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Charlie Catholique, Chair
Environmental Monitoring Advisory Board
PO Box 2577
Yellowknife, NT X1A 2P9, Canada

12 September 2022

Dear Mr. Catholique:

Subject: DDMI 2021 Environmental Agreement Annual Report

Please find enclosed Diavik Diamond Mines (2012) Inc.'s (DDMI) final 2021 Environmental Agreement Annual Report (EAAR) for the Diavik Mine as per Article XII of the Environmental Agreement. The final 2021 EAAR addresses the comments and recommendations received from the Environmental Monitoring Advisory Board and the Government of Northwest Territories Environment and Natural Resources in August 2022 following a review of DDMI's draft 2021 EAAR submitted to stakeholders in July 2022. A table of DDMI responses to these comments and recommendations is appended to this letter.

Please do not hesitate to contact the undersigned at kofi.boa-antwi@riotinto.com or Kyla Gray (kyla.gray@riotinto.com; 867-445-4922) if you have any questions related to this submission.

Yours sincerely,

Kofi Boa-Antwi
Superintendent, Environment

cc: John McCullum, EMAB
Mohannad Elsalhy, EMAB
Laurie McGregor, GNWT-ENR
Jeffrey Cedarwall, GNWT-ENR

Attachments: - Table of DDMI Responses to EMAB and GNWT-ENR Comments and Recommendations on Draft 2021 EAAR
- 2021 Environmental Agreement Annual Report

Table of Responses to EMAB and GNWT ENR Recommendations on Draft 2021 EAAR

	Reference	Comment	Recommendations	DDMI Response/Location in 2021 EAAR
2022 GNWT Comments				
1	Monitoring Programs (Page 10)	Table 3 lists the "Wildlife Habitat Loss" under the Air Quality, Dust & Vegetation program. It seems the "Wildlife Habitat Loss" is misplaced and should be listed under the "Wildlife" program?	It is recommended to correct or confirm the placement of "Wildlife Habitat Loss" in Table 3	DDMI has moved the Wildlife Habitat Loss from Air Quality Programs to Wildlife Programs.
2	Total Suspended Solids (TSP) (Page 63)	It is stated that "In 2019, DDMI determined that continued TSP monitoring is not a valuable component of the air quality monitoring initiatives at the Diavik mine".	Diavik should explain how this determination was made that TSP monitoring is not a valuable component of the air quality monitoring initiatives. Diavik should also explain what air quality data analyses were performed that led to this determination.	DDMI has previously explained, in detail, our rationale to stop the trial TSP monitoring program (2019 Diavik EAQMMP Version 2). DDMI recommends that further discussion on this topic is done through the review of the EAQMMP after the GNWT air quality guidelines have been developed. Text added to TSP section of EAAR
3	Total Suspended Solids (TSP) (Page 63)	It is stated that "Results have not proven useful in developing adaptive management strategies for improving air quality at the site"	Diavik should provide additional information/data on why the results have not proven useful and how the results were considered in developing adaptive management strategies.	The results of the TSP program did not show a problematic level of TSP or any trends in TSP that would require adaptive management of the site. Diavik uses visual identification of high-dust locations to determine when and where to apply mitigative actions. Workers in vehicles and workplaces immediately notify supervisors of visible dust and this allows dust suppression (watering of roadways/workplaces) to be initiated immediately and targeted to those places that are producing the most dust. TSP units will only provide data on elevated levels when weekly downloads of the data occur. This will result in delayed response to elevated dust levels. The location of the monitors is also stationary, and the data from them does not provide insight into where elevated dust is sourced from. Having workers on the ground has proven to be the most successful form of air quality management. Text added to TSP section of EAAR

Table of Responses to EMAB and GNWT ENR Recommendations on Draft 2021 EAAR

	Reference	Comment	Recommendations	DDMI Response/Location in 2021 EAAR
4	Total Suspended Solids (TSP) (Page 64-67)	The TSP monitoring detail is presented inconsistently from year to year (2013-2018).	Provide information for each monitoring location by year on percent valid data, maximum concentration for 24-hour average, annual average concentration, number of exceedances for 24-hour average, and number of exceedances for annual average from the start to discontinuation of the TSP monitoring program.	Additional information provided on page 65-68.
5	Figure 13: TSP monitoring station locations (Page 64)	The figure states that "Note: The wind rose represents the direction the wind was blowing FROM…".	However, there is a no wind rose shown in the figure. Include a wind rose of Diavik's meteorological station data.	The intent of Figure 13 is to show the locations of the TSP monitors and the Diavik Meteorological station. Diavik has revised the image to exclude the reference to the 2015 wind rose to avoid confusion.
6	Typo - Page 67, first paragraph, second line	There is a typo "save". It should be except.	Fix Typo.	The typo has been corrected.
7	Air Quality - National Pollutant Release Inventory (NPRI) (Page 112)	The report simply refers for further information to external links and provides no emissions data for air quality parameters reported to NPRI.	It is recommended that Diavik add a summary table of annual air quality emissions reported to NPRI from 2003 to present.	DDMI appreciates the reviewer's recommendation to provide a summary table of NPRI reported air emission releases. DDMI has provided an annual air emission summary table in Appendix VI.

Table of Responses to EMAB and GNWT ENR Recommendations on Draft 2021 EAAR

	Reference	Comment	Recommendations	DDMI Response/Location in 2021 EAAR
8	Additional Figures to show rolling summary to illustrate trends	Article 12.1 (b) of the Environmental Agreement specifies that "Each Annual Report shall include the results of Environmental Monitoring Programs, and a rolling summary and analysis of environmental effects data over the life of the Project to illustrate any trends." The draft Annual Report describes many summary differences across years with words but does not always include accompanying figures or tables with the written information. To better meet the objectives of 12.1 (b) and assist the reader compare differences and trends across the life of the mine it would be beneficial to visually illustrate a rolling summary using clear figures and/or tables for additional parameters including but not limited to water quality parameters which exceed action levels, dustfall rates, snow survey contaminants, greenhouse gas emissions, and data collected as part of the lichen survey.	It is recommended that the Final Annual Report include more figures to show a clear rolling summary and analysis of additional environmental effects data.	DDMI appreciates the reviewer's recommendation to provide more figures and tables that summarize results to date of the various program data to better align with EA commitments. DDMI would like to highlight that summary tables and figures are provided in various monitoring annual reports referenced in EAAR (i.e., annual AEMP reports) and remain the best location for the reader to review as the reports contain the accompanying and complete technical context for the figures and/or tables. DDMI will strive to incorporate more summary figures and/or tables from these annual reports into the EAAR. The locations of the summary tables/figures within the EAAR (either in the main report or as an appendix) will be dependent on what location is most appropriate/reader friendly. If tables and/or figures cannot be incorporated into the EAAR in a way that is reader friendly (i.e., too technical, or encompassing). DDMI will direct the reader to the location of the visuals in the original reports. Because AEMP action level parameters are not consistent between years or between under-ice and open water seasons, compiling the exceedances into one large table format may not be a useful visual. DDMI will continue to provide annual action level exceedance for each reporting year. DDMI has included annual dust fall rates and snow water chemistry results figures as Appendices IV and V in the 2021 EAAR. DDMI has provided annual GHGRP emissions reported to ECCC's GHGRP in Table 9 in the Climate and Air Quality Section of the 2021 EAAR.

Table of Responses to EMAB and GNWT ENR Recommendations on Draft 2021 EAAR

EMAB Comments on Draft 2021 EAAR				
	Reference	**Comment**	**Recommendations**	**DDMI Response/Location in 2021 EAAR**
1	Plain Language	Plain language in the executive summary is good. Plain language could be improved throughout thebody of the report	Plain language could be improved throughout the body of the report	DDMI will continue to improve the quality of plain language summaries.
2	Air Quality	EMAB believes Diavik's EAQMP has not met all of its commitments in the EA, particularly in regards to TSP monitoring. EMAB initiated a Ministerial investigation on the discontinuation of the TSP monitoring which is ongoing. EMAB believes that this should be included in the 2021 EAAR.	Include notification of the ministerial investigation occurring on Diavik's TSP program.	This has been addressed on page 65, bullet point 1 of TSP section.
3	SNP Page 16 Para. 2	Page 16, paragraph 2, discusses the regular inspections of the dam and dike structures and recording the amount of water. Could Diavik please expand on the number of inspections completed in accordance with the EA section 12.1 (c-i).	Include frequency of dike and dam inspections.	Included frequency of dike inspections on page 16, paragraph 2.
4	2017-2019 3-year summary report observations	Page 24, paragraph 1 of this section, the first sentence in this paragraph may be an error. Without parenthesis the sentence reads "Treated water that is put back into and Effect Benchmarks, and reviewing trends to see if amounts were higher or lower over time.". EMAB recommends revisiting this to clarify this.	Clarify this typo.	Section revisited and corrected with appropriate text on page 24.
5	Total Suspended Particulates (TSP)	Page 63, paragraph 2, discusses the discontinuation of TSP monitoring and states that "results have not proven useful in developing adaptive management strategies for improving air quality at the site". EMAB believe Diavik should expand on how results were used in attempts to develop adaptive management strategies in accordance with the EA section 12.1 (c-ix). EMAB is still in disagreement with Diavik's stance on TSP monitoring, and believes TSP monitoring should be mandatory		The GNWT is developing air quality guidelines and DDMI understands the final AQ guidelines will be issued in December 2022 after which, the GNWT will review the Diavik EAQMMP. If the program is found to be incomplete or not adequate the Minister will provide Diavik with a report addressing deficiencies that require correction and Diavik will be provided an opportunity to respond.
6	Vegetation and Terrain	Page 70, table 9, "*Cumulative habitat loss each year*" shows that there was a net gain of 0.13 km^2 (9.78 km^2 in 2009, to 9.65 km^2 in 2010), however, in Diavik's 2010 EAAR they state there was no habitat loss/gain from 2009, and show a total habitat loss from mining activities remained at 9.78 km^2 from the previous year (pg. 66, 2010 EAAR). EMAB recommends that Diavik update table 9 on page 70 of the draft 2021 EAAR to represent the values from past EAAR's, or include an explanation of the net gain.		Value corrected to 9.78km^2.

Table of Responses to EMAB and GNWT ENR Recommendations on Draft 2021 EAAR

7	Wolverine	Page 90, last bullet point under observations, the point seems to begin mid-sentence, or is missing part of the sentence. EMAB recommends revisiting to determine whether this is a typo or not. Page 93, paragraph 1, starts off by stating "Diavik participates in a joint wolverine DNA research program…". EMAB recommends Diavik revise this to be past tense, as Diavik has stated the wolverine hair snagging program is discontinued.		Revised both sentences on page 90 and on page 93.
8	Community Engagement and Traditional Knowledge	Page 100, paragraph 1, states that table 19 summarizes *completed* engagements relating to the environment. In table 19, the 2021 TK Panel and AEMP TK Camp at Lac de Gras from July 30 to August 8 is included. EMAB is unclear whether this engagement is technically "complete" if not all components have been verified through the verification process. EMAB recommends including an asterisk to this row of the table to explain why the engagement is not yet complete.		Removed the word "completed" to encompass active and completed engagement.
9	New Technologies and Energy Efficiency	Page 106, paragraph 3, discusses the new food waste dehydrator and a more efficient waste incinerator. EMAB commented last year that it would like to see a more comprehensive summary of these two technologies in accordance with the EA section 12.1 (c-xi). This paragraph is the same as last year with no new information. Page 106 paragraph 4, discusses the change in process plant operations in 2018. EMAB is pleased to know that less wet/fine sand is being produced. To the extent possible, please expand on how this process works, and the percent change in wetter, finer sands produced during the processing operation.		Added information about the dehydrator and incinerator on page 110 and 111. Included a more detailed explanation of the changes to the process plant in 2018 on page 111.
10	Other	The 2021 EAAR did not have a section for the Water License Amendment for Progressive Reclamation that was conducted in 2021/22. Does Diavik plan to report on this in their 2022 EAAR? Please add rationale for not reporting tis in 2021 EAAR.		Added mention of the purpose for the 2021 Water Licence amendment application to the community engagement and traditional knowledge section, Page 104
11	Appendix II: Summary of Adaptive Management & Mitigation Measures	EMAB is pleased to see that Diavik has addressed all of EMAB's comments and recommendations in Table I-A, Appendix II from the 2020 EAAR. In Table I-A, Appendix II, in aspect "Waste" under "Adaptive Management Responses", the 12th bullet point states that "seepage monitoring stations changed in response to observations over the years". EMAB would like		This statement moved to the "Water" section of Appendix II, Table I-A. Details were added in the Mitigative Measures column and the Effectiveness of Measures column. Deactivated seepage monitoring locations included.

		Diavik to explain what types of changes were made to the monitoring stations and give examples.		In August 2013, a number of groundwater and seepage survey locations were discontinued, and survey efforts were refocused toward upstream seepage interception wells and surface runoff stations at the Ammonium Nitrate storage and Emulsion buildings. This was deemed a more effective method of monitoring and managing seepage since upstream collection systems had proven to successfully capture and divert any runoff according to investigations in 2009. Groundwater stations that were discontinued in 2013 had been dry or frozen since installation and had not provided any data on water quality.

RioTinto

2021 Environmental Agreement Annual Report

Diavik Diamond Mines (2012) Inc.

Document #: ENVI-1356-0922-R0

Published: September 12, 2022

Executive Summary

The Diavik diamond mine is located on the East Island of Lac de Gras, in Canada's Northwest Territories, approximately 300 kilometers northeast of the capital city, Yellowknife. Diavik signed an Environmental Agreement (the Agreement) with five (5) Aboriginal organizations and the federal and territorial governments in 2000. The Agreement says what Diavik is to do to protect the environment while operating the mine. There was also an Environmental Monitoring Advisory Board (EMAB) formed as part of the Agreement; the Board is a public watchdog of the regulatory process and the implementation of the Agreement. The Diavik diamond mine was in its nineteenth (19th) year of operations during 2021. Mining at the A21 pipe (mineral deposit) commenced in 2018 and continued in 2021 and underground mining continued at A154 and A418 pipes.

This report talks about the results of Diavik's environmental monitoring and management programs during 2021. Copies of the reports listed can be found in the EMAB registry (in their office, or on-line library) or the Wek'èezhìi Land and Water Board public registry.

Summary of 2021 Environmental Activities

Mine Footprint

In 2021, the Mine footprint increased by 0.15 square kilometers. The total loss of terrestrial and aquatic habitats to date from Diavik mining activities (11.55 square kilometers) is less than that predicted in the original Environmental Assessment for the Diavik Diamond Mine Project. The current footprint is expected to be at its maximum now for operations, except for the Waste Rock Storage Area - South Country Rock Pile (WRSA-SCRP) and Waste Rock Storage Area - North Country Rock Pile (WRSA-NCRP) footprints that may slightly expand during reclamation activities.

Re-vegetation

In 2004, Diavik started doing research on ways to help plants grow back after the mine closes. This research was finished in 2017. The goals were to determine: how best to grow plants from seeds, how effective different planting methods are on plant growth and which conditions improve plant growth over time. The research looked at if it is good to use different planting techniques in patches around the mine site at closure, as this is something that has worked well for other large sites. This work also included more monitoring of the research plots from 2004, to see how well they were doing over time. A final report was completed in 2018 with results considered as part of the latest version of Diavik's Interim Closure and Reclamation Plan (Version 4.1).

Wildlife

Caribou monitoring continued to focus on behavioural observations (watching caribou to study their reaction to mining or other activities) when caribou were present in the study area. Movement

patterns for the northern Bathurst caribou migration support the idea that the northern migration route to the west or east side of Lac de Gras is influenced by their location on the winter range. When compared to the prediction that caribou would move east of the lake in fall, the results for 2018 differ from this prediction and more collared caribou have been moving west around Lac de Gras for the southern migration since 2011. Caribou aerial surveys were not required or completed in 2021. Discussions with Government of the Northwest Territories Environment and Natural Resources (GNWT-ENR) during the 2021 Diavik Mine Wildlife Monitoring Meetings indicated that aerial surveys can be discontinued as part of Diavik's caribou monitoring. There were no caribou deaths related to the mine in 2021. There was one instance where action had to be taken to herd a single caribou away from vehicle traffic and mine infrastructure in 2021.

Wolverine, grizzly bears and falcons continue to be present in the mine area. Incidental observations are recorded to track the number of times a species is seen on site, including if they are using any of the mine buildings for denning or nesting. There were 2 raptor deaths on the mine site in 2021, the cause of death was not identifiable for either. There were no relocations for wildlife in 2021. The next regional raptor nest monitoring survey is planned for 2025. ENR conducts this survey with the support of Diavik and other mines. The most recent grizzly bear hair snagging DNA study was conducted during 2017 and results showed that there have been no negative impacts on the regional population of grizzly bears in the Slave Geological Province (i.e., grizzly bear populations are stable and increasing) due to the Diavik mine. Wolverine track surveys were completed in 2021 and results indicate that wolverine presence in the study area continues to be stable.

Vegetation, Dust and Air Quality

Snow samples are taken every spring and they are melted to test for the amount of dust on the snow and the type and amount of chemicals in that dust. Dust particles are also captured in collectors and checked to see if there are patterns in the amount and location of dust from the mine. During 2021, the amount of dust was slightly higher than in 2020 but lower than was seen in 2019. As expected, there was less dust seen at sites further from the mine. The level of chemicals within the dust-covered snow remained below Water Licence requirements for water leaving site. The levels of chemicals in the snow in 2021 were higher than 2019 or 2020, but were similar to years prior to 2010.

The Diavik Vegetation and Lichen monitoring studies were conducted in 2021. These studies were last done in 2016 and results from 2021 were similar to previous years. Variety and abundance of vegetation and lichen species between near-mine and far-from mine sites continue to indicate that the mine is having a small and localized effect on vegetation. Some grass-like species are becoming more abundant near the mine over time. The amount of metals measured in lichen tissues has decreased steadily since 2010 and was lower in 2021 than in 2016. Metals levels indicate that there continues to be no risk to Caribou health from metals in lichen near the mine.

In 2021, a total of 81.6 million litres of diesel were used to operate the mine site.

Water and Fish

Diavik continued to do the Aquatic Effects Monitoring Program (AEMP) and onsite Surveillance Network Program (SNP) monitoring in 2021. The AEMP studies different parts of the lake in different years in order to identify possible effects to Lac de Gras from mining activities. The types of samples taken close to the mine (near and mid-field stations) and far from the mine (far-field stations) in 2021 included water chemistry (quality) and nutrients, and plankton (tiny plants and animals in the water - amount and type), and fish. Traditional Knowledge (TK) studies for the AEMP took place as part of the 2021 TK camp/TK panel visit. Parasites were observed in many of the fish caught at the camp. Parasites have been observed in varying quantities in the fish at each camp since the beginning of AEMP TK Camp fish monitoring. Levels of metals in the fish caught were all below Health Canada safe consumption guidelines. Chemical analysis of water samples at the camp in 2021 indicated that there were no harmful levels of metals or other chemicals in the water.

Elevated concentrations of nutrients extending to various distances from the Mine (depending on variable and season) suggest the Mine is increasing nutrients in Lac de Gras. The effect is small and Lac de Gras continues to be a nutrient-limited lake with low productivity.

Changes to the lake are mostly caused by an increase in nutrients from the groundwater and blasting. Diavik tries to reduce the amount of nutrients that reach Lac de Gras by using blasting controls, careful selection of blasting materials as well as water management and treatment.

Community Engagement/Traditional Knowledge

Diavik values opportunities to share updates on environmental monitoring and closure planning progress with community members. Diavik works with each Participation Agreement (PA) organization to try to determine a suitable way and time to carry out such events. A summary of Diavik's engagement about the environment with the PA community organizations during 2021 is provided in this Report.

In 2021 in-community and in-person engagements continued to be impacted due to Covid-19 and most engagements were completed by telephone and videoconference. Diavik worked with community partners to ensure that engagements were adapted to suit the needs of community during this time. Use of technology, translation and other methods were modified to maintain engagement. Some in-person meetings were able to occur. Topics of communication included Frame Lake rehabilitation project, participation agreement implementation, Processed Kimberlite to Mine Workings (PKMW) Project, mine closure, incorporation of Traditional Knowledge (TK), Covid-19 and its impact on communities, winter road, reclamation activities on site, the 2021 AEMP TK camp and the 2021 TK Panel. Diavik also tries to bring community members to the mine site so that they can see the mine and observe the surrounding environment with their own eyes. While it is impossible to bring everyone to site, the hope is that those who have been involved share their experience with others back home in the community.

In 2021, Diavik Diamond Mines (2012) Inc. (DDMI) brought a community member from Lutselke to site to assist in the wolverine track survey program. Covid-19 outbreaks precluded the possibility of bringing groups of community members to site.

Every 3 years, DDMI organizes the AEMP Traditional Knowledge camp. In 2021, Elders and youth from the PA communities were brought to a tundra camp on the east arm of Lac de Gras to test fish health and water quality. The findings from this camp will inform fish health and water quality monitoring programs in the future. This camp was organized together with the annual TK panel, which extended the length of the camp by an additional 4 days. The TK Panel meets to discuss topics related to mine operation and closure, and provides recommendations that can be incorporated into the Diavik Closure Plan. In 2021, the TK Panel met at the AEMP TK camp to discuss vegetation health and monitoring through closure. The 2021 TK Panel Session #13 recommendations are included in this report and cover topics such as vegetation health monitoring techniques, timelines for post-closure monitoring and specific data requests.

New Technologies & Energy Efficiency

There are four (4) wind turbines that operate at the Diavik mine, and staff continued to make the most of the efficiency of these turbines throughout the year. The wind turbines offset 3.8 million litres of diesel fuel use and approximately 10,269 tonnes of emissions (CO_2e) in 2021. The turbines have flashing lights to help deter wildlife and reduce bird strikes from the rotating blades. Additionally, approximately 215,580 litres of waste oil was collected to be used in the waste oil boiler during 2021. Since it was commissioned in 2014, a total of over 1.7 million litres of waste oil has been burned to create heat, rather than having to ship it off-site.

Diavik continues to look for new ways to reduce energy needs across site. Additional energy efficiency measures include: heat recovery from the electricity generators and boilers, use of LED lighting in buildings, photocells installed in outdoor light poles, installation of variable frequency drive pumps around site which limit energy requirements, installation of light timers, decommissioning of unoccupied buildings, installing digital thermostats, and reducing heat in infrequently used buildings. In 2021, these energy savings projects saved approximately 116, 000 litres of diesel fuel which offset approximately 3,630 tonnes of emissions (CO2e).

Compliance and EMAB

The 2020 EAAR was deemed to be satisfactory by the Deputy Minister of the GNWT-ENR on December 7, 2021. A copy of the Deputy Minister's letter on the 2020 Environmental Agreement Annual Report is provided in Appendix I.

The EMAB and Diavik exchanged letters relating to topics such as the Frame Lake Rehabilitation Project, the Diavik water licence amendment to include progressive reclamation, as well as reviews of various environmental monitoring programs and management plans.

Thank you/Marsi Cho/Masi Cho/Quana to the Kitikmeot Inuit Association, Tłı̨chǫ Government, Yellowknives Dene First Nation, Łutsel K'e Dene First Nation and the North Slave Métis Alliance for the efforts of their staff, businesses, and individual members who worked with Diavik staff in 2019. The continued support of Diavik's Participation Agreement partners helps to make sure that environmental impacts are minimized, and our resources are used wisely.

ʔerehtɬ’ís Hálı Ts’ı Hanı Nedúwé

Diavik diamond mine tsamba k’é theɔą sí, Lac de Gras húlye Jadízį ʔedzagh Nĕn theɔą sí ɔeyër East Island húlye nu theɔą sí ɔeyër t’a theɔą ɔat’e, Beghúldesche ts’ı yudázé ts’ĕn tonona dechën hánıłtha húk’e theɔą. 2000 núltágh kú, Diavik sǫlághe ɔełk’éch’a dëne dédlıne ts’ıɔáne xa k’áldé dálı sí xél chu yunághé ts’ı níé ts’ĕn k’aldhër chu jadízį ɔedza nĕn ts’ı níé ts’ĕn k’aldhër xél t’at’ú nı́ hadı xa límashı heɬts’ı, that’ın yatı t’á Envıronmental Agreement (Agreement) húlye. ʔedërı límashí sí Diavik tsamba k’é theɬɔą ghár t’at’ú níé ts’ędhır ch’á yałnı xaɔą sí bek’oréhtɬ’ıs, ɔeyı yeghár ɔeghálana xa. ʔedërı límashí hálı sí ɔeyı beghár ɔedërı Environmental Monitoring Advisory Board (EMAB) húlye nuhút’ągh, thëne ts’ĕn t’así hałnı xa; ɔedërı Board sí t’at’ú ɔerehtɬ’ıs beghár ɔeghálada xaɔą sí hałnı-u, tth’ı nı́ ts’ędhër ch’á t’at’ú beghálada xa snı sí ɔeyı hát’e-u háɔą xa hałnı ɔat’e. Diavik diamond mine tsamba k’é theɬɔą, 2021 k’e beghálahdą́ sı́, dų łǫ́tąɔadhel (19) gháy xa beghálada ɔat’e. A21 pıpe húlye (tthe betagh tsamba hulı) 2018 núltagh k’e beghálada búnídhër-u, 2021 k’e ɔałú beghálada háɔą -u, A154 chu A418 nı́yághe ɔeyı tth’ı ɔalú beghálada háɔą.

ʔedërı ɔerehtɬ’ıs sí, 2021 k’e t’at’ú Diavik nı́ hałnı-u, t’at’ú nı́ hadı yeghálana sí, ɔeyı ghą t’e. ʔedërı ɔerehtɬ’ıs sí, EMAB húlye t’a ɔerehtɬ’ıs theła sí (bets’ı office theɔą sí ɔeyër-u, tth’ı computer yé t’ąlásí ɔerehtɬ’ıs neɬɔı xadúwíle bek’ání, ɔeyër tth’ı thela ɔat’e) ɔeyër thela-u, hat’ele dé, Wek’èezhìı Land and Water Board húlye ɔeyër t’ąlásí ɔerehtɬ’ıs neɬɔı xadúwíle ɔerehtɬ’ıs theła sí ɔeyër tth’ı thela ɔat’e.

2021 K’e T’at’ú Nı́ Badı Beghálahdą́ Sí Ghą Dënexél Hadı

Tsamba K’é T’a Nı́ Theɔą

2021 núltagh k’e tsamba k’é t’a nı́ k’e theɔą sí, deɔą́ɨłyą ɔaja 0.15 kilometers húlye háíłyą t’á. Diavik diamond mine Project húlye nút’ágh tthe, tsamba k’é nútágh t’á t’at’ú t’así ts’ędhır xa hunıdhën bek’aunehtágh hɻlé sí ɔeyı t’at’ú nı́ ts’ı chu tu yághe ts’ı t’así ɔedú ɔane xa hunıdhën sí Diavik tsamba k’é theɬɔą sí (11.55 square kilometers), ɔeyı bek’áɔǫ́ húle ɔat’e. Dų t’aıłyą nı́ bet’át’ı sí, ɔeyı ɔą́ązį́ nı́ bet’át’ı xaıle hunıdhën, hat’e húlı t’a tthedhır ɔáldhır hála that’ın yatı t’á Waste Rock Storage Area - South Country Rock Pıle (WRSA-SCRP) húlye chu Waste Rock Storage - North Country Rock Pıle (WRSA-NCRP) húlye ɔeyër t’a tsamba k’é dárétągh tɬ’ą́gh dé nı́ ɔeła nanelye ghą núdhër dé ɔeyı deɔą́ɨłya nı́ t’át’ı xa dé hane xa.

T’ą́nch’ay nanelye

2004 kú, Diavik tsamba k’é dárétą tɬ’ą́ dé t’at’ú t’ánchay dánanílye xa sí k’aunetagh húnítthër hɻlé ɔat’e. ʔedërı bek’aunetagh sı́, 2017 ɔeyı kú noot’é. ʔedërı t’a hołé hunıdhën xa beghálada sí: t’así huneshe bet’át’ı t’á ɔedlát’u t’a ɔaté nezų t’ası neshe-u, tth’ı ɔełk’éch’a ts’ĕn t’áncháy dánıye sí, ɔedlát’u t’a deɔą́ąs nezų neye t’á-u, tth’ı ɔedlát’u háɔą dé t’ánchá́y deɔą́ąs nezų neye ɔeyı netʔ. ʔedërı bek’aunetagh

sí, tsamba k'é theɔą bedárétągh tł'ą dé, ɔeyër náré t'at'ú t'ánchάy nanelye sí, ɔedlát'u t'a deɔąąs nezų dáníye t'á, ɔeyı t'a net'ʔ-u, t'a hurıchá sí ɔeyër nezú t'ánchάy dánílye búret'ʔ t'á. ʔedërı beghálada sí, 2004 kú t'así neshe xa nílya hʔlé sí, dų t'at'ú dáníye sı ɔeyı tth'ı net'ʔ. 2018 núltágh k'e ɔedërı ghą fınal report húlye nade ɔerehtł'ʔıs hálʔ-u, t'anódhër sí benánadé, Diavik bets'ʔ Closure and Reclamation Plan (Version 4.1) húlye ɔeyı t'a húlɔą sí, bexél ɔalye xa dé beghą nánadé.

Ch'ądí

ʔetthën badı háɔą sí, ɔeyër náré ɔetthën dólʔ dé ɔetthën t'arát'ʔ sí (tsamba k'é theɔą t'á to ɔeyër nár t'así ɔeghálada t'á to ɔetthën t'arátʔ sí ɔeyı badı) ɔeyı xa badı. Yudázʔ ts'ʔ Bathurst carıbou húlye ɔetthën t'a ts'ën dzérélt'ı sí yudázʔ ts'ʔ t'a ts'ën dzérélt'ı xa snı, hát'u dzérélt'ı-u ghay k'e t'a ts'ën dzérélt'ı sí ɔeyı bet'á Lac de Gras ts'ʔ ɔetthʔze ts'ën tó nazʔ ts'ën tó dzérélt'ı xa bek'óreją ɔat'e. Xayt'ás dé ɔetthën ɔeyı tu theɔa ts'ʔ ɔetthʔze ts'ën ɔat'ʔ xa dásnı hájaıle 2018 núltágh k'e, tth'ı ɔetthën bek'oth kál bek'e dáthela łą Lac de Gras ts'ʔ nazʔ ts'ën ɔat'ʔ sayızʔ ts'ën nalt'ı ghą núdhër dé, 2011 ts'ʔ hát'ʔ ɔat'e. 2021 núltágh k'e dzeret'áy t'á ɔetthën hultagh sí, bedí húlí sát'ele t'á hályaıle. 2021 núltagh k'e ɔeyı Dıavık Mıne Wıldlıfe Monıtorıng nádáítı hʔlé sí ɔeyı kú Jadízʔ ʔedzagh Nën Ts'ʔ Nié Ts'ën K'aldhër bechëlekuı Environment and Natural Resources (GNWT-ENR) húlye sí denı hehedí-u, Dıavık dzeret'áy t'á ɔetthën hałnı sí ɔeyı hút'agh yeghánaıle xadúwíle yéłnı.

2021 k'e tsamba k'é theɔą ts'ʔɔáne ɔłágh hulı ɔetthën thąıdhër huʔlʔle. 2021 núltagh k'e ɔłágh hulı beschën ch'azʔ chu tsamba k'é theɔą dasí dáthela ch'azʔ ɔetthën yuwé níjú hʔlé.

Nághaye-u, dleze-u tth'ı ǰischogh tth'ı ɔeyër tsamba k'é theɔą nár búret'ʔ. ʔeyër nár ch'ądí het'ʔ dé bek'úríłt'ıs ɔat'e, ɔeyı ghár t'aníłt'e k'éneth t'at'ı ch'ądí het'ʔ sí bek'óreją xa t'á, tth'ı ɔeyër tsamba k'é theɔą kúé dáthela sí, ɔeyı náré bet'ógh níle dé xa tth'ı badı. 2021 k'e tsamba k'é háɔą ɔeyër nár náke ɔıyes t'así hena heldél hát'ı thaıdé húlí t'at'ú ɔaja sí bek'órejąıle. 2021 núltagh k'e ɔłágh hulı ch'ądí ɔedílya hulʔle. 2025 núltagh k'e núdhër dé, ɔeyı ɔıyes t'así hena heldél bet'ógh badı net'ʔ nadlʔ xa ɔeyı kú. ENR húlye sí denı t'a ɔedërı hałnı ɔat'e-u Dıavık chu beghąłthën tsamba k'é dáthela sí, yets'éránı ɔat'e. 2017 k'e dleze betth'ighá nálts'ı-u, bets'ʔ DNA húlye net'ı-u, ɔeyı beghár ɔeyër South Slave Geologıcal Provınce húlye náré dleze nádé sí ɔeyı tsamba k'é theɔą t'á t'asájaıle bek'óreją (t'at'ú ɔats'edı dleze t'at'ú dáníye sárat'ele-u deɔáníłt'e ɔane). 2021 núltagh k'e nághaye beké káúnetagh hʔlé-u, ɔeyı ghár ɔeyı tsamba k'é theɔa náre ɔałú t'asát'ele-u nághaye ɔat'ʔ bek'óreją.

T'anchay Neshe-u, Ts'ér Dzérédhı-u, tth'ı Nıłts'ı Ts'ejí Dzérédhı T'at'e Sí

Haluka hant'u, yath nálts'ı-u, nalghʔ-u, bet'agh t'aníłt'e ts'ër hulʔ net'ʔ-u, t'at'ı ts'ër-u, tth'ı ɔeyı ts'ër betagh t'at'ı náídísłıne hulʔ sí ɔeyı tth'ı net'ʔ. ʔeyı beghąłthën ts'ër náłtsı xa t'así dáthela sí, ɔeyı beyé net'ʔ-u, tsamba k'é theɔą t'at'u ts'ër t'at'ú dzérédhı-u, t'aníłt'e ts'ër dzérédhı sí ɔeyı tth'ı hultágh-u badı. 2021 núltagh k'e, t'aníłt'e ts'ër dzérédhı sí 2020 núltagh k'e ɔeyı kú t'aníłt'e ts'ër

Dzérédhı sí ɔeyı ɔąąs ts'ër ts'érédhı húlí 2019 núltágh k'e t'aníłt'e ts'ër dzérédhı sí ɔeyı k'áɔǫ ɔat'e. Tsamba k'é theɔą ch'azʔ súghá nıłtha xa dé, ts'ër dzeredhı k'áɔǫ ɔat'e-u hane xa są hunıdhën ɔat'e. Yath k'e ts'ër nátł'ır sí net'ʔ ghár ɔeyı Water License húlye tu t'áát'ʔ xa ɔerehtł'ʔıs betł'alchúth sí, ɔeyı t'aníłt'e

tsamba k'é theʔą ch'azį tu ʔat'į yé t'aníłt'e tsër xadúwíle héts'edı sí ʔeyı k'áʔǫ ʔat'e. 2021 núltagh k'e yath ta t'aníłt'e náídı that'ın yatı t'á chemıcals húlye beta hulį sí 2019 chu 2020 k'e chú t'aníłt'e yath ta náídı hulį sí ʔeyı ghay k'e deʔą́ą́s yath ta náídı hulį húlí 2010 ʔeyı tthe t'at'ú háʔą nısí ʔeyı chú ʔełéłt'e ʔat'e.

2021 núltagh k'e ʔeyı Dıavık Vegetatıon and Lıchen Monıtorıng húlye t'ánchay chu tthetsį chu bek'aunehtagh net'į. 2016 núltagh k'e ʔedërı nade bekaunehtagh hįlé ʔat'e-u, 2021 núltagh k'e t'aut'e sí t'atthe t'aut'e sí ʔełéłt'e ʔat'e. ʔeyër t'a tsamba k'é theʔą chú tsamba k'é theʔą ch'azį súghánıłtha ʔeyër nár ts'į t'at'ú t'ánchay chu tthetsį chu dáníye sí bek'áúnetagh ghár xa-u, ʔeyër nár ʔųłį t'anchay bek'uréłʔa ʔat'e búret'į. Tsamba k'é theʔa ʔeyër náré tł'ogh lát'ı deʔą́ą́s dáníye ʔane. ʔeyı tthets'į beta t'aníłt'e satsán hulį xa hultágh sí, 2010 núltagh ts'ı ʔałų́ k'áʔǫ ʔane-u, 2021 núltagh k'e hultágh-u, 2016 t'a t'e ní sí ʔeyı k'áʔǫ ʔat'e. Tsamba k'é theʔa náre ʔeyı satsan t'así ta húltágh badı bekáúnetagh ghár xa-u, tthetsį beta satsán sí ʔeyı ʔetthën xa ʔałų́ t'asát'ele

2021 núltágh k'e kú harelyų́ t'ą 81.6 límëlyǫ́ lígalǫ́, that'ın yatı t'á lıtres snı sı, háníłt'e gëslín, diesel húlye, bet'áát'į, tsamba k'e beghálada xa.

Tu chu Łue chu

2021 núltágh k'e, Diavik ʔedërı Aquatic Effects Monitorıng Program (AEMP) húlye háłʔą ghár tu yághe t'así dáníshe t'arát'e badı ʔeyı ʔałų́ yeghálana-u, tth'ı Surveıllance Network Program (SNP) húlye ʔeyı tth'ı ʔałų́ yeghálana. ʔeyı AEMP beghár ʔeghálada sí, ʔįłágh ghay hant'u Lac de Gras tu theʔą sí, net'į ʔat'e hat'e húlí, ʔįłágh ghay k'e t'asízį net'į-u, ʔeyër ts'į yunedhe ghay dé, ʔedų́ ts'ën net'į, ʔeyı beghár tsamba k'é theʔą sí bet'á Lac de Gras ts'ę́dhır dé xa badı t'á. 2021 núltágh k'e tsamba k'é theʔą ts'ën nıdhíle (bets'ën nedhíle-u, tth'ı t'anís ts'ën lát'e dáthela) chu netthá ts'į chú tu náłtsį bets'į chemıstry (tu t'at'e sí) húlye net'į xa-u, tth'ı that'ın yatı t'á nutrıents snı ʔeyı chu plankton (te yé ts'į t'así dánechílaze búret'įle dáníye – t'aníłt'e chu t'at'ı chu) húlye ʔeyı tth'ı xa net'į – łue tth'ı net'į. ʔedërı AEMP húlye badı xa Traditional Knowledge (TK) Study húlye sí 2021 núltágh k'e ʔeyı TK xa camp heʔą/TK panel húlye ʔeyër náíhedel hályá. ʔeyı camp hálį ts'į łue ghą náts'ıdé sí, ʔeyı łue łą betagh parasıtes húlye dolį k'e búlʔą. ʔedërı AEMP TK Camp húlye łue t'at'e badı xa nút'ągh sí t'atthe beghálada búnídhër sí ts'į łue yé parasıtes dólye dólį ʔunt'e. Satsán metals húlye ʔeyı hát'ı łue yé hulį húlí, ʔeyı Health Canada húlye t'aníłt'e hát'ı satsán lųe yé hųlį húlí ts'eldél xa t'asáte'ele hénı sí ʔeyı háníłt'e dek'áʔǫ́ łue yé satsán hulíįle. 2021 núltagh k'e ʔeyër camp háʔą náré tu náłtsį-u net'į-u, tu sát'ele k'é, t'así satsán-u, náídı-u hát'ı łą betagh hulíįle hulʔą.

ʔeyër tsamba k'é theʔą ts'į súghánıłtha ts'ën (ʔełk'éch'a t'así t'á-u tth'ı t'o tth'ı) ʔeyı nutrıents húlye sí yudágh ʔajá k'é búrét'į ʔeyı t'á ʔeyı tu theʔą Lac de Gras húlye sí beyé nutrıents húlye yudágh ʔane ʔeyër tsamba k'é theʔą t'á ʔat'e hunıdhën. ʔeyı betágh hútł'ath bek'uréłʔą choıle-u, ʔeyı Lac de Gras tu theʔą sí, betágh t'así łą dáníshele-u, t'así łą betagh t'įle.

Ní túé bet'agh nutrıent's húlye yudágh ʔát'į chu ní nálk'eth ʔeyı bet'á tu ʔedų́ ʔat'į ʔat'e. Diavik ʔeyı ní túé bet'ágh nutrıents húlye Lac de Gras yétł'ır k'áʔǫ ʔane xa yeghálana ʔat'e-u, ní nák'eth sí, ʔeyı té badı-u, ní nálk'eth xa t'a t'át'į sí ʔeyı té yałnı-u, tth'ı tu té nezų seyerıłthën-u beghálada háłʔą ʔat'e.

Háyǫrı́la Ts'ı Dëne Bexél Yatı/Dëne Ch'ání Ts'ı Haní

Diavik t'at'ú nı́é ts'ędhır ch'a xa yałnı chu yuneth haɔa tsamba k'é dárétı ghą núdhër dé, t'at'u ɔeyı xa ts'ĕn ɔeghálana sí ghą háyǫrı́la dëne náráde xél halnı nélı. Diavik t'ą xél Partıcıpatıon Agreement (PA) húlye bets'ı sí ɔeyı xél ɔedërı t'at'ú súghá hunıdhën k'e ɔeghálana-u, tth'ı t'o hunıdhën sí, hát'u dëne xél ɔeghálana. 2021 núltágh k'e Diavik t'ó t'ą xél PA húlye bets'ı sí ɔeyı xél nı́ t'at'ú yeghálaıhena sí ghą dëne xél halnı hıłé sí, ɔeyı tth'ı ɔedërı ɔerehtł'ıs k'e bek'uréhtł'ıs ɔat'e.

2021 núltagh k'e Covıd-19 húlye dekoth dáda nedhé t'á háyǫrı́la náhídel-u, dëne tsamba k'é theɔa ts'ĕn dzérı́dıl ɔıle -u beyághe yatı t'á to that'ın yatı t'á vıdeoconference húlye ɔeyı ɔuɬı t'á dëne xél yaıltı hıle. ʔeyı hánódhër kú, Dıavık háyǫrı́la dëne xél ɔeghádálana sí xél ɔeghálaná ɔeyı háyǫrı́la dëne nárádé t'at'ú burelkër-u t'at'ú súghá ɔeyı k'e ɔeghálodá hunıdhën hát'u dëne xél ɔeghálaıhına. Sats'án t'á-u, ɔerehtł'ıs k'e dëneba tátı-u tth'ı beghąłthën ɔełk'éch'a ts'ĕn dëne bexél ɔełk'éch'a t'así ghą nátı xa surelthı́. Náátı xa nay dëne ɔeła nıdı́l hıłé. ʔełk'éch'a t'así ghą dënexél hadı-u, Frame Lake rehabılıtatıon Project húlye ɔeyı beghą hadı-u, partıcıpatıon agreements dólye t'at'ú beghálada-u, tthe beyé dıamond hulı ts'ı hílchu bedháy ts'ı tsamba k'é theɔą that'ın yatı t'á Processed Kımberlıte to Mıne Workıngs (PKMW) yehúshe, ɔeyı-u, tsamba k'é yunéth haɔa dárítı xa ts'etáy suhúde-u, yunís ts'ı dënech'andı T, radıtıonal Knowledge (TK) húlye ɔeyı beghár ɔeghálada-u, dekoth dádá nedhé ɔeyı bet'ágh t'at'ú háyǫrı́la beba húrenıle hıłé-u, xaye tıłu-u, ɔeyër tsamba k'é theɔą nı́ t'atthe t'at'ú theɔą ts'ĕn nadlı xa beghálada reclamatıon húlye ɔeyı-u, tth'ı 2021 núltagh k'e ɔeyı AEMP camp nút'ągh chu 2021 núltagh ts'ı TK Panel húlye, ɔeyı harelyú t'así ghą dënexél hadı húɔą. ʔeyı beghąłthen, Diavik tsamba k'é thełɔą sí, háyǫrı́la ts'ı dëne ɔeyër náílí réłdzágh, dëne ɔeyër tsamba k'é t'at'ú háɔą sí, denı té benágh t'á yeɔı rélɔı t'á. Harelyú dëne kós nálye xaɔąıle húlı́, t'ą kos náıhedel sí, háyǫrı́la nıdel dé, t'a heɔı ghą dëne xél halnı nıdé yıdhën ɔat'e.

2021 núltagh k'e Dıavık Dıamond Mıne (2012) Inc. (DDMI) tsamba k'é theɔą nághaye beké dólı net'ı xa Łútsëlk'é ts'ı ɔłághe dëne ɔeyër dëne ts'éni xa néyehíłtı. Dekóth dádá nédhe t'á háyǫrı́la ts'ı dëne ɔeyër tsamba k'é theɔą ghą naılyí xaɔąıle hıłé ɔat'e.

Tagh ghą hant'u DDMI ɔeyı AEMP ts'ı Tradıtıonal Knowledge camp yehúshe nıhíɔa ɔat'e. 2021 núltagh kú PA communıtıes dólye ɔeyër ts'ı ʔałneth chu sekuı góth chu ɔeyër nánıs camp nítągh ɔeyër nábehéłya, łue chu tu chu t'at'e lásí net'ı xa. ʔeyı t'at'e sí yunéth haɔa t'at'ú łue chu tu chu badı háɔą sí ɔeyı ghár badı xa. ʔeyı camp nítągh sí TK Panel húlye bexél nítągh ɔat'e-u, ɔłágh ghay hant'u halɔı-u, dı dzı́ begháret'ągh. ʔeyı TK Panel t'a ghą nádáhełtı sí tsamba k'é theɔą t'at'ú beghálada-u, tsamba k'é bedárét'ı ghą núdhër dé t'at'ú ɔalyé-u, yeghár yeghádalaıhena xa yatı beghálye-u ɔeyı Dıavık bets'ı Closure Plan húlye sí ɔeyı bexél ɔalye. 2021 núltagh k'e ɔeyı TK Panel húlye sí ɔeyër AEMP TK camp náátı ghą náhıdé-u, t'ánchay t'at'ú dáníye-u t'at'ú badı ɔeyı ghą náhıłtı. ʔeyı 2021 nultagh ts'ı TK Panel yatı dënegháhıɔa #13 recommendatıon yehúshe ɔeyı ghą ɔedërı ɔerehtł'ıs yé beghą hadı ɔat'e-u, t'at'ú t'ánchay dáníye badı-u, tsamba k'é bedárét'ı na beghálada t'anítháá xa-u tth'ı t'at'ú t'así badı-u t'a butseldën ts'ı hanı náltsí.

T'así Góth Xél ʔeghálana-u, Kún K'áɔǫ́ Bet'áti

Diavik tsamba k'é theɬɔą sí, ɔeyër dį (4) satsán nıɬts'ı heɬtsı nechá dáthela ɔat'e-u, dëne ɔeyër ɔeghádálena sí ɔeyı satsán kón heɬtsı t'árát'ı, harelyú ghay k'e. 2021 núltágh k'e ɔedërı satsán bet'át'ı t'á harelyú t'á 3.8 límëlyǫ́ lígaló, that"ın yatı t'á lıtres snı sı, háníɬt'e gëslín, dıesel húlye dek'áɔǫ́ bet'át'ı-u, 10,269 tonnes húlye háníɬt'e gëslín belër (Co2e) hálıle. ʔeyı satsán dáthela bet'óth naratl"ır sí, bek'e kón dék'ën nareltth'ı dólı t'á chadí chu ɔıyes chu yet'árádel ɔat'ele. ʔeyı beghąɬthën 2021 núltágh k'e 215,580 lígaló háníɬt'e tłesdóth bet'át'ı hıłé sí, náɬtsı-u, waste oıl boıler húlye theɔą ɔeyër bet'át'ı. ʔeyı 2014 núltágh k'e nít'ągh sí ts'ı harelyú t'á 1.7 límëlyǫ́ lígaló háníɬt'e tłesdóth bet'át'ı hıłé sí ɔeyër hurék'án t'á hadhël hale ɔat'e, ɔeyı hát'u bet'át'ı t'á tsamba k'é theɔa ch'ás nalyéle.

Dıavık t'aníɬt'e kún k'ereɬk'ą sí ɔeyı t'at'ú k'áɔǫ́ ɔayíle xa ɔeyı yek'áúnetagh ɔat'e. ʔeyı sí bet'á kǫ́é hunédhën-u bet'á kón dék'án-u, kǫ́é dáthela yís hunédhël ɔeyı ts'ı harelyú háthël náltsí-u yuwé t'así xa yet'át'ı réłdzágh-u, tth'ı yís bet'á húret'ı kón dek'án sí that'ın yatı t'á LED lıghts (háníɬt'e kón k'ereɬką ɔat'éle) dólye t'at'ı-u, bıt'as photocells húlye dałya-u, tsamba k'é theɔą ɔeyër náré varıable freəuency drıve pumps dólye nílya bet'á dek'áɔǫ́ kón k'ereką t'á-u, beghár t'o hunıdhën kún ɗík'ą nílya-u, kǫ́é bet'á ɔat'ıle sí ɔeɗílye-u, dıgıtal thermostats dólye ɔeyı tth'ı nílya-u, t'a kǫ́é halą bet'át'ıle sí, hathël yuyághe náíldeth. 2021 núltagh k'e ɔeyı dek'áɔǫ́ kún k'erek'ą xa réts'ágh sí, ɔeyı bet'á harelyú t'á 116,000 lígaló háníɬt'e gëslín k'urelk'ą hıłé-u, ɔeyı t'á 3,630 tonnes haíɬdath emıssıons (CO2e) húlye belër hıłé.

T'a Ghár ʔeghálada Xaɔą Hát'u ʔeghálada chu EMAB chu

2020 ts'ı EAAR húlye ɔıɬágh ghay hant'u ɔeyı ghą dënexél hadı ɔerehtɬ"ıs haɬé sí, Jaɗízį ʔedzagh Nën Ts'ı Níé Ts'ën K'aldhër bechëlekuı Environment and Natural Resources húlye xa k'aldhër helı sí 2021 núltágh k'e Tadhe Yatı Zá ɬáísdı k'e, ɔeyı ɔerehtɬ"ıs sát'ele héni. ʔeyı k'aldhër 2020 ts'ı Environmental Agreement Annual Report ghą dëne ts'ën ɔerıtɬ"ıs sí ɔedërı ɔerehtɬ"ıs bexél heɬchúth ɔat'e Appendıx I húlye ɔeyër t'a heɬchúth.

ʔeyı EMAB húlye chu Diavik chu ɔeɬts'éheretɬ"ıs ɔanat"ı, t'así ɔeɬk'éch'a ghą, Frame Lake rehabılıtatıon Project húlye ɔeyı ghą-u, Dıavık tu t'át"ı xa ɔerehtɬ"ıs betɬ'álchuth hıłé sí water lıcence húlye ɔeyı ɔedú nolye héni hurekér xa ɔeyı tth'ı ghą-u, ɔeyër náré t'at'ú ní ts'édhır ch'á xa badı háɔą-u net"ı-u, ɔeyı tsamba k'é t'at'ú beghár beghálada xa yatı thela sí, that'ın yatı t'á management plans húlye ɔeyı tth'ı net'ı ɔat'e.

Kıtıkmeot Inuıt Assocıatıon-u, Tłı̨chǫ Government-u Yellowknıves Dene Fırst Natıon-u, Łutsel K'e Dene Fırst Natıon-u, tth'ı North Slave Métıs Allıance ɔeyı harelyǫ́ henılt'é-u márs ı hél ı́dı rılɔı̨ t'ą yeba ɔeghádálana t'at'ú dóréldzagh-u, busınesses dólı̨ sí ɔeyı tth'ı-u, 2021 núltagh k'e t'ą Dıavık ba ɔeghádálana t'ą yets'éráínı sí denı tth'I marsı héts'edı. ʔeyı Dıavık t'ą xél Partıcıpatıon Agreement heła sí ní ts'édhı̨r ch'a yexél yałnı-u, bet'á dek'áɔǫ ní k'erelɔą xa réłdzágh ɔeyı ɔeła yeghálaıhena ɔat'e.

Atanguyat Naitumik Uqauhia

Diavik piniqutikhanik uyagaktaqvik iniqaqtuq Kivaliqhiani Qigiqtami Lac de Gras-mi, Kanataup Nunatiagani, qanituani 3-hanat kilaamitamik tunungata kivaliqhianik kavamaqaqviuyup sitip, Yalunaim. Diavik sainiqhihimayuq Avatiliqinikut Agiqatiriigutauyumik (Agiqatiriigut) talimalu Nunaqaqaqtut timiuyut kanatamilu ukiuqtaqtumilu kavamauyunik 2000-mi. Agiqatiriigut uqaqtuq hunanik Diavik-kut havaakhaqaqniaqniginik munariyaagani avatauyuq aulapkaitilugit uyaraktaqvikmik. Piqaqtuqlu Avatiliqinikut Amirijutinik Ihumakhaqhiuqtinik Katimayinik (EMAB) hatqiqhimayut ilagiyaanit Agiqatiriigutip; Katimayit inuknit amiqhiyit maliruagakhanit havauhiqmi atuliqniganiklu Agiqatiriigut. Diavik-kut piniqutikhanik uyaraktaqvik 19-giyaani ukiumi aulaniqaqtuq atuliqtilugu 2021-mi. Uyaraktaqtut A21-mi uyaraktaakhani (uyaraktaakhat) atuliqhimayuq 2018-mi atuqhimaaqtuqlu 2021-mi nunaplu iluani uyaraktaqniqmik atuqhimaaqtuq A154-mi A418-milu uyaraktaakhani.

Una unipkaaq uqauhiqaqtuq qanuriliniginik Diavik-kut avatiliqinikut amirijutainik munarijutainiklu havaanik atuqtilugu 2021-mi ukiuq. Ajikutariyait unipkaap titiraqhimayut naniyaulaaqtut EMAB-kut naunaipkutiqaqviani (titiraqvikmikni, uvaluniit qaritauyami titiraqaqviani) uvaluniit Wek'èezhìi-kut Nunaliqiyit Immaliqiyilu Katimayiinit inuit nainaiyaiviani.

Naitumik Uqauhiq 2021-mi Avatiliqinikut Hulijutini

Uyaraktaqvikmit Inigiyauyuq

2021-mi, uyaraktaqvikmi inigiyauyuq agikligiaqhimayuq 0.15 square kilaamitanik. Atautimut ahiuniga nunamiutat immaqmiutalu nunagiyait ublumimut Diavik-kut uyarakhiuqniqmi hulijutainit (11.55 square kilaamitauyuq) mikitqiyaq nalautaaqtauyumit hivuliqmi Avatiliqinikut Ilituqhaunmi Diavik-kut Piniqutikhanik Uyaraktaqvikmi Havaami. Taja inigiyauyuq naahuritiyauyuq aginiqhaunikhaanik taja aulanigini, uvaniugituq Iqagunik Uyaraktaanik Tutquqtirivik Nuna – Hivuraani Maniqami Tutquqtirivik (WRSA-SCRP) Iqaguniklu Uyaraktaanik Tutquqtiriviuyuq Nuna – Tunungani Maniqami Uyaraktaanik Tutquqtiriviuyuq (WRSA-NCRP) inigiyauyut mikiyumik agikliniarunaqhiyut nunat utiqtitauliqata ilitquhiinut hulijutini.

Nautiqtaufaarutit

2004-mi, Diavik-kut ilituqhailiqhimayut qanuq ikayuriagani nautiat nauvaliayaagani uyaraktaqvik umikpat. Una ilituqhaijut iniqhimayuq 2017-mi. Iniqtigakhat nalunaiyariagani: qanuq nautiqtuiyaagani nauninuanit, qanuq ihuaqniqaqmagaa aalatqiit nautiqtuijutit nautiaq nauvalianikhaini kitulu qanurinigit ihuaqhivaalirutinik nautiat nauniginik hivunikhami. Ilituqhainiq naunaiyaiyuq nakuukmataa aturiami aalatqiinik nautiqtuijutikhanik ilagini nunanuani haniani uyaraktaqviup inigiyaani umikpat, ila una nakuuyumik aulaniqatiaqmat ahiini agitqiyanik inigiyauyuni. Una havaaq ilaqaqtuqlu amiqhijutinik ilituqhaivikni nunani 2004-mit, nalunairiagani naamatiaqmagaa kiguani. Kiguliqmik unipkaaq

iniqhimayuq 2018-mi qanuriliniginik ihumagiyauvlutik ilagiyaanik kiguliqmik titiraqniginik Diavik-kut Tajainaq Umilagiagani Utiqtitpalianiginilu Nunat Upalugaiyautimik (Titiraami 4.1-mi).

Uumayut

Tuktuut amirinigini ihumagiyaqaqtut qanuriliuqniginik tautukhugit (qungiaqhugit tuktuut ilituqhariagani qanuriliuqniginik uyaraktaqniqmit ahiinilu hulijutinit) tuktuut talvaniiliraagata ilituqhaivikmi nunami. Aulanigit tunungani Qigaup tuktuut aulanigit ikayuqtut ihumagiyauniganik tunungani aulanigit apqutauyuq auliqhianut kivaliqhianuluniit Lac de Gras-mit pijutiqaqtuq humiiniginik ukiumi nunagiyainit. Nalunaiyaqtautilugi nalautaaqtauniganik tuktuut nuunnikhainik kivaliqhianut tatip ukiakhami, qanurilinigit 2018-mi aalagauyut uumanga nalautaaqtauyumit amigaitqiyalu quguhiniqtautilgit tuktuut nuutpaliahimayut ualiqhianut talvani Lac de Gras-mi hivuraani aulaniginik 2011-mit. Tuktunik tikmaikut naunaiyautit aturiaqaqhimagituq iniqhimayuluniit 2021-mi. Uqaqatiriigutit Kavamat Nunatiami Avatiliqiyit Nunamiutaniklu Ihuaqutinik (GNWT-ENR) atuqtilugu 2021-mi ukiuq Diavik-kut Uyaraktaqviup Uumayunik Amirijutinik Katimanigit nalunairutauyuq tikmiakut naunaiyautit aturuilaaqtut ilagiyaani Diavik-kut tuktuunik amirijutini. Tuktuunik tuquyuqagituq pijutauyunik uyaraktaqniqmit 2021-mi. Atauhiiqhuni qanuriliuqhimayut qimalatiyaagani atauhiq tuktu ahianit akhaluutit aulaniganit uyaraktaqvikmilu hanahimayunit 2021-mi.

Qalviit, akhait, kilgaviilu talvaniiginaqtut uyaraktaqvikmi. Qanuriliyuqaraagat takuyauyut titiraqtauvaktut nalunairiagani qafiiqtuqniginik uumayut takuyauniginik inigiyauyumi, unalu atuqniqata uyaraktaqvikmi igluqpaknik hitiqaqvigivlugit ivavigivlugiluniit hurajanit. Malruuk niqainaqtuqtuuk tikmijak tuquhimayuk uyaraktaqvikmi inigiyauyumi 2021-mi, tuqujutauniga ukua nalunaqtuq hunauniganit. Malruuk nuutauhimayuk uumayuk 2021-mi. Tuukliq nunami niqainaqtuqtunit uvluinik amirijutikhaq naunaiyaut upalugaiqtauyuq 2025-mi aturiagani. ENR-kut naunaiyaihimayut uumiga ikayuqtiqaqhutik Diavik-kunit ahiinilu uyaraktaqviuyunit. Qaganuaq akhaqnit hiaginik ahivaijutimik DNA-git ilituqhariagani atuqhimayut 2017-mi qanurilinigilu nalunairutauyuq piqaginiganik ihuitumik aktuqniginik nunami amigainigini akhait Kivaliqhiani Nunatiami (ila akhait amigainigit naamainaqtut amigaiqpaliavlutiklu) pijutauniganit Diavik-kut uyagaktaqvianit. Qalviit humugauniginik naunaiyautit iniqhimayut 2021-mi qanurilinigilu nalunairutauyut qalviit talvaniiginaqniginik ilituqhaqviuyumi naamainaqturiyauyut.

Nautiat, Puyuit, Hilavlu Halumanigit

Aputinik naunaiyagakhat pihimayut upingaatuaraagat autuqtiqtauvlutik ilituqhariagani qanuraaluk hiuraqaqniginik aputini qanurituniklu qanuraaluklu halumailruqaqmataa hiuqami. Hiuravaluilu katitauhimayut naunaiyaqtauvlutiklu qanuriluiqniriyainik amigainigini humiiniginilu hiuravaluit uyaraktaqvikmit. Atuqtilugu 2021-mi ukiuq, agitilaaga hiuravaluit agitqiyauyuq 2020-mit kihiani mikiqtiyaq takuyauyunik 2019-mi. Naahuriyaunigani, mikitqiyaq hiuraaq takuyauhiamyut ahiqpanit uyaraktaqvikmit. Qanuraaluk halumaituqaqniginik hiuqamik qaliqaqtut aputit aulainaqtut mikiniqhaanik Immaqmik Aturiagani Laisiuyumi aturiaqaqtunik immaqni kuuktunik inigiyauyumit. Qanuraaluk halumailruqaqniganik aputit 2021-mi agitqiyat 2019-mit 2020-miluniit, kihiani ajikutait hivuani 2010-mi ukiugani.

Diavik-kut Nautianik Tuktulu Niqirivaktainik amirijutinik ilituqhautit atuqhimayut 2021-mi. Ukua ilituqhautit havaariyauhimayut 2016-mi qanuriliniginiklu 2021-mi ajikutariyait kiguliqni ukiunit. Aalatqiit amigainigilu nautiat tuktulu niqiriyait umayut akungani haniani uyaraktaqviup ugahiktuanilu uyaraktaqviup inigiyainit naunairutauhimaaqtuq uyaraktaqvik mikiyumik talvaniinaqlu aktuqniganik nautianik. Ilagit nauninuit amigaiqpaliayut haniani uyaraktaqviup atuqhimayuni ukiuni. Qanuraaluk havivaluqaqniginik tuktuut niqigiyaini mikhivaliahimayut 2010-mit mikitqiyauyuqlu 2021-mi 2026-mit. Havivaluqaqnigit nalunairutauyuq ihumaluknaqniqaginiganik Tuktuut aaniagitaagani havivaluknit niqimiknit haniani uyaraktaqviup.

2021-mi, atautimut 81.6-milian liitanik uqhuqyuanik atuqtauhimayuq aulanigani uyaraktaqvikmi inigiyauyumi.

Immaq Iqaluilu

Diavik-kut atuqhimaaqtut Immaqnik Aktuqniganik Amirijutimik Havaamik (AEMP) inigiyauyumilu Qungiaqnignik Havaqatiriigutini Havaamik (SNP) amirijutimik 2021-mi. AEMP ilituqhaiyuq aalatqiinik ilagiyainik tattip aalatqiini ukiuni tikuaqhiyaagani aktuqnirilaaqtainik Lac de Gras-nik nunanik uyaraktaqvikmit hulijutinit. Qanurinigit naunaiyagakhat pihimayut hanianit uyaraktaqviup (haniani ahiqpanivyaklu ilituqhaiviknik) ugahiktumilu uyaraktaqvikmit (ugahiktumit ilituqhaiviknit) 2021-mi ilaqaqtut immaqmi hunaqaqniginik (halumaniginik) niqikhaniklu, kumaruvalukniklu (mikanuanik nautianik umayuniklu immaqmi – qanuraaluk qanurituniklu), iqalukniklu. Igilraat qauyimayainik (TK) ilituqhautit AEMP-mi atuqhimayut ilagani 2021-mi TK-nik inituqliqviknik/TK-nik naalaktitiyit pulaaqmata. Kumaruvaluit takuyauhimayut amihuni iqaluktauyuni maniqami. Kumaruit takuyauvaktut aalatqiini amigainigini iqalukni atuni inigiyauyumi atuliqniganit AEMP-mik TK-nik Inigiyauyumi iqaluknik amirijutini. Havivaluqaqnigit Iqaluktauyuni mikitqiyauyut Aaniaqtailinikut Kanatami aaniasitaagani niqikhanik maliruakhani. Halumailruqaqniginik ilituqhautit immaqni naunaiyagakhani inigiyauyumi 2021-mi nalunairutauyut aaniqnaqtuqaginiganik havivaluknik ahiinikluniit halumailrunik immaqmi.

Agiklivaliayut atautimi niriyakhat tutitpaliayut aalatqiinut ugahikniginut Uyaraktaqvikmit (pijutiqaqtut aalatqiiqniginik ukiuplu hunauniganit) nalunairutiyuq Uyaraktaqvik amigairutivaliayuq niriyakhanik Lac de Gras-mi nunami. Aktuqniga mikiyuq Lac de Gras-lu niriyakhaqaqpalaagituq tahiq hunaqaqpalaagitumik.

Aalaguqnigit tahiqmi pijutauluaqtut amigaiqniginik niriyakhat nunap iluanit immaqnit qagaqtitaijutinilu. Diavik-kut mikhilirinahuaqpaktut niriyakhanik tikitpaktunik Lac de Gras-mut atuqhutik qagaqtitaijutini munarijutinik, qayagivlutik pinahuaqniginik qagaqtitaijutini hanahimayunik immaqniklu munarijutinik halumaqhijutiniklu.

Nunagiyauyut Upipkaqniginik /Igilraalu Qauyimayainik

Diavik-kut ihumagiyaqatiaqtut atuqtakhanik avanmut aturiagani avatiliqinikut amirijutit umikpalu upalugaiyautinik havauhiqmik nunagiyauyunilu ilauyunik. Diavik-kut havaqatiqaqtut atuni Ilaujutimik Agiqatiriigutimi (PA) timiuyuq nalunairiagani ihuaqtumik qanuriliuruhikhamik hunauliqaalu havaariliriagani taimaitut havauhikhat. Naitumik uqauhia Diavik-kut upipkaijutaanik uumiga avatauyumik PA-mi nunagiyauyuni timiuyut atuqtilugu 2021-mi ukiuq pipkagauyuq uvani Unipkaami.

2021-mi nunagiyauyumi takutivlutiklu upipkaijutit aktuqtauhimaaqtut Qalakyuaqniq-19-mit amigainiqhalu hulijutauyut iniqhimayut hivayautikut qaritauyakuluniit qungiarutikut. Diavik-kut havaqatiqaqhimayut nunagiyauyuni ikayuqtinik ukua upipkaijutit ihauqhariagani ihariagiyainik nunagiyauyumit talvuuna. Atuqnigit nutauniqhat, nuuptiqnigit ahiilu havauhiuyut ihuaqhaqhimayut atuqhimaariagani upipkainiq. Ilagit takutivlutik inuit katimanigit atuqhimayut. Uqauhiuyut ilaqaqtut Frame Lake-mik tahiqmik halumaqtikniganik havaaq, ilauyut agiqatiriigutaanik atuliqniganik, Uyaqiqiyauhimayut Uyaraktaat Uyaraqtaqvikmilu Havauhiuyut (PKMW) Havaaq, uyaraktaqvik umikniganik, ilaliutiniginik Igilraat Qauyimayainik (TK), Qalakyuaqniq-19-mik aktuqnigalu nunagiyauyunik, ukiumi apqutauyumik, kiklimaktirijutinik hulijutinik inigiyauyumi, 2021-mi AEMP-mi TK-nik maniqamiuvikmik 2021-milu TK-mik Naalaktitiyit. Diavik-kut tikipkainahuaqpaktut nunagiyauyunit ilauyunik uyaraktaqvikmi inigiyauyumut takuyaagani uyaraktaqvik ihivriuriaganilu haniani avatauyuq takulugit inmiknik. Ayuqnaraluaqtilugu akyariagani tamita inuit inigiyauyumut, nahuriyauyuq ukua ilauhimayut uqariagani atuqhimayamiknik aalanut agilrariyamikni nunagiyauyumi.

2021-mi, Diavik Piniqutikhanik Uyarakhiuqtit (2012) Timiuyuq (DDMI) akyaqhimayut nunagiyauyumi ilauyumik Lutselke-mit inigiyauyumut ikayuriagani qalviknik humugauvakniginik naunaiyaunmik havaami. Qalakyuaqniq-19-mit aaniarutit tikipkaijutaugitut aalanik ikayuqtiriinik nunagiyauyumi ilauyujnik inigiyauyumut.

Pigahut ukiut naatkaga, DDMI-kut ihuaqhaivaktut AEMP-mik Igilraat Qauyimayainik maniqami. 2021-mi, Iniqnirit inulramiilu PA-nik nunagiyauyuni akyaqtauyut maniqami hiniqtaqvikmut kivaliqhiani higiyuami Lac de Gras-mi ilituqhaiyaagani Iqaluit aaniaginiginik immarikniganiklu. Naunaiqtauyut uumanga maniqamiuvikmit ihumagiyauniaqtut Iqaluit aaniaginiginik immarikniganiklu amirijutinik havaani hivunikhami. Una maniqamiuvik ihuaqhaqtauyuq ukualu aipaagutuaraagat TK-nik naalaktitiyit, ilagiarutauyuq hivituniganik maniqamiuvik ilagiarutinik hitamanik ublunik. TK-mik Naalaktitiyit katitpaktut uqauhiqariagani ihumagiyauyunik pijutiqaqtunik uyaraktaqvikmi aulaniginik umiqtiqniganiklu, pipkaivlutiklu atulirumayauyunik ilaliutilaaqtunik Diavik-kut Umiktiqnigagut Upalugaiyaunmi. 2021-mi, TK-mik Naalaktitiyit katimahimayut AEMP-mik TK-mik hiniqtaqvikmi uqauhiqariagani nautiaq aaniaginiginik amirijutiniklu umiqtiqnigani. 2021-mi TK-mik Naalaktitiyit Katimaniga #13-mit atuliquyauyut ilagiyauyut uvani unipkaami uqauhiqaqhutiklu ihumagiyauyunik ila nautiat aaniginignik amirijutinik nutauniqhanik, pivikhaqaqniginik kiguani umiknigani amirijutikhanik naunaituniklu naunaipkutinik tukhiqtauyunik.

Nutaat Nutauniqhaliqijutit Aulaqutilu Nakurutauniginik

Piqaqtuq hitamanik anurituutinik aulayunik Diavik-kut uyaraktaqviani, havaktit atuqhimaaginaqtait ukua aulaniqatiaqniginik anurituutit atuqnigani ukiup. Anurituutit atugijutauyuq 3.8-milian liitanik uqhuqyuanik atuqtauyunik qanituanilu 10-tausit 269 tonnes-nik puyuqnik (CO_2e) 2021-mi. Anurituutit qavlagaqtaqtunik quliqaqtut qimalatiyaagani uumayut ikiklivaaliriaganilu tikmianuit akuuqtauyut kaivyanit. Ilagiyaanilu, qaniguani 215-tausit 580-liitanik iqagunik uqhuqnik katitiqtauhimayuq atuqtauyaagani iqagunik uqhuqyuanik ikulativikmi 2021-mi ukiumi. Atuliqtauniganit 2014-mi, atautimut avatqumayuq 1.7-milian liitanik iqagunik uqhuqyuanik ikulatiyauhimayuq uunaqutigiyaagani, aulaqtihimaitumik ahianut igluqpaqaqviup.

Diavik-kut qiniqhiahimaaqtut qanuq mikhivaaliriagani aulaqutini ihariagiyainik humiliqaa inigiyayauyumi. Ilagiarutit aulaqutit aulaniqatiaqniganik ihuaqhautit ilaqaqtuq: uunaqniganik atuqniganik alruyaqtuutinik igniqutinit uunaqutinilu igniqviknit, atuqnigit LED-nik quliqnik igluqpakni, igutaaqtuqaqat quliit hilami napaqtini, iliyauniginik aalatqiinik kayumikniqaqtunik papautinik humiliqaa inigiyauyumi mikhilirutauyuq aulaqutinik aturumayauyunik, iliyaunignik quliit ikumanikhainik, agiptiqnignik inuqaruiqtut igluqpait, iliyaunigit uunaqniganik naunaiyautit, atuqpalaaginigilu uunaqutit atuqtauqatagituni igluqpakni. 2021-mi, ukua aulaqutinik atuqpalaarutaugituni havaat ilipqamajutauyut qanituani 116-tausit liitanik uqhuqyuanik aturutaugitunilu qanituani 3-tausit 630-tonnes-nik puyuqnik (CO2e).

Malitiaqniqmik EMAB-lu

2020-mi EAAR-guyuq naamagiyauhut Tuuklianit Ministauyup GNWT-ENR-kunit December 7-mi 2021-mi. Ajikutaa Tuuklianit Ministauyut titiqijutaa 2020-mi Avatiliqinikut Agiqatiriigunmik Aipaagutuaraagat Unipkaaq pipkagauyuq Ilagiyaani I-mi.

EMAB-kut Diavik-kulu avanmut titiqijutiqaqtut pijutauyunik ihumagiyauyunik ukuniga Frame Lake Halumaqtiqniganik Havaamik, Diavik-kut immaqmik aturiagani liusiuyumik nutaaguqtiqniganik ilaqariagani atuqhimaaginaqtumik kiklimaktirunmik, ihivriurutiniklu aalatqiini avatauyumik amirijutinik havaanik munarijutiniklu upalugaiyautinik.

Thank you/Marsi Cho/Masi Cho/Quana Qitiqmiuni Inuit Katimayiit, Tłı̨chǫ-kut Kavamait, Yalunaimi Itqilrit, Łutsel K'e-mi Itqilrit Kivaliqhianilu Qavlunaaqanit Katimayit akhuurutainik havaktigiyainilu, manikhaqhiurutainit, inuknilu ilauyunit havaktunik Diavik-kut havaktiinik 2019-mi. Ikayuqtuqhimaaqnigit Diavik-kut Ilauniginik Agiqatiriigunmi ikayuqtit ikayuqtut ukua avatauyumik aktuniginik mikiniqhauyaagani, ihuaqutivulu atuqtautiariagani ihuaqniqhamik

K’àodèe Godı Nɻhtɬ’è Nek’ǫ̀ą

Dıavık sǫǫ̀mbakweè gha sǫǫ̀mbak’è, Ek’atî k’e East Island gòyeh k’e gò˃ǫ. Canada wek’èezhìı Edzanèk’e Sǫǫ̀mbak’è kǫ̀gòlaa gots’ǫ taıkw’eènǫǫ̀ echɻ, chɻk’è-k’àbatsǫ̀ ts’ǫnèe gò˃ǫ hǫt’e. 2000 ekò Dıavık, Dǫsǫǫ̀hɬɻ̨ sɻlài xàgeè˃aa, ɻdaà Dèek’àowodeè eyıts’ǫ Edzanèè Dèek’àowo Dè Tsı̀gowıı Ch’à Nàowoò (EA) k’e edıızì dek’enèyɻ̨tɬ’è ɻlè. Eyìı nàowo gèhtsɻ̨ sìı Dıavık ekǫ sǫǫ̀mbak’è wek’e eghàgedaa wenıts’ǫ̀ dè tsı̀gowıı ts’à gıxoehdı ha dek’eèhtɬ’è. Eyìı Nàowo wexè Dè Wexoedıı k’e Dèhkw’ee (EMAB) wehòlɻ; Eyìı wek’e dèhkw’ee sìı gonèk’e dǫ gha kehogıihdıı dǫǫ̀ gɻ̨lɻ dàanì nàowo dek’eèhtɬ’èe k’ę̀ę̀ gıghàlada ha eyıts’ǫ Nàowo Hòlɻ̨ k’ę̀ę̀ ek’ızeh ha. 2021 k’e Dıavık sǫǫ̀mbakweè gha sǫǫ̀mbak’è gò˃ǫǫ sìı hoònǫ-daats’ǫ̀-łǫǫ̀tǫ (19) xo wek’e eghàlagɻ̨dà. Sǫǫ̀mbakweè xàzee gha satsǫ̀weè A21 (sǫǫ̀mbakweè k’è gò˃ǫǫ) 2018 k’e wexèhǫǫ̀wo ɻlè eyıts’ǫ 2021 ts’ǫ̀ wek’e eghàladà, eyıts’ǫ satsǫ̀weè A154 eyıts’ǫ A418 gòlaa sìı ɻłaà dègotɬ’a wek’e eghàlada.

Dıı godı nɻhtɬ’è wek’e Dıavık 2021 ghoò k’e dè wehogıihdıı eyıts’ǫ dàanì wek’e eghàlagɻ̨dàa t’à dìı wek’e dàgǫ̀ht’e dek’eèhtɬ’è. Wegodìı nɻhtɬ’è EMAB gınɻhtɬ’èkǫ̀ whela hǫt’e (ginɻhtɬ’èkǫ̀, hanì-le-dè satsǫ̀k’àlemì on-line library k’e dek’eèhtɬ’è) hanì-le-dè Wek’èezhìı Dè eyıts’ǫ Tı Nàowoò k’e Dèhkw’ee public registry.

2021 K’E DÈ TSÌGOWII TS’À WEK’E EGHÀLADA WEGODIÌ

Sǫǫ̀mbak’è Wek’è Gò˃ǫǫ

2021 k’e Sǫǫ̀mbak’è wekeè k’è gòlaa sìı 0.16 dè hagoɻhtso ts’ǫ̀ ɻdoò adzà. Dıı dzę̀ę̀ ts’ǫ̀ Davık sǫǫ̀mbak’è wek’e eghàlada ts’ıh˃ǫ̀ hazǫǫ̀ t’à dè wek’e eyıts’ǫ tı yìı nàdèe k’è wedıhòɬɻ̨ sìı (11.55 square Kilometers) hagoɻhtso wedıhòɬɻ̨. Dakweɬǫ̀ǫ̀ Dıavık Dıamond Mıne Weghàladaa weghǫ nadąą̀ gogɻ̨de nahk’e dek’a˃ɻ̀ hǫt’e. Dìı wek’e eghàlada ts’ıh˃ǫ̀ denahk’e wek’è gò˃ǫǫ agode ha, Kwets’ìı Whelaa k’è South Country Rock Pile (WRSA-SCRP) eyıts’ǫ Kwets’ìı Whelaa k’è North Country Rock Pile (WRSA-NCRP) ekǫǫ̀ dè sìınago˃ɻ̨ nɻdè wek’è gò˃ǫǫ sìı yaàzea gǫchà agode ha sǫnı.

Dènagoehse

2004 ekò Dıavık, sǫǫ̀mbak’è wedaàtǫ nɻdè dàanì ɻt’ǫ̀ nadesee gha gıxàeta xèhogɻ̨hwho ɻlè. Eyìı gıxàetaa sìı 2017 k’e gıghǫnot’e ɻlè. Ededı agɻ̨wǫą edàanì nɻdè ɻt’ǫ̀ wejıı gots’ǫ denahk’e nezɻ̨ dehsheè ha gɻ̨wǫ, dàanì eładɻ̨ xà˃aa k’ę̀ę̀ dè goyìı gele t’à nezɻ̨ dehseè ade ha, mǫ̀ht’a dàgǫ̀ht’e ghàà eyıts’ǫ wek’e dàwaà hoowıı tɬ’axǫǫ̀. Eneèt̨ nɻdè sǫǫ̀mbak’è gomǫǫ̀ dè k’e eładɻ̨ ɻt’ǫ̀ dè k’e negele t’à asɻ̨ nezɻ̨ dehshe gha gıxàehtaà. Sǫǫ̀mbak’è eyìı-le gǫchàa gòlaa gha hagɻ̨làa t’à nezɻ̨ agòdzà ɻlè. Hanì weghàladaa wexè 2004 gots’ǫ dè k’e hagogɻ̨là wexàetaa sìı denahk’e wexoedı agode ha, wek’e whaà hoòwo tɬ’axǫǫ̀ asɻ̨ ɻt’ǫ̀ nezɻ̨ dehshe gha gıxoehdı. 2018 k’e wenɻhtɬ’è nǫde weghǫnahǫ̀t’e ɻlè, asɻ̨ wegòt’ǫǫ sìı Dıavık Whaà-lea Eneèt̨-a eyıts’ǫ Sìınagodlee K’e Eghàladaa xè nagetɬ’è adla ha gɻ̨wǫ (Versıon 4.1).

Tıts'aàđıı

Ekwǫ̀ ɻłaà wexoedıı hǫt'e, ekwǫ̀ xàgeetaa k'è ekwǫ̀ k'eɔ̀à nɻdè gıxoehdı, (kwe xàzee xè asagot'ɻɻ nɻdè dàget'ɻɻ gıxoehdı). Hozìı goekwǫ̀ chɻhk'è nageeɔ̀aa gots'ǫ dą̀ą̀ ts'ǫ̀ hanì-le-dè Ek'aťı ts'ǫǫ̀hk'e k'àbatsǫ̀ ts'ǫ̀ nadeeɔ̀aa nɻdè xok'e edɻɻ k'ehohde ts'ıhɔ̀ǫ̀ aget'ɻ hǫǫwǫ. Xat'ǫ̀ k'e ekwǫ̀ Ek'aťı gots'ǫ kàbatsǫ̀ ts'ǫ̀ nadeeɔ̀à ha nadą̀ą̀ gogɻɻde ekò weghàts'eda nɻdè 2018 k'e hagòdzà-le, eyıts'ǫ deɔ̀ǫ̀atłǫǫ̀ gık'o k'e satsǫ̀ whelaa sìı dą̀ą̀ ts'ǫ̀ Ek'aťı wemǫǫ̀ ets'ageède sìı sazɻɻ ts'ǫ̀ nadeehɔ̀aa gha, 2011 gots'ǫ hagoat'ɻɻ t'à. Nɻhtł'èk'et'aa t'à ekwǫ̀ xogıihdı ha gogedìı-le ɻlè hanì-le-dè 2011 k'e eyìı gha nɻhtł'è sìıdlà-le ɻlè. Edzanèk'e Dèek'àowo, Dè Gomǫǫ̀ Gòɔǫǫ eyıts'ǫ Dè Gots'ǫ Asìı Nàehshee (GNWT-ENR) xè ełegıađı ekò 2021 k'e Dıavık Mine Wildlife Monitoring Meetings ełegıađı ekò nɻhtł'èk'et'aa t'à ekwǫ̀ xogıihdı wedę agele ha gedı. 2021 sǫǫ̀mbak'è gòɔǫǫ ts'ıhɔ̀ǫ̀ k'e ekwǫ̀ ełaɻdèe gǫ̀hɬɻ-le gedı. ɻłàà asanàhòwo t'à ekwǫ̀ ɻłàet'ea satsǫ̀behchɻɻ tɻlìı k'è eyıts'ǫ sǫǫ̀mbak'è gha asìı whelaa ts'ǫǫ̀ nawedeèzì ɻlè.

Nǫ̀gha, sahcho eyıts'ǫ tatsea ɻłaà sǫǫ̀mbak'è gòɔǫ gà aget'ɻ. Ɉk'èa asìı xots'eehdı nɻdè tıts'aàt'ɻɻ dàhòt'ɻɻ dàtłǫ ɔeht'aà ekǫ wègoèht'ɻɻ sìı dek'enègetł'è, eyıts'ǫ sǫǫ̀mbak'è gòɔǫǫ gha kǫ̀ gòlaa t'à edeɔǫǫ hanì-le-dè et'oh gogehtsɻ nɻdè wexè dek'eèhtł'è. 2021 k'e sǫǫ̀mbak'è gà tatsea ɻłè ełaɻwo, ayìı t'à ełaɻwoo sìı wek'èhodzǫ-le. 2021 k'e tıts'aàđıı edɻɻ wegha gòɔǫǫ adle ha gǫ̀hɬɻ-le. Gonèk'e tatsea weɔǫǫ gha ɻdaà wexoedıı gha 2025 k'e agode ha. ENR ededɻ gıtł'aà agot'ɻ ha, Dıavık eyıts'ǫ eyìı-le sǫǫ̀mbak'è gòlaa gots'àgedı xè. Dìı whaà-lea sahcho weghàà asìı ts'aka t'à nàgehtsɻɻ sìı wets'ǫ DNA 2017 k'e gıxàeta ɻlè, wegodìı xàeta t'à Slave Geologıcal Provınce(ı.e. sahcho dàtłǫ nàdèe sìı xè nagoedaà-le eyıts'ǫ gɻtłǫǫ̀ adaade) Dıavık sǫǫ̀mbak'è gòɔǫǫ ts'ıhłǫ̀. Nǫ̀gha dàanì gıxè hòɔǫǫ sìı 2021 k'e hòt'a gıxàeta ɻlè, wegodìı ghàà edɻɻ gıxàetaa k'è ɻłaà gıxè nagoedaà-le wègoat'ɻ.

Ɉt'ǫ̀ Dehshee, ʔehtł'è Daedıı eyıts'ǫ Nɻhts'ı Weta Dàgǫ̀ht'e

Edaèhk'ǫ taàt'eè zah k'ahotaa gha zah ǥihchı sìı ɔeèk'ǫǫ ageh ʔɻ tł'axoǫ̀ weka ɔehtł'è dàtłǫ gha gık'aahta, nàèdı dàhòt'ɻɻ, dàtłǫ ɔehtł'è ta whela gha gık'aahta. ʔehtł'èkwìa wexè nàgehtsɻɻ sìı tǫą̀ yìı wek'èhođıı. ʔehtł'è dàtłǫ eyıts'ǫ sǫǫ̀mbak'è gòɔǫǫ ts'ǫ̀ dàgǫǫwa t'à dàgot'ɻɻ gha gık'aahta. 2021 k'e ɔehtł'è weta dàtłǫ gǫ̀hɬɻɻ sìı 2019 nahk'e dek'aɔ̀ɻ wègoat'ɻ ɻlè. Hanì ha wexats'elı k'ę̀ę̀ sǫǫ̀mbak'è gòɔǫǫ ts'ǫ̀ gǫǫwà gòɔǫǫ sìı denahk'e dek'aɔ̀ɻ ɔehtł'è wègoat'ɻ. Zah ka ɔehtł'è gǫ̀hɬɻɻ weyìı nàèdı dàtłǫ adzàa sìı Tı Nɻhtł'è Goɻchıı gha ɻłaà dek'aɔ̀ɻ hǫt'e, tı t'asɻɻ ade gha. 2021 k'e nàèdı zah yìı dàtłǫ adzàa sìı 2019 eyıts'ǫ 2020 nahk'e ɻdoò ajà, hanìkò 2010 wekwe xo whelaa xèht'e ɻlè.

2021 Dıavık Ɉt'ǫ̀ Dehshee eyıts'ǫ Ajɻɻ wexoedı wexàeta ɻlè. 2016 k'e nǫdè hadlà ɻlè; wegodìı eyìı xo wekwe whelaa xèht'e. Ɉt'ǫ̀ łǫ hàɔaa gǫ̀hɬɻɻ eyıts'ǫ ajɻɻ hàɔaa sǫǫ̀mbak'è nıwà-le gòlaa eyıts'ǫ nıwà gòlaa wege hagǫ̀ht'e wègoat'ɻɻ t'à sǫǫ̀mbak'è gòɔǫǫ wet'à hòtł'ò-lea eyıts'ǫ gomoò gòɔǫǫ zǫ t'à ɻt'ǫ̀ dehshee xè ładɻɻ agot'ɻ. Whaà hoòwo tł'axǫǫ̀ tł'o hàɔaa wòhdaa sǫǫ̀mbak'è gòɔǫǫ gà łǫǫ̀ adaade. Ajɻɻ weɔɻt'ǫ̀ weyìı satsǫ̀ nàèdı whelaa sìı xèǥɻɻhdzà sìı 2010 gots'ǫ dek'aɔ̀ɻ adaade eyıts'ǫ 2021 k'e denahk'e ɻzhìı adzà. Satsǫ̀ nàèdı dàtłǫ gǫ̀hɬɻɻ weghàà sǫǫ̀mbak'è gòɔǫǫ gots'ǫ Ekwǫ̀ hotıeda xè asagode ha-le k'ę̀ę̀ wègoat'ɻ.

2021 k'e hazǫǫ̀ t'à tłee wet'à satsǫ̀etłee 81.1 lemìıyǫǫ̀ litres haàtłǫ t'à sǫǫ̀mbak'è gòɔǫǫ weghàlada.

Tı eyıts'ǫ Łı

Dıavık ɻłaà Tı xè Ładɻɻ Agot'ɻɻ Wexoedıı k'e Eghàladaa (AEMP) eyıts'ǫ sǫǫ̀mbak'è gòɔǫǫ gomǫǫ̀ goxogıihdı k'è gòlaa (SNP). AEMP xo ładɻɻ k'e tı wek'e łedɻɻ gòɔǫǫ xàgeta hanìɻdè Ek'aťı wek'e kwe

xàgelee k’e eghàlagedaa nɻdè asıı t’à Ek’atı xè ładjı̨ agot’ı̨ ha nɻdè gıxàeta. Sǫǫ̀mbak’è gòɔǫǫ gà tı dàhòt'ı̨ wòhdaa gɨhchı, (nıwà-le, dè k’e tanı-kǫ̀a gòlaa) eyıts’ǫ sǫǫ̀mbak’è gòɔǫǫ ts’ǫ̀ nıwà (dè k’e nıwà-kǫ̀ gòlaa) 2021 ekò wexè tı gɨhchıı sìı tı weta dàgǫ̀ht’e (quality) eyıts’ǫ łıwedıa eyıts’ǫ asìıkw’òa weta nàdèe (ɻt’ǫ̀ kw’òa, tıts’aàđıı kw’òa) eyıts’ǫ łıwe. Whaèhdǫǫ̀ Nàowoò (TK) xàetaa, AEMP gha asìı xàetaa, 2021 k’e Whaèhdǫǫ̀ Nàowoò xàgogeèhk’ǫǫ k’è/ Whaèhdǫǫ̀ Nàowoò k’e dèhkw’ee ts’àgedèe. Xàgogeèhk’ǫǫ k’è łıwe łǫ weyìı asìık’ets’à ghàts’ı̨dà. xàgogeèhk’ǫǫ k’è ł weyìı asìık’ets’à ełek’èdaàtłǫ ts’aɔı̨ AEMP Tk ł xogıihdıı gha nàgedèe xèhǫ̀wo gots’ǫ. Łı ɔ̀ılıı weyìı satsǫ̀ nàèdıı dànìɻhtso sìı Health Canada weghàà hotìı ts’eda gha weghǫ sèts’ezee gha asanìle. 2021 k’e xàgots’eèhk’ǫ̀ǫ k’è tı wòhdaa weyìı Nàèdıɬı̨ gha wek’aàhoòtǫǫ sìı tı weyìı satsǫ̀ nàèdı eyıts’ǫ eyìı-le nàèdıɬı̨ weta gǫ̀hɬı̨-le k’è wègoat’ı̨.

Łıwedıa łǫ doò at’ı̨ t’à sǫǫ̀mbak’è gòɔǫǫ gots’ǫ nıwà nı̨ɻɔàa ts’ǫ̀ aget’ı̨ (edlaàgot’ı̨ eyıts’ǫ ayıı zaà k’e agǫ̀ht’e ghàà) t’à sǫǫ̀mbak’è gòɔǫǫ wet’à Ek’atı weta łıwedıa łǫ adaade. Wet’à ładjı̨ agot’ı̨ gha sìı nechà nìıle eyıts’ǫ Ek’atı ɻłaà łıwedıa tı weta dek’aɔı̨ hǫt’e xè dek’aɔı̨ hołè.

Tı weta ładjı̨ agot’ı̨ nɻdè dègoťı eyıts’ǫ kwe nàek’èe ts’ıhɔǫ̀ łıwedıa ɻdoò at’ı̨. Dıavık, eyìı łıwedıa dek’aɔı̨ Ek’atı ts’ǫ̀ at’ı̨ gha hogeèhdzà, kwe nàek’èe xogìıhdıı t’àa, dek’aɔı̨ kwe nàek’èe, wet’à kwe nàek’èe xàɔaa gots’ǫ nezı̨ı̨ gı̨ı̨wǫǫ sìı t’à get’ı̨ı̨, eyìı xè tı xè nezı̨ı̨ eghàlageda eyıts’ǫ tı sìıɔı̨ı̨ t’à geèdzà.

Kǫ̀ta Gıxè Agot’ı̨ı̨ / Whaèhdǫǫ̀ Nàowoò

Dıavık, dè gomǫǫ̀ gòɔoǫ wexoedıı weghǫ godı gòò t’à dǫ xègogedoo gı̨ı̨wǫ eyıts’ǫ sǫǫ̀mbak’è eneèťı̨ı̨ xè nadąą̀ sınìhot’à xè hawee sìı wet’à Kǫ̀ta xè gogedo gıgha nezı̨. Dıavık, Ełexè Eghàlats’edaa xè Nàowo Hòlı̨ı̨ (PA) hazǫǫ̀ weghaxeèt’e k’e dèhkw’ee xè eghàlageda, hanìɻdè dàanì nezı̨ı̨ k’ehogeɔa xè agot’ı̨ı̨ gha nèhòt’à gha hogeèdzà ha. 2021 k’e Dıavık wegodìı nek’ǫ̀ą k’e dè gomǫǫ̀ gòɔǫǫ xè eghàlada PA kǫ̀ta łexè la k’e dèhkw’ee gıxè sìı dıı wegodìı nıhtɬ’è dek’eèhtɬ’è.

2021 k’e kǫ̀ta dǫ gıxè agot’ı̨ı̨ xè ładjı̨ agodzà Covıd-19 wets’ıhɔǫ̀, eyıt’à ełexè eghàlagedaa deɔǫ̀atłǫ wet’à gots’edee eyıts’ǫ satsǫ̀kwì t’à ełets’eèhđıı t’à ełexè eghàlagedaa weghǫ nahǫ̀t’e.

Dıavık, kota dǫ xè eghàlageda hanìɻdè hotìı ayıı k’e eghàlagedaa sìı dìı dǫ xè dàgǫ̀ht’e gha hotìı gıt’àhoehwhı ha gı̨ı̨wǫ. Satsǫ̀kwì nàowoò t’àhot’ı̨ı̨, etaàtıı k’è atɬ’èe eyıts’ǫ eyìı-le k’ę̀ę̀ agot’ı̨ı̨ sı xè yaàzea ładjı̨ adlà ɻłaà ełexè eghàlats’eda gha. Dǫ xè ełets’eèhdıı wòhdaa xè hagòdzà. Ayıı k’e xàyatıı sìı Frame Lake xè sìınagòdlee laà, łexè eghàlats’eda nàowoò wet’àhot’ı̨ı̨, sǫǫ̀mbakweè degoo sìıɔı̨ı̨ eyıts’ǫ sǫǫ̀mbak’è gòɔǫǫ weghàladaa, sǫǫ̀mbak’è eneèťı̨ı̨, Whaèhdǫǫ̀ Wenàowoò Hołèe, tàdaa Covıd-19 eyıts’ǫ wet’à kǫ̀ta xè ładjı̨ agot’ı̨ı̨, xotɻlìı, sǫǫ̀mbak’è gòɔǫǫ k’e sìınagoɔı̨ı̨, 2021 AEMP TK nàgedèe k’è eyıts’ǫ 2021 TK gha dèhkw’ee. Dıavık kǫ̀ta ts’ǫ dǫ sǫǫ̀mbak’èe eyıts’ǫ wemǫǫ̀ gòɔǫǫ ededaà t’à weghàgeda gha ekǫ ts’ǫ̀ gogewa hogeèhdzà. Dǫ hazǫǫ̀ sǫǫ̀mbak’è gòɔǫǫ ts’ǫ̀ gogewa gha wèhoedìı-le kò edahxò dǫ gıxè agot’ı̨ı̨ sìı gıxè dàgoat’ı̨ı̨ sìı t’à ɻdè dǫ edekǫ̀ geèhkw’ee xè gogedo ha weł gı̨ı̨wǫ.

2021 k’e Dıavık Dıamond Mınes (2012) ınc.(DDMI) Łutselke gots’ǫ dǫ sǫǫ̀mbak’è gòɔǫǫ ts’ǫ̀ geèhchì, ekǫ nǫ̀gha wekeè k’è wexàetaa gha gots’àdı gha. Tàdaa COVID-19 dǫ ta adzàa t’à kǫ̀ta ts’ǫ dǫ sǫǫ̀mbak’è gòɔǫǫ ts’ǫ̀ agogele gha haɻlèe sìı wets’àat’ǫ adlà.

Taı xo taàt’eè DDMI, AEMP Whaèhdǫǫ̀ Nàowoò nàgedèe k’è gha k’ehogeɔa. 2021 k’e PA kǫ̀ta gots’ǫ ɔǫhdah eyıts’ǫ cheekoo hozìı nèk’e nàgedèe k’è gogeewa, Ek’atı k’e k’àbatsǫ̀ ts’ǫneè, ekǫ ł hotìı eda gha gık’aehta gha eyıts’ǫ tı xè dàgǫ̀ht’e sı gha. Eyìı nàgedèe k’è asìı xàgetaa gots’ǫ asìı gogı̨ı̨hɔǫǫ

wegodìı sìı ɻdaà gogha ɬı hotıedaa eyıts'ǫ tı xè dàgǫ̀ht'ee wexoedıı ts'ǫ̀ agele ha. Dıı nàgedèe k'è gòɔǫǫ eyıts'ǫ xo taàt'eè TK k'e dèhkw'ee sìı eɬègehdèe sìı gıtɬ'aà agot'ɻ eyıt'à dɻ dzęę̀ ts'ǫ̀ ɻdaà agɻɻlà. Tk k'e dèhkw'ee sìı sǫǫ̀mbak'è gòɔǫǫ weghàladaa eyıts'ǫ wedaàt'ɻɻ hanıı ghǫ gogede eyıts'ǫ Dıavık eneèt'ɻɻ gha nàowo łeghàgeɔàa eyìı nàowo Dıavık Eneèt'ɻɻ Weghàladaa yìı whelaa adle ha dìı-le. 2021 k'e TK k'e Dèhkw'ee Ełegeèhdıı #13 ekò asìı gha nàowo hoɬèe sìı dıı godıı nɻhtɬ'è k'e dek'eèhtɬ'è eyıts'ǫ ayìı k'e gogɻɻdee, dè k'e asìı nezɻ̨ naehshee sìı dàanì wexoedıı gha weghàladaa, sǫǫ̀mbak'è eneetǫ tɬ'axǫǫ̀ dàwa ts'ǫ̀ wexoedı ha eyıts'ǫ asìı wegodìı ghǫ daɔaake k'e gogɻɻde.

Nàowo Gòò xè Eghàlats'edaa & Deghàà Asìı t'à Hot'ɻɻ

Dıavık sǫǫ̀mbak'è gòɔǫǫ k'è nɻhts'ı t'à satsǫ̀ etłe dɻ (4) gǫ̀hɬɻ wet'à xoghàà eghàlagìıdèe dǫǫ̀ nɻhts'ı t'à deghàà satsǫ̀ etłee denahk'e gıt'àat'ɻ. Nɻhts'ı t'à satsǫ̀ etłee wet'à dek'aɔ̀ɻ tłee t'à goèhk'ǫ̀ǫ̨ 3.8 lemìıyǫǫ̀ lıtres haàtɬǫ dek'aɔ̀ɻ gıt'àat'ɻ eyıts'ǫ 2021 k'e tłehloò xàdeekw'ee (CO_2e) gha 10,269 lemìıyǫǫ̀ haàtɬǫ aɻhda dek'aɔ̀ɻ xàdeekw'e. Nɻhts'ı t'à satsǫ̀etłee wek'e ek'aàk'ǫ̀ naìtɬ'ɻɻ wek'e whela wet'à tıts'aàdıı wets'ǫ̀ at'ɻ-le eyıts'ǫ wet'à webeè ets'aetɬ'òo sìı dek'aɔ̀ɻ det'ǫ k'e ade ha. Eyìı wedaa ts'ǫ̀ 215,580 lıtres ekıyeè tłee haàtɬǫ weghàhoòwoo wedęę̀ sìı nàgehtsɻɻ sìı tłee dèk'ǫ̀ǫ̨ satsǫ̀ yìı gık'eehk'ǫ̀. 2021 gots'ǫ hanì gıt'àat'ɻ. 2014 k'e wet'a eghàlada gots'ǫ hazǫǫ̀ t'à 1.7 lemìıyǫǫ̀ lıtres tłee haàtɬǫ weghàhoòwoo sìı wet'à goyìı gòkǫ̀ gha wek'eak'ǫ, ɻdaà naezee nahk'e nezɻ̨ hǫt'e.

Dıavık, sǫǫ̀mbak'è gòɔǫǫ gha dàanì dek'aɔ̀ɻ tłee dek'ǫ̀ǫ̨ t'à get'ɻ ha gıxàeta. Weɔǫ̀ǫ̀ deghàà wet'à asìı etłee sìı dıı haàtɬǫ wexè agot'ɻ: satsǫ̀etłee t'à ek'aàk'ǫtɬ'ìı dèk'ǫ̀ǫ̨ eyıts'ǫ tłeèk'ǫ satsǫ̀ gots'ǫ edıı nats'ıhchıı, LED ek'aàk'ǫǫ̀ goyìı dèk'ǫ̀ǫ̨, mòht'a dechɻnàɻɔaa k'e photocells t'à ek'aàk'ǫǫ̀ dèk'ǫ̀ǫ̨, ekǫ tı k'etɬ'òo k'è gòlaa wet'à dek'aɔ̀ɻ ek'aàk'ǫtɬ'ìı t'à hot'ɻ, wet'à sìghàɻwaa ts'ǫ̀ ek'aàk'ǫǫ̀ dèk'ǫ̀ǫ̨, kǫ̀ gokw'ǫǫ̀ golaa sìı goyìı asìı nats'eehkwıı, wet'à goyìı gòkǫ̀ǫ̨ golakw'ǫǫ̀ t'à wek'èts'ıhchıı, kǫ̀ dats'ǫǫ̀ wet'àhot'ɻɻ-le goyìı dek'aɔ̀ɻ gokǫ̀ aahwho. 2021 ekò eyìı asìı wet'à dek'aɔ̀ɻ k'aàk'ǫǫtɬ'ìı t'à hot'ɻɻ t'à 116,000 lımìıyǫǫ̀ lıtres tłee haàtɬǫ dek'aɔ̀ɻ nìɻtɬ'ıı sìı wet'à tłehloò xàdeekw'ee(CO_2e) sìı 3,630 tonnes haɻha dek'aɔ̀ɻ nìɻtɬ'ı.

Ek'èhots'eɔàa eyıts'ǫ EMAB

Toyatı Zaà 7, 2021 k'e 2020 EAAR gınɻhtɬ'è wegodìı GNWT-ENR ts'ǫǫ̀hk'e K'àowodeè T'ǫǫ̀ǫ̨ Whedaa wegha nezɻ̨ aatɬ'è. Eyìı K'àowodeè T'ǫǫ̀ǫ̨ Whedaa 2020 Dè Gomòǫ̀ǫ̨ Gòɔǫǫ Xè Nàowodeè Hòlɻɻ Xo Taàt'eè Wenɻhtɬ'è Hoɬèe k'e gots'ǫ̀ ɻɻtɬ'èe sìı wenɻhtɬè Appendıx I. k'e dek'eèhtɬ'è.

EMAB. Dè Gòɔǫǫ Wexoedıı gha Yatıgoghàgeɔàa k'e Dèhkw'ee eyıts'ǫ Dıavık Frame Lake Nezɻ̨ Anadlee wek'e Eghàladaa, Dıavık tı nɻhtɬ'è sìınadlà wet'à ɻɬaà dè sìınagodle xè hawee, eyıts'ǫ dè goɔǫǫ xogııhdı weghàladaa eyıts'ǫ dàanı sıgɻɻhwhǫ ha, hanıı ghǫ ɬets'ǫ̀ geetɬ'è.

Thank you/Marsi Cho/Masi Cho/Quana to the Kitikmeot Association Inuit, Tłı̨chǫ Dèek'àowo, Sǫǫ̀mbak'è got'ı̨ı̨ Dakwełǫǫ̀ Dǫne Nàdee, Łıchok'è Dakwłǫǫ̀ Dǫne Nàdee, Chı̨k'èedà Metıs Łexe Eghàladaa gıchekee gots'àgı̨ı̨đıı gha, sǫǫ̀mba hołèe nàowoò, eyıts'ǫ 2019 k'e dǫ Dıavık wechekeè xè eghàlagı̨ı̨dàa, Dıavık xè Eghàlats'edàa gha Nàowo Hòlı̨ı̨ gots'ǫ dǫ goxè eghàlageedaa wet'à dè gomǫǫ̀ gòʔǫǫ xè dek'aʔì̀ ładı̨ı̨ agot'ı̨ı̨, eyıts'ǫ gots'ǫ asìı naehshee gots'ı̨ı̨zǫǫ wet'àhot'ı̨.

Diavik Diamond Mine Location Map

List of Acronyms (abbreviations found in this report)

AEMP	Aquatic Effects Monitoring Program
ARD	Acid Rock Drainage
BOD	Biological Oxygen Demand
CCME	Canadian Council of Ministers of the Environment
CSR	Comprehensive Study Report – Diavik Diamonds Project
DDMI	Diavik Diamond Mines Inc.
EA	Environmental Assessment
EAAR	Environmental Agreement Annual Report
EMAB	Environmental Monitoring Advisory Board
EMS	Environmental Management System
ENR	Environment and Natural Resources
GNWT	Government of the Northwest Territories
ICRP	Interim Closure and Reclamation Plan
LDG	Lac de Gras
MVLWB	Mackenzie Valley Land and Water Board
NIWTP	North Inlet Water Treatment Plant
NTU	Nephelometric Turbidity Units (measurement of water turbidity)
PA	Participation Agreement
PK/PKC	Processed Kimberlite/ Processed Kimberlite Containment
PVP	Permanent Vegetation Plot
QA/QC	Quality Assurance/Quality Control
SNP	Surveillance Network Program
SOP	Standard Operating Procedure
TEK/TK/IQ	Traditional Ecological Knowledge/Traditional Knowledge/Inuit Qaujimajatuqangit
TP	Total Phosphorous
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
WLWB	Wek'èezhìi Land and Water Board
WMMP	Wildlife Monitoring and Management Plan
WOE	Weight of Evidence
WRSA-NCRP	Waste Rock Storage Area - North Country Rockpile
WRSA-SCRP	Waste Rock Storage Area - South Country Rockpile

WTA	Waste Transfer Area
ZOI	Zone of Influence

Definitions

Abundance – a count or measurement of the amount of any one thing.

Action Level - a level of environmental change which, if measured in an aquatic effects monitoring program, results in a management action well before effects that could be harmful to the lake can happen.

Adaptive Management - a systematic way of learning from monitoring results or management actions with the intent to improve operating or management practices.

Benthic Invertebrates – small bugs without a backbone that live in the sediments on the bottom of a lake or river; can include flies, worms, clams, etc.

Chlorophyll *a* - found in plants and traps light energy from the sun.

Density – total amount of a given substance within a defined area.

Deposition Rate – the speed at which something settles on to a surface, e.g. how slow/fast a piece of dirt falls through water to settle on the bottom of a lake.

Distribution – how any one thing may be spread out over an area.

Effluent – water from the sewage or water treatment plant that is discharged from the plant after cleaning/treatment.

Enrichment – addition of an ingredient that improves quality; if too much is added, it may then start to reduce quality.

Environmental Assessment – process to review potential environmental impacts of a project that is being considered for development and decide if the project can be developed.

Eutrophication – water bodies like a lake receive a lot of nutrients and then start to grow a lot of plants within the water.

Habitat Compensation – replacement of natural habitat lost during construction of the mine; done using human-made features to improve areas of natural habitat.

High-level Effects – change noticed between different areas that may start to be higher than an agreed-upon standard.

Indicator – information used to try and understand what is happening in the environment.

Interim Closure & Reclamation Plan – a document that outlines ways to close a mine, including what needs to be done with water, land and wildlife. 'Interim' means that it is less detailed than a final plan, as there are still questions to answer before the final design or plan can be done.

Low-level Effect – early-warning level where little change is detected.

mg/dm²/y – milligrams per decimeter squared per year, the amount of dust deposited in a given area each year.

Mitigation Measures – things that are done to control or prevent a risk or hazard from happening.

Moderate Effect – some change noticed between different areas that may start to be higher than an agreed-upon standard.

Monitoring – a way to check on performance and compare it against an expected result, e.g. is anything changing.

Parameters – chemical and physical signs that can be used to determine water or soil quality.

Plume – an area in air, water or soil that is affected from a nearby source, e.g. a plume of smoke around an erupting volcano.

Prediction – an educated guess of what will happen in the future, can be based on existing knowledge or experience where possible.

Progressive Reclamation – starting to repair certain areas of land damage by mining activity while the rest of the mine is still operating; focus is on areas where mining activities are complete.

Research – a structured way to test questions on unknown features of the environment, e.g. reasons why a change may be happening.

Risk Assessment – a way to identify possible harmful effects by looking at how harmful the effect could be and how often it could occur. After risks have been identified, management actions are defined.

Sediment Chemistry – the mineral content of dirt particles that sit on the bottom of the lake.

Seepage – a release of water or other liquid material that flows through or out of a containment area.

Total Suspended Particulates - small particles in the air that measure 100 micrometers in size (which is slightly larger in size than the diameter of a human hair at 75 micrometers).

Trophic Status – a measure of lake productivity based on how many plants are in the lake.

Water Quality – an overall characterization of the chemical (nutrients or metals), physical (temperature) and biological (algae) features of water in a lake or river.

Weight-of-Evidence (WOE) – an estimate of the strength (weight) of proof (evidence) that is provided by jointly considering the results from each type of sample (e.g. water quality) throughout a season or across multiple years, to determine the overall effect of mine operations on Lac de Gras.

Zone of Influence (ZOI) – area of reduced wildlife occupancy as a result of mining activities.

Introduction

Diavik and the Environmental Agreement

The Diavik diamond mine is located on the East Island of Lac de Gras, in Canada's Northwest Territories, approximately 300 kilometers northeast of the capital city, Yellowknife. The lake is roughly 60 kilometers long and drains into the Coppermine River, which flows north to the Arctic Ocean. Diavik Diamond Mines (2012) Inc. (DDMI or Diavik) undertook an Environmental Assessment that started in 1998 through the Canadian Environmental Assessment Agency. The mine has been operating since 2003, and protecting the environment around the mine continues to be important.

Diavik signed an Environmental Agreement (the Agreement) with five (5) Indigenous organizations and the federal and territorial governments in 2000. The Agreement states what Diavik is to do to protect the environment while operating and closing the mine.

The Environmental Monitoring Advisory Board (EMAB) was established under Article IV of the Agreement as a public watchdog of the regulatory process and the implementation of the Agreement.

This report summarizes the results of Diavik's environmental monitoring and management programs during 2021. Complete copies of the numerous reports that Diavik submits each year can be found in the EMAB library (at their office, or on-line library) or the Wek'èezhìi Land and Water Board public registry.

Operational Plans

The Diavik diamond mine was in its nineteenth year of operations during 2021. Underground mining from both the A154 and A418 pipes occurred in 2021 and will continue into 2022. Construction of a third dike to support open pit mining of the A21 kimberlite pipe began in 2015 and was finished in 2018 with operation of the A21 mine also starting in 2018. The A21 open pit mine will continue to operate during 2021. The table below shows a timeline of Diavik's mine plan, which shows mining activities planned for the next several years and closure planned around 2025.

Kimberlite Pipe	Access	Mine Status
A154 North	• A154 open pit • A154 Underground (common decline with A418)	• Open pit mining completed Q3 2008 • Underground mining active
A154 South	• A154 open pit • A154 Underground (common decline with A418)	• Open pit mining completed Q3 2010 • Underground mining active
A418	• A418 open pit • A418 Underground (common decline with A154)	• Open pit mining completed Q3 2012 • Underground mining active
A21	• A21 open pit • A21 Underground	• Open pit mining active • TBD

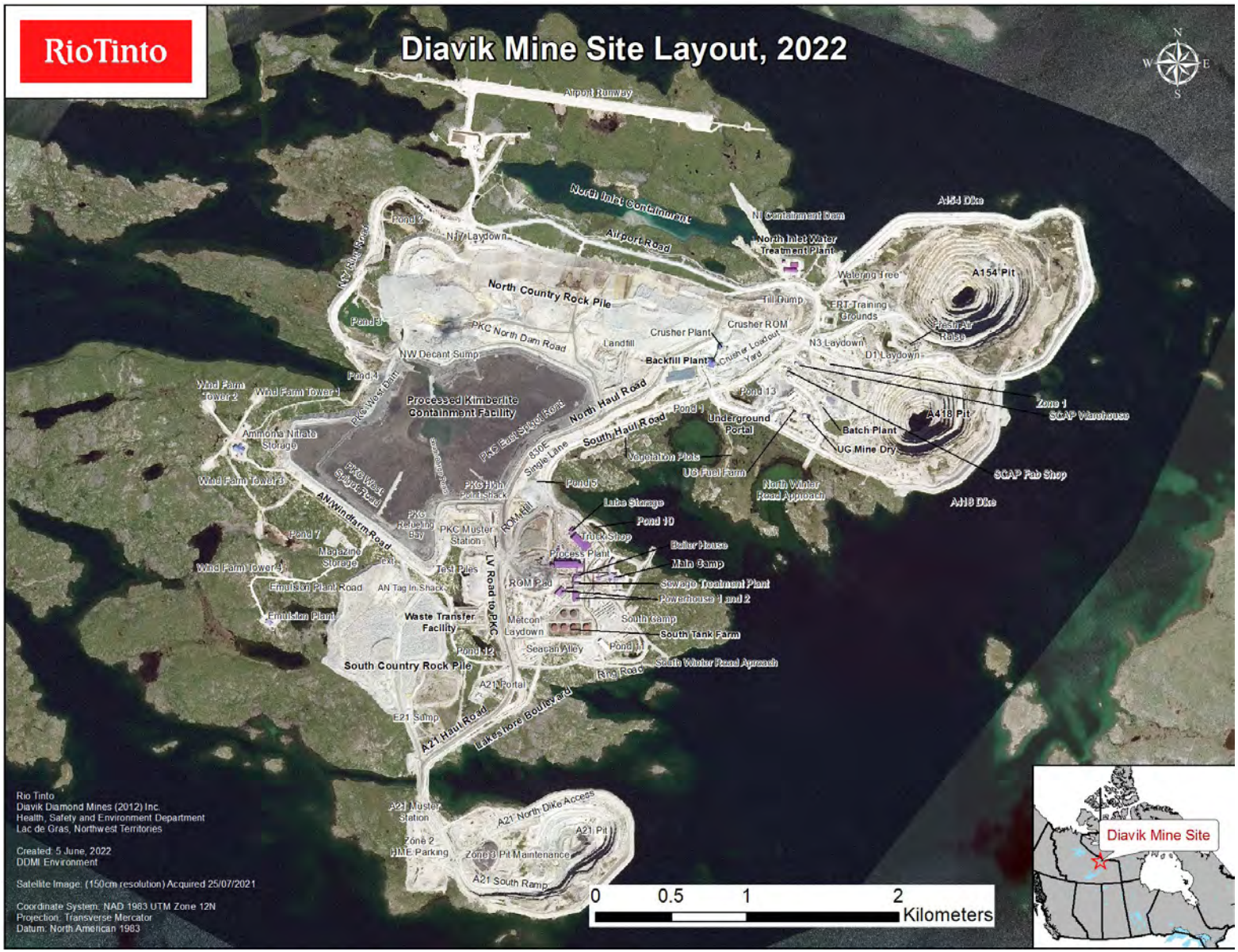


Figure 1 Diavik Diamond Mine labelled site satellite photo.

1. Environmental Agreement Annual Reporting Commitments

Section 12.1 of the Environmental Agreement (the Agreement) outlines the content to be reported annually to the Parties, the Government of Nunavut, and the Environmental Monitoring Advisory Board on June 30th (submission date revised from March 31st in 2003), as outlined in Table 1.

Table 1: Summary of the Agreement Commitments in Relation to the Environmental Agreement Annual Report (EAAR)

The Agreement Commitment	Plain Language Interpretation (from EMAB)	Report Section
Comprehensive summary of all supporting information, data and results from the Environmental Monitoring Programs and all studies and research	A full summary of all supporting information, data and results from the Environmental Monitoring Programs, plus all studies and research related to these	2, 3
Rolling summary and analysis of environmental effects data over the life of the Project; compare results to predictions in environmental assessment and the Comprehensive Study Report – Diavik Diamonds Project (CSR), and illustrate any trends	A summary that adds in data of each year and an analysis of environmental effects data over the life of the Project - to show patterns over the years	3
Comprehensive summary of all compliance reports required by the Regulatory Instruments	A full summary of all reports on how Diavik has followed all rules and regulations in the Regulatory Instruments	6
Comprehensive summary of operational activities during the preceding year	A full summary of mining activities during the year up to the annual report	Introduction, 6
Actions taken or planned to address effects or compliance problems	The ways Diavik is fixing any environmental effects or problems following rules and regulations	6
Operational activities for the next year	A summary of mining activities for the next year	Introduction, 6
Lists and abstracts of all Environmental Plans and Programs	Lists and summaries of all Environmental Plans and Programs	2
Verification of accuracy of environmental assessments	A check that environmental assessments are correct	3
Determination of effectiveness of mitigation measures	A report on how well steps to lessen effects are working	Appendix II
Comprehensive summary of all adaptive management measures taken	A full summary of all adaptive management steps taken	Appendix II

The Agreement Commitment	Plain Language Interpretation (from EMAB)	Report Section
Comprehensive summary of public concerns and responses to public concerns	A full summary of public concerns and responses to public concerns	4
Comprehensive summary of the new technologies investigated	A full summary of the new technologies Diavik has looked into	5
Minister's comments, including any Minister's Report, on the previous Annual Report	The Minister's comments on the Annual Report from the year before, including any Minister's Report	Appendix I
Plain language executive summary and translations into Dogrib/Tłı̨chǫ, Chipewyan, and Inuinnaqtun using appropriate media	Plain English executive summary translated into Dogrib/Tłı̨chǫ, Chipewyan, and Inuinnaqtun	Appendix III-VI

2. Environmental Programs and Plans - 2021

This section outlines the various environmental plans and programs that Diavik follows. For each plan/program, a brief outline is provided that explains why the program is being done and/or how it is completed. Many of these plans and programs are the same from one year to the next. As stated in Diavik's Water Licence (W2015L2-0001), plans that have not changed do not require updates; those that have been updated and submitted for regulatory approval during 2021 are identified in Table 2 (the table also includes commentary on plan updates as of May 2022). Additionally, Appendix II contains a list of mitigation measures and adaptive management actions that have been implemented during mine operations.

Management & Operations Plans

Management and operations plans are site-specific documents that identify potential environmental issues and outline actions to minimize possible impacts that could result from mining activities. They are reviewed by DDMI each year and updated as required (i.e. if something changes). Table 2 lists the management and operations plans required under DDMI's water Licence, some of which are also linked to Diavik's land leases and Land Use Permits and summarizes the purpose of the plans and identifies which plans were updated for 2020.

Table 2: Management & Operations Plans for the Diavik Mine*

Plan & Version Number	Purpose	Updated in 2021 (Y/N)	Updates/ Comments
Ammonia Management Plan (AMP), v7	To assist in achieving the lowest practical amount of ammonia from explosives that would enter the mine water and waste water streams. The plan details how ammonia management performance is evaluated and includes details of ammonia management techniques.	No	WLWB approved updates in March 2020 to remove references to the concentrated sulphuric acid dosing system, which is to be decommissioned/removed from the North Inlet Water Treatment Plant.
Waste Rock Management Plan (WRMP) v10.1	Rock types that surround the kimberlite may have minerals in them that can cause water to become acidic when it runs over the rock. The plan describes how DDMI identifies, separates, and stores the rock to reduce acid runoff.	No	WLWB approved updates (WRMP V9) in July 2019 regarding changes to ore stockpiling and changes to verification procedures for A21 waste rock. WLWB approved updates (WRMP V10) in May 2020 to address previous Board directives, changes to sulphur testing procedures for A21 waste rock, and changes to ore stockpiling locations.
Interim Closure & Reclamation Plan (ICRP) v4.1	Outlines closure goals (overall vision for what Diavik would like to achieve), objectives (steps the organization needs to take to achieve the goals – specific and measurable) and criteria (a standard against which success is measured) and includes engineering designs and research programs for closure of all the major components of the mine. Because it is a plan that evolves over time, it does not yet include final closure designs or details on specific after-closure monitoring programs.	Yes	Version 4.1 submitted in Dec 2019 to WLWB. The WLWB approved of Version 4.1 in June 2021 with further Direction for the Final Closure & Reclamation Plan.

Plan & Version Number	Purpose	Updated in 2021 (Y/N)	Updates/ Comments
Hazardous Materials Management Plan (HMMP), v19	Describe procedures for the safe and efficient transport, storage, handling and use of chemicals for mining. Prevention, detection, containment, response, and mitigation are the key elements in the management of hazardous materials. The plan also describes how hazardous materials will be removed from site during closure.	No (last WLWB approval in 2016)	N/A
Contingency Plan (CP, used to be called the Operational Phase Contingency Plan), v23.1	Describe response procedures for any accidental release (spill) of hazardous or toxic substances, as well as procedures for water management. The CP outlines the responsibilities of key personnel and gives guidelines for minimizing impacts to the environment, including contingencies for the underground mine.	Yes	WLWB approved Version 23.1 in June 2022.
Water Management Plan, v15	Describe how water around the site is moved, treated, monitored and controlled. Also includes a 'water balance', which gives Diavik an idea of the amount and location of water on site at any given time, so that plans can be made for handling and treating water.	No	WLWB approved updates in March 2020 in support of decommissioning and removing the acid dosing system from the North Inlet Water Treatment Plant.
Waste Management Plan, V4 (includes Incinerator v4, Hydrocarbon Impacted Materials V4, Solid Waste & Landfill v4, Dust Management V4)	Identify the types of waste generated on site and outline methods for the minimization, collection, storage, transportation and disposal of wastes in a safe, efficient and environmentally compliant manner. Characterizes and segregates waste streams according to their on- and off-site disposal requirements.	No	Updated in 2022 to reflect DDMI's intention to use dust suppressant in expanded areas at the mine site. The submission also included minor administration changes. The WLWB approved Version 4 in June 2022.
A21 Construction Environmental Management Plan, v5.2	Outlines how Diavik plans to reduce environmental effects from A21 dike construction activities. Includes a description of on-land and in-lake construction activities, including dewatering. Environmental management controls and monitoring requirements are also described.	No (last WLWB-approval in 2017)	N/A

Plan & Version Number	Purpose	Updated in 2021 (Y/N)	Updates/ Comments
Engagement Plan, v3.1	Outlines the outreach and engagement process with communities in relation to the Diavik Mine Project under Water Licence W2015L2-0001 and in line with the WLWB's Engagement Guidelines for Applicants and Holders of Land Use Permits and Water Licences.	No	DDMI submitted Engagement Plan Version 3.1 in July 2020 that reflected WLWB Directives from its May 2020 review and approval of Version 3 of the Plan.
PKMW Engagement Plan V1.1	Developed to inform DDMI's engagement with potentially affected Indigenous Groups during the implementation of the PKMW Project to ensure that water is safe for people, aquatic life, wildlife, and suitable for cultural use.	Yes	DDMI submitted the PKMW Engagement Plan Version 1 to WLWB in September 2021. The WLWB approved Version 1 in November 2021. DDMI submitted Version 1.1 of the plan in February 2022 addressing Directives. The WLWB approved Version 1.1 in March 2022.
Processed Kimberlite Management Plan, V6.1	Outlines how to handle the water and solids within the PKC facility. Includes information on PKC design, dam construction, monitoring programs for water, ice & solids stored within the PKC.	Yes	DDMI submitted PK Management Plan V6.0 to WLWB for review in July 2021. Version 6 Plan updates reflected modifications to the PKCF Phase 7 dam raise and Phase 7 spillway. In December 2021 DDMI submitted Version 6.1 of the Plan addressing Directives following WLWB's September 2021 approval of Version 6.
North Inlet Water Treatment Plant (NIWTP) Operation Manual, v2.1	Provide information about the plant (area layout, treatment capabilities, etc.), operational requirements of the plant (as it relates to water management both on site and within the plant) and plant maintenance requirements.	No	WLWB approved updates in March 2020 to remove significant unnecessary standard operating procedure level details describing how to operate the treatment plant. Removed requirement for sulfuric acid dosing system from the updated plan. DDMI submitted Version 2.1 of the Plan addressing WLWB Directives in April 2020.
Sewage Treatment Plant (STP) Facility Operations Plan, v6	Outlines the design and layout, operating rules, monitoring requirements, what to do in case of an emergency, maintenance and closure of the plant.	No (last WLWB approval in 2011)	N/A

Plan & Version Number	Purpose	Updated in 2021 (Y/N)	Updates/ Comments
Tier 3 Wildlife Management and Monitoring Plan (WMMP)	Outlines methods to limit impacts to wildlife as a result of mine operations and programs to determine if the distribution (location as it relates to the mine, habitat and region) and abundance (number) of wildlife species are affected by the mine.	Yes	DDMI submitted a final Tier 3 WMMP in November 2021 for approval that was developed based on GNWT WMMP guidelines. The WMMP was conditionally approved in July 2022.
Environmental Air Quality Monitoring and Management Plan (EAQMMP)	To identify air quality monitoring requirements on site. The components of the EAQMMP include dust deposition (dust fall) monitoring (as part of the Aquatic Effects Monitoring Program (AEMP)), a snow core program (as part of the AEMP) and reporting to the National Pollutant Release Inventory (NPRI), and the national Greenhouse Gas Reporting Program (GHGRP) to Environment and Climate Change Canada (ECCC).	No	DDMI has discontinued sampling and reporting on Total Suspended Solids (TSP) monitoring at Diavik for a number of reasons including that TSP results over the past 4 years are below what was predicted from the 2012 dispersion model and that the Arctic environment presents challenges to the operational performance of TSP samplers.

*Management Plan status reflects updates up to September 2022.

Monitoring Programs

Monitoring programs are designed to track changes to the environment as a project develops and are usually linked to predictions from an Environmental Assessment (EA). Monitoring programs required for Diavik are summarized within the water Licence (W2015L2-0001), Fisheries Authorizations or EA. A summary of the monitoring programs conducted during 2020 is outlined in Table 3.

Table 3: Monitoring Programs for the Diavik Mine

Monitoring Program	Purpose	Completed in 2021 (Y/N)	Reporting Frequency/ Comments
Wildlife			
Caribou Behaviour Observations	If/how caribou behaviour changes in relation to distance from mine	Y	Annually
Aerial Caribou Surveys	Zone of Influence of mining activities in the LDG region	N	Discontinued
Caribou Road Surveys	Effectiveness of mitigation measures	Y	Annually, initiated based on collar data or reported sightings
Wolverine Track Survey	Wolverine presence in the area of the mine	Y	Annually. In April 2021 DDMI completed one round of wolverine track surveys but was unable to undertake a second round due to COVID-19 related disruptions to site operations.
Wolverine DNA	Wolverine numbers in the Lac de Gras (LDG) area	N	Discontinued
Grizzly Bear DNA	Bear numbers in the LDG area	N	Discontinued
Raptor Survey	Regional estimate of number of nests with birds in them and how many chicks are alive	Y	Completed every 5 years with GNWT & other mines; last survey in 2020; next survey to be conducted in 2025
Wildlife Habitat Loss	Track habitat loss due to mine development; total loss and preferred habitats for individual species	Y	Annually
Building Inspections	Survey mine buildings and pit walls to identify bird nests and/or wildlife use	Y	Annually
Waste Inspections	Monitor waste disposal that may attract animals	Y	Annually
Wildlife Presence	Track wildlife observations and numbers on the mine site	Y	Annually

Monitoring Program	Purpose	Completed in 2021 (Y/N)	Reporting Frequency/ Comments
Wildlife Mortality & Injury	Track any wildlife deaths or injuries associated with mine operations	Y	Annually
Water			
Mine Site Water Quality	Test water against Water Licence limits at a set frequency (Surveillance Network Program, SNP)	Y	As outlined in Water Licence
Lake Water Quality	Changes to water quality in LDG over time (part of Aquatic Effects Monitoring Program, AEMP)	Y	Annually
Nutrients, small Plants & Bugs in Water	Changes to nutrients, plants and bugs that live in the water column, over time (part of AEMP)	Y	Annually
Lake Sediments	Changes to sediment quality in LDG over time (part of AEMP)	N	Completed every 3 years; last sampled in 2019
Lake Bottom Bugs	Changes to number and type of bugs that live on the lake bottom, over time (part of AEMP)	N	Completed every 3 years; last sampled in 2019
Large Bodied Fish Health	Fish health tests through palatability and/or tissue chemistry	Y	AEMP Traditional Knowledge Study has been run on a 3-years cycle
Small Bodied Fish Health (Slimy Sculpin)	Fish health tests through tissue chemistry	N	Completed every 3 years.
Water Quantity	Measure levels and sources of water used, added or moved on site	Y	Annually
Air Quality, Dust & Vegetation			
Dust Deposition	Amount and chemistry of dust collected in dust gauges and on snow, close to and far from the mine	Y	Annually
Meteorological	Weather trends and influence on water balance and dust deposition	Y	Annually
Vegetation Plots	Changes to type and amount of plants over time, near and far from the mine	Y	Completed every 5 years; completed in 2021
Lichen Study	Metal levels in lichen and soil, near and far from the mine; included health assessment for caribou consumption	Y	Completed every 5 years; completed in 2021

Aquatic Effects (Lake Water Quality & Fish Health)

The AEMP is designed to measure short- and long-term changes in Lac de Gras. Sampling efforts focus on sampling stations in Lac de Gras that are located closer to the mine (where effects would first be expected to occur). There are also sampling stations far away from the mine (where effects would take much longer to occur). Comparing information from both places allows changes in the lake caused by the mine to be measured over time (temporal) and can be measured near the mine site and further away (spatial).

There are 39 sample locations (Figure 2) where many different types of samples are taken. The types of samples that were collected in 2021 included: water quality (e.g. ammonia, metals), the amount and quality of dust deposited, nutrient indicators, and other information used to understand the lake environment, e.g. chlorophyll *a* (material found in tiny plants that traps light energy from the sun), phytoplankton (tiny plants), zooplankton (tiny animals). Fish health were studied as part of the 2021 TK camp.

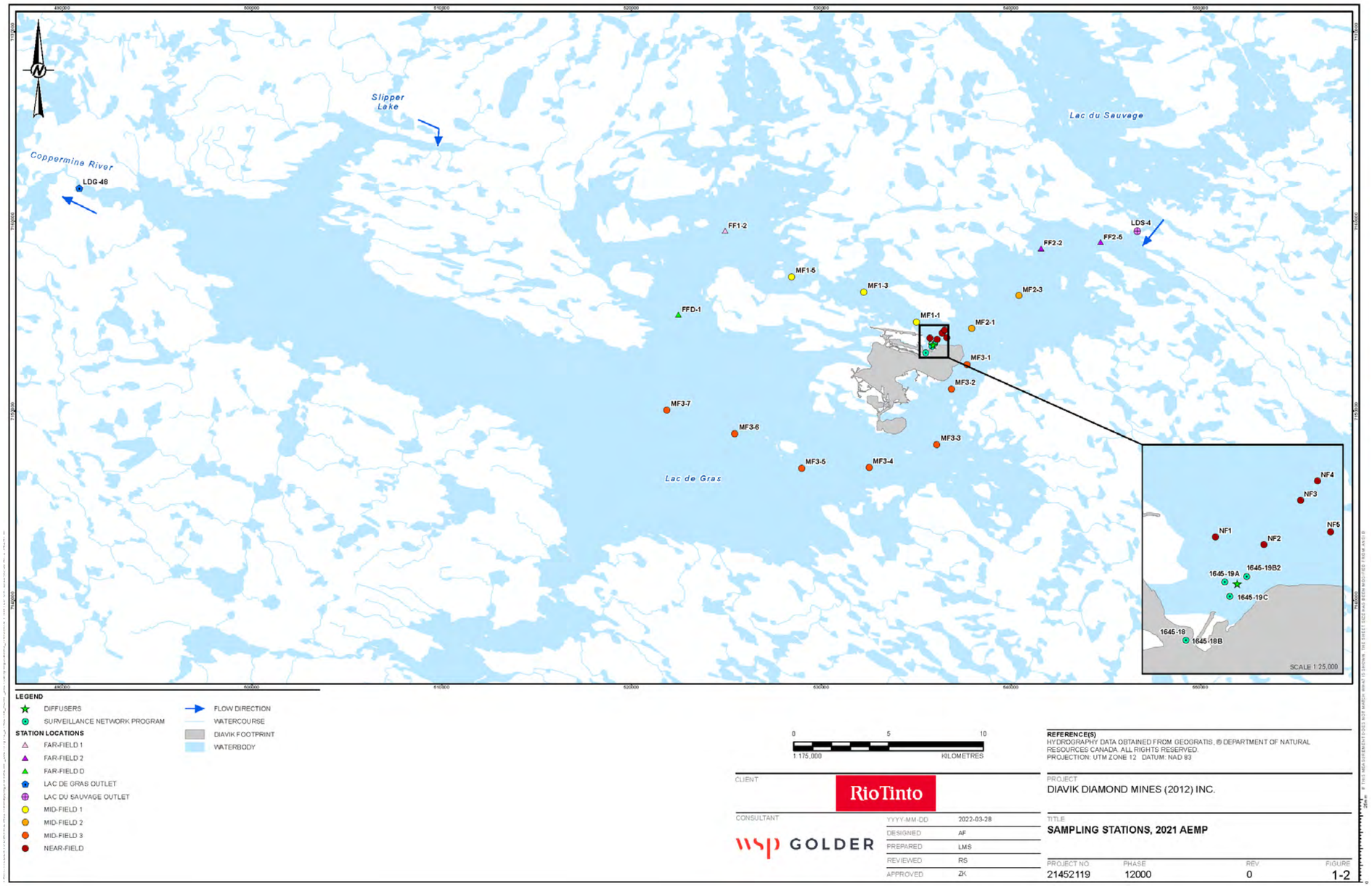


Figure 2 2021 AEMP sample locations.

Air Quality (Dust & Emissions)

The goal of the Dust Deposition Monitoring Program is to understand dust deposition rates (how much dust falls onto the tundra and lake) caused by project activities. The program provides information to support the Wildlife Effects and Aquatic Effects monitoring programs.

The sampling stations for the Dust Deposition Monitoring Program (Figure 3) were set up using a transect approach (series of sample locations that extend outwards on ice and land from the mine site). In October 2017, two new sample stations were added (i.e., Dust 11 and Dust 12) and Diavik now monitors:

- 14 permanent dust gauges - fixed-location sampling devices that collect dust for analysis all year long; and,
- 27 seasonal snow survey stations - GPS locations where Diavik collects snow samples to measure the amount of dustfall over the winter (27 samples) and the water quality of the snow where dust was deposited on the lake (16 samples).

They are sampled each year and results are compared to the Alberta Ambient Air Quality Objectives for dustfall for residential and non-residential areas. This approach is used by some mines in the Northwest Territories (NWT) for comparison purposes only, as there are no air quality standards or objectives for the NWT. In 2021, results from monitoring were compared to the aforementioned Alberta Ambient Air Quality Objectives.

The goal of the Air Quality Monitoring Program is to help with finding trends in dust levels beyond the area of the mine. Diavik also keeps track of its diesel fuel use to determine greenhouse gas releases to the atmosphere.

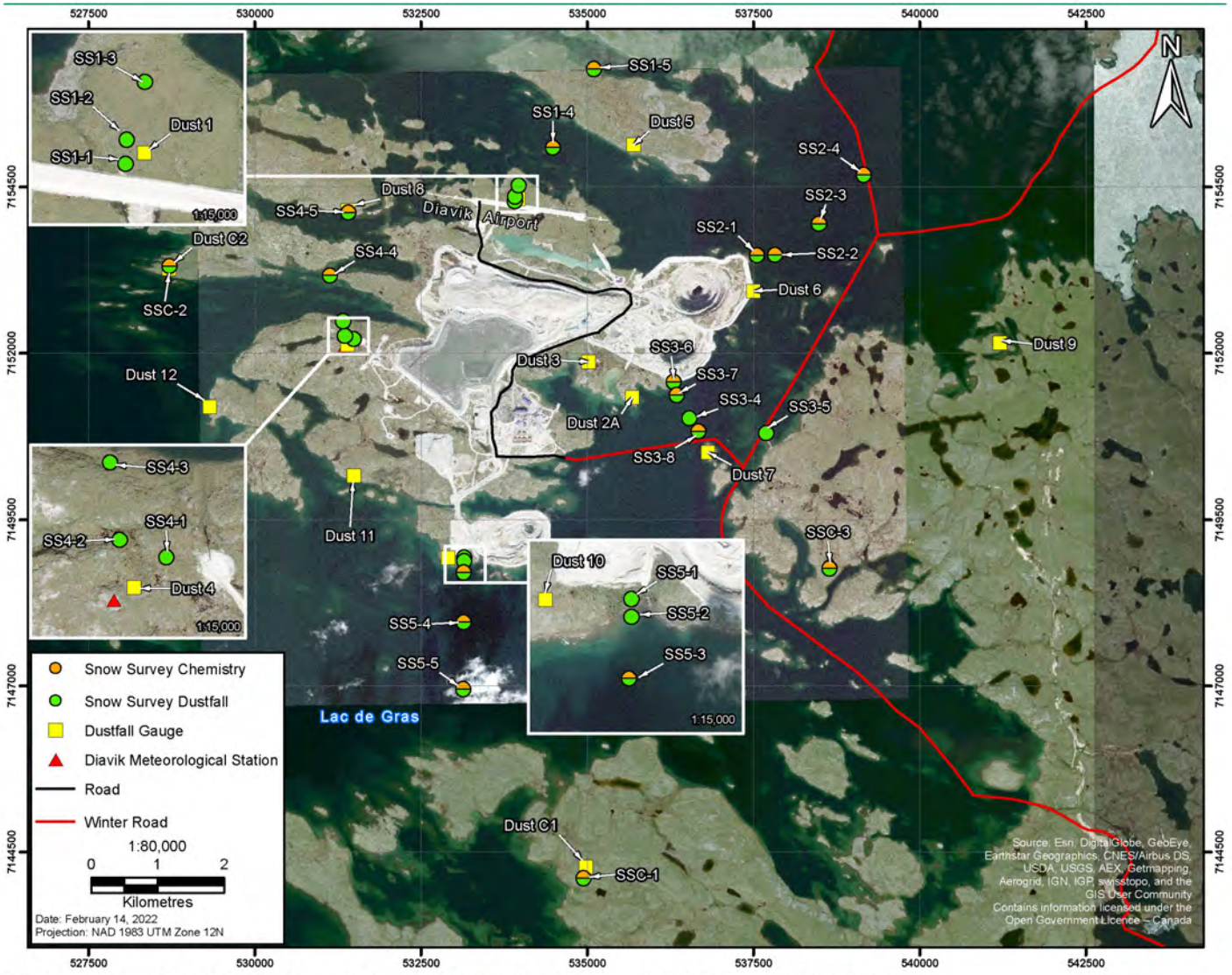


Figure 2-1: Dustfall Gauge and Snow Survey Locations, Diavik Diamond Mine, 2021

Figure 3 2021 Air quality sample locations – dust and snow surveys.

Surveillance Network Program (Water Quality at the Mine Site)

Diavik monitors water quality around the mine site in accordance with the Surveillance Network Program (SNP), which is a component of Diavik's water licence. The SNP outlines where Diavik collects water samples, how often samples are collected, and what parameters (metals, nutrients and other water quality characteristics) are measured. The SNP also outlines sampling requirements for water that flows into Lac de Gras during dewatering activities (e.g., dike construction).

Diavik monitors dams and dikes around the mine site for potential seepage (water from inside the dam that may flow through the dam to the environment). Detailed inspections are documented weekly on all water retention structures. Daily inspections are completed on areas of geotechnical interest. The dikes and dams are designed to hold back water; however, some seepage (leaking water) through these structures is expected. The purpose of the surveys is to check areas for potential leaks so that Diavik can take appropriate measures to stop the water. The monitoring includes regular inspections of the dam and dike structures and recording the amount of water; some water samples are also taken. The Processed Kimberlite Containment Facility (PKCF) holds enough water that it does not completely freeze in the winter, so water can move within the dam all year round.

Diavik has water interception (capture) wells and a water control system to collect water from the dams before it enters the receiving environment. It includes a number of collection wells and ponds (Figure 4), which surround major structures such as the PKCF, and are monitored.

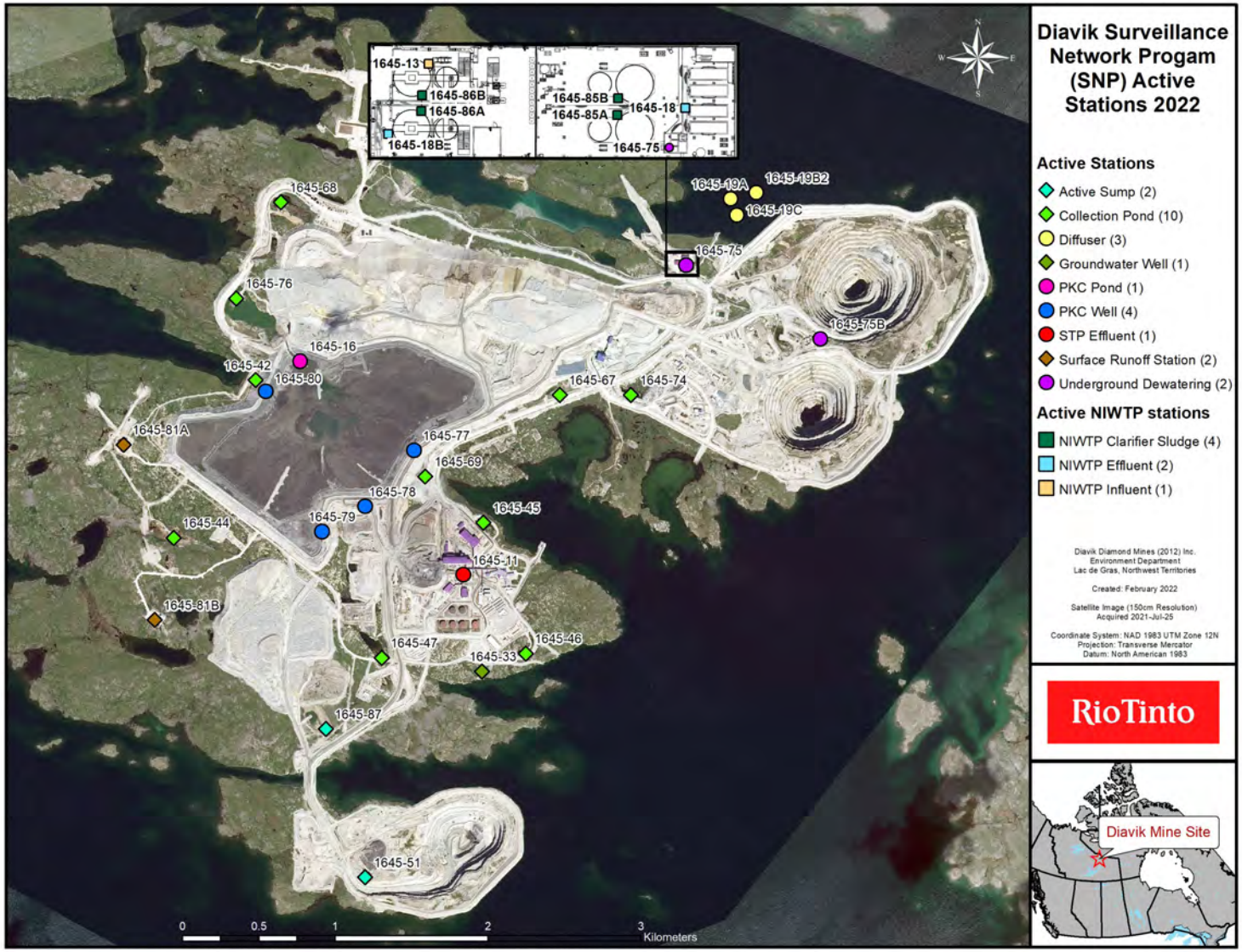


Figure 4 2021 Surveillance Network Program (SNP) sample locations.

Wildlife and Plant Monitoring

Diavik developed a wildlife monitoring program to check if the actions taken to reduce impacts to wildlife as a result of the Diavik mine project are working. The program is called the Wildlife Monitoring and Management Plan (WMMP) and is a method for detecting, modifying and improving procedures for wildlife and habitat management at the mine site. The WMMP is therefore closely linked with Diavik policies, guidelines and management plans. As outlined in Table 3, the program includes monitoring for vegetation/wildlife habitat, caribou, grizzly bear, wolverine, raptors and waste management. The Diavik wildlife study area is shown in Figure 5.

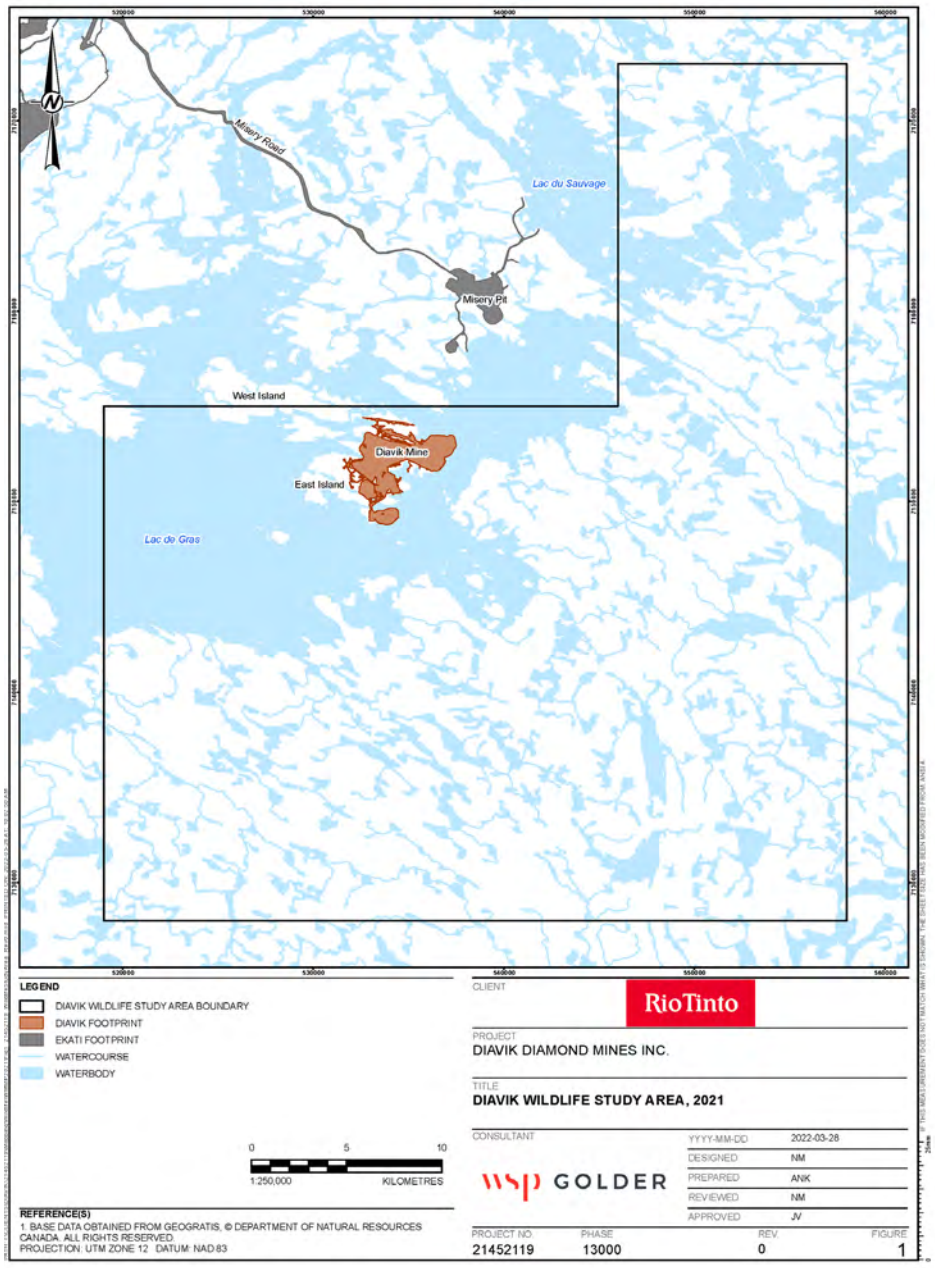


Figure 5 Regional wildlife study area for the Diavik Mine.

3. Results: Summary of Rolling Effects & Monitoring Program Changes

This section gives a summary of monitoring results and changes that have occurred to each program over time. Many of the changes have been made in response to information collected, items missing from study designs or based on feedback from various stakeholders. The Environmental Assessment (EA) included predicted indicators (things we can watch for change) that would either stay the same or change over time. The predictions (estimates of degree of change) for each indicator have been included in this section, followed by a summary of the information collected to confirm those predictions over the years. Graphs and figures or tables are given where practical to show the trends over time. Where trends are not similar to those predicted, DDMI has included a brief discussion of possible reasons. Further details can be found in the full reports that Diavik produces for each topic and a plain-language summary of what the results from the environmental monitoring programs mean is included as a 'Report Card on the Environment' in the EMAB Annual Report.

Water and Fish

At Diavik, water quality and fish health are monitored through the Aquatic Effects Monitoring Program (AEMP). The discussions below regarding fish and water come from the results of the AEMP.

Water

What effect will the mine development have on water quality?

EA Predictions and Overall Status:

- ***Water will remain at a high quality for use as drinking water and by aquatic life (i.e., meet CCME thresholds);***

Confirmed to date based on AEMP sample results; there is strong evidence for nutrient addition in Lac de Gras and weak evidence that toxic effects are occurring.

- ***Localized zones of reduced quality during dike construction;***

Confirmed based on water samples during construction – all dike construction completed.

- ***Nutrient enrichment (increased nutrients, particularly phosphorus), primarily from the mine water discharge, could change the trophic status (a measure of how productive the lake is) of Lac de Gras of up to 20% (or 116km^2) during operations. The overall trophic status in most of Lac de Gras is not expected to change.***

Confirmed to date based on AEMP sample results – the area of Lac de Gras impacted by phosphorus varies by year and has exceeded the 20% (or 116km^2) threshold twice during ice cover but never during open water.

- **Post-closure runoff (water flowing off the mine site) expected to affect the quality of two inland lakes.**

Post-closure effects cannot be measured at this time.

2021 Observations:

Twenty water quality parameters triggered Action Level 1 (out of a total of 9 Action Levels) for mine effluent water quality, which is considered an early-warning indicator of effects in Lac de Gras (Table 4). Of the twenty water quality parameters, nine also triggered Action Level 2. This is also an early warning indicator, which triggers a requirement to develop an AEMP Effects Benchmark (threshold criteria). None of the water quality parameters measured triggered Action Level 3, and all the parameters that triggered Action Level 2 had water quality effects benchmarks previously established.

Table 4: Action Levels for 2021 AEMP

Component	Variable	Action Level
Water Quality	Total Dissolved Solids (calculated) - Ice-Cover and Open-Water	2
	Turbidity - lab - Ice-Cover	1
	Calcium - Ice-Cover and Open-Water	1
	Chloride - Ice-Cover and Open-Water	2
	Magnesium - Ice-Cover	1
	Potassium - Ice-Cover	1
	Sodium - Ice-Cover and Open-Water	2
	Sulphate - Ice-Cover and Open-Water	2
	Ammonia - Open-Water	1
	Nitrate - Ice-cover and Open-Water	2
	Aluminum - Ice-Cover	1
	Antimony - Ice-cover	1
	Barium - Ice-Cover	1
	Chromium - Ice-Cover	1
	Copper - Ice-Cover	1
	Manganese - Ice-Cover	1
	Molybdenum - Ice-Cover and Open-Water	2
	Silicon - Ice-Cover	2
	Strontium - Ice-Cover and Open-Water	2
	Uranium - Ice-Cover and Open-Water	2
Eutrophication	Chlorophyll *a*	2
	Total Phosphorus	1

Effluent water quality samples in 2021 indicated that mine contact water from the North Inlet Water Treatment to Lac de Gras was not toxic. The levels of all regulated water chemistry variables were below effects benchmarks for the protection of aquatic life and drinking water in 2021.

The water quality analysis looked at the possibility that dust was affecting water quality in the lake and determined that mine effluent water is the primary contributor to mine-related lake effects, with a negligible contribution from dust deposition. The AEMP report recommended that the analysis used to determine potential effects from dust be discontinued in future AEMPs, since the program provides sufficient coverage to determine effects on the lake from all mine sources, including dustfall.

The mine is having a nutrient enrichment effect on the lake, as is clear by greater nutrient and chlorophyll *a* concentrations, and zooplankton biomass in the lake close to the mine. Lower total phosphorous loads measured in the mine effluent corresponded with lower phosphorous levels in the lake in 2021. Results are consistent with the EA prediction of greater concentrations of nutrients, particularly phosphorous in the mine discharge, resulting in an increase in primary productivity in the lake.

There was no Weight of Evidence (WOE) assessment required in 2021. The next WOE is scheduled for the 2022 AEMP.

2020 Observations:

Twenty-one water quality parameters (e.g. minerals and metals) triggered Action Level 1 (out of a total of 9 Action Levels) for mine effluent water quality, which is considered an early-warning indicator of effects in Lac de Gras. Of the twenty-one water quality parameters, eight (8) also triggered Action Level 2 which is still considered early-warning and triggers a requirement to develop an AEMP Effects Benchmark (threshold criteria). None of the water quality parameters reached Action Level 3 (Table 5 below). Regulated effluent parameters remained below the limits stated in the Water Licence. Plankton data did not trigger an Action Level, though Chlorophyll *a* triggered Action Level 2.

Table 5: Action Levels for 2020 AEMP.

Component	Variable	Action Level
Water Quality	Total Dissolved Solids (calculated) - Ice-Cover and Open-Water	2
	Total Suspended Solids - Open-Water	1
	Turbidity – lab - Ice-Cover	1
	Chloride - Ice-Cover and Open-Water	2
	Sulphate - Ice-Cover	1
	Sulphate - Open-Water	2
	Ammonia - Open-Water	1
	Nitrate - Ice-cover and Open-Water	2
	Aluminum - Ice-Cover	1
	Antimony- Ice-cover and Open-Water	1
	Barium - Ice-Cover	1
	Calcium - Ice-Cover and Open-Water	1
	Chromium - Ice-Cover	1
	Copper- Ice-Cover	1
	Magnesium - Ice-Cover	1
	Molybdenum - Ice-Cover and Open-Water	2
	Potassium - Open-Water	1
	Silicon - Ice-Cover and Open-Water	1
	Sodium - Ice-Cover and Open-Water	2
	Strontium - Ice-Cover and Open-Water	2
	Sulphur - Ice-Cover	1
	Uranium - Ice-Cover	1
	Uranium - Open-Water	2
Eutrophication	**Chlorophyll** *a*	**2**

The 2020 effluent toxicity results indicated that the effluent discharged to Lac de Gras in 2020 was non-toxic.

Elevated concentrations of nutrients extending to various distances from the Mine (depending on variable and season) suggest the Mine is increasing nutrients in Lac de Gras. In 2020, the total phosphorus (a nutrient) concentration was below the normal range; therefore, the area of the lake

affected by total phosphorus was 0%. The extent of effects from total nitrogen (a nutrient) was 40 to >48% (or 200-240km^2) of the lake depending on the season. The extent of effects on chlorophyll *a*, a good measure of the effects of nutrient enrichment, was estimated as 0.1% (or 0.5km^2) of the lake area.

The extent of mine-related effects on phytoplankton and zooplankton was 2.8% and 57%, respectively, of the lake. Results are consistent with nutrient addition, as demonstrated by increase in small plants and bugs in the water column near the mine.

In 2020, nearly all concentrations (>99%) of variables in samples collected at the mixing zone boundary (where mine effluent is discharged to the lake) were within the relevant AEMP water quality Effects Benchmarks that are based on the Canadian Water Drinking Quality Guidelines for the protection of aquatic life and drinking water (Table 3-2 of AEMP 2020 Annual Report).

The Weight of Evidence (WOE) assessment is meant to rank impacts to Lac de Gras using the data collected by the AEMP. Impacts from different parts of the program (e.g. Fish Health) are rated as being: negligible/none (score of 0), low (1), moderate (2) or strong (3). They are also categorized as either 'toxicological' (harmful response) or 'nutrient enrichment' (increased nutrients). The previous WOE assessment in 2019 indicated that nutrient addition is happening in Lac de Gras, however there is nothing that shows a toxic effect in Lac de Gras from mine operations. The next WOE assessment is scheduled for 2022.

2017-2019 3-year Summary Report Observations

Treated water that is put back into the lake has been tested between 2002 and 2019 and it was found to be non-toxic when tested with tiny fish and animals that live in the water column. Over 850 toxicity tests have been done during this period. The treated water from the mine continues to meet the requirements for quality described in the Water Licence. The goal of the AEMP re-evaluation was to provide a summary of changes and effects observed on the water quality of the lake overtime. The importance of an effect was calculated by comparing water chemistry in different areas in the lake to background values (values which are considered "normal" for Lac de Gras) and Effect Benchmarks (similar to chronic or long-term water quality guidelines) and reviewing trends to see if amounts were higher or lower over time. Background values for Lac de Gras are those that fall within what is called the "normal range". The normal range describes the range of natural differences that are found within the chemistry a lake that hasn't been impacted by development. An amount that is greater than the normal range is not considered normal for Lac de Gras, but it does not mean that it is harmful. Effect Benchmarks (similar to water quality guidelines) are a better measure when a chemical may be harmful to animals that live in the water. Concentrations of total dissolved solids, chloride, calcium, magnesium, potassium, sodium, and sulphate in Lac de Gras were greater than the normal ranges in both the ice-cover and open-water seasons and are generally increasing over time. Molybdenum and strontium were also found in Lac de Gras at concentrations above the normal range, particularly in the near-field and mid-field areas. This increase matches up with the amounts of these chemicals we measure in the mine's treated water discharge.

Construction of the A21 Dike occurred between 2015 and 2017 and dewatering of the dike occurred during the 2018 reporting period. While there was a noticeable effect in the quantity of sediment-related variables in the region of the A21 dewatering during 2018, there was no dike effect evident for any water quality variable in 2019, indicating that effects from the A21 construction and dewatering have not persisted in Lac de Gras. Most substances with Effects Benchmarks had levels that were consistently below Effects Benchmarks at the area where the treated mine water discharges into Lac de Gras during the AEMP monitoring period from 2002 to 2019.

The sediment quality component of the AEMP measures chemicals in mud at the bottom of the lake. Eighteen chemicals measured in sediment from 2007 to 2019 had greater average levels in the near-field area compared to the far-field areas for at least one year, but none of these had levels above guidelines for protecting plants and animals that live in or near the sediments in 2019. Two sediment-related substances have shown an increasing trend in recent years in the near-field area, but their levels are well below guideline recommendations.

Nutrient levels throughout Lac de Gras continue to remain low. Chlorophyll *a* (which uses sunlight to help plants in the water grow) and plankton (small plants and animals that live in the water) show effects related to increased nutrients closer to the mine. Total phosphorus and chlorophyll *a* concentrations have decreased in recent years, though levels in both were higher closer to the mine. Chlorophyll *a* concentrations were generally above the normal range in all years except in 2019. Total nitrogen levels have increased in all areas of Lac de Gras, with greater increases seen further from the mine and at the outlet of Lac de Gras near the mouth of the Coppermine River. Nitrogen concentrations have been above the normal range in over 20% of the lake since 2008. The extent of lake area affected was greater than 20% from 2007 to 2019, with 100% of lake area affected in 2019 during open-water and 85% of lake area affected during the ice-cover season. The area with greater amounts of chlorophyll *a* increased between 2007 and 2016 to over 40% of lake area, however, more recently, the affected area decreased with only 0.1% of the lake area affected in 2019. The EA predicted that phosphorus concentrations would not exceed 5 micrograms per litre in more than 20% of the area of Lac de Gras. So far, this prediction has been exceeded twice during the ice-cover season (2008 and 2013), but it has never been exceeded during the open-water season..

Relationships between chlorophyll *a*, nutrients and total dissolved solids were examined. The results of this monitoring component and the Plankton component agree and indicate mild Mine-related nutrient enrichment in the eastern part of Lac de Gras.

The effect of nutrient inputs from Mine-related falling dust in Lac de Gras was reanalyzed for this summary report. The overall conclusion from dust and biological monitoring under the AEMP is that there is no indication that nutrient amounts and biological (living plant and animals) communities are measurably impacted by falling dust on top of the enrichment effect resulting from the Mine effluent discharge.

The plankton component of the AEMP evaluated whether there were any changes happening to the tiny plants and animals that live in the water in Lac de Gras. Changes in plankton can affect fish in the lake because fish eat them, and changes in plankton can happen before fish are affected. Differences

in the plankton communities between areas closer to and further from the mine have been seen every year between 2007 and 2016. Conditions in Lac de Gras are suitable for growth of healthy plankton communities. Overall, the changes to plankton communities in Lac de Gras continue to reflect the increase in nutrients closer to the mine.

The benthic invertebrates component of the AEMP looks at whether the treated mine water put back into Lac de Gras has caused changes over time in the numbers and types of small bugs that live on the bottom of Lac de Gras. Benthic invertebrates include snails, clams, worms and insects. These bugs are food for fish and changes in the numbers and types of them can eventually cause changes in the numbers and types of fish in the lake. Effects of nutrient addition have also been observed for the bugs on the bottom of the lake. This enrichment effect has resulted in larger numbers of invertebrates in areas closer to the mine in some years, though populations generally stayed within their normal ranges since 2012.

Slimy Sculpin , which is a small fish that lives and stays in small local areas, who live close to the mine (i.e., in the near-field area) were relatively small and had smaller livers than fish captured further from the Mine (i.e., in the far-field area). These fish were similar in size to those caught in previous years and this difference does not appear to be changing over time. This suggests differences in habitat may be responsible for these differences, rather than the Mine. For example, water temperatures were cooler in the near-field area than the far-field area and this may have caused fish to grow more slowly in the near-field area. In general, while there are some small differences in fish size, fish are healthy overall, and can grow and reproduce.

A fish salvage program in the area of the A21 dike occurred in 2015 and 2016 during the open-water season. The main goals were achieved for program: local communities were engaged and actively involved in the fishing and processing effort, and fish were successfully transferred to Lac de Gras. Of the 309 fish captured, 148 fish were transferred and released live into Lac de Gras. The total catch of fish removed from the A21 area was less than predicted. As a result, only a few fish could be distributed to the local communities. A possible explanation for the observed fish density is that the dike perimeter remained open to the rest of Lac de Gras for an extended period prior to completion of the rock dike in 2016, allowing fish the opportunity to leave the construction zone and move to the main body of the lake. As a result, only a small percentage of the fish population that would have originally been present remained isolated within the dike perimeter.

The weight-of-evidence (WOE) section of the AEMP combines the sections of the AEMP report that describe the quality of treated mine water, nutrient levels, lake bottom sediment quality, tiny plants and animals in the water, bugs and invertebrates that live on the lake bottom, and fish health. The WOE attempts to describe the overall health of the lake when all these things are considered together. Statistics were used to estimate how strong the evidence is for increasing nutrient levels or toxic effects occurring in Lac de Gras from 2007 to 2019 (Figure 6). It takes a significant amount of evidence to say confidently that changes to Lac de Gras are occurring, and that they are influenced by the mine. The WOE determined that it is likely that nutrient level increases in Lac de Gras overtime are related to mine effluent, and that there is very little evidence to say that there are toxic effects occurring. This analysis will next be completed as part of the 2020-2022 AEMP Re-evaluation report.

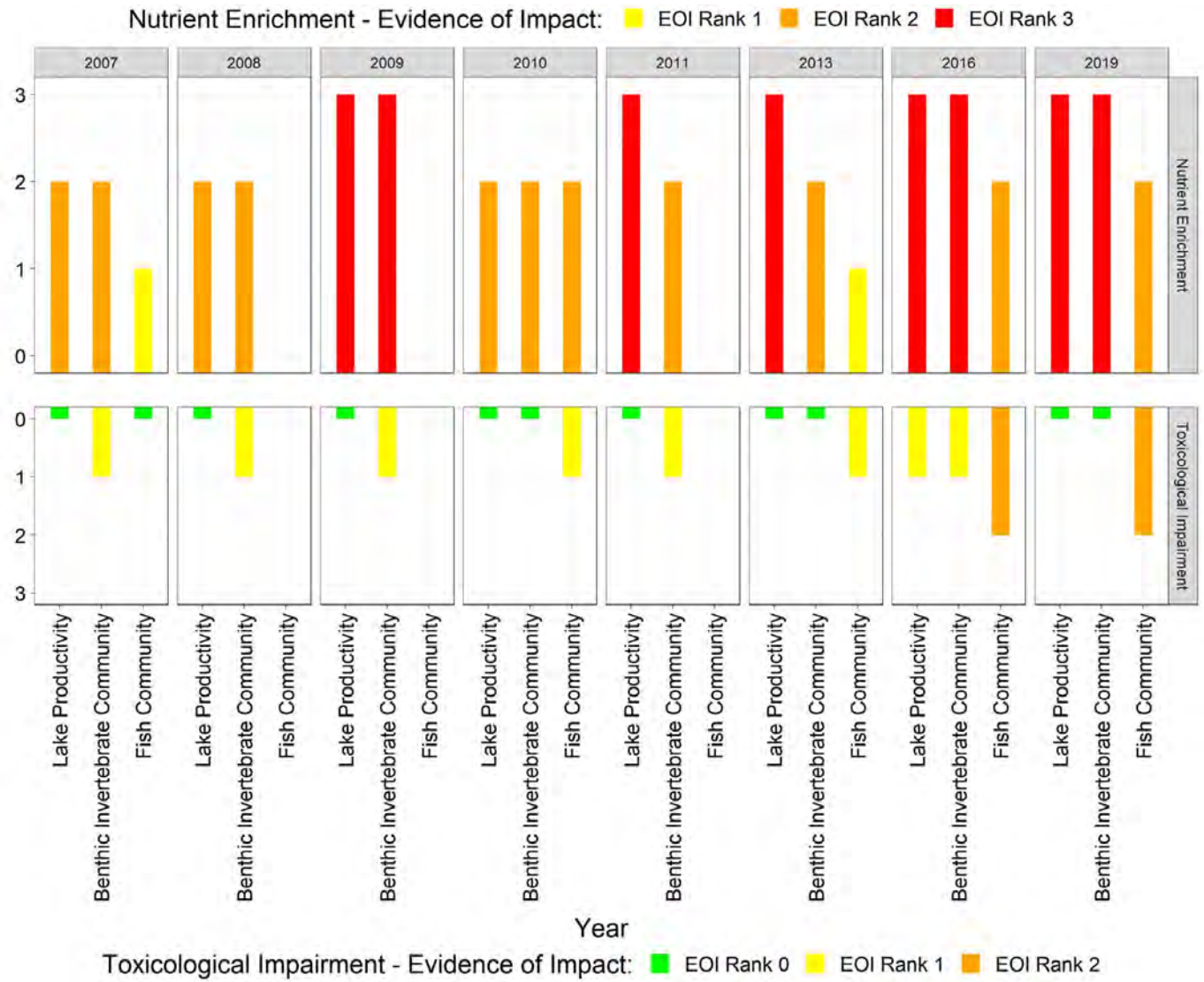


Figure 6 2007 – 2019 weight of evidence summary.

2019 Observations:

No Action Levels were triggered in 2019 for the eutrophication indicators (nutrients), benthic invertebrate community and plankton.

Sixteen water quality parameters (e.g. minerals and metals) triggered Action Level 1 (out of a total of 9 Action Levels) for mine effluent water quality, which is considered an early-warning indicator of effects in Lac de Gras. Of the sixteen water quality parameters, nine (9) also triggered Action Level 2 which is still considered early-warning and triggers a requirement to develop an AEMP Effects Benchmark (threshold criteria). None of the water quality parameters reached Action Level 3 (Table 6 below). Regulated effluent parameters remained below the limits stated in the Water Licence.

Table 6: Action Levels for 2019 AEMP.

Component	Variable	Action Level
Water Quality	Total Dissolved Solids - Ice Cover and Open Water	2
	Turbidity – lab - Ice Cover	1
	Calcium (dissolved) - Ice Cover and Open Water	1
	Chloride - Ice Cover and Open Water	2
	Magnesium (dissolved) - Ice cover	1
	Sodium (dissolved) - both	2
	Sulphate - open water	2
	Sulphate - ice cover	1
	Ammonia - open water	2
	Nitrate - Open Water	2
	Nitrate - Ice Cover	1
	Aluminum - Ice Cover	1
	Barium - Ice Cover	1
	Manganese - Ice Cover	1
	Molybdenum - Ice Cover and Open Water	2
	Silicon - Ice Cover	1
	Strontium - Ice Cover and Open Water	2
	Uranium - Ice Cover and Open Water	2
Sediment Quality	Total Bismuth	2
	Total Molybdenum	1
	Total Uranium	1
Fish	Fish	2

The 2019 effluent toxicity results indicated that the effluent discharged to Lac de Gras in 2019 was non-toxic.

Elevated concentrations of nutrients extending to various distances from the Mine (depending on variable and season) suggest the Mine is increasing nutrients in Lac de Gras. In 2019, the total phosphorus (a nutrient) concentration was below the normal range; therefore, the area of the lake affected by total phosphorus was 0%. The extent of effects from total nitrogen (a nutrient) was the entire lake area during the open-water season and 85% (or 484km^2) of the lake during the ice-cover season. The extent of effects on chlorophyll *a,* a good measure of the effects of nutrient enrichment, was estimated as 0.1% (or 0.5km^2) of the lake area.

Mine-related effects on bottom sediments in areas of Lac De Gras near the mine (Near Field stations) were identified for some metals and nutrients; however, none of the metal and nutrient concentrations triggered an Action Level higher than 2.

The extent of mine-related effects on phytoplankton and zooplankton was 0% and 29%, respectively, of the lake. The 2019 plankton and benthic invertebrate data do not suggest that adverse effects are occurring in Lac de Gras. Results are consistent with nutrient addition, as demonstrated by increase in small plants and bugs in the water column near the mine.

The 2019 slimy sculpin study showed the sculpin fish were healthy, in good physical condition, and reproducing. Some fish samples showed signs of parasites, specifically tapeworms, but this presence of parasites was not associated with closeness to the Mine. Fish tissue concentrations of metals from fish sampled in 2019 were similar to results since 2013, with the exception of molybdenum which exhibited an increase of 34%.

In 2019, a Special Effects Study (SES) was conducted in August to provide additional information to support the evaluation of potential dust-related effects on water quality and aquatic life. The conclusions of the study showed that dust fall is likely to have a slight influence on lake water quality and that it is not responsible for phosphorus (nutrient) loading to Lac de Gras. The treated water from the North Inlet Water Treatment Plant (NIWTP) was the main source for phosphorus loading. Based on the results of this study additional sampling effort in the lake to further investigate if dust has an impact on the lake is not necessary.

In 2019, nearly all concentrations (>99%) of variables in samples collected at the mixing zone boundary (where mine effluent is discharged to the lake) were within the relevant AEMP water quality Effects Benchmarks that are based on the Canadian Water Drinking Quality Guidelines for the protection of aquatic life and drinking water (Table 3-2 of AEMP 2019 Annual Report).

The Weight of Evidence (WOE) assessment is meant to rank impacts to Lac de Gras using the data collected by the AEMP. Impacts from different parts of the program (e.g. Fish Health) are rated as being: negligible/none (score of 0), low (1), moderate (2) or strong (3). They are also categorized as either 'toxicological' (harmful response) or 'nutrient enrichment' (increased nutrients). The overall WOE indicated that nutrient addition is happening in Lac de Gras, however there is nothing that

shows a toxic effect in Lac de Gras from mine operations. The WOE results for the 2019 AEMP are presented in the below table.

Table 7 Weight-of-Evidence Results, 2019 AEMP

Ecosystem Component	Rating
Toxicological Impairment	
Lake Productivity	0
Benthic Invertebrates	0
Fish Population Health	2
Nutrient Enrichment	
Lake Productivity	3
Benthic Invertebrates	3
Fish Population Health	2

2018 Observations:

- Nineteen water quality parameters (e.g. a metal or nutrient) triggered Action Level 1 (out of a total of 9 Action Levels) for water quality, which is considered an early-warning indicator of effects in Lac de Gras. These included many previously identified parameters and four additional ones that were added this year (i.e., ammonia, iron, lead and titanium) because concentrations at stations that may be affected by dust in the middle of the lake were slightly higher than the natural water quality for Lac de Gras. There were also 10 out of the 19 parameters also reached Action Level 2. This is still considered early-warning and triggers a requirement to develop an AEMP Effects Benchmark (threshold criteria). Most parameters that reached Action Level 2 already have a benchmark value, with the exception of calcium; Diavik will therefore develop a response for this. Regulated effluent parameters remained below the limits stated in the Water Licence .

  Elevated concentrations of nutrients extending to various distances from the Mine (depending on variable and season) suggest the Mine is increasing nutrients in Lac de Gras. In 2018, the total phosphorus concentration was elevated above the normal range in a very small area of the lake (i.e. 0.5%). The extent of effects from total nitrogen was around 40.8% of the lake area, and on small plants and bugs in the water column, the extent of effects was 16.8% and around 12.8% of the lake, respectively. The extent of effects on chlorophyll *a* was estimated as 14.7% of the lake area.

  The 2018 plankton data do not suggest that adverse effects are occurring in Lac de Gras. Results are consistent with nutrient addition, as demonstrated by increase in small plants and bugs in the water column near the mine.

2017 Observations:

- Sixteen water quality parameters showed an early-warning indicator of effects in Lac de Gras. Three additional variables (i.e., ammonia, lead and tin) were added to a list of substances of interest in 2017, because possible effects of dust were seen in lake areas a short way from the mine. The Regulated effluent parameters from the Water Licence were all below requirements.

  Elevated amounts of nutrients extending to various distances from the Mine (depending on variable and season) suggest the Mine is adding nutrients to Lac de Gras. In 2017, total phosphorus was above the normal range in 1.1% of the area of Lac de Gras. Effects on total nitrogen were seen in about 41.9% of the lake area. Effects on phytoplankton was 19.4%, while that for zooplankton weight was less than 0.6% of Lac de Gras. Effects on chlorophyll *a* was estimated at around 26.2% of the lake area.

  These results show that nutrient addition is happening in Lac de Gras, however there is nothing that shows a toxic effect in Lac de Gras from mine operations. There was no clear pattern to show if increased nutrients followed the plume of water discharged from the mine's water treatment plant. For zooplankton there was a clear pattern showing decreasing amounts further from the mine's discharge. The results also indicated that there are different types of species that are seen closer to the mine.

2014-2016 3-year Summary Report Observations:

- The treated water that is put back in the lake has been tested between 2002 and 2016 and it was found to be generally not toxic when tested with fish and tiny animals that live in the water column. Over 700 toxicity tests were done during this period. The treated water from the mine continues to meet the requirements for quality described in the Water Licence. The importance of an effect was calculated by comparing the water chemistry in different areas in the lake to the background values (what is considered 'normal' for Lac de Gras) and Effect Benchmarks (similar to a water quality guideline) as well as by reviewing trends to see if amounts were higher or lower over time. Background values for Lac de Gras are those that fall within what is called the "normal range". The normal range describes the natural differences that are found within the chemistry of a lake that hasn't been impacted by development. An amount that is greater than the normal range would not be considered normal for Lac de Gras, but it also doesn't mean that it is harmful. Effect Benchmarks (similar to water quality guidelines) are a better way to measure when a chemical may be harmful to animals that live in the water. Concentrations of total dissolved solids, chloride, fluoride, calcium, potassium, sodium, and sulphate in Lac de Gras were greater than the normal ranges in both the ice-cover and open-water seasons, and are generally increasing over time. This increase matches up with the amounts of these chemicals we measure in the mine's treated water discharge. Water quality results from 2015 and 2016 also showed the effects of the A21 dike construction on the water closer to the mine. Results from the west side of the lake show possible cumulative effects in this area because of the Diavik and Ekati mine discharges. However, the amount of these chemicals in the affected area of Lac de Gras remain

low and were not seen in all years of monitoring. The majority of chemicals with Effects Benchmarks had levels below those values from 2002 to 2016 in the area where the treated mine water discharge mixes with the lake water.

Nutrient levels remain low throughout Lac de Gras, though chlorophyll *a* (which uses sunlight to help plants in the water grow) and plankton (small plants and animals that live in the water) show effects related to increased nutrients closer to the mine. The amount of nitrogen has been above the normal range in over 20% of the lake since 2008, with up to as much as 84% of the lake area being considered as affected in 2016. The area with greater amounts of chlorophyll *a* has also increased between 2007 and 2016, to over 40% of lake area. The EA predicted that the amount of phosphorus would not exceed 5 micrograms per litre in more than 20% of the area of Lac de Gras. So far, this prediction has been exceeded twice during the ice-cover season (2008 and 2013), but it has never been exceeded during the open-water season.

The sediment quality component of the AEMP measures chemicals in the mud at the bottom of the lake. Seventeen chemicals measured in sediment from 2007 to 2016 had greater amounts in areas closer to the mine when compared to areas further from the mine. However, none of these were in amounts above guideline values for protecting plants and animals that live in or near the sediments.

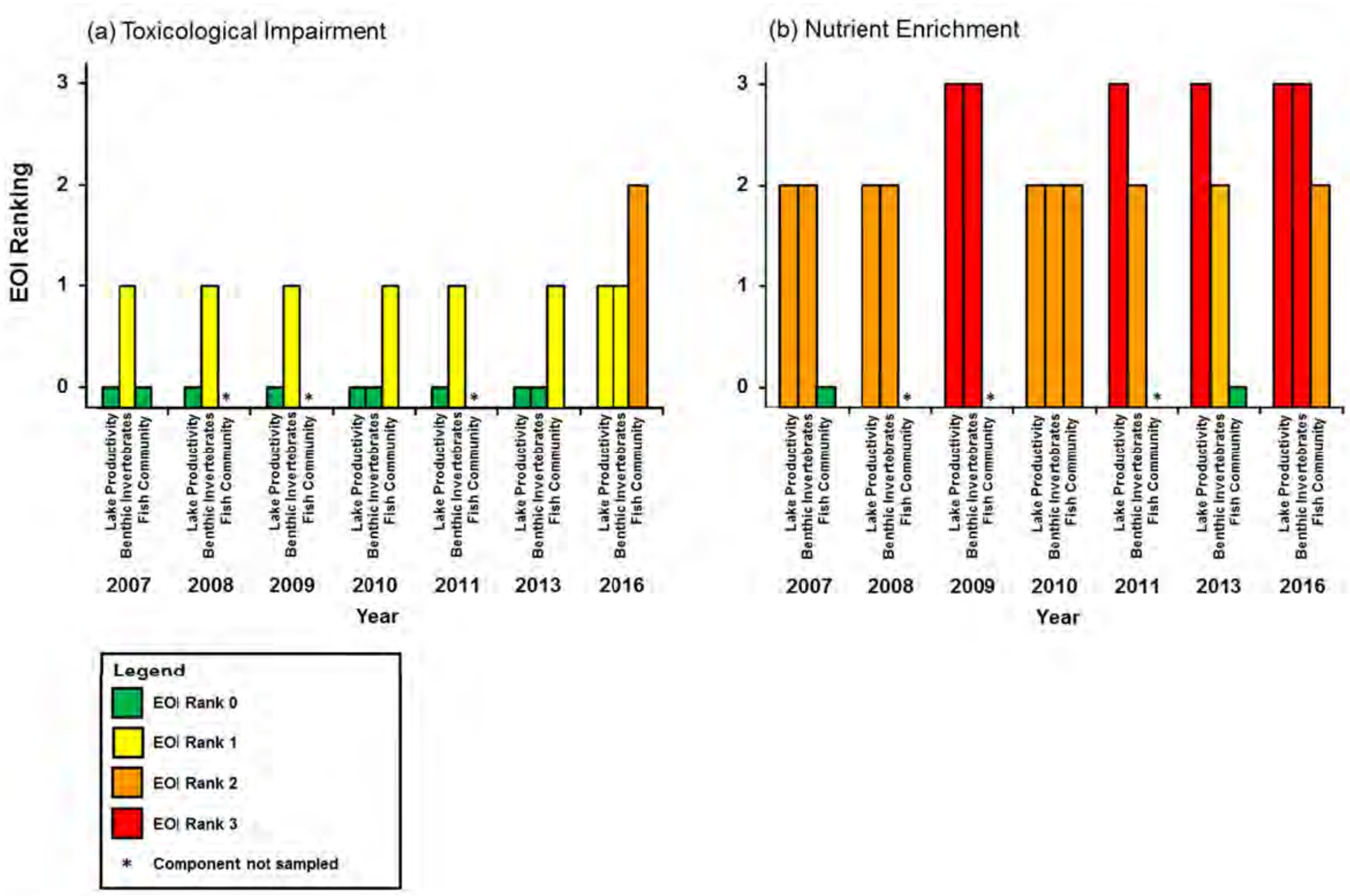
The plankton component of the AEMP evaluated whether there were any changes happening to the tiny plants and animals that live in the water in Lac de Gras. Changes in plankton can affect fish in the lake because fish eat them, and changes in plankton can happen before fish are affected. Differences in the plankton communities between areas closer to and further from the mine have been seen every year between 2007 and 2016. Conditions in Lac de Gras are suitable for growth of healthy plankton communities. Overall, the changes to plankton communities in Lac de Gras continue to reflect the increase in nutrients closer to the mine.

The benthic invertebrates component of the AEMP looks at whether the treated mine water put back into Lac de Gras has caused changes over time in the numbers and types of small bugs that live on the bottom of Lac de Gras. Benthic invertebrates include snails, clams, worms and insects. These bugs are food for fish and changes in the numbers and types of them can eventually cause changes in the numbers and types of fish in the lake. Effects of nutrient addition have also been observed for the bugs on the bottom of the lake, but recent results suggest a weakening of this effect.

Slimy Sculpin, which is a small fish that lives and stays in small local areas, that live close to the mine are generally smaller in size than those that live farther from the mine. The fish living close to the mine have stayed the same size over time, which suggests that the reason for the size difference is other factors (like fish habitat). For example, water temperature is colder closer to the mine and gets warmer farther from the mine; this might make some fish grow more slowly in

the near-field area. In general, while there are some small differences in fish size, fish are healthy overall, and able to grow and reproduce.

The weight-of-evidence section of the AEMP combines the information and conclusions of the sections of the AEMP report that look at lake and treated mine water quality, eutrophication indicators (signs of increased nutrient availability), sediment quality on the lake bottom, tiny plants and animals that live in the water, bugs that live on the bottom of the lake and fish health. It tries to summarize the overall health of the lake when all of these things are considered together. A process was used to estimate the strength (or weight) of evidence (proof) for nutrient addition or toxic effects occurring in Lac de Gras from 2007 to 2016 (Figure 7). Overall, there is strong evidence for nutrient addition in Lac de Gras and weak evidence that toxic effects are occurring. This will next be updated as part of the 2017-2019 AEMP Re-evaluation Report.



EOI = Evidence of Impact

Figure 7 Weight-of-Evidence Summary (2007-2016).

Updates to the AEMP Design (the document that describes what, when, where and how to sample the lake) and the Reference Conditions Report (the document that says the amount of each substance that is considered typical for Lac de Gras) were put forward in response to the results from the 3-year evaluation. This includes: studying mine-related effects by looking at trends across the lake (instead of comparing area results from near the mine and farther from the mine), changes to the number and location of sample points farther from the mine, changes to how Action Levels are evaluated and explained and minor updates to the list of what is tested for at the lab. The sampling schedule for tiny plants and animals that live in the water column has been changed to every year in the middle of the lake (it used to be once every three years), so that they can look at possible effects on tiny plants and animals in the main body of the lake on an annual basis.

2016 Observations:

- As noted in the 2015 EAAR, AEMP report submissions have been off schedule the past few years to address some information requested by the WLWB. As such, the 2016 EAAR includes AEMP updates for the 2015 and 2016 AEMP Annual Reports. The 2015 AEMP Annual Report was submitted to WLWB on 15 September 2016 and the 2016 AEMP Annual Report was submitted on 31 March 2017; both reports had not yet been approved by the end of 2016. Diavik developed a Reference Conditions Report (2015) that is used to calculate and record the expected range of values for water quality parameters so that these can be used for comparisons in AEMP data calculations going forward. It also provides reference area (natural background) levels for the lake. The 2015 and 2016 monitoring was based on the AEMP Study Design Plan, Version 3.5 (2014). This document describes the sampling program and actions to take in response to findings. Diavik submitted an updated version of the AEMP Study Design Plan (V4,) and the Quality Assurance Project Plan (V3, the document that describes the care taken in field, lab and data analysis procedures to provide reliable results) to the WLWB in July 2016. Approval of these documents was still pending at the end of 2016. Lastly, the 2014-2016 Re-evaluation Report, which summarizes AEMP findings to date on a 3-year basis, is due 6 months after approval of the 2016 AEMP Annual Report. Key results from the 2016 program are outlined below.

  Dust deposition rates in 2016 were higher than in 2015 because of A21 dike construction activities. Deposition rates were highest close to the Mine infrastructure and decreased with distance from the Mine. The effluent (treated water discharged from the water treatment plant) water quality limits in the Water Licence are often used as a comparison for snow water quality and the 2016 results were lower than those stated in the Licence.

  Mine effluent triggered Action Levels (which are considered an early-warning of possible effects in the area close to the mine) for 15 water quality variables, including turbidity, calculated total dissolved solids (TDS), calcium, chloride, sodium, sulphate, nitrate, aluminum, copper, lead, manganese, molybdenum, silicon, strontium, and uranium. Based on the amount of the following substances found in the treated mine water, eleven additional variables - total suspended solids (TSS), bismuth, chromium, cobalt, fluoride, iron, nitrite, thallium, titanium, vanadium, and

zirconium - were added to the list of parameters to watch for in Lac de Gras (also called Substance of Interest, or SOI). Action Levels, explained in the Design Plan, are triggered well before unacceptable effects could occur. Regulated effluent parameters were all below applicable effluent quality criteria (EQC) in the Water Licence. The 2016 effluent toxicity results indicated that the effluent discharged to Lac de Gras in 2016 was generally non-toxic.

Increased amounts of nutrients moved across the lake to reach various distances from the Mine (depending on the type and season), and concentrations of chlorophyll *a* were higher than the top of the normal range in areas close to the mine. This suggests the Mine is having a nutrient enrichment (increase) effect in Lac de Gras. In 2016, 6.5% of Lac de Gras was considered affected with respect to total phosphorus (TP) concentrations, the extent of effects on total nitrogen (TN) was 84.7% of the lake area and that for chlorophyll *a* was 43.7%. This triggered an Action Level response, as noted in the AEMP Design Plan, and a Response Plan is being developed.

The 2016 phytoplankton (tiny plants that float in the water) results show no signs of a Mine-related effect in Lac de Gras. However, zooplankton (tiny animals that float in the water) results suggest that changes are occurring in areas near the mine may be related to an increase in nutrients. Phytoplankton and zooplankton biomass (the total weight of these tiny plants and animals) was 13.0% and 0.5%, respectively, of Lac de Gras. The amount near the mine remained within the normal range of values expected for zooplankton and this tells us that the reason for the decrease is not likely to be contamination. An Action Level response was triggered because the amount of zooplankton close to the mine was lower than it is farther from the mine (the opposite of what would likely be expected) and DDMI plans to investigate the cause for this.

Nine sediment (mud on lake bottom) quality variables in the area near the mine were in amounts greater than areas far from the mine, including TN, bismuth, lead, molybdenum, potassium, sodium, strontium, tin, and uranium. These variables were added to the list of parameters to watch for in Lac de Gras. There are no Action Levels for sediment quality. Based on published studies and available sediment quality guidelines, concentrations of bismuth, lead, and uranium encountered in sediments near the mine are unlikely to contaminate species of plants and fish.

Differences in the benthic invertebrates (small bugs that live on the bottom of the lake) between the area close to the mine and those areas far from the mine demonstrated a slight response to increased nutrients. Greater densities (amount of bugs in a given space) were observed closer to the area where treated mine water flows back into the lake and there were a lot more midges in this area when compared to areas further from the mine. Species evenness (how close the number of each species is in different areas) was affected by the number of midges near the mine and this triggered an Action Level response to investigate the cause and confirm the effect. The average values for all of the measurements taken for lake bottom bugs close to the mine were within expected levels.

Overall, the weight of evidence evaluation showed more of an environmental response to increases in nutrients in Lac de Gras rather than signs of a contamination response. There appears to be a clear link between nutrient releases (i.e., TP and TN) to Lac de Gras from the

treated Mine water resulting in greater amounts of nutrients and lake productivity at areas closer to the mine. There was also a response that showed more and different distributions of bugs (midges) that can be linked to increased nutrients. Although there are differences between the areas closer to and farther from the mine for nutrients, there appears to be little effect on the ability of the lake to support and maintain its health.

2015 Observations:

Dust deposition rates in 2015 were higher than in 2014. Deposition rates were highest close to the project infrastructure and decreased with distance from the Mine. The effluent (treated water discharged from the water treatment plant) water quality criteria in the Water Licence are often used as a comparison for snow water quality and the 2015 results were lower than those stated in the Licence for all except one sample (which was taken from an incorrect location).

The treated water discharged back into Lac de Gras had an effect on 17 water quality parameters (total dissolved solids [TDS, calculated], turbidity, calcium, chloride, potassium, sodium, ammonia, nitrate, aluminum, antimony, chromium, copper, molybdenum, silicon, strontium, uranium and vanadium). The concentrations of these variables in the area near the mine were higher than those measured further from the mine (reference area). As a result, an Action Level response, explained in the AEMP Design Plan, was triggered. These are considered as early-warning signs of possible effects in the area close to the mine and are triggered well before unacceptable effects could occur.

Results from water quality sampling suggest that the Mine is causing a slight increase in nutrients, as also reported during previous years of monitoring. Higher amounts of total phosphorus (TP) and total nitrogen (TN) were observed in the areas near the mine when compared to areas further away from the mine. Less than 20% of the lake area had concentrations of chlorophyll *a* higher than the normal range. This also triggered an early-warning Action Level response in relation to nutrient levels.

The 2015 plankton (small plants and animals living in the water) monitoring results suggest that zooplankton communities in Lac de Gras are exhibiting a Mine-related effect in response to increased nutrients, consistent with the results for water quality. The 2015 plankton results provided no direct evidence of contamination, as all measurements taken were within normal levels. However, the total weight of small plants in areas near the mine was lower than those further from the mine. This triggered an Action Level response for possible contamination and the presence of this early warning change will be confirmed during the 2016 AEMP analysis.

2014 Observations:

As noted in the 2014 EAAR, the Annual AEMP report submission was delayed due to a request for further information from the WLWB. An updated version of the 3-year (2011-2013) Summary Report of the AEMP was submitted to the WLWB in April 2016, and the 2014 AEMP Annual Report was submitted on 31 March 2016. The development of the Reference Conditions Report for Lac de Gras is the main reason for these delays. It is a report that calculates and explains the background (natural) water quality and allows regulators to better determine the level of any

effect on the lake. As such, the updated 3-year Summary Report and the 2014 Annual report are summarized in this section. The 2015 Annual AEMP Report as well as Version 4 of the AEMP Design document are both due on 30 June 2016.

Water quality tests showed that there were 19 elements that had amounts over two times higher close to the mine when compared to samples taken further away in Lac de Gras. Eight of these were also above what is considered the normal range for their concentrations in Lac de Gras. Diavik is taking the appropriate actions outlined for such a response, as detailed in the approved Action Level Framework for water chemistry.

Nutrient addition to the lake, as measured by nitrogen, phosphorous and parts of algae concentrations, continued to show mild enrichment (an increase in nutrients) close to the mine compared to other areas farther from the mine. The small plants and animals that live in the water column (plankton) have increased in light of the increased nutrients, and tests do not show signs of harm (toxicological impairment) to the number or types of organisms that are present.

2011-2013 3-year Summary Report Observations:

Below is a summary of the updated findings for each of the monitoring activities included in the Aquatic Effects Monitoring Program, and it focuses on results from 2011 to 2013.

- The treated water that is discharged back into Lac de Gras has shown changes in quality over the years. For example, salts such as calcium and chloride have decreased since 2010. Some metals have increased over time (molybdenum, strontium), however most have decreased (aluminum, barium, copper, manganese) or stayed the same (chromium, uranium, antimony, silicon). The tested mine effluent has continued to meet water Licence criteria. Additionally, most of the effluent tested over the years has been non-toxic, with over 500 toxicity tests conducted since 2002.

- A total of 25 different chemicals had levels that were greater near the mine versus further away. Of these, 14 had higher levels than what is considered normal for Lac de Gras, but this does not necessarily mean that it is harmful. None of the chemicals tested were higher than what are called benchmark values, which measures when a chemical may be harmful to aquatic life. With the exception of chromium in 2004 and 2006, water quality has remained below the guidelines for protection of aquatic life throughout the life of the mine.

- Increased productivity (eutrophication) was a predicted effect for Lac de Gras because groundwater and treated mine water would introduce more nutrients into the lake. This is why monitoring nutrients (phosphorous and nitrogen) and algae growth (determined by measuring chlorophyll *a,* the green pigment in algae) is important to measure over time. Concentrations of nitrogen and have been higher than the normal range in over 20% of the lake since 2008 and chlorophyll *a* had the same results in 2009 and 2013.

Phosphorus was predicted not to go over 5 micrograms per litre in more than 20% of Lac de Gras; this level has only been exceeded twice during ice cover in 2008 and 2013, and never during open water.

Plankton (small plants and animals that live in the water column) are monitored because they are part of the food chain and changes in their population may be seen before any impacts are noted in fish. Since 2007, the amount of plankton has consistently been higher closer to the mine versus farther from the mine. Monitoring has shown that the mine is not having a harmful/toxicological effect on plankton. Changes to the type of plankton are being seen throughout Lac de Gras, suggesting that a natural change is also occurring. The number of small animals in the water (zooplankton) peaked in 2011 and has decreased since then, but has still been greater than the normal range for Lac de Gras since 2007. The amount of phytoplankton (biomass of small plants) was greater than the normal range in more than 20% of the lake in 2009 and 2011.

- Sediment samples showed that 15 metals were deposited onto the lake bottom near the mine in greater amounts than are present in areas of the lake farther from the mine. To date, the amount of metals present has stayed below the guideline that protects animals living in the lake bottom sediments. Concentrations of bismuth, lead and uranium increased near the mine from around 2002 to 2008, and it is thought that the construction of the dikes may have contributed to this increase. The amount of these metals in sediments has remained the same since 2008 and have not exceeded Soil Quality Guidelines.

- Benthic invertebrates (bugs such as snails, clams, worms and insects that live in the sediment on the bottom of the lake) are studied because they are food for fish. Since 2008, the number of bugs close to the mine has been higher than areas farther from the mine, but they are within the normal range for the lake. The types of these bugs have changed over the years, but similar to the findings with plankton, a change over time has also been seen in the reference areas and suggests that natural changes occur over time.

- Small (slimy sculpin) and large (lake trout) fish are sampled from Lac de Gras. Small fish are good to sample because they tend to live in one area. Large fish are good to sample because they are the top of the food chain and of value to community members. Results from small fish samples have consistently showed increased levels of lead, strontium and uranium even though water quality levels for these chemicals are not of concern. Outside of this, there have been no consistent trends in differences between small fish close to the mine when compared to those further from the mine. Lake trout flesh samples have shown an increase in mercury concentrations, but this has also been observed in fish from Lac du Sauvage, and other areas in the north. Traditional

Knowledge studies have shown that the taste and texture of the fish in Lac de Gras has not changed over the years the mine has been operating.

- A weight-of-evidence (refer to Definitions section) uses all of the above information in a quantitative process where professional scientists assess the strength of all the results in determining possible nutrient enrichment or harmful/toxicological impacts from the mine. There was strong evidence for nutrient enrichment and weak evidence for toxicological damage from 2011 to 2013 (Figure 8). The effect of nutrient enrichment in Lac de Gras extends over approximately 20% of the lake, as was predicted in the 1998 Environmental Assessment.

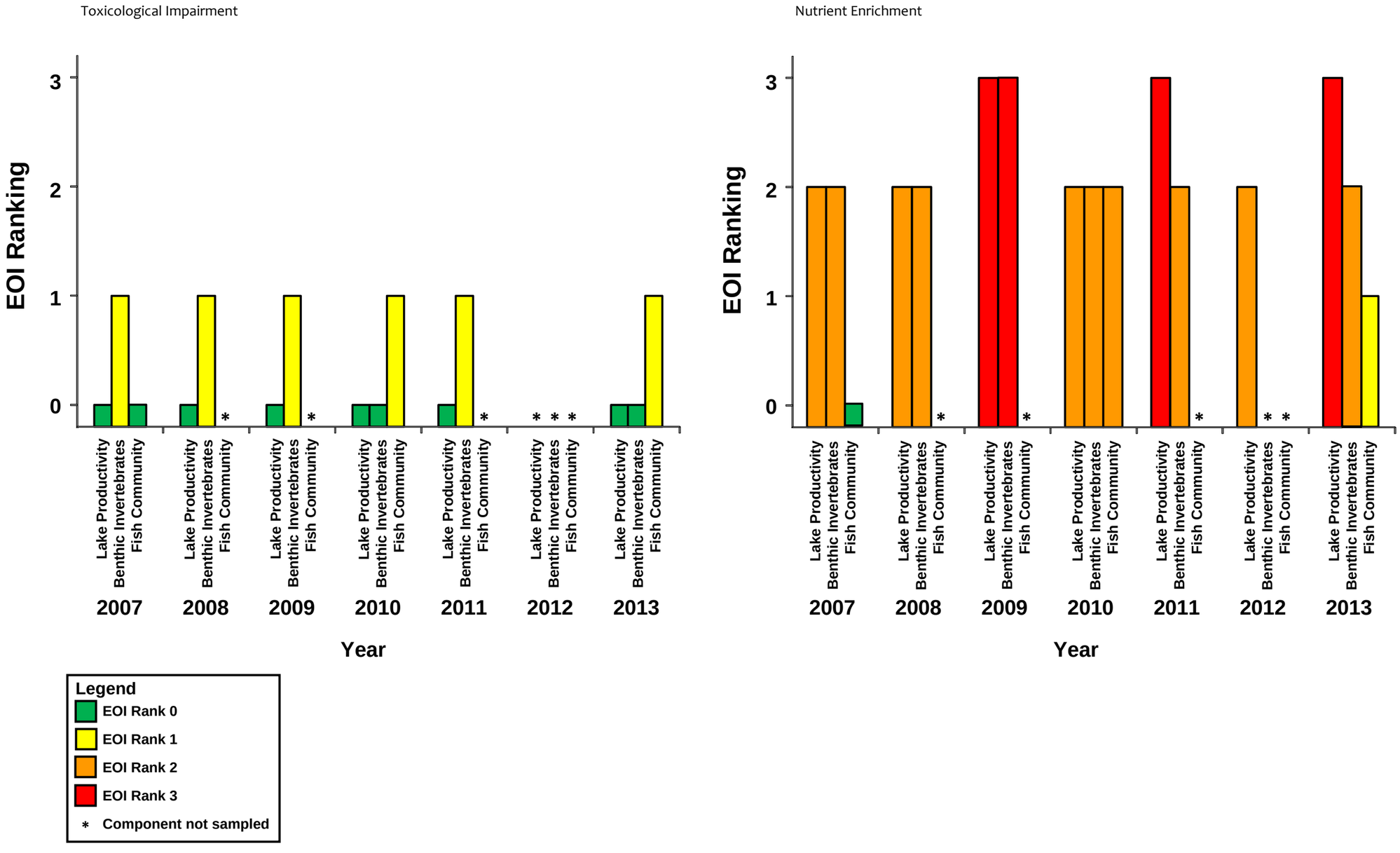


Figure 8 Overall Ranking of Effects (EOI = evidence of impact).

2013 Observations:

Revisions to the Aquatic Effects Monitoring Program design resulted in a more in-depth program being conducted on a 3-year cycle for the AEMP, and 2013 was a year where the majority of sampling requirements for the program were conducted. Overall, the program determined that nutrients (nitrogen and phosphorus) released into Lac de Gras from the treated mine water discharge continue to increase in Lac de Gras, near the East Island.

- Mine effluent had an effect on 15 water quality variables and the amount of chemical in each sample was highest close to the mine and lowered with increasing distance from the mine.
- Results relating to eutrophication indicators (chemicals and small plants that show early signs of increasing nutrients) suggest that the mine is causing an increase in nutrients in Lac de Gras as there were greater concentrations of some nutrients and small plants closer to the mine versus further from the mine. For example, algae (chlorophyll *a*) concentrations were higher than the normal range for Lac de Gras, and the higher amount of algae was found in over 20% of the lake. The approved AEMP (v3.3) has established an Effects Benchmark for chlorophyll *a* at a concentration of 4.5 µg/L; current results are below this value .

  The 2013 monitoring results for plankton communities (tiny plants and animals) in Lac de Gras suggest that there is a mine-related increase in nutrients because there was a difference in the amount and type of them in the exposure area (close to the mine) when compared to the reference areas (further from the mine). There was however no evidence of toxicological damage, so no Action Level has been reached.

- Effects of the mine discharge on bottom sediments (mud at the bottom of the lake) in the exposure area of Lac De Gras were evident for 13 metals, as areas near the mine had higher average amounts than those further from the mine. Of these 13 metals, three had average amounts that were higher than what would normally be found in the lake. When comparing these results to sediment quality guidelines, it is unlikely that the amounts found in Lac de Gras sediments would be harmful to fish and plants.
- Differences in the total amount of benthic invertebrates (small bugs that live on the lake bottom) were noted between the exposure area (close to the mine) and reference areas (further from the mine). This suggests an increase in nutrients, rather than a harmful effect, so no Action Level was reached. Benthic invertebrates are measured by density, which means counting the number of animals in a given area.
- The Weight of Evidence assessment is meant to rank impacts to Lac de Gras using the data collected by the AEMP, as summarized in the bullet points above and in the Fish section below. Impacts from different parts of the program (e.g. Fish Health) are rated as being: negligible/none (score of 0), low (1), moderate (2) or strong (3). They are also categorized as either 'toxicological' (harmful response) or 'nutrient enrichment' (increased nutrients).

Table 8: Weight-of-Evidence Results, 2013 AEMP.

Ecosystem Component	Rating
Toxicological Impairment	
Lake Productivity	0
Benthic Invertebrates	0
Fish Population Health	1
Nutrient Enrichment	
Lake Productivity	3
Benthic Invertebrates	3
Fish Population Health	1

- During 2013, a batch of preservative that is provided by an external lab and added to water samples prior to shipping was found to be contaminated. After investigation, a total of seven metals (cadmium, chromium, cobalt, iron, manganese, molybdenum, and nickel) were found to be in higher concentrations than normal when the contaminated preservative was used, starting in July 2013. Further tests were then done to determine which sample results were incorrect because of this contamination. These seven metals from a total of 114 specific samples (21 samples from 1645-18, 24 samples from 1645-19 and 69 samples from the open water AEMP) were removed from the 2013 AEMP and SNP datasets, and these values were also not used in any analyses.

2012 Observations:

The Aquatic Effects Monitoring Program was successfully revised before the 2012 monitoring season so only certain aspects of water quality and fish monitoring were conducted. Overall, the program determined that nutrients (nitrogen and phosphorus) released into Lac de Gras from the treated mine water discharge are causing some enrichment in Lac de Gras, near the east island. A Traditional Knowledge study on fish and water health was also conducted as part of the AEMP during the summer of 2012.

Specific results of note from the 2012 Aquatic Effects Monitoring Program include:

- The analysis of effluent and water chemistry data collected during the 2012 AEMP field program and from relevant sites from the Water Licence SNP program stations indicated similar trends as observed in 2011, including an increase in arsenic and iron concentrations.
- Results to date of the plankton monitoring program, which examines changes in the amount, number and types of tiny animals (zooplankton) and algae (phytoplankton) that live in the water of Lac de Gras (LDG), indicate a pattern consistent with weak nutrient enrichment from mine effluent.

- Results of the eutrophication indicators component of the AEMP were similar. Based on the measured higher amounts of phytoplankton (chlorophyll *a*) and total phosphorus (TP) in the near field area relative to the reference areas, the observed enrichment effect has been given a "moderate" effect level designation. Zooplankton biomass resulted in a "low" effect level designation. More specifically, the area of the lake that has been affected was 24% of LDG for Chlorophyll *a* and less than 1% for TP in 2012.
- Toxicity testing on the treated mine water that is discharged back to Lac de Gras was done four times in 2012, as part of the SNP program in the Water Licence . No concerns or issues were noted with any of these tests.
- The results from the 2012 TK camp provided feedback on the context and process for sharing Traditional Knowledge as well as on the health of the fish and water in Lac de Gras. Camp participants noted the importance of TK's context, which is situated in, and interconnected with spirituality (e.g., human-animal transformations), codes of conduct (e.g., respect for and obedience of one another), and connection to the land, animals, and ancestors. Customs and practices (e.g., drumming, feeding the fire and water) and stories about the journey-based creation of unique landscape features (e.g., mountains, islands, and waterbodies) underscore this context of TK. So, the importance of the setting in which knowledge is shared and of being respectful to others becomes important to ensure proper transfer of knowledge.
- TK camp participants noted the environmental indicators that they use to assess water quality, such as condition of the shoreline and clarity of the water. Additionally, a tea test was used to assess water quality and participants noted that tea made from water of a poor quality results in film or scum on the surface of the cup. None of the water samples from Lac de Gras had this scum or film and all the samples tasted acceptable to participants.

2011 Observations:

Overall, the 2011 program determined that nutrients (nitrogen and phosphorus) released into Lac de Gras from the treated mine water discharge are causing mild enrichment in the bay east of East Island. Specific results of note from the 2011 Aquatic Effects Monitoring Program include:

- The analysis of effluent and water chemistry data collected during the AEMP field program and from relevant sites from the Water Licence SNP stations continued to show a low level effect on water chemistry in the lake resulting from the mine.
- Analysis of the number and types of small organisms that live on the bottom of the lake (benthic invertebrates) indicated a range of effect terms, from no effect to a high level effect, depending on what was analyzed. Low level or early-warning effects were detected for some species between the reference areas and exposure areas. Effects on total density (amount) and other benthic species density were classified as moderate

level. A high level effect was found for the amount of one species. Benthic invertebrate monitoring results show effects of mild nutrient enrichment.

- Results to date of a special study to examine changes in amount, number and types of tiny animals (zooplankton) and algae (phytoplankton) that live in the water of Lac de Gras show a pattern consistent with nutrient enrichment from the mine. Based on the measured higher amounts of algae (chlorophyll *a*) and total phosphorus near the mine versus farther from the mine, this effect remains at a "moderate" level effect designation. Higher zooplankton biomass near the effluent continued to result in a "high" level effects designation.
- Moderate nutrient enrichment from the mine water discharge has been shown for 15.5% of Lac de Gras, based on the amount of algae and phosphorous measured in the lake. This is below the predicted level of 20%.
- Results of the Lake Trout study suggest that there has been a slight increase in mercury in Lake Trout muscle tissue since 2005. This increase is seen in both Lac de Gras and Lac du Sauvage. The increase in mercury from before the mine was built resulted in a low level effect classification.
- A technical analysis confirmed the nutrient enrichment effect and concluded that there continues to be strong evidence for a mild increase in lake productivity, and associated enrichment of the benthic invertebrate community, as a result of nutrient increases in Lac de Gras. There is some evidence suggesting low-level impairment to the small organisms on the bottom of the lake due to contaminant exposure but these findings have a high uncertainty because the link to contaminant exposure is not strong. The slight increases in mercury levels in fish tissue since 1996 have occurred in both Lac de Gras and Lac du Sauvage (upstream from the mine), and it is not likely that the increase is linked to mine operations. Diavik continues to monitor mercury levels in big and small fish in the lake, as well as monitoring for other possible sources of mercury. This helps to try and find out what may cause any increases that do happen and catch any possible issues.

2010 Observations:

Overall, the program determined that nutrients (nitrogen and phosphorus) released into Lac de Gras from the treated mine water discharge are causing mild enrichment in the bay east of East Island. Specific results of note from the 2010 Aquatic Effects Monitoring Program include:

- The analysis of effluent and water chemistry data collected during the AEMP field program and from relevant sites from the Water Licence SNP stations showed a low level effect on water chemistry in the lake resulting from the mine.
- Results of the sediment analysis did not identify conditions that are likely to affect fish, bug or plant life in the lake through enrichment or harm. Bismuth and uranium were, however, assigned "high level effects" designations as both areas near the mine and at least one

halfway down the lake had average concentrations greater than the areas farther from the mine. Measured levels of bismuth and uranium are unlikely to pose a risk to fish, bugs, or plant life.

- Analysis of the number and types of small organisms that live on the bottom of the lake (benthic invertebrates) indicated a range of effect terms, from no effect to a moderate level effect, depending on what was analyzed. Low level or early-warning effects were detected based on statistical differences between the reference areas and exposure areas. Effects on total density and other benthic species density were classified as moderate level. Early-warning/low level effects were detected for the amount, distance, and density of one species. Benthic invertebrate monitoring results are indicative of nutrient enrichment.
- A study was completed in 2010 to determine the approximate area the treated effluent (a "plume") covers in Lac de Gras. The plume extent was similar between summer open-water and winter ice-cover conditions, but concentrations near the discharge point were higher during winter ice-cover conditions.
- One possible explanation for the 2007 finding of elevated mercury in small fish (Slimy Sculpins) was increased mercury being released from sediments because of nutrient enrichment from the treated mine effluent. A sediment core study was done to look in to this and it showed that this explanation was not likely, based on the results.
- Results to date of a special study to examine changes in amount, number and types of tiny animals (zooplankton) and algae (phytoplankton) that live in the water of Lac de Gras indicate a pattern consistent with nutrient enrichment from treated mine effluent. Based on the measured higher amounts of algae (chlorophyll *a*) and total phosphorus near the mine versus farther from the mine, this effect has been given a "moderate" level effect designation. Higher zooplankton biomass near the effluent resulted in a "high" level effects designation.
- Results for the small fish study indicate a pattern consistent with an increased availability of food and nutrients in the sampling areas near the mine compared to the areas farther from the mine. Despite the moderate-level effects seen in the fish tissue chemistry for bismuth, strontium, titanium, and uranium, there was no evidence that tissue metals concentrations were negatively affecting fish health.
- Mercury levels in small fish (Slimy Sculpin) at sampling sites near the mine were lower than reported in the 2007 AEMP. There was no significant difference between samples taken near the mine and those taken farther away from the mine in 2010, most importantly in relation to tissue concentrations of mercury. The reason for the differences between the 2007 AEMP results for mercury and the 2010 results is unknown; however, a different analytical laboratory using slightly different methods was used in 2010.
- A technical analysis confirmed the nutrient enrichment effect and concluded that there is strong evidence for a mild increase in lake productivity, and associated enrichment of the

benthic invertebrate community and fish community, as a result of nutrient increases in Lac de Gras. There is little evidence of harm to lake productivity as a result of any contaminant exposure. Although there is some evidence suggesting potential low-level contaminant issues with benthic invertebrate and fish communities, these observations have a relatively high amount of uncertainty.

2009 Observations:

Similar to 2008, the 2009 Aquatic Effects Monitoring Program showed nutrient enrichment (increased levels of phosphorous and nitrogen in the water available for algal growth, where increasing algal growth is a sign of eutrophication, or increased lake productivity) in areas of the lake. Nutrient enrichment is the main change in Lac de Gras that leads to most of the other changes we see relating to the different animals that live in the water. Specific observations that were noticed in the 2009 data include:

- The analysis of effluent (treated water discharged back in to the lake) and water chemistry (quality) data collected during the 2009 AEMP field program and from relevant stations from the Water Licence Surveillance Network Program stations indicated an early warning/low level effect on water chemistry within Lac de Gras resulting from the Mine. This means that there is a difference between samples taken near the mine and those taken farther away from the mine, but is within the expected range. Some values may be slowly increasing over time, though, so it is important to monitor for any changes that may occur from one year to the next.
- Results of the sediment analysis did not identify conditions that are likely to affect aquatic life through enrichment or impairment. Most of the metals and nutrients measured in the sediment had an early warning/low level effect on sediment chemistry. However, bismuth was assigned a "high level effect" designation; this means that samples near the mine and at least one sample part way across the lake had average concentrations that were higher than those of the reference area at the other end of the lake.
- Analysis of the number and types of benthic invertebrates (small organisms that live on the bottom of the lake) indicated a range of effect designations, from no effect to a high level effect, depending on what was analyzed. Low level/early warning effects were detected based on significant differences between the reference areas further from the mine and the exposure areas near the mine in eight of twelve benthic invertebrate community variables compared (variables include things like the number of species found, whether one species was found more than another, number of organisms in a given area, number of midges, etc.). Total invertebrate densities, as well as two species densities (Pisidiidae and Heterotrissocladius sp.) were higher closer to the mine than the range measured in areas farther from the mine. Densities of Pisidiidae near the mine and part way across the lake were greater than the range measured in areas at the other end of the lake; for that reason, it was assigned a high level effect. These results relate back to the nutrient enrichment happening in the lake.

- Findings to date on a special study to examine changes in amount, number, and types of zooplankton (tiny animals) and phytoplankton (algae) that live in the water of Lac de Gras show a pattern linked to nutrient enrichment from mine effluent. Because there are higher amounts of phytoplankton (chlorophyll a/algae) and total phosphorus in areas near the mine compared with areas farther from the mine, this effect has been given a "moderate" level effect designation. Higher zooplankton biomass (the amount of small animals in an area) near the effluent resulted in an early warning/low level effect designation; this means that there is a difference between the areas closer to and further from the mine, but that it is within the expected range.
- A weight-of-evidence (WOE) analysis compares all the information collected (water quality, sediment quality, benthic invertebrates, etc.) to try and answer two questions:
    - Could damage to aquatic animals happen due to chemical contaminants (primarily metals) released to Lac de Gras?
    - Could enrichment occur in the lake because of the release of nutrients (phosphorus and nitrogen) from treated mine effluent?

    The weight-of-evidence analysis confirmed nutrient enrichment and concluded that there is strong evidence for a mild increase in lake productivity due to nutrient enrichment. There was not a lot of evidence of damage to aquatic animals as a result of contaminant exposure. The observation of potential low-level harm of the benthic invertebrate community has a fairly high amount of uncertainty.

2008 Observations:

Overall, the 2008 Aquatic Effects Monitoring Program determined that nutrients (nitrogen and phosphorus) released into Lac de Gras from the treated mine water discharge are causing mild nutrient enrichment in the bay east of East Island. Nutrients are essential to the growth of plants and animals in land and in the water. Adding nutrients to natural waters can result in increased production of plants or algae. Too many nutrients can cause environmental problems generally known as nutrient enrichment or eutrophication. These problems include increased oxygen consumption in the water by algae (fish need this oxygen too) and a reduction in the amount of light getting to plants at the bottom of the water body.

Special Effects Studies for mercury detection limits (measuring mercury at very low levels), chromium VI (a compound Diavik investigated because it could be a concern at lower levels compared to other forms of chromium) and trout fish tissue metals levels (based on previous AEMP studies that showed possible elevated level of metals in fish) were also completed. Other results of note from the 2008 Aquatic Effects Monitoring Program include:

- The analysis of effluent and water chemistry data collected during the 2008 AEMP field program and from locations around the mine site (from Surveillance Network Program) indicated a low level effect on water chemistry within Lac de Gras resulting from the mine.

- Results of the sediment analysis did not identify conditions that are likely to affect aquatic life through enrichment or impairment. Bismuth and uranium (metals) were however assigned "high level effects" designation as both near-field and at least one mid field area had mean (average) concentrations greater than the reference area (sites far away from the mine) range.
- Analysis of the number and types of small organisms that live on the bottom of the lake (benthic invertebrates) indicated a range of effect designations, from no effect to a high level effect, depending on the variable analyzed. Low level or early warning effects were detected based on differences between the reference areas (far away from the mine) and exposure areas (near the mine) in eight of eleven benthic invertebrate community variables compared. Density (number of individuals in a specified area) of the midge Procladius in the near-field area were greater than the range measured in the reference areas and was assigned a moderate level effect. Density of Sphaeriidae in the near-field and mid field areas greater than the range measured in the reference areas and was assigned a high level effect. Both results are indicative of nutrient enrichment.
- The fish liver tissue analyses from 1996, 2005, and 2008 has not indicated that there has been an increase in the concentration of metals, including mercury, in lake trout over that period and therefore a no effect classification has been assigned for lake trout usability.
- Findings to date on a special study to examine changes in amount, number and types of tiny animals (zooplankton) and algae (phytoplankton) that live in the water of Lac de Gras indicate a pattern consistent with nutrient enrichment from mine effluent. Based on the measured higher amounts of phytoplankton (chlorophyll a) and total phosphorus in the near field areas compared with the reference areas this effect has been given a "moderate" level effect designation. Higher zooplankton biomass near the effluent resulted in a "high" level effects designation.
- Mercury and chromium VI levels in the treated mine water discharge, both subject of special studies in 2008, were determined to be at concentrations below the best analytical detection limits available.
- The AEMP confirmed that there is a nutrient enrichment effect and concluded that there is strong evidence for a mild increase in lake productivity due to nutrient enrichment. There is negligible evidence of impairment to lake productivity as a result of any contaminant exposure. The observation of potential low-level impairment of the benthic invertebrate community has a relatively high degree of uncertainty.

Special studies on dust sampling frequency, mercury detection limits, and chromium VI are now complete.

2007 Observations:

- Effluent and water chemistry data collected indicated a low-level effect on water chemistry within Lac de Gras from the mine.
- Lakebed sediment chemistry data indicated a potential low-level effect for lead, and a potential high level effect for bismuth and uranium on sediment chemistry within Lac de Gras from mine activities, although benthic results suggest that sediment exposure concentrations are unlikely to pose risk to aquatic life.
- Benthic invertebrate analyses indicate a low-level nutrient enrichment effect on benthic invertebrates within Lac de Gras.
- The fish study indicated a pattern consistent with an increased availability of food and nutrients in near-field and far-field exposure areas compared to far-field reference areas. Elevated barium, strontium, mercury and uranium in slimy sculpin was assigned a moderate-level effect.
- Dike monitoring results revealed potential dike-related minor changes to water quality and concentrations of lead and uranium in sediment. Overall, analyses suggest benthic communities near the dikes are more likely responding to habitat variation than to changes in water quality or sediment chemistry.
- Eutrophication indicators showed a moderate-level nutrient enrichment effect within Lac de Gras, with the mine being a significant contributor to this effect.
- As with the previous year's results, despite the proximity of SNP Station 1645-19 to the effluent diffuser (60m), open-water and ice-cover water quality results remain within Canadian Council of Ministers for the Environment (CCME) Guidelines for the Protection of Aquatic Life.
- Ice-cover concentrations at SNP Station 1645-19 still tend to be higher and more variable than open-water concentrations. This is likely a result of increased wind driven lake circulation in the open-water, resulting in better initial dilution or mixing.

2005/2006 Observations:

Due to pending changes to the AEMP, data reports were completed for the 2005 and 2006 programs, however, a report of the analysis and interpretation was not submitted.

2004 Observations:

- As with the previous year's results, despite the very close (60m) proximity of SNP Station 1645-19 to the effluent diffuser, open-water and ice-cover water quality results remain within Canadian Council of Ministers for the Environment (CCME) Guidelines for the Protection of Aquatic Life.

- Ice-cover concentrations at SNP Station 1645-19 still tend to be higher and more variable than open-water concentrations. This is likely a result of increased wind driven lake circulation in the open-water, resulting in better initial dilution or mixing.
- As with the previous year, the results for several of the parameters indicated a possible change when the actual reason for the positive results was a low baseline statistic. There are also locations (LDG50) or parameters (nitrite at LDG46) where baseline data are not available and so the data analysis is not possible. Finally there are parameters where baseline detection limits have dominated the baseline statistic and could result in changes not being detected.

2003 Observations:

- Despite the very close (60m) proximity of SNP Station 1645-19 to the effluent diffuser, open-water and ice-cover results remain within CCME Guidelines for the protection of aquatic life.
- Ice-cover concentrations at SNP Station 1645-19 tend to be higher and more variable than open-water concentrations. This is likely a result of increased wind driven lake circulation in the open-water resulting in better initial dilution or mixing.
- The results for several of the parameters indicated a possible change when the actual reason for the positive results was a low baseline statistic. There are also locations (LDG50) or parameters (nitrite at LDG46) where baseline data are not available and so the data analysis is not possible. It is therefore recommended that in the future the data analysis method be modified so that the baseline references are from the combined mid-field and far field sites instead of each individual monitoring site. This change would reduce the number of false positives results.

2002 Observations:

- Water quality at all Lac de Gras monitoring locations, including sites immediately adjacent to effluent diffuser remained high.
- Increases from location specific baseline levels were measured for turbidity and suspended solids at 3 mid-field monitoring stations, however all remained within typical baseline values for the area.
- Predicted nutrient enrichment effects were not realized although phytoplankton biomass was determined to have increased over baseline at one far-field location but not at any mid-field locations.
- No trends or specific concerns were noted for zooplankton, benthic invertebrates and sediment quality, based on two sampling results.
- Snow chemistry results were all below discharge limits.

Previous Years Observations:

- Localized increases in turbidity, suspended solids and aluminum were measured due to dike construction.
- Water and sediment quality, zooplankton, phytoplankton and benthic invertebrate results were generally consistent with baseline, however some results, particularly benthic invertebrate numbers, showed larger year-to-year variability.

Fish

What effect will the mine development have on fish?

EA Prediction and Overall Status:

- ***On a regional scale the only effect on the fish population of Lac de Gras would be due to angling;***

Fish populations do not appear to have been impacted by mine operations.

- ***The effect of increases in metal concentrations in fish flesh would be negligible (i.e. metal concentrations in fish flesh would not exceed consumption guidelines (0.500 mg/kg for mercury);***

Since baseline, eleven (13) lake trout tissue samples have exceeded the .500 mg/kg for mercury and all were large fish (mercury is known to increase over time). An increased amount of mercury was detected in tissue from small fish (slimy sculpin) taken from the lake in 2007 but levels since then have remained normal.

- ***Mercury concentrations will not increase above the existing average background concentration of 0.182 mg/kg; and,***

The average mercury concentration in lake trout caught from Lac de Gras has increased above background concentrations of 0.182 mg/kg (year 1999 baseline) in some years but overall concentrations have not significantly increased in the last 24 years. Mercury in lake trout is naturally occurring as the Mine is not a source of mercury input to Lac de Gras. In general, larger and older fish naturally have increased mercury concentrations as mercury bioaccumulates in fish tissue. The instances of fish caught with mercury levels above baseline are likely a combined result of aging fish populations, and the bioaccumulation (builds up in tissue) and biomagnification (levels increase up the food chain) effects of mercury.

- ***Local effects due to blasting, suspended and settled sediment from dike construction, increase in metal concentrations around dikes and post-closure runoff.***

Effects due to blasting and construction were minimal based on monitoring and research results; post-closure runoff cannot yet be assessed.

Observations:

AEMP TK Study of Fish Health

The AEMP TK study includes up to 2 Elders, 1 youth and interpretation as required for each of the PA organizations and is conducted every three (3) years.

In 2021, the Traditional Knowledge camp brought together Elders and Youth from 5 PA communities to test the health of water and fish in Lac de Gras. Community members and Diavik staff set 3 nets and caught 19 lake trout for analysis. During the dissection of the fish for tissue collection, some community members were concerned over the quantity of parasites in the bodies of the fish and palatability (taste tests) tests were not completed.

DDMI presented scientific fish and water quality results at a verification session in Yellowknife in December 2021 and provided a historical summary of prevalence of parasites in fish caught at previous years camps and information on the parasites found at the 2021 camp. The prevalence of parasites observed in 2021 was comparable to several years past. DDMI will continue to work with the PA groups involved at the TK Camp on their feedback received to date.

Tissue samples collected for metals analysis showed that fish have normal levels of metals in their flesh. Two fish contained mercury levels slightly higher than the Health Canada Guideline (0.5mg/kg) (Figure 9). Of these two fish, one was the oldest caught at the camp, at 30 years old (based off of otolith ageing) and the other was suspected to be similar in age based off of size and weight but no otolith could be collected for LT 14 to confirm its age.

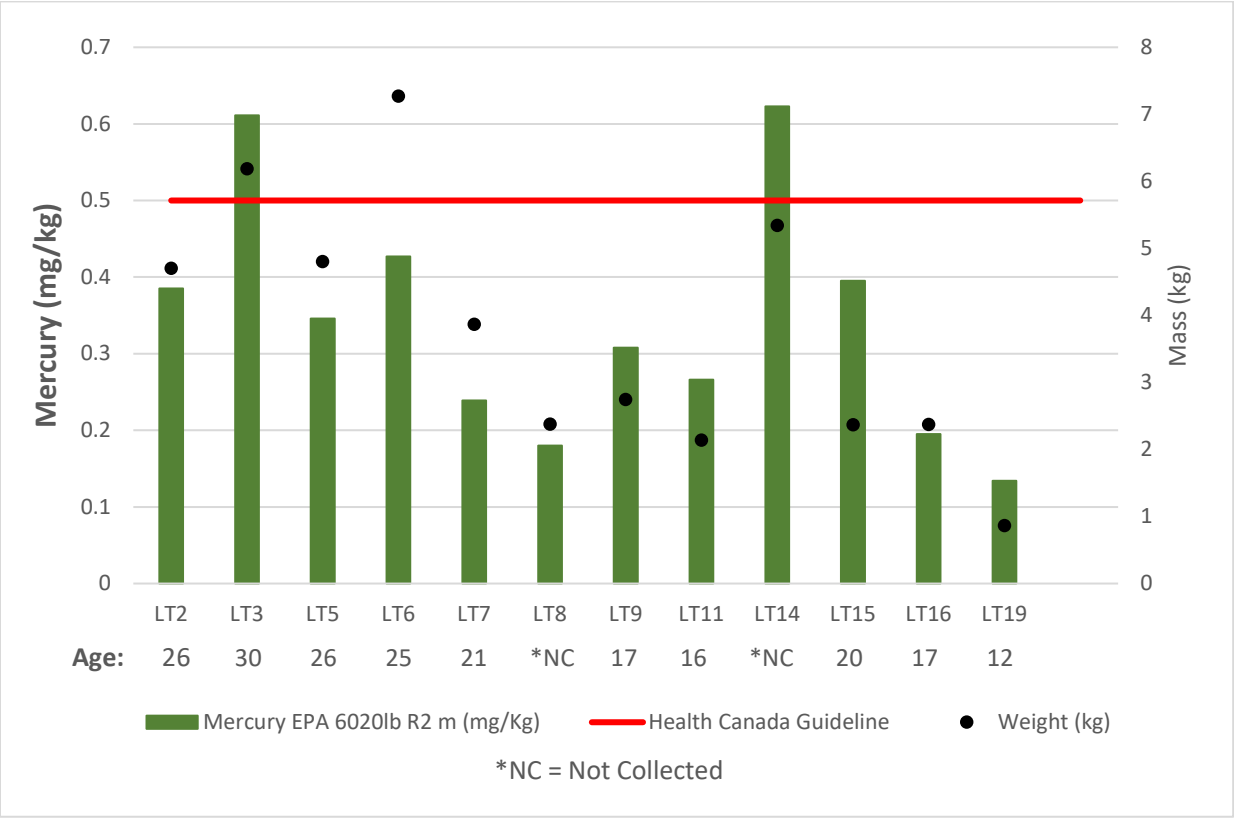


Figure 9 Mercury levels in fish caught at the 2021 TK Camp.

At the 2018 TK Camp, a total of 36 fish were caught from two locations (35 lake trout, 1 lake whitefish). When evaluating the fish during processing, people generally described the fish as healthy with typical gills, tissue, skin, scales, hearts, livers, pipes, eggs. Camp participants tasted four lake trout that they baked, boiled, fried, and grilled. The descriptions provided on the taste of each fish were positive and included: good, very good, healthy and typical. However, compared to previous years, participants suggested that the number of fish with cysts and worms (parasites) appeared to have increased. While some people recognized that parasites occur naturally and are present in fish within their communities, there was still an interest in trying to understand why fish in 2018 appeared to have more cysts than expected. During the Verification Session in December, results of documented cysts from previous years were compared with 2018 and did not show an increase. To date, systematic documentation of cyst presence was not done consistently; however, henceforth, more care will be given to tracking this indicator.

Camp participants reasoned that water quality was good by virtue of observing water clarity, movement, temperature, vegetation, fish activity and taste. Two sampling locations were selected, one near the lakeshore and another in deeper water, and tasting was carried out with consensus that the water is healthy. When asked, participants responded that they do not have any concerns or worries about water in Lac de Gras at this time.

Scientific samples to test for mercury in fish tissue were taken and results were compared against the Health Canada consumption guideline of 0.500 mg/kg of mercury in the edible portion of fish tissue (http://www.hc-sc.gc.ca/fn-an/securit/chem-chim/contaminants-guidelines-directives-eng.php); no samples exceeded this value during 2018 (Figure 10)

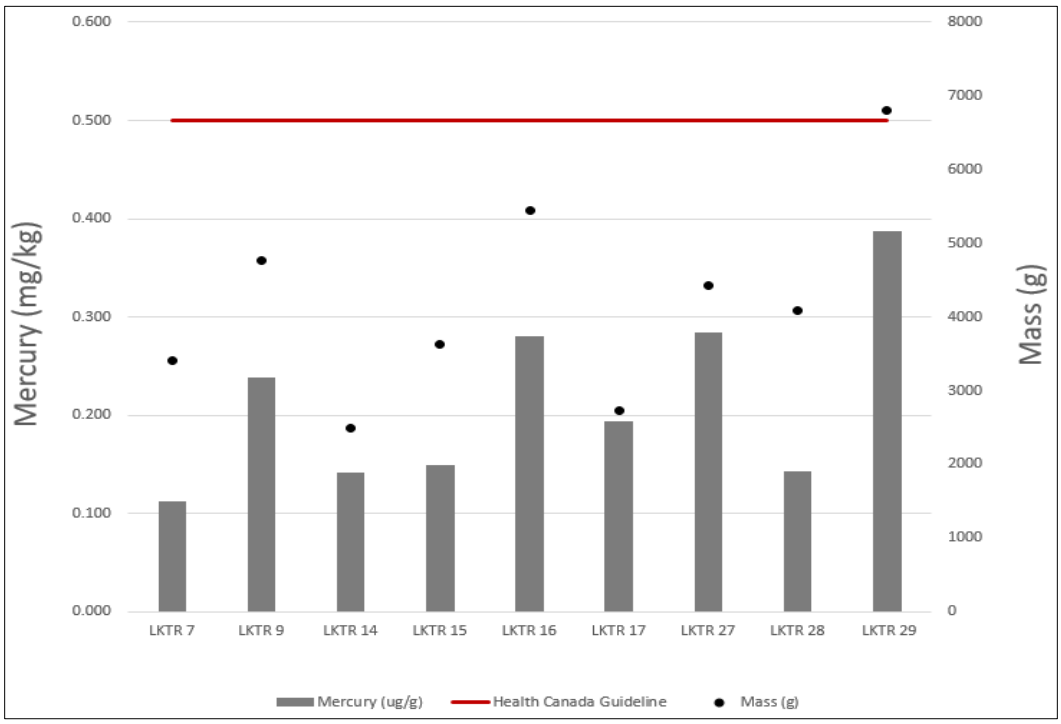


Figure 10: 2018 Lake Trout mercury levels (Hg), age, and weight.

- Overall, participants in the 2015 AEMP TK Study commented that the present status of the fish and water in Lac de Gras beside the Diavik mine is good and better than they expected given how close it is to industrial activity.

- In 2015, a total of 31 fish were caught and 20 were Lake Trout while 9 were Whitefish (lake and round). Eight (8) fish were selected for inspection using TK and science. Of all the fish caught, only one fish was considered 'sickly' by participants due to its heart being smaller than usual and the presence of cysts on its liver. Participants chose to include this fish as part of the fish tasting. Four fish were officially tasted for the palatability study and all scored a 1 or 2 rating (i.e. this fish tastes excellent (1)/good (2) and tastes better (1)/similar (2) to fish we usually eat).

- Scientific samples to test for mercury in fish tissue were taken for 21 fish in 2015. Results were compared against the Health Canada consumption guideline of 0.500 mg/kg of mercury in the edible portion of fish tissue (http://www.hc-sc.gc.ca/fn-an/securit/chem-chim/contaminants-guidelines-directives-eng.php). Two fish slightly exceeded this value; both were large (over 4 kg), old (33 and 28 years) fish and mercury is known to increase in the body over time (Figure 11).

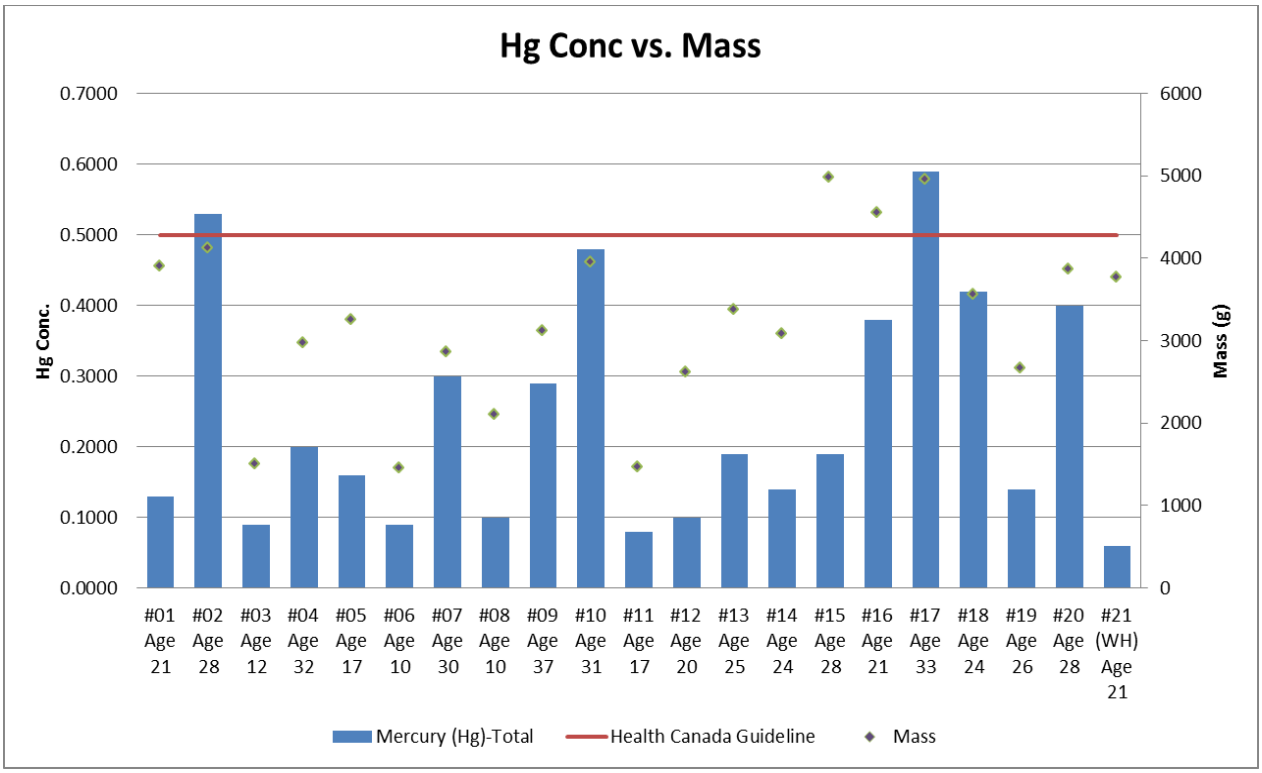


Figure 11: 2015 mercury (Hg) levels for fish tissue based on age and weight.

Participants from the 2012 Traditional Knowledge fish camp, conducted as part of the AEMP, noted that the status of the fish in Lac de Gras near the Diavik mine is good. Thirty-nine fish were caught and, of these, two fish were identified as being of poorer condition, noting that these fish were skinny and, in the case of one, had a larger head. Another fish was also observed as having some intestinal worms and was of poorer condition. Participants noted that this tends to occur in all fish populations and that the fish are not eaten. Those that were tasted as part of the palatability study resulted in scores of 1 (excellent for eating, looks better than fish usually caught) or 2 (good for eating, looks similar to fish usually caught) from all participants.

- Based on the results of the 2008 trout survey, it was determined that mercury levels were safe for consumption so a fish palatability study was done in 2009. Four fish were cooked for tasting using the same methods as previous studies, and 10 fish tissue and organ samples were taken for metals testing, including mercury. Each of the four fish that were cooked for the palatability study also had metals samples submitted for testing. Results for the metals levels in the fish tested during the 2009 fish palatability study showed mercury levels below Health Canada's guideline for consumption and that fish were okay for eating.

From 2003 until present, the fish from Lac de Gras (LDG) have tasted good according to participants in the community-based monitoring camps that are held in some summers. Scientific testing for metals levels in fish tissue and organs that were caught during these camps were also as expected - the results have showed no concerns.

M-lakes and West Island Fish Habitat Restoration

These programs were started in 2009 in order to make up for the fish habitat lost to dike/pit construction. This is a requirement from the Department of Fisheries and Oceans. Streams in these areas were improved to encourage fish use and movement between smaller inland lakes and Lac de Gras. Construction was finished in 2012 and monitoring of these areas continued through 2013. Some retrofits were completed after the first year of monitoring, as one type of flow structure created was ineffective in sustaining a suitable depth and was not being used by fish. After these were re-sloped and some additional boulders were added, flows and depths became suitable to support fish use and fish were detected in these streams.

Slimy Sculpin

- The next slimy sculpin survey will take place in summer of 2022.
- Small fish (slimy sculpin) sampled in 2019 in Lac de Gras were healthy and showed similar reproductive success and presence of internal and external abnormalities as in the 2016 fish sampling program. The presence of parasites, specifically tapeworms, varied in different parts of the lake, but was not associated with closeness of fish sampling area to the Mine. Average values of all examined variables (signs) of fish health were within normal levels. There were observed differences in length, weight and relative liver size of juvenile fish between the sampling locations closer to the Mine and reference areas (where Mine activities are not likely to be able to result in an impact), which may be a sign of a toxicological response as defined under the Action Level assessment and triggered Action

Level 2 in 2019. Factors contributing to similar effects in 2016 were determined to be inconsistent with a Mine effect, and were likely as a result of localized habitat variation among study areas in Lac de Gras. Fish tissue concentrations of molybdenum, silver, strontium and uranium in the sampling locations near the Mine (near-field areas) were significantly greater when compared to the sampling areas further from the Mine (far-field areas), and exceeded normal levels in samples collected from areas closer to the Mine; however, concentrations of these metals have remained relatively stable since 2013, with the exception of molybdenum which exhibited an increase of 34%.

- Small fish (slimy sculpin) sampled in 2016 were healthy, with few irregularities. Body condition and liver size were similar throughout the lake. All sizes of fish were captured in each area, which shows that reproduction is successfully occurring. Parasites (i.e., tapeworms) were common in each study area, but more prevalent in the fish caught closer to the mine. Average values of all measured fish health variables were within normal levels. Fish closer to the mine were 9% to 29% shorter and lighter than fish caught in areas further from the mine. Differences in habitat (i.e., water temperature, lake bottom sediments) or the difference in numbers of parasites between sampling areas in 2016 may account for, or contribute to, the difference in the size of fish between the areas closer to and further from the mine in 2016. Concentrations of some metals, such as molybdenum, strontium, and uranium, bismuth and tin, as well as calcium and phosphorous, were higher in areas closer to the mine and in the vicinity of A21 construction. These differences found in fish size may be a response to the chemicals present in fish flesh closer to the mine and as such, they triggered an Action Level response to investigate the cause and confirm the effect. Results of the fish health study seemed as though they could be the result of possible contamination; however, these were considered low-level and there was a lack of contamination in the small plants, animals and bugs, which would be expected to occur before effects are noticed in fish. The fish health responses for 2016 could represent normal changes that can occur within the lake, or they could be caused by other biological or physical factors.

- These small fish were sampled in 2013. Differences in the body size (length and weight) of the fish, as well as the condition factor (how 'fat' the fish is, or length in relation to weight), relative liver size, and relative gonad size were observed in fish caught near the mine compared to those in areas further from the mine. This demonstrates a potential toxicological response (a reaction to exposure). These observations are not consistent with the results of previous fish surveys in Lac de Gras or with the other findings of the AEMP that all indicated a nutrient enrichment response. Overall, the fish data indicate that an Action Level 1 (confirm the effect) has been reached, which means this study will be repeated in 2016.

- The small-bodied (slimy sculpin) fish survey was also done in 2010. Results showed that there was some change to size and condition of the fish that would be consistent with nutrient

enrichment (more availability of food and nutrients); this was found closer to the mine. There were some metals in the fish tissue that could have a moderate effect on fish, but there did not appear to be any impacts to fish health. Mercury levels in the fish tissue were lower than previously reported in 2007 and were within the expected range. A different lab was used to analyze the tissue samples, but the reason for the differences between the 2007 and 2010 studies is not known.

- An increased amount of mercury was detected in tissue from small fish (slimy sculpin) taken from the lake in 2007.

Lake Trout and Mercury

- A large-bodied fish tissue sample program was done on Lake Trout between 29 July and 10 August 2014 in Lac de Gras and Lac du Sauvage (LDS). Samples were taken using a non-lethal technique, and fish were also aged and weight and length of each were recorded. Except for one fish from LDS, all sample results, were below the Health Canada guideline of 0.50 mg/kg. Based on the amount of mercury in fish in 2014, Lake Trout in LDG and LDS would not be expected to have health concerns or pose a risk to human health.
- A large-bodied (lake trout) fish survey was done in 2011 to test mercury levels in fish. The results from this study showed that mercury levels are increasing slightly in both Lac de Gras and Lac du Sauvage. The average mercury concentration in lake trout from Lac de Gras was similar to that found during 2008. This number is a length-adjusted number because mercury concentrations increase with size and age. The lake trout in Lac du Sauvage were found to have average mercury concentrations higher than those found during 2008; this lake is upstream from Diavik. A low-level effect was given for fish mercury levels, though it doesn't appear to be linked to the mine.
- A special study was conducted in 2009 as a joint research program with Fisheries and Oceans Canada (DFO) to assist in understanding if mercury in the slimy sculpin tissue (identified in 2007) is related to the treated mine water discharge. Results from this study did not support the idea that higher levels of mercury may be because of increased mercury being released from sediments due to nutrient enrichment from the treated mine effluent.
- In 2008, Diavik conducted a study to further evaluate the elevated mercury in fish tissue, this time studying large-bodied fish (lake trout). The fish liver tissue analyses indicated that there is no concern relating to the concentration of metals, including mercury, in lake trout, but that some very large/old fish did show higher levels of mercury than smaller fish, as can be expected. A mercury study was also completed on treated mine water discharge and determined that concentrations are below the best analytical detection limits available.

Global concern over mercury levels has increased due to human activity and industrial processes. Increased levels have been noted in the past in small fish in Lac de Gras (Diavik 2007), as well as in other lakes located throughout the Northwest Territories (http://www.hss.gov.nt.ca/health/environment-and-your-health/mercury-levels-fish).

Other

In 2014 and 2015, a study was also done to see if big fish like Lake Trout move between Lac de Gras and Lac du Sauvage, as it was unclear if LDS could be used as a reference lake for the mercury monitoring program. To do this, 126 Lake Trout (120 from LDG and 20 from LDS) were tagged with a transponder to track their movement. Over the course of one year, 29 fish (23%) travelled between the two lakes by using the Narrows. The majority of the fish that moved between lakes were originally tagged near the Narrows, but nine of the fish travelled greater distances of up to 20 km away. Of the 29 fish that moved between lakes, 4 were detected only once, and the remaining 25 were detected multiple times. One fish was tagged moving between the two lakes 128 times.

Fish habitat utilization studies showed that lake trout continue to use both natural and man-made shoals near the A154 dike.

A Blasting Effects Study was done starting in 2003 and showed no effects on fish eggs.

Since 2000, no fish have been taken by recreational fishing from Lac de Gras by Diavik.

Other observations made include:

Sediment deposition rates measured during the construction of the dikes were below levels predicted in the Environmental Assessment.

In 2002, 2526 fish were salvaged from inside the A154 dike pool and released in Lac de Gras. 526 fish were salvaged from the North Inlet and released to Lac de Gras.

In 2006, 725 fish were salvaged from inside the A418 dike pool and released in Lac de Gras.

In 2017, 309 fish were salvaged from inside the A21 dike pool and released in Lac de Gras. Of the 309 fish captured, 148 fish were transferred and released into Lac de Gras. In total, 16.7 kg of fish were sacrificed and frozen for distribution to local communities, with 30 kg of fish transferred live into Lac de Gras.

Runoff and Seepage

There are locations where intercepted water and runoff are monitored at the Diavik mine site. There were historically 22 stations that included: 7 survey stations, 5 groundwater monitoring stations and 10 collection ponds. In 2013, 4 groundwater and all 7 survey stations were discontinued. Working with the WLWB, Diavik's program was changed in 2013, 2018 and 2019 to include the following monitoring locations, as identified in Figure 4:

- 2 freshet surface runoff locations;
- 1 groundwater well;
- 1 sump;
- 4 interception wells (within the PKCF dams);
- 10 collection ponds; and
- 7 A-Portal misclassified waste rock potential seepage monitoring locations.

Runoff is monitored and managed by DDMI staff and the Inspector is kept informed of any seepage issues, as well as the short- and long-term plans for monitoring and repairs. Seepage inspections are conducted weekly for site infrastructure to identify any potential seepage that may occur outside of, or from, storage and containment structures. These include the Waste Rock Storage Areas, water retention dikes and dams, as well as other rock stockpiles and areas constructed with mine/quarried rock.

In 2021, 3 instances of seepage were identified and are described below.

On May 20, 2021 ponded water at the base of the SCRP-WRSA was observed flowing into a small interior lake and flowed intermittently over 28 days. Short-term measures including a pump and temporary pipeline were put in place to redirect the ponded water towards drainage-controlled areas. Samples were collected every day flow was observed, and flow rates were measured to estimate total discharge. Water was last seen flowing on Jun 16, 2021, and approximately 3,436 m^3 of water flowed from the ponded water to the small interior lake. The water quality sample results were below EQC, and did not trigger an Action Level 1. The natural depression at the base of the WRSA-SCRP was infilled in July, 2021 to remove the potential for standing water adjacent to the rock pile. This will effectively reduce the possibility of a recurrence of this event. DDMI will continue monitoring the area for seepage during ice-free periods.

On November 7, 2021 Geotechnical crews conducting routine inspections discovered seepage flowing from the west dam of the PKCF onto the tundra. The seepage bypassed the existing trench along the base of the west dam which redirects seepage to collection pond 4. DDMI collected samples each day that flow to the tundra was observed. Water quality samples were below EQC and did not trigger an action level 1 response. On November 8th, DDMI installed a pump system to intercept the seepage and redirect it to pond 4. It is conservatively estimated that 213 m^3 flowed to the tundra. On November 19, DDMI began construction of a till berm on the downstream side of the existing trench, and installed a culvert to improve the flow of water to pond 4. This construction is an effective long-term strategy to avoid this seepage event occurring in the future.

On May 20, 2021 during spring snowmelt, flowing water was observed at seepage location 6 west of the A21 pit. The flow was sampled the same day, and water quality results were below EQCs and did not trigger an Action Level 1 response. This flow reported directly to the A21 sump which is pumped to the North Inlet, so it did not impact the receiving environment. No follow-up actions were required.

In July 2020, after a 1:100-year heavy rainfall event, flow was observed from the base of the WRSA-SCRP to a small interior lake over the course of 14 days and flowing water was observed at Seepage Location 6 (one of the 7 seepage monitoring locations of misclassified waste rock) for 3 days. All results from the WRSA-SCRP overflow were below maximum average EQCs and were also nontoxic to fish. Seepage Location 6 is located at the edge of the A21 pit and as a result of the topography of this location, the water reported to the A21 pit sump and there was no impact to the receiving environment.

Five (5) seepage samples were taken during 2012.

Results of DDMI runoff and seepage monitoring are summarized annually in a Seepage Survey Report submitted to the WLWB on March 31 every year.

Water Quantity

What effect will the mine development have on water quantity?

EA Prediction and Overall Status:

- ***Water supply to the mine is not limited and use of the resource will not cause changes in water levels and discharges from Lac de Gras beyond the range of natural variability.***

Monitoring and modelling results have not shown a significant change in water levels or discharges from Lac de Gras.

Observations:

The figure below shows the purpose and amounts of fresh water used from 2000 to 2021 (Figure 12). Diavik recycles water from the Processed Kimberlite Containment Facility and North Inlet as much as possible in order to reduce the amount of fresh water needed; in 2021, this amounted to 2.8 million m^3 of recycled water. The Water Licence allows Diavik to use a total of 1.28 million m^3 of Lac de Gras water per year; Diavik has always remained well below this amount and only used 1,032,966 m^3 in 2021. Use of water from Lac de Gras by Diavik is not causing changes in water levels beyond natural variability. Further information can be obtained from the Water Management Plan.

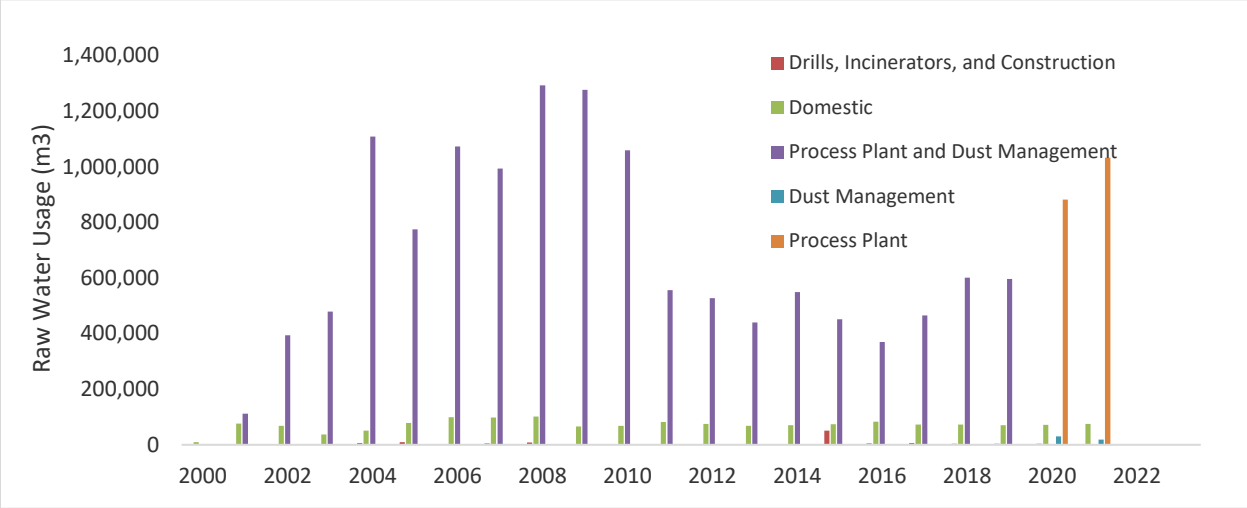


Figure 12 Freshwater use volumes from 2000-2021.

Climate and Air Quality

Will the mine development affect air quality around Lac de Gras?

EA Predictions and Overall Status:

- ***Ambient air quality objectives will not be exceeded; and***

Dustfall levels were higher than originally predicted during open pit mining but have remained below Alberta Objectives (used for comparison) and Total Suspended Solids (TSP) levels have generally remained below NWT Guidelines.

- **The mine will be a very minor greenhouse gas emission contributor to Canada's total emissions.**

Emissions are tracked and reported; levels remain relatively stable across years.

Observations:

As predicted, dust deposition decreases as one moves away from the mine. The rate of dust being deposited is affected by activities at the mine (for example, higher dust deposition is typically measured at the airport compared to the west part of East Island where there is very little activity) as well as by wind direction (because wind carries the dust). These trends have been measured each year since dust monitoring began in 2001. Dust suppressants were investigated for use on the airstrip, but the small runway size and nearness to the lake have prevented the safe use of such chemicals. Suppressants are used on the helipad, taxiway, parking lot and apron areas.

Total Suspended Particulates (TSP)

In 2019, DDMI determined that continued TSP monitoring was not a valuable component of the air quality monitoring initiatives at the Diavik mine. Diavik found that in the four years of TSP data collection (2013-2018), there were only three exceedances of the GNWT-ENR daily average TSP guideline (120 ug/ m^3). TSP was found to have limited applicability to the EAQMMP and AEMP because the primary pathway for fugitive dust to affect wildlife and plant health is through deposition on the land and water surface, which is not measurable with TSP, since TSP measures particles suspended in the area. Furthermore, TSP cannot be used as a tool to estimate dust deposition because the two measurements depend on different factors of dispersion and settlement and therefore, TSP does not provide an estimate of the potential effects on the receiving environment from fugitive dust in a meaningful way. The TSP results did not show a problematic level of TSP or any trends of TSP that would require adaptive management of the site. Visual identification of high-dust locations to determine when and where to apply mitigative actions (watering roadways and use of dust suppressant in approved areas) is the most successful and immediate form of air quality management. In addition, equipment reliability issues have required significant on-site and off-site maintenance programs that have impeded their availability and caused strain on Environment department resources.

DDMI would like to emphasize that it will still be continuing all remaining components of the EAQMMP that track items of community concern while continuing to provide valuable data that is utilized in the adaptive management of air quality on site; the EAQMMP Version 2 reflects these commitments. In addition, DDMI's ongoing Aquatic Effects Monitoring Program (AEMP) enables the monitoring and assessment of the effects of accumulation of project-related dust and air emissions on aquatic receptors.

- In July 2020, EMAB initiated a Ministerial investigation on the discontinuation of TSP monitoring at Diavik. As of September 2022, the GNWT-ENR's investigation is ongoing.
- During 2012, a revised air quality modeling and monitoring approach was used to update the prediction of deposition rates from the EA. An Air Quality Monitoring Program was finalized and implemented as part of this process and included two TSP monitoring stations; one located by the Communications building and the other on the A154 dike (Figure 13).

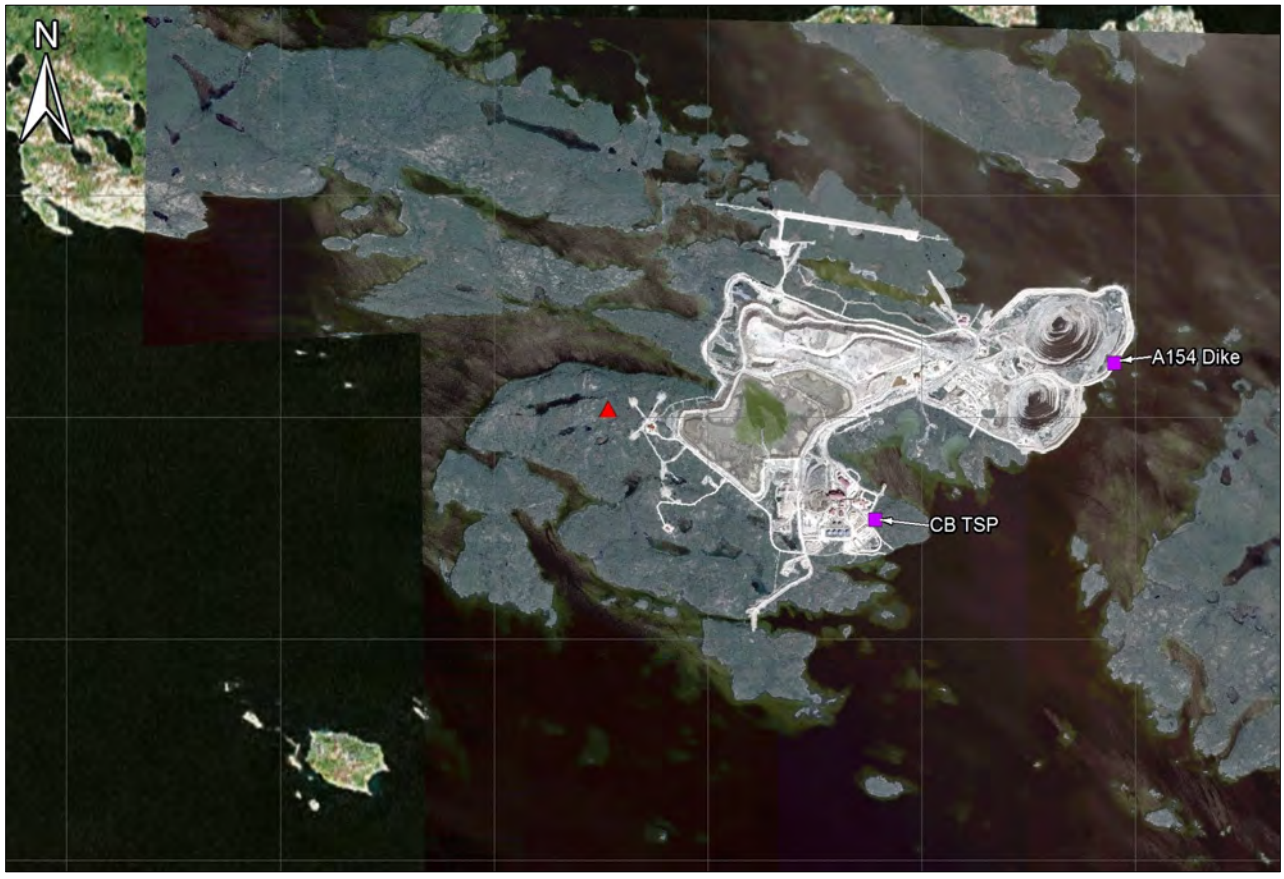


Figure 13 TSP monitoring station locations.

- From January to December 2018, TSP was measured at the Communications Building (CB) station. The TSP monitoring at A154 Dike station was suspended in 2018 due to issues with the equipment. There was no exceedance of the GNWT-ENR 24-hour average TSP guideline

(120 µg/m³) at the CB station (see Figure 14). The maximum daily average value was 23.2 µg/m³, and the minimum value was 0.3 µg/m³. The 2018 annual average TSP concentration at the CB station was 3.6 µg/m³ and was well below the annual GNWT-ENR standard (60 µg/m³). TSP monitoring at the CB station had valid daily data for 86% of the days in 2018.

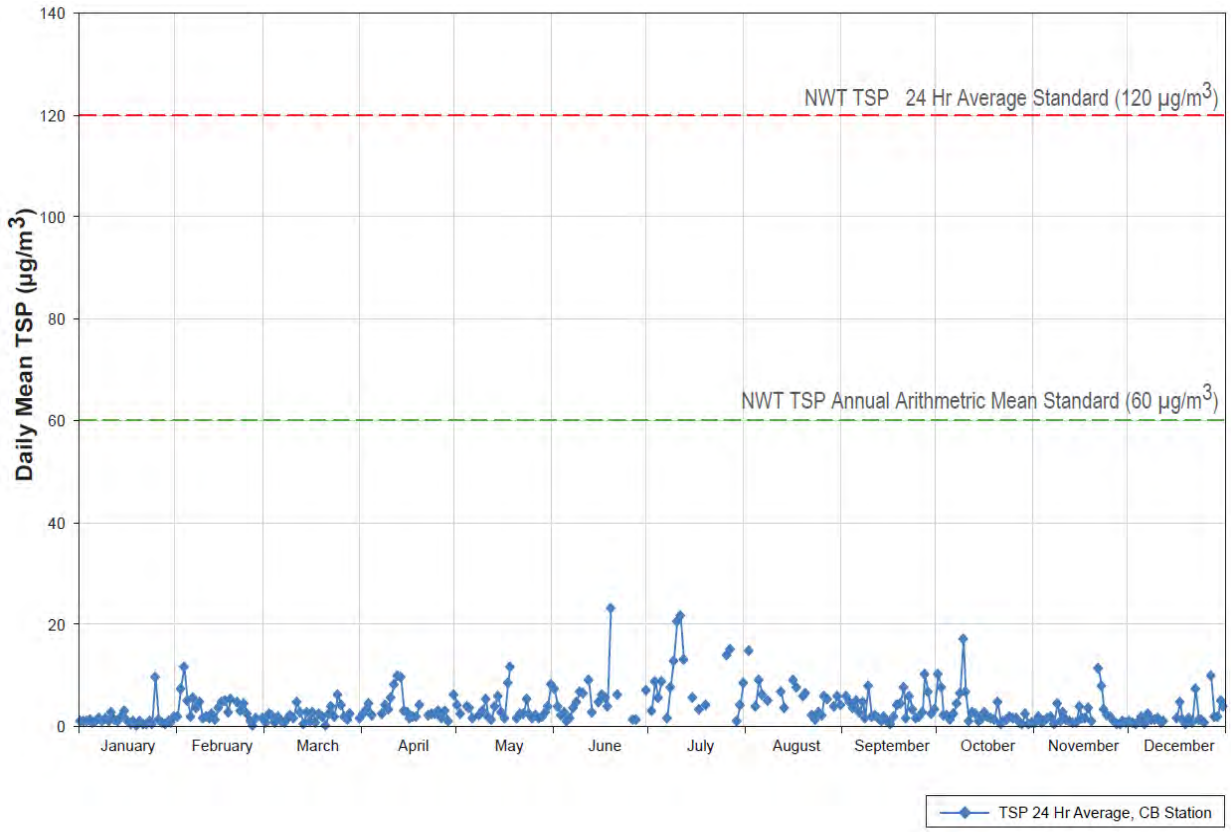


Figure 14 2018 Communication Building daily average TSP amounts.

- From January to October 2017, TSP stations had valid daily data for 71% (CB) and 69% (A154 Dike) of days. TSP levels at the CB TSP station remained below the GNWT ENR 24-hr standard of 120 micrograms per cubic meter (µg/m³), and 4 samples were above the GNWT-ENR 60 µg/m³ annual standard (Figure 15). The max daily mean was 97.9 µg/m³ and the minimum daily mean was 0.5 µg/m³ and the annual average was 9 µg/m³. The A154 station showed one sample (241.1 µg/m³) above the GNWT-ENR 24-hr standard and 4 above the GNWT-ENR annual standard (Figure 16). Elevated TSP concentrations were measured by both stations from August 13 to 15 as forest fire smoke was observed at the Mine site on these dates. The minimum daily mean was 1.0 µg/m³ and the annual average was 9.9 µg/m³. The 2017 results agree with Diavik's prediction that there would be up to two (2) exceedances of the 24-hr standard per year.

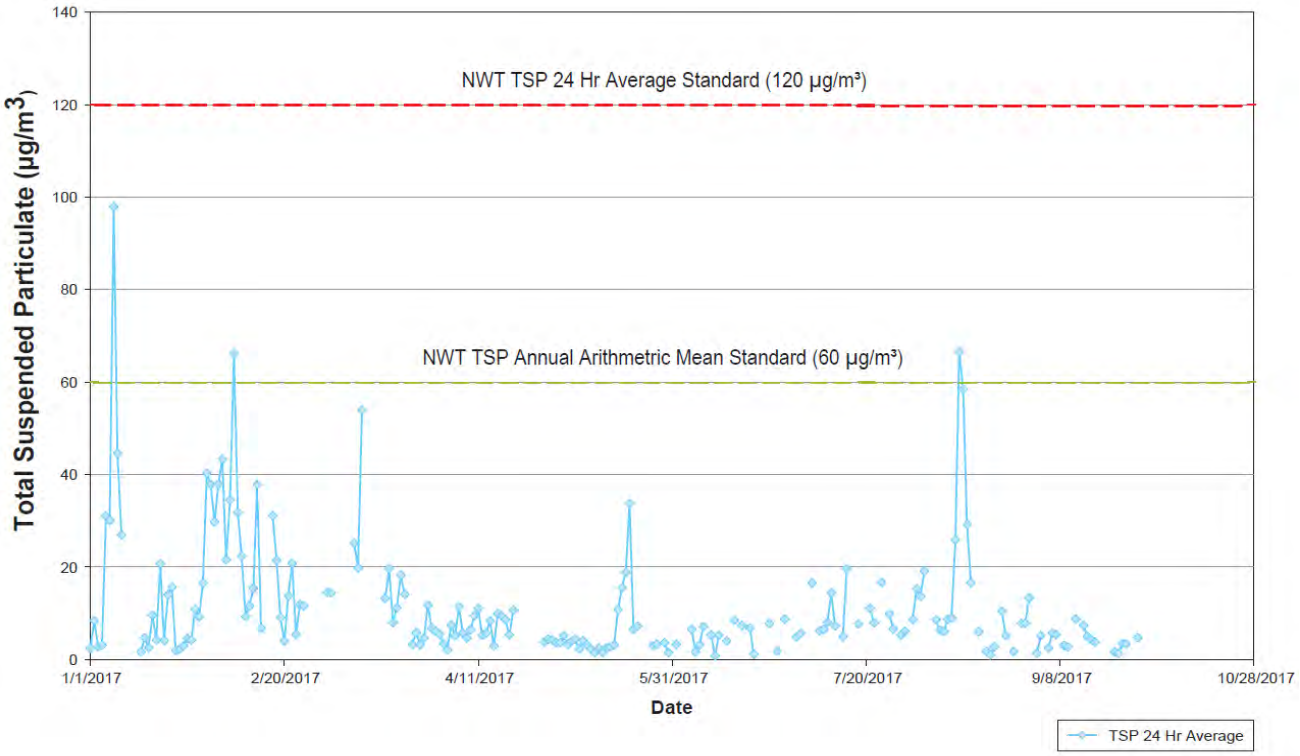


Figure 15 2017 Communication Building annual 24-hr TSP amounts.

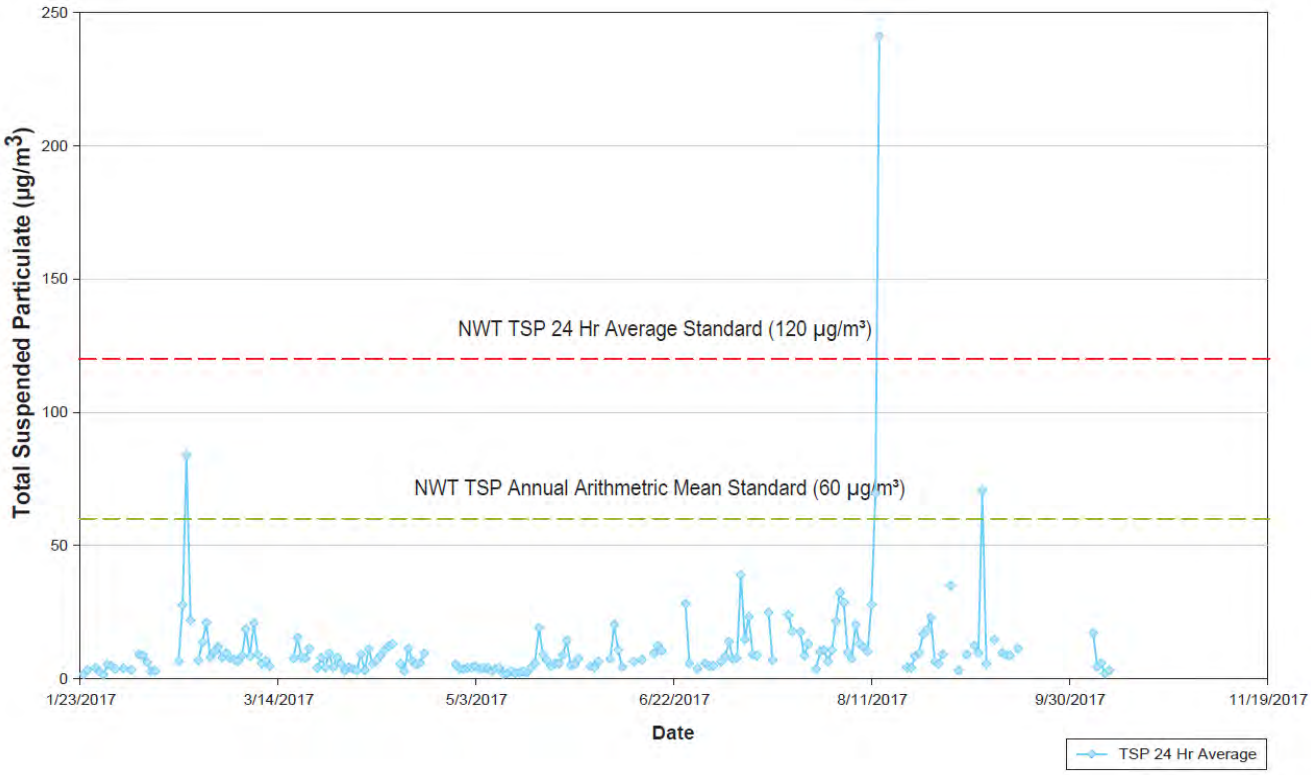


Figure 16 2017 A154 Dike annual 24-hr TSP amounts.

- In 2016, there was one high reading (150 µg/m^3) above the GNWT-ENR 24-hr standard (120 µg/m^3) at the CB TSP station; however, the overall annual mean (10.3 µg/m^3) was lower than the GNWT-ENR annual mean standard (60 µg/m^3). The minimum daily mean at the CB TSP station was 0.7 µg/m^3. The winds at the time of the exceedance were analyzed and shown to originated upwind of the mine which would suggest the source of elevated TSP concentrations were not from the mine. Percent valid data for the communications building was 87% and 0% for the dike TSP station. The TSP monitoring station on the A154 dike was offsite for 10 months of the year for repair. The 2016 results agree with Diavik's prediction that there would be up to two (2) 24-hour exceedances per year.
- During 2014 and 2015, TSP readings did not exceed the GNWT -ENR annual mean standard (60 µg/m^3), and there was only one daily exceedance (124 µg/m^3) of the GNWT-ENR 24-hour standard (120 µg/m^3) at the communications building in 2014. In 2014 the CB TSP station maximum daily mean was 82.2 µg/m^3 (124 µg/m^3 in 2015), the minimum daily mean was 1.9 µg/m^3 (0.5 µg/m^3 in 2015, and the mean annual average was 14.5 µg/m^3 (13.6 µg/m^3 in 2015). In 2014, the A154 TSP station maximum daily mean was 64.4 µg/m^3 (16.3 µg/m^3 in 2015, the minimum daily mean was 0.3 µg/m^3 (0.1 µg/m^3 in 2015), and the mean annual average was 8.7 µg/m^3 (2.3 µg/m^3 in 2015.) In 2014, percent valid data for the CB TSP station was 44% (87% in 2015) and 55% (80% in 2015) for the dike TSP station. The 2014-2015 results agree with Diavik's prediction that there would be up to two (2) 24-hour exceedances per year.
- Even with the monitoring stations being located on the mine site, all TSP values measured during 2013 were below the 24-hour standard (120 µg/m^3), except for one day in December at the CB TSP station (203 µg/m^3), that was thought to be due to snow clogging the sensor. All data for both stations were below the GNWT-ENR annual mean standard (60 µg/m^3). The annual average for the CB TSP station was 13.41 µg/m^3 and 7.01 µg/m^3 for the A154 TSP station. The results of 2013 agreed with DDMI's updated dispersion model predictions completed in 2012.

Dust Deposition

The dustfall rates for 2021 were slightly higher, but comparable to 2020 rates. Dustfall values are higher on average since 2018 compared to years between 2012 and 2018. This is due to A21 open pit becoming active in 2018. The annual dustfall rates at all stations were less than the Alberta Ambient Air Quality objective for dustfall at industrial locations (1,924 mg/dm^2/y). There are currently no air quality standards or objectives for the Northwest Territories. As expected, dustfall rates decreased with distance from the mine. Annual dust fall rates from 2003 to 2021 are displayed visually in Appendix IV. Additional details for the figures provided can be found in the Dust Deposition Report of the Annual AEMP Reports.

- In 2020, dustfall rates were comparable to, but slightly lower than 2019 rates. The dustfall rates in 2020 were higher than years before 2018, when the A21 pit was not open. Dustfall values at all stations in 2020 were below the upper limit of the Alberta Ambient Air Quality Objectives and Guideline for dustfall (1,924 mg/dm^2/y) applied to commercial and industrial areas. There are no dustfall standards or objectives for the Northwest Territories.

- The dustfall rates estimated from dustfall gauges in 2019 were comparable to the 2018 rates, which were the highest recorded since 2008. The higher recorded dustfall values in both 2018 and 2019 suggest that dustfall rates in these two years were likely influenced by the surface activity at the Mine, particularly at the A21 open pit. The 2019 annualized dustfall rates estimated from gauges at all stations were below the upper limit of the Alberta Ambient Air Quality Objectives and Guideline for dustfall (1,924 mg/dm2/y).
- In 2018, dustfall values remained lower than the former British Columbia dustfall objective for the mining industry (BC MOE 2016) except at the four sites that recorded the highest dustfall rates in 2018 (i.e., Dust 3, 7, 10, and 1). Dust deposition rates in 2018 were the highest since 2008 at some locations. The higher dustfall rates were likely due to the surface activity at the Mine, particularly the A21 open pit, which began active mining in December 2017. Deposition rates were highest close to the Mine and decreased with distance from the Mine.
- Comparisons of mean and maximum dustfall values suggest that dustfall rates during 2017 remained within the range of dustfall rates typically recorded at the Mine site and were lower than the British Columbia dustfall objective for the mining industry. A21 dike construction activities likely contributed to the amount of dust during 2016 and 2017.
- Dust fall levels continued to show a decreasing trend in 2014 and 2015, based on distance from the mine. The lowest dust fall level was recorded at one of the control sites located 5.5 km away from the mine. Values recorded for each of the 12 dust gauges and 27 snow survey stations were below the BC objective range of 621 to 1,059 mg/dm^2/y.
- In 2013, dust fall levels were lower than in previous years, with the exception of the area close to the airstrip (common with gravel runways) and an area downwind of the prevailing winds. Dustfall values for most stations remained below the BC dustfall objectives for the mining industry. The two stations that exceeded the BC objective were located beside the airstrip.
- In 2012 there was a decrease in dust levels at 7 of the 12 dust gauges as construction slowed down and Diavik transitioned from an aboveground to underground mine. Dust levels were still higher than predicted, most notably 250 meters (750 feet) from the airstrip. Dust levels were also higher near the PKC area, due to construction activities.

Overall, dust deposition rates have been more than what was originally predicted by models in the Environmental Effects Report, because that model did not account for additional construction and operational activities relating to underground mine development. However, all except one of the average dust deposition levels remained below the BC Objectives for mining.

Snow Water Chemistry

For comparative purposes, the snow water chemistry results were screened against effluent quality criteria (EQC) in the Water Licence (the limits for treated mine water being released back to the lake); however, there is no regulatory requirement for snow water chemistry to meet these criteria.

In 2021, analyte concentrations within 100m of the mine footprint were generally higher than 2019 and 2020 records. Most analysed parameters were less than their associated EQC, with the exception of aluminum at one sampled location. Analysis found that concentrations of chemistry analytes decreased further from the mine. Several snow water chemistry variables stayed consistent regardless of distance from mining activity, indicating that these variables are not influenced by mine activity. Annual snow water chemistry parameter concentrations from 2002 to 2021 are displayed visually in Appendix V. Additional details for the figures provided can be found in the Dust Deposition Report of the Annual AEMP Reports.

- For 2020, analyte concentrations in snow meltwater decreased with distance from the Mine site. Concentrations in 2020 were lower compared to recent years for all parameters except nitrite. The highest concentrations of all variables were less than their corresponding EQC.
- In general, analyte concentrations in snow meltwater decreased with distance from the Mine site in 2019. Concentrations were lower than measured during recent years for all parameters except ammonia, nitrite, and phosphorus. The highest concentrations of all variables were less than their corresponding EQC.
- Concentrations of snow water chemistry variables were below effluent quality criteria in 2018. This was also true for 2017, with the exception of 4 variables (i.e., aluminum, chromium, nickel and zinc), that were higher than these numbers at a single station (Station SS3-4, 200-1000 m away from the mine, and east of A21 construction).
- Measurements of the amount of chemicals in the water from melted snow indicate that the concentrations measured in 2016 and 2014 were also below the levels outlined in the Water Licence. In 2015, results were below water Licence levels for all snow cores except SS3-6 where elevated levels of aluminum, chromium, nickel and zinc were found. However, this sample was accidently taken closer to the mine site than it should have been so the ability to compare the results is limited.

National Pollutant Release Inventory

Annual air emissions reported by the Mine through Environment and Climate Change Canada's (ECCC) National Pollutant Release Inventory (NPRI) are provided in Appendix VI

Greenhouse Gas Emissions

The Mine reported greenhouse gas (GHG) emissions are part of the annual Greenhouse Gas Emissions Reporting Program (GHGRP) submission to ECCC. Total greenhouse gas emissions reported through the GHGRP for Diavik in 2021 was 194,258 tonnes of CO_2e. 2020 was 192,741 tonnes of CO_2e. In 2019 it was 192,103 tonnes of CO_2e, in 2018 it was 219,010 tonnes, in 2017 it was 194,968 tonnes and 2016 was 191,632 tonnes of CO_2e, all of which were an increase from 2015 due to A21 dike construction. "CO2 e" is an abbreviation of 'carbon dioxide (CO_2) equivalent'. CO_2 is a greenhouse gas, but there are many more greenhouse gases. To make it easier to understand greenhouse gases, a standardized method is to report all of the greenhouse gases from a site together as if they were equal to a set volume of CO_2; this is the CO_2e referred to above. A summary of annual emissions reported through the GHGRP by Diavik are provided in Table 9 below.

The four wind turbines at Diavik were able to offset approximately 3.8 million liters of diesel fuel use in 2021, less than in 2020.

CAC Emissions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Carbon Dioxide (CO_2)	192,555	202,924	169,988	182,441	184,457	171,327	175,184	172,231	172,231	191,631	187,860	209,436	192,103	192,171	193,684
Methane (CH_4)	226	249	171	187	194	182	186	216	224	237	232	260	239	141	135
Nitrous Oxide (N_2O)	5,965	30,731	5,318	6,116	6,930	7,077	7,324	6,794	6,970	7,059	6,874	9,313	8,543	430	437
Total	198,748	233,903	175,479	188,746	191,582	178,586	182,453	179,241	186,844	198,929	194,968	219,010	200,885	192,741	194,258

Table 9 ECCC GHGRP Emissions (tonnes CO_2e)

Vegetation and Terrain

How much vegetation/land cover will be directly affected by the mine development?

EA Predictions and Overall Status:

- ***Approximately 12.67 km² of vegetation/land cover will be lost at full development; and***

Total vegetation/cover loss to date remains below the amount predicted

- ***Slow recovery of vegetation following mine closure.***

Recovery of vegetation after mine closure cannot yet be determined.

How will the vegetation communities outside the mine footprint be changed as a result of mine development?

- ***Localized changes in plant community composition adjacent to mine footprint due to dust deposition and changes in drainage conditions.***

Limited and local effects on plant types have been seen between areas closer to and further from the mine

Observations:

Development of the South Country Rock Pile and progressive reclamation of the North Country Rock Pile contributed to an increase in mine footprint in 2021. Total habitat loss due to mine disturbance was measured at 11.55km². This is within the predicted amount of 12.67 km². Table 10 shows a running total of the habitat loss to date.

Table 10: Cumulative habitat loss each year.

Predicted Vegetation Habitat Loss (km²)	Up to 2001	2002 to 2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 to 2019 *	2020	2021
12.67	3.12	8.15	8.86	9.40	9.66	9.78	9.78	9.71	10.1	10.12	10.15	10.55	11.22	11.31	11.19	11.41	11.55

* Net gain of habitat from removal of undisturbed areas from total Mine footprint in 2019

In 2019, residual portions of terrestrial habitat within the Mine footprint that remained physically undisturbed since construction were removed from the total mine footprint.

Vegetation Plots

Permanent vegetation plots (PVPs) were established close to and far from the mine site in 2001 to monitor if there are differences in vegetation and ground cover near the mine and farther away from the mine. The program is conducted every 3 years and in 2004, the program expanded to include 15 mine plots and 15 reference plots (far from the mine). In each of these areas, 5 sample plots for each of 3 vegetation types (heath tundra, tussock-hummock and shrub) were set up so as to reduce

within site variability of plant communities (which was high) and increase the likelihood of capturing true change in plant abundance between mine and reference areas over time.

The vegetation monitoring program was completed in August of 2021. Results agreed with the findings of previous years that dust deposition is a likely driver of observed changes in vegetation species abundance and coverage near the mine. A variety of factors could impact the results of the vegetation program including wildlife grazing, personnel changes, weather variability, and uncommon species identification. The differences between mine and reference plots continue to remain consistent with previous studies. Species richness for vascular plant species (non-lichen plants) was higher on mine plots than reference plots, and species richness for lichen was similar between mine plots and reference plots. Mine plots had greater vascular plant species cover than reference plots, with lichen cover being less on mine plots than on reference plots. This could be related to the effects of dust deposition, however, in years when lichen cover was found to be changed from the previous years near mine plots, there was similar changes seen in reference plots at the same time, suggesting there may be other drivers of lichen abundance as well as mine-related effects. Amount of ground litter (dead fallen leaves and twigs on the ground) has been reduced since 2010 in both near-mine and far-from mine plots. The study indicates that the mine is having a small and localized effect on vegetation near the mine and recommends that the next monitoring cycle should occur in 3 years.

- PVPs were sampled in 2016. The results of the analysis of dust deposition and vegetation data show differences in the amount and types of plant species in mine and reference plots (natural tundra at a far distance from the mine) over time that are likely due to Mine-related effects, such as dust deposition. Natural changes in conditions among PVPs prior to and after mining, annual differences in weather, plants being eaten by wildlife/caribou, personnel variability and difficulty in identifying uncommon species have also probably influenced results for plant species. However, the differences between mine and reference sites have remained largely the same over the past 10 years, with limited and small effects. Importantly, the data show no potential towards a disagreement in the observed patterns of the amount and types of plant species. Based on the principles of adaptive management and the slow response of vegetation in the Arctic, it is recommended that this program be continued to confirm if the observed differences and changes in plants continue during mining operations; however, the sampling frequency was reduced to once every 5 years

- The PVP's survey done in 2013 had results that showed that dust on vegetation may be changing the amount (abundance) and types (composition) of some plant species in vegetation types near the mine. Lichen cover on heath tundra and shrub mine plots continues to decrease over time, while the average numbers of vascular plants (e.g. grasses, small plants) in these same areas are increasing. This has also been observed in other studies looking at the effects of road dust on different types of plants.

- Observations of PVPs done in 2010 showed that there were more grasses and flowering plants closer to the mine versus further from the mine, and there was also lower soil lichen cover and higher litter cover values closer to versus further from the mine. During the previous sampling year, there was no ecologically significant difference in vegetation and ground cover between mine and reference plots for each of the plant communities assessed.

Lichen

Lichen studies are conducted every three to five years to determine the amount of metals in lichen from dust deposition closer to and further away from the mine. The program was completed in August 2021.

The 2021 lichen monitoring program collected lichen samples for metals analysis. Samples were collected from 0-6km from the mine, 30-40km from the mine, and 3 far-far field samples were collected at 100km from the mine. The amount of metals in lichen was less than 2016, and has been decreasing from a high in 2010. This confirms a trend of decreasing metals levels in lichen near the mine identified in previous lichen monitoring programs. Field Biologists identified reduced lichen species diversity and coverage in areas near the mine, likely related to dust deposition effects.

Levels of metals in lichen were higher close to the mine than further away but were below the levels used for the 2010 caribou health risk assessment that determined metals levels were not high enough to impact caribou health. Metals levels are decreasing in lichen near the mine over time.

- In the 2016 study, sample areas for lichen near the mine were in the same areas as the dust collectors, while the sample sites further away from the mine were previously chosen by TK holders at a distance approximately 40 km (24 miles) away. In 2016, a far-far-field sampling area was used to collect lichen at three stations approximately 100 kilometres from the Mine site.

- Metals concentrations in lichen were compared between areas close to and far from the mine, and among the 2010, 2013 and 2016 sampling events. The amount of metals in lichen confirmed the observations of Elders that dust deposition was higher near the Mine when compared to areas further away. However, most metals in lichens from the areas near the mine in 2016 were also a lot lower than those found in 2010 and/or 2013. This decrease may be due to the change in mining operations from open pit to underground mining since 2012, resulting in an overall reduction in dust levels. Also, most metals levels in lichen from the far-far-field sampling area (100 km away) were similar to levels in the far-field sampling area (40 km away).

- The lichen monitoring program was also designed to determine whether the increased metals levels in lichen near the mine pose a risk to caribou health. A risk assessment was done in 2010 and showed no effects of concern to caribou health. Since the majority of metals levels have decreased below those reported in the 2010 risk assessment, a follow up

risk assessment based on 2016 data is not required. Metal levels in lichen are predicted to remain within safe levels for caribou. Based on the principles of adaptive management, the sampling frequency for this study was reduced to once every 5 years to coincide with the change in the vegetation monitoring program.

- The 2013 sampling program had a scientific component focusing on metal levels in lichen and soil, as well as a TK component focused on assessing the type of landscapes caribou prefer for forage, use and migration, and to assess lichen conditions at various sample sites to see how dust from the mine potentially affect caribou use of the area. During the program, Elders noticed dust on lichen in near-mine areas, but did not see dust on lichen in areas further from the mine. The analysis of metal concentrations in lichen confirmed the Elder's observations, as the amount of most metals in lichen samples near the mine were significantly higher than those further from the mine. The Elders suggested that caribou would avoid near-mine sites because of poor food quality. It should be noted that the amount of metals found in lichen during the 2013 sampling program was lower than those found in 2010; this means that a follow-up risk assessment is not necessary as the level of exposure to metals remains at a safe level for caribou. Similar to the PVP program, lichen is sampled every 3 years, with 2016 being the next year this program is scheduled.

- The 2010 lichen study also looked at the metals data to find out how much dust caribou are exposed to (could eat) by eating the lichen with dust on it. With the exception of 4 metals, concentrations of all other parameters were higher close to the mine, as was expected. Aluminum levels were slightly high but the assumptions made for the risk assessment were very conservative (meaning that it was assumed that caribou feed in the area of the mine 100% of the time). Based on the risk assessment performed, the level of exposure to metals was within safe levels for caribou.

Re-vegetation

Research conducted to date has indicated that soils can be constructed from many different materials salvaged from mine operations (e.g. gravel, till from the bottom of the lake, treated sewage sludge) and used effectively for re-vegetation. Seed loss (erosion) may be an issue and use of erosion control techniques, such as erosion control blankets (straw mats) and the addition of some protective mounds, bumps and rocks on the ground, are showing some success for increasing plant growth. Lastly, the regrowth process at reclamation sites is faster than for natural recovery but it still takes a long time, with soil and plant development taking 2 to 3 years. A final report summarizing the results of the re-vegetation research done for Diavik has been completed and relevant information will be incorporated into the Final Closure and Reclamation Plan.

Wildlife

Caribou

Will the distribution or abundance of caribou be affected by the mine development?

/cvi EA Predictions and Overall Status:

- ***At full development, direct summer habitat loss from the project is predicted to be 2.97 habitat units (HUs). (A habitat unit is the product of surface area and suitability of the habitat in that area to supply food for caribou and cover for predators);***

Direct summer habitat loss from the project has remained below the value predicted.

- ***The zone of influence (ZOI) from project-related activities would be within 3 to 7 km;***

The most recent estimate of the ZOI has been calculated as 14 km.

- ***During the northern (spring) migration, caribou would be deflected west of East Island and during the southern migration (fall), caribou would move around the east side of Lac de Gras; and***

Northern migration generally occurs west of the mine; southern migration occurs east and west of the mine.

- ***Project-related mortality is expected to be low.***

Mine-related caribou deaths have remained low.

Observations:

From 18 March to 29 September 2021, behaviour scans were completed on 21 caribou groups from 0 km to 15 km from the Mine. These caribou were potentially from the Beverly/Ahiak and Bathurst herds based on collared caribou locations. The total number of caribou observed was 425. Group size ranged from 1 to 200 with the average group size of 20 animals (1SD=42 animals). Various methods are used to determine whether or not animals were present in the vicinity of the Mine, which included incidental observations reported from pilots and workers, and using the satellite collar locations provided by ENR.

Habitat

In 2021, there was 0.05 Habitat Units of direct summer caribou habitat lost due to mine footprint expansions, primarily due to the planned growth of the South Country Rock Pile (SCRP). The total loss of Habitat Units to date is approximately 2.864 units and is below the predicted amount of 2.965 HUs.

Table 11: Caribou habitat loss (HUs) by year.

Prediction		2000-2005	2006	2007	2008	2009	2010	2011	2012	2013-2014	2015	2016	2017	2018	2019*	2020	2021	Loss to Date
2.97		1.96	0.15	0.18	0.13	0.04	0.00	0.02	0.13	0.00	0.13	0.06	0.00	0.08	-0.15	0.06	0.05	2.81

* Net gain of habitat from removal of undisturbed areas from total Mine footprint in 2019.

Caribou summer habitat loss was greatest in 2001, when the majority of haul roads and laydown areas for mine infrastructure were constructed. The loss of habitat in 2008 was associated with expansion of mine infrastructure to support underground mine development, and that for 2012 related to development of the wind turbine pads.

Reevaluating a Zone of Influence (ZOI)

The most recent analysis completed for ZOI monitoring (2019) concluded caribou distribution follows spatial distribution of preferred habitat as would be expected in the absence of a ZOI.

An external, independent review of the Diavik and EKATI survey data was done by Boulanger et al. and the results indicated that the estimated Zone of Influence (ZOI - the size of area where caribou avoid the mine) on the probability of caribou occurrence around the mines was approximately 14 km. However, 2019, reanalysis of the same aerial survey data (1999-2012) determined a measurable ZOI was not detected or supported by the data (2019 Wildlife Management Report).

The spatial (space occupied by caribou) patterns showed that the availability of area and preferred habitat increases with distance from the mines. In the absence of sensory disturbance effects, caribou abundance (number of animals) and distribution should also increase with distance from mines. Results of 13 years of caribou monitoring with greater than 128,000 observations indicated that caribou in the Lac de Gras region are distributed in accordance to the spatial distribution of preferred habitat in undisturbed areas adjacent to the two diamond mines (Figure 17).

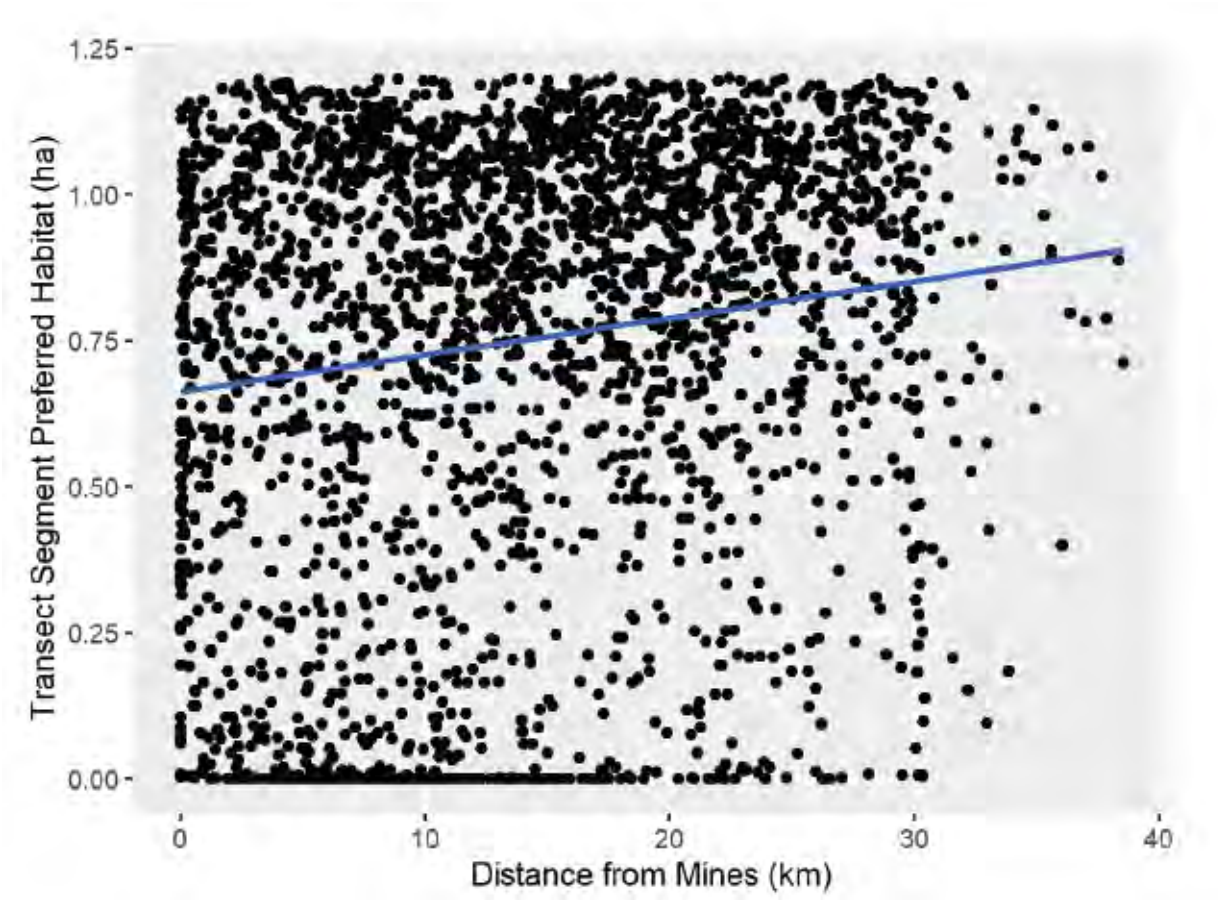


Figure 17 Spatial distributions of preferred caribou habitat area (ha) of aerial survey transect segments, 1998 to 2009, and 2012.

While previous analysis applied a presence-absence (of caribou) approach, it is believed that the conclusion of the presence of a ZOI was due to misinterpretation of statistical support for a positively correlated distance variable that was specified as an additive model effect.

The study demonstrated that an understanding of the distribution of habitat quality relative to sources of sensory disturbance is important for assessing the pattern of animal use in the study area. A graphical representation of habitat quality distribution is an informative first step for understanding how caribou or other animals should be distributed in the absence of sensory disturbance. Sensory disturbance is expected to reduce habitat use (through avoidance) relative to proximity (nearness) to human development. Thus, use of preferred habitat by caribou should change with proximity to human activity and the magnitude and spatial extent of the change is expected to be measured through statistical support of an interaction between distance and preferred habitat, which was not the case for these data.

Aerial Surveys

Due to low caribou numbers and community concern, aerial surveys have been suspended since 2009 (with the exception of 8 July to 13 October 2012). Aerial surveys continue to be suspended in

favour of other studies that support the GNWT Barrenground Caribou Management Strategy and Bathurst Caribou Range Plan.

Movements

In 2021, data from caribou satellite collars in the Northwest Territories were analyzed for a zone of influence on Caribou from the Diavik mine. This analysis tracked caribou movements over time within 3km of the Diavik mine and compared the satellite movements of caribou within that zone to caribou more than 30km away from the mine. The researchers looked at the number of hard turns the caribou took and compared this against the habitat type and behaviour scans that were conducted on caribou in the area at the same time as the collared caribou. In previous analyses, Caribou were found to slow down slightly, and make more hard turns when close to Ekati roads. This 2021 analysis found that caribou within 3km of the Diavik mine exhibited very similar movement patterns as caribou further away, and that behaviour scans on caribou near the mine indicate that slowing down and turning more frequently could be signs of foraging in prime caribou habitat. The analysis did not identify any zone of influence on caribou movement caused by the Diavik mine, when compared against caribou far from the mine.

The caribou satellite collar movement 2018 analysis showed that caribou move more slowly when they are in good quality habitat. It found that more than half of the caribou paths were at least 100 km (61 mi) away from the mine and 24 km (15 mi) from the nearest lake. The relationship between difficult terrain and the distance caribou travel supported TK observations that caribou use flatter terrain and prefer to travel along shorelines. Despite there being a low number of movement paths near lakes in this study, caribou would move more slowly and stay in an area longer when they were near a lake. The analysis also showed that caribou move more quickly as they approach and spend time near the Diavik-Ekati mine complex. Lastly, long term scientific monitoring and TK have shown that caribou were usually present around the mine area in July and August. From 2009 to 2013, caribou remained closer to Contwoyto Lake and approached the areas of the mine during the fall rut period.

Ground-based Behavioural Observations

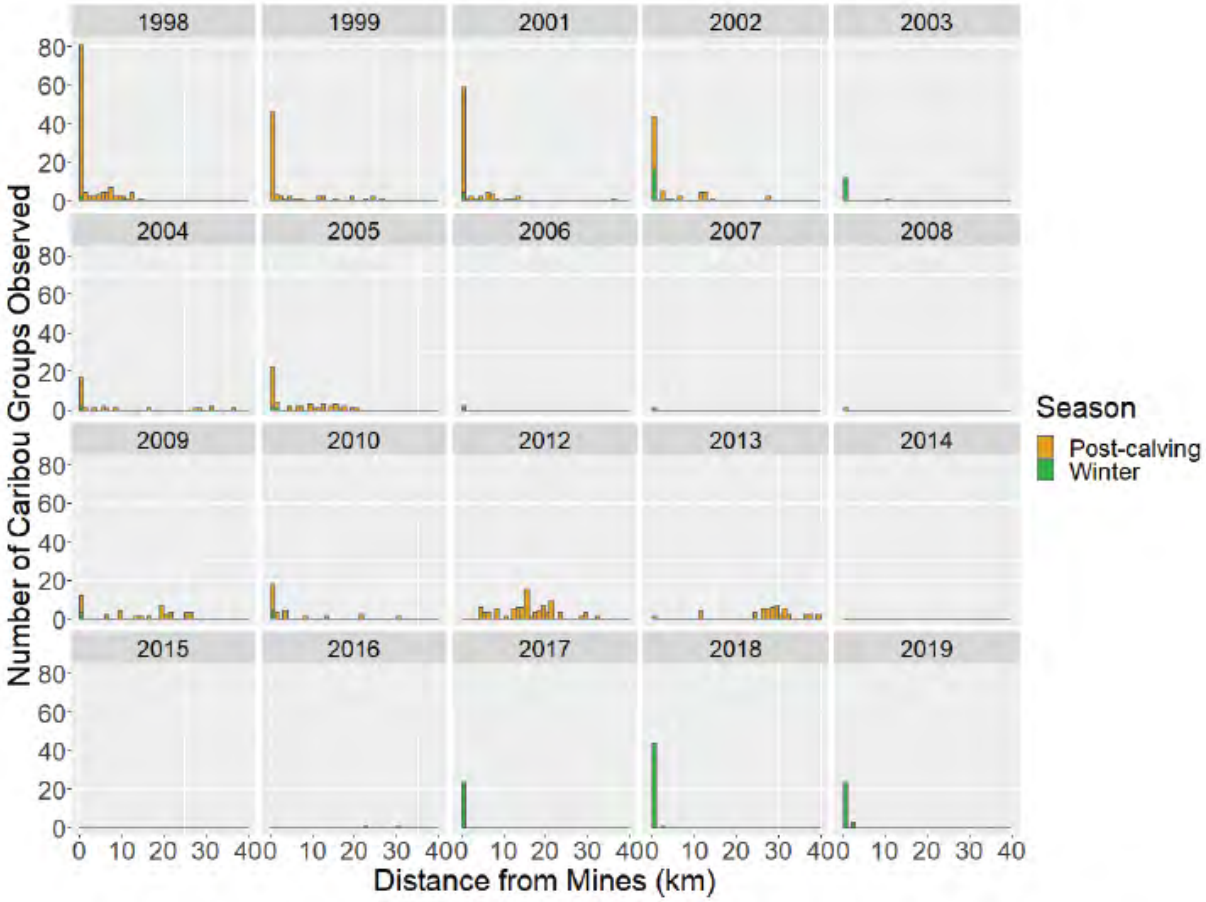
The goal of the ground behavior observation program is to generate enough observations to test possible impacts to caribou based on how they behave closer to and further from the mines. Monitoring is conducted cooperatively with the Ekati mine to collect and share data that covers distances from less than 2 km to greater than 30 km from mine infrastructure. Ground based-caribou observations are conducted by DDMI Environment staff on caribou groups that are sighted incidentally by mine site personnel and also on any caribou groups that are known to Environment staff to be on the Mine site. As well, caribou ground based behavior observations are conducted by DDMI Environment staff while conducting far field monitoring activities if there is presence of caribou. In past years, Diavik has had community Elders and youth participate in this work and contribute their input and knowledge to the program results.

From 18 March 2021 to 29 September 2021, behaviour scans were completed on 21 caribou groups from 0 km to 15 km from the Mine. These caribou were potentially from the Beverly/Ahiak and

Bathurst herds based on collared caribou locations. The total number of caribou observed was 425. Group size ranged from 1 to 200 with the average group size of 20 animals (1SD=42 animals). The estimated mean proportion (± 2SE) of caribou behaviour observed is as follows; bedded 22% (14%), feeding 45% (17%), standing 8% (9%), alert 2% (5%), walking 19% (14%), trotting <1% (2%), and running 4% (7%). No focal scans were completed in 2021. The number of caribou groups observed in 2021 remained below the 55 groups in different distance strata required to detect a 15% change in behaviour derived from past summer and autumn results.

The limiting factor for determining this change in behavior was the small number of far-field observations (0 observations). Due to changes in the herd size and migration patterns / timing over the past decade, caribou are generally in the study area during the winter when far-field observations are not practical or safe (related to cold temperatures) but on-site observations are safe and practical on account of continuous access to shelter(vehicles).

- Caribou far-field and near-field observations from 1998 through 2019 are presented in Figure 18 below.



Note: does not include Ekati scan data since 2010 (n = 10 groups).

Figure 18 Frequency of caribou behaviour groups scans by distance from Mines from 1998 through 2019.

- From 6 February to 13 November 2020, behaviour scans were completed on 33 caribou groups from 0 to 15 km from the Mine. Caribou collar locations received from the GNWT suggest these animals were most likely from the Beverly / Ahiak and Bathurst herds. The total number of caribou observed during behaviour scans was 509, group size ranged from 1 to 150 with the average group size of 15 animals.
- Few caribou were observed in the study area in 2017, the number of behavioural observations/scans conducted was a total of 32 (0 to 2.7 km from the mine). Caribou collars locations suggest these animals were most likely from the Beverly/Ahiak and Bathurst herds. The total number of caribou observed increased compared to previous years and was 513, with a group size range from 1 to 64 and an average group size of 16 animals.
- The following numbers of behavioural scans were conducted in past years: 2 in 2016 (both more than 20 km away from the mine), 38 in 2015, 9 in 2014, 90 in 2013, 86 in 2012, 104 in 2011, 83 in 2010 and 89 in 2009. A full analysis of caribou behaviour data was done in 2011.
- During the early years of this monitoring, Diavik had limited opportunities to study caribou behaviour on the ground through scanning observations; in 2003, 2004, 2005, 2006, 2007 and 2008, ground observations of caribou behaviour were successfully completed for 12, 14, 5, 8, 24 and 7 caribou groups, respectively.

Migration Patterns

Deflection (off course) movements of caribou due to mining activities was predicted in the EA. It was predicted that during the spring migration caribou would deflect west of East Island and during the fall migration caribou would move around the east side of Lac de Gras. The results from 1996 to 2018 have shown that there are years where collared caribou do not follow predictions but over the long-term there are no strong deviations from deflection prediction and/or an ecological consequence, such as fragmentation of the herd. Changes in rates of eastern movements by collared Bathurst caribou cows were not associated with autumn range distribution or activity level at the Mine. While natural factors did not strongly influence eastern movement rates, the result of no association with mining activity supports previous analyses and conclusions that the Mine is not having a strong influence on caribou migration patterns. Applying the principles of adaptive management, using collared caribou movements to assess the deflection prediction are no longer monitored since 2019. The deflection analysis does not inform on mitigation effectiveness so results will not lead to changes in how the Diavik Mine operates.

- Data from GNWT satellite-collared caribou in 2018 show that during the northern migration six caribou (3 females, 3 males) traveled west and five (2 females, 3 males) traveled east of Lac de Gras, which supports the prediction in the EER (Figure 19a). These results are also consistent with the long-term patterns observed since 1996, and further support the observation that the northern migration route of Bathurst caribou relative to the west and east side of Lac de Gras is influenced by their location on the winter range. During the southern migration, 17 collared caribou (9 females, 8 males) traveled west and 1 female collared caribou traveled east of Lac de Gras from July to 30 November 2018 (Figure 19b). The results for 2018 are not consistent with the prediction of eastern movement around Lac de

Gras during the southern migration in the EER. Collared caribou cow seasonal range overlap from year to year has been consistent over time, so caribou are still able to access previously used areas despite variation in movements around Lac de Gras. The data suggest that the presence of mining activity within and adjacent to Lac de Gras has had little influence on the large-scale movement and distribution of caribou in the region and no measurable ecological effect such as fragmentation of the Bathurst caribou herd. Based on the principles of adaptive management there is little benefit from continuing the monitoring of caribou collar deflections.

- During the 2017 northern migration the majority of caribou (31 in total; 17 males, 14 females) travelled west of the mine, which supports the prediction in the EER. Only 6 animals were seen travelling to the east of Lac de Gras (3 males, 3 females). During the 2017 southern migration, 11 caribou went east of the lake (1 male, 10 females), which supports the prediction in the EER. Five caribou (3 males, 2 females) travelled west of the lake.
- The 2016 northern migration 28 collared caribou (16 females, 12 males) traveled west and none traveled east of Lac de Gras, which supports the prediction in the EER. These results support the long-term patterns observed since 1996, and further support the observation that caribou movement west or east of Lac de Gras during the northern migration is dependent on their winter range location (Golder 2011). During the southern migration, nine collared caribou (3 females, 6 males) traveled west and one female traveled east of Lac de Gras from July to 30 November 2016. The results for 2016 are inconsistent with the EER prediction of animals moving east around Lac de Gras during the southern migration. However, the comprehensive analysis conducted this year (Golder 2017) found that 120 (63%) of the 190 collared caribou moved east past Lac de Gras during past southern migrations from 1996 to 2016. Additionally, the comprehensive analysis found that 169 (73%) of the 231 collared caribou moved west past Lac de Gras during the northern migration. Long-term data best show that caribou movement paths generally correspond to the predictions made in the EER (DDMI 1998).
- Data from satellite-collared animals record cows in the Bathurst herd west of the mine site during the northern migration in 2015. Collar maps for the 2015 southern migration suggest that cows remained further north longer than usual (into November) and then the majority travelled east of Diavik during the southern migration as well. Two (2) collared cows were recorded moving west of Lac de Gras, as originally predicted. Analysis has shown that northern caribou movement patterns agreed with the EER prediction that the majority of collared caribou would travel west of the mine during the northern migration (78% of collared caribou). A total of 45% of collared caribou have travelled through the southeast corner of the study area over time during the southern migration. A TK study conducted through the Tłı̨chǫ Training Institute in 2013 developed a map (Figure 20) based on Elder observations that shows how caribou migrations have changed due to an increase in mining activity in the Slave Geologic Province. TK observations at that time suggested that caribou continue to move west and east of Lac de Gras during their migrations, while noting that they travel

further from the mine and ultimately return to the same general areas for calving and overwintering.

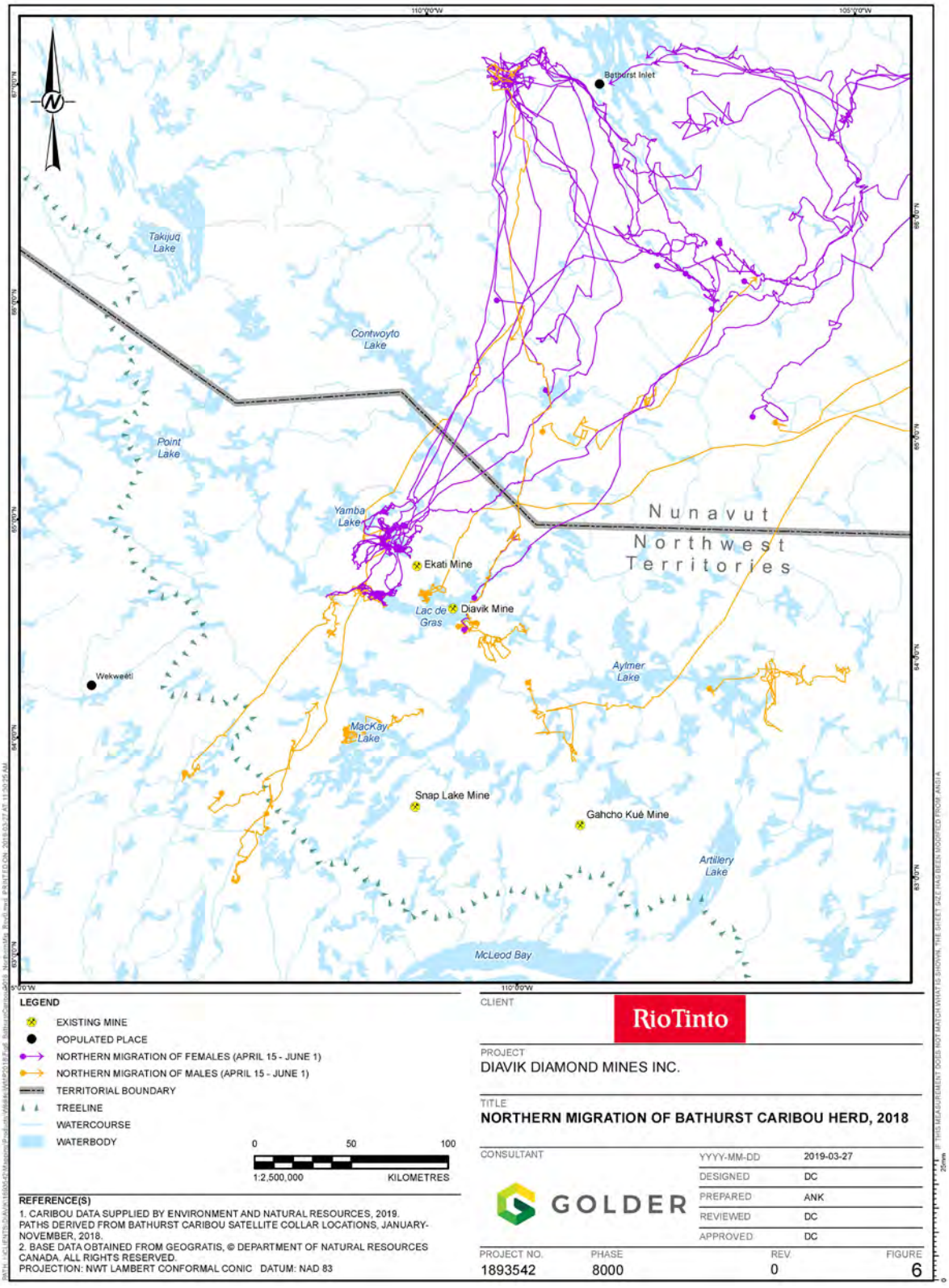


Figure 19a 2018 northern migration of caribou.

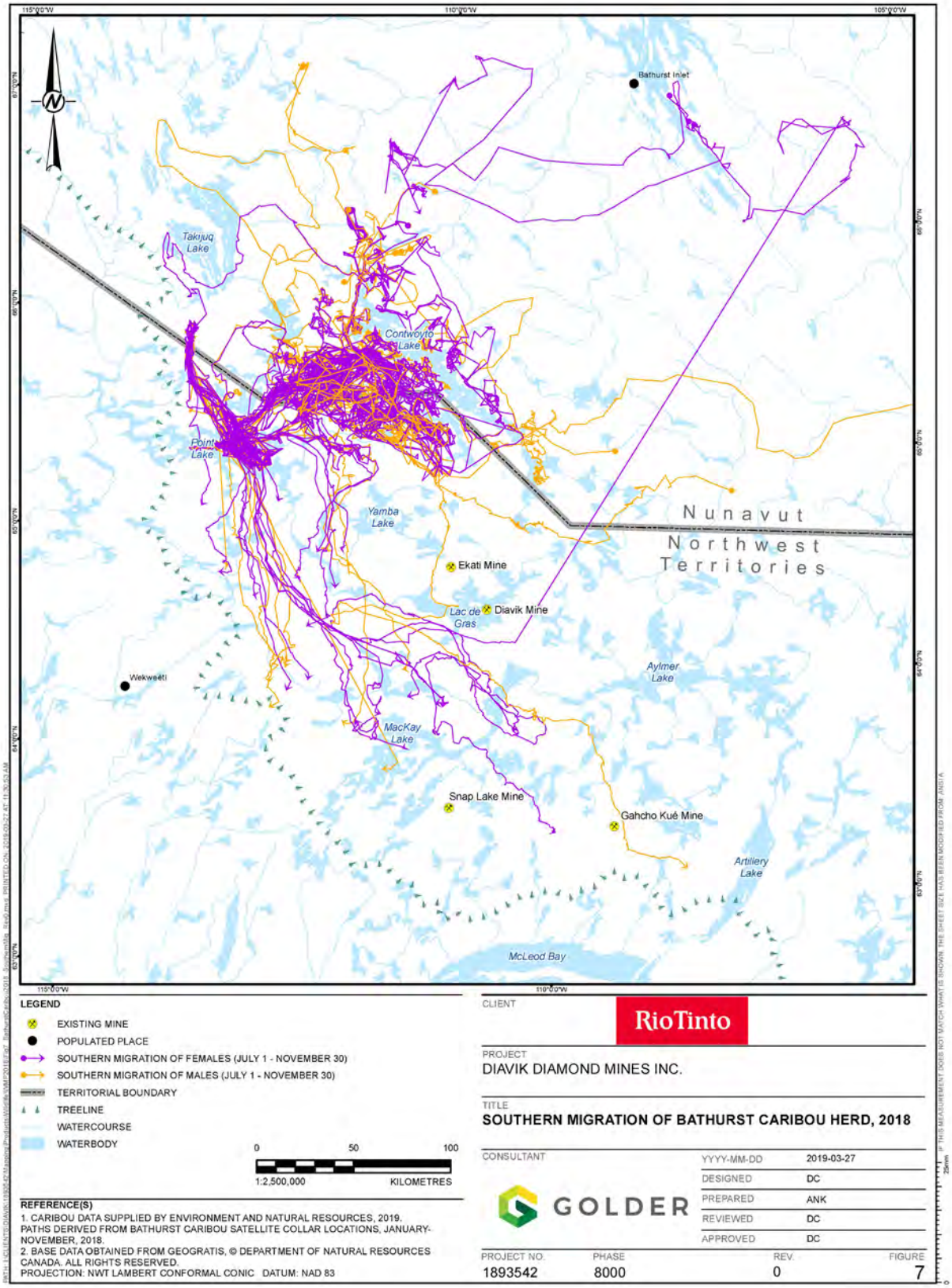
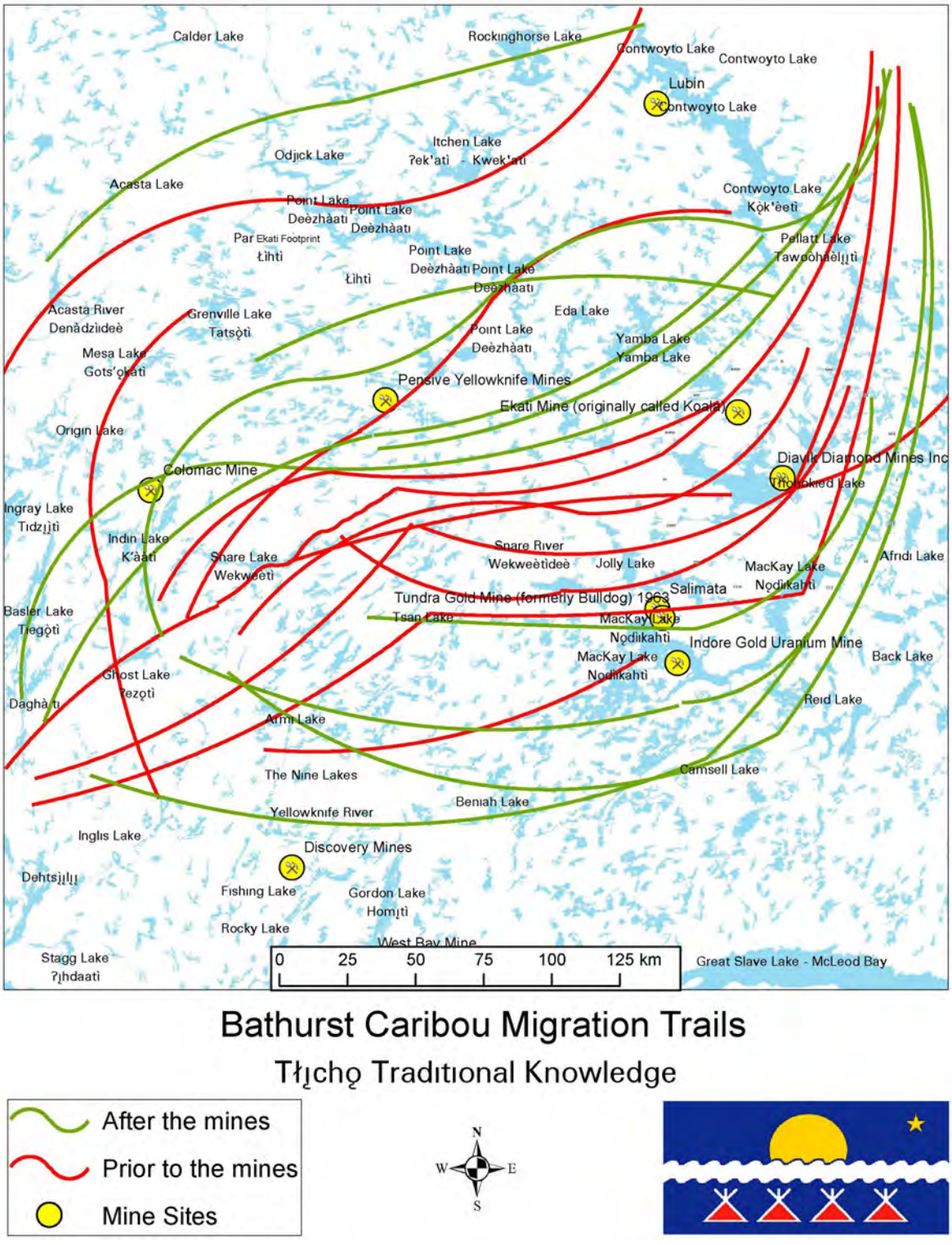


Figure 19b 2018 southern migration of caribou.



Bathurst Caribou Migration Trails

Tłı̨chǫ Traditional Knowledge

After the mines

Prior to the mines

Mine Sites

N

W E

S

Figure 20 Caribou migration trails prior to and after the Mines (Tłı̨chǫ Training Institute).

Herding

There was one instance of caribou deterrence on 1 August 2021. A single caribou was observed on the south haul road. The Environment Department were immediately notified and traffic control measures implemented, which included all traffic in the area stopping at a distance of approximately 100 m from the caribou. At the direction of the Environment Department, two pick-up trucks were positioned to prevent the caribou from returning to the active road. The caribou eventually moved away from the haul road onto nearby tundra.

- There were no herding events for caribou at the Mine site in 2020, 2019, 2018 or 2017. In July of 2016, a caribou was observed on the airport runway. The caribou was deterred from the runway by two staff members on foot. A second caribou was observed on the airport runway in July 2016, which staff members were able to deter by truck. No herding events took place in 2015. One caribou herding event took place in 2014, and no events occurred in 2012 or 2013. In 2011, caribou were herded away from mine infrastructure three times. There were also two herding events in 2009 – one for 27 animals near the airstrip with an incoming flight and one for a single caribou walking on the Type I rock pile. Very few herding events have been required since the mine began operating.

Mortality

There were no caribou mortalities or injuries caused by mining activities in 2021.

- In 2020, GNWT-ENR biologists came to site to euthanize a caribou that was injured by natural means and was in danger of suffering. The animal was returned to Yellowknife for salvage
- In April 2019, Environment staff responded to a call of a carcass of a caribou from a wolf kill. Similarly, in 2017, there was one natural caribou mortality from a wolf kill that Environment staff found near the mine. There has been only one caribou mortality caused by mining activities (2004) since baseline data began being collected in 1995. Caribou mortalities on East Island, from baseline to 2019 are presented in the table below.

Table 12: Caribou Mortalities on East Island, Baseline to 2019.

Year	Natural Caribou Mortalities on East Island	Mine-related Mortalities
Baseline (1995-1997)	8	0
2000	7	0
2001	1	0
2002	1	0
2003	0	0
2004	2	1
2005	0	0
2006	0	0
2007	1	0
2008	0	0
2009	0	0
2010	0	0
2011	1	0

Year	Natural Caribou Mortalities on East Island	Mine-related Mortalities
2012	1	0
2013	1	0
2014	1	0
2015	0	0
2016	0	0
2017	1	0
2018	0	0
2019	1	0
2020	1	0
2021	0	0

Support

The GNWT (Environment and Natural Resources, ENR) has been leading a working group to determine the best approach(es) to monitoring and DDMI will consider the recommendations developed as a part of this process.

In 2019, ENR developed a Bathurst Caribou Range Plan, which proposes development limitations and hierarchical management actions for different areas in the Bathurst annual range. The Mine is located in Area 2 of the draft Bathurst Caribou Range Plan, which has a proposed moderate development level and status of cautionary. Diavik is in compliance with recommended mitigation described in the Bathurst Caribou Range Plan

Diavik contributed financial support to the GNWT to develop models for Bathurst caribou winter range habitat selection in 2015 and to increase the number of GeoFence collars on the herd in 2016. A Comprehensive Analysis Report was completed for wildlife monitoring results at Diavik following the 2016 monitoring year. At the request of EMAB, the results were used to determine the number of caribou in a given area (density) over the aerial survey route, in order to determine if the ZOI results in an unnatural increase of caribou outside of that zone. The result (1.62 animals/km2) is within the mine-related and natural levels of change seen in the study area from 1998 to 2012.

Grizzly Bear

Will the distribution or abundance of grizzly bears be affected by the mine development?

EA Predictions and Overall Status:

- ***Approximately 8.7 km² of grizzly bear habitat will be lost and there will be some avoidance of the area, but the abundance and distribution of grizzly bears in the regional area will not be affected measurably;***

Bear habitat loss has remained below the value predicted; effects on the abundance and distribution of grizzly bears have been minimal

- ***The maximum zone of influence from mining activities is predicted to be 10 km; and,***

Efforts to determine a ZOI for bears were not successful

- ***Bear mortalities due to mine related activities are expected to average 0.12 to 0.24 bears per year over the mine life.***

Mine-related bear deaths have remained low and below the predicted rate

Observations:

Habitat

The amount of grizzly bear habitat that has been lost to date (in square kilometers) is 8.20 km², which falls below what was predicted (8.67 km²).

Mortality

The calculated mine mortality rate for grizzlies over the past eighteen years (since 2000) is 0.14, which is below the range predicted.

In 2021, a young bear was spotted on site with injuries. At the direction of ENR, Diavik euthanized the injured bear. A post-mortem assessment showed extensive bite and puncture wounds, indicating the wounded bear had been in conflict with another bear and was not injured by interaction with the mine.

- In 2020, following permission from GNWT ENR, a sow grizzly and first year cub were euthanized at the Mine site. The animals were showing signs of habituation and posed a continued safety risk to personnel after the sow entered the main accommodations dining area two days in a row. The euthanization was completed by northern Indigenous individuals with extensive hunting experience and the animals were sent to ENR for autopsy and meat salvage.
- In 2004, a bear was euthanized with RWED permission (now ENR) after it charged several windows at the cafeteria towards people inside and attempted to enter a building at multiple locations. The same bear had previously broken into the Diavik airport terminal building and a winter road camp.

- In 2001, a relocation attempt on a grizzly sow and two cubs led to the death of a bear cub during tranquilization.

Annual mortality and relocation totals for grizzly bears are provided below in Table 13.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Mortality	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
Relocation	1	0	1	0	0	0	0	0	0	0	0	3	1	0	0	0	1	0	0	3	0

Table 13 Grizzly Bear Relocation and Mortalities

Abundance/Distribution

There were 80 reported instances of grizzly bears on East Island, and a total of 89 grizzly bears were observed (Table 14). Grizzly bears were observed on 60 days from 2 May to 10 October, 2021. These numbers are not considered to be the number of bears in the Diavik area, as it is certain that these sightings include multiple observations of the same bear(s) due to repeat visits to East Island. The number of grizzly bear sightings in any given year does not appear to be influenced by the number of people on site (Table 14) however, staff reporting incidental observations does foster an awareness of wildlife issues at the Mine.

Table 14: Average Camp Population and Number of Incidental Grizzly Bear Observations, 2002-2021.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ave # ppl in camp	1100	470	397	646	716	747	979	562	579	630	629	537	484	524	625	641	578	586	585	558
# Bear on island	5	19	24	43	21	41	5	22	44	56	97	67	69	77	94	89	90	80	95	80

- Grizzly bear habitat surveys were conducted from 2001 to 2008, but they were not successful at determining a ZOI for bears within the study area. Diavik submitted a request to remove the Zone of Influence monitoring requirement and this was supported by GNWT-ENR and EMAB.
- There was a change in the way grizzly bears in the Diavik and EKATI mine areas are studied in 2012, as well as for De Beers Canada Inc. properties. TK/IQ was used to identify the preferred habitat of grizzly bear and then determine the location in which to set the 113 posts to collect hair samples for DNA analysis. Community assistants were also involved with post

construction and deployment. The study was conducted in the summers of 2017, 2013 and 2012, for the Diavik and EKATI mines, and De Beers completed it in 2017, 2014 and 2013. The results (Table 15) show a stable to increasing number of grizzly bears in the northern section relative to monitoring completed in the late 1990's. Data analysis indicated that there have been no negative impacts on the regional population of grizzly bears (i.e. populations are stable to increasing) due to the Ekati and Diavik mines; therefore, the grizzly bear DNA survey will be postponed until further notice.

Table 15: Number of Grizzly Bears Identified during DNA Analysis.

Year	# samples	Individuals	
		Male	Female
2012	1,902	42	70
2013	4,709	60	76
2017	3,657	55	81

Wolverine

Will the distribution or abundance of wolverine be affected by the mine development?

EA Predictions and Overall Status:

- ***The mine is not predicted to cause a measurable shift in the presence of wolverines in the study area; and***

Wolverine presence has been variable within the study area across the years

- ***Mining related mortalities, if they occur, are not expected to alter wolverine population parameters in the Lac de Gras area.***

Mine-related wolverine deaths have not altered the population in the area; a decrease has been observed but is likely related to the caribou population

Observations:

In 2021, there were 6 reported instances when wolverines were observed on East Island. These sightings were reported during 6 days from 13 January to 20 November. These observations are collected incidentally and may contain repeated observations of the same animal. There were no deterrent actions taken during any of the 6 reports. There were no wolverine deaths in 2021. Relocations and mortalities continue to be uncommon at the Mine (Table 16).

Table 16: Wolverine observations, relocations and mortalities, baseline to 2021.

	Baseline[(a)]	2000-2004	2001	2002-2007	2008	2009-2011	2012	2013-2014	2015	2016	2017	2018	2019	2020	2021
Days with Visits	27/year Total = 82	25	36	149	46	53	11	9	118	105	44	28	21	17	6
Relocations	1	0	2	0	0	0	0	0	1	2	0	0	2	1	0
Mortalities	1	0	1	0	1	0	2	0	0	1	0	0	0	0	0

(a) Includes wolverine occurrences recorded at three different camps (i.e. Diavik, Kennecott, and/or Echo Bay Road camps) annual numbers are not available for baseline investigations.

- Since 2000, eight wolverines have been relocated and five mortalities have occurred at the Mine. There were two relocations and one wolverine found dead at the Mine in 2016.
- Many of the 2015 sightings were of the same individual that was relocated on 23 March 2015. The number of occurrences of wolverine on East Island in 2008 was higher compared to other years (46); however, it is important to realize that many of the sightings were of a male animal that was denning under South Camp and another wolverine that had a snow den on the west side of East Island.

Snow Track Survey

Snow track surveys began in 2003, and have been conducted with the assistance of community members, as available. In 2008, Diavik revised the wolverine track survey in favour of an increased number of transects of standard length compared to the surveys completed in previous years. They are 4 km straight lines that are randomly distributed throughout the study area, but some bias is placed on tundra areas identified as preferred habitat for wolverine based on TK. A second survey has been completed to estimate detection of wolverine snow tracks since 2015. Snow track survey results are presented in Table 17.

In 2021, a total of 24 tracks were found over a single first round of transect surveys from 26 March to 4 April, with an average track density of 0.138 tracks/km/day. Only the first round of the wolverine track survey was completed due to disruptions from the onset of the COVID-19 pandemic.

Table 17: Wolverine Track Index, 2003-2020.

Year	Survey Period	Number of Tracks	Distance Surveyed (km)	Track Index (Tracks/km)
2003	April 10 – 12	13	148	0.09
2004	April 16 – 24	22	148	0.15
2004	December 2 - 8	10	148	0.07
2005	March 30 – 31	7	148	0.05
2005	December 7 – 12	18	148	0.12
2006	March 30 – 1	5	148	0.03
2008	April 30 – May 2	15	160	0.09
2009	April 2 – 4	11	156	0.07
2010	No community assistant available			
2011	March 30 – April 3	23	156	0.15
2012	March 28 – April 3	22	160	0.14
2013	April 2 – 6	26	156	0.17
2014	March 23 – 26	25	160	0.13
2015	March 24 – March 29	21	160	0.13
2015	April 14 – April 17	17	160	0.11
2016	March 22 – March 27	50	160	1.25
2016	April 8 – April 13	50	160	1.25
2017	March 22 – April 4	10	160	0.06
2017	April 9 – April 19	42	160	0.26
2018	March 23 – April 11	10	132	0.08
2018	April 13 – April 22	4	132	0.03
2019	March 23 – April 2	14	160	0.09
2019	April 12 –April 21	32	160	0.20
2020	April 1 – April 18	12	160	0.13
2020	Second round not completed due to Covid-19 disruptions.			
2021	26 Mar-4 Apr	24	156	0.15

Year	Survey Period	Number of Tracks	Distance Surveyed (km)	Track Index (Tracks/km)
2021	2nd round not completed due to Covid-19 disruptions			

Snow Survey Conclusions

The results of the 2021 wolverine snow track survey are consistent with the finding of the 2019 comprehensive report analysis in that occupancy rates remain stable over the life of the Mine. In 2021, detection rates could not be estimated in part because the second survey was not completed due to COVID-19 restrictions.

- Key highlights from 2019 comprehensive analysis of the wolverine track survey data showed that;
    - Wolverine tolerate low level activity but may reduce their use of the study area as Mine activity increases.
    - Habitat was found to have a small effect on colonization rates and transects with lower quality habitat were found more likely to be colonized. Wolverines may be changing their habitat selection over time in response to varying environmental pressures (e.g., food availability, competition) and what is considered high quality habitat in one year may not be consistent over time.
    - Changes in population growth were weakly correlated with annual occupancy rates.

  The 2019 analysis of the data showed that conducting multiple snow tracking surveys within a year is integral to correctly estimating occupancy rates, as wolverine detectability is relatively low at around 40%. Which was not surprising because wind and snowfall have been variable during the surveys among years. Continued monitoring of wind and snow conditions will help make accurate and unbiased estimates of detectability, and subsequently occupancy, in future years.

  The data and analyses showed a small amount of variation in wolverine occupancy over time that was seldom below 70%. This suggests that wolverine occupancy in the study area has changed little from 2008 to 2019 despite the increased probability of extinction in response to higher Mine activity levels (i.e., FTE). In other words, annual declines in occupancy due to higher Mine activity do not have long lasting effects on wolverines, as they will reoccupy transects in the study area in years with lower Mine activity. Although there are only two years of overlap with wolverine density estimates at Diavik from 2005 to 2014, a similar stable trend was reported using DNA hair sampling data.

- Results from the 2017 comprehensive analysis of snow track data indicate that track density index (TDI) and occurrence of snow tracks have increased in the study area through time from 2003 to 2016. These patterns appear unrelated to the Mine, although both TDI and occurrence were negatively correlated with the amount of waste rock production.

Wolverine Hair Snagging

Diavik participated in a joint wolverine DNA research program with the GNWT and EKATI mine in certain past years. This program was conducted at Diavik in 2005, 2006, 2010, 2011 and 2014 and the study area is associated with the Diavik, Ekati, Snape Lake and Gacho Kue mines, and Daring Lake. In 2018, a study of the data suggested that mine-related effects are very small if present, which is consistent with the long-term results of Diavik's snow track monitoring program and recorded annual adverse wolverine-Mine interactions. A key finding of the study was that wolverine across these study areas function as a single population, so there is limited utility for this type of monitoring to detect separate mine related effects. The study reported that the number of individual wolverine captured in the study has ranged from 17 to 24 wolverines from 2005 to 2014 with an estimated density of 2.2 wolverine per 100 km^2. The program frequency depends on the number of individuals identified and could be repeated every four to six years to detect an annual decline of 5%.

Program partners at the 2021 Diamond Mine Wildlife Monitoring Meetings determined that the wolverine hair snagging program will be discontinued.

Raptors

Will the distribution or abundance of raptors be affected by the mine development?

EA Predictions and Overall Status:

- ***Disturbance from the mine and the associated zone of influence is not predicted to result in measurable impacts to the distribution of raptors in the study area; and***

Negligible impacts to the distribution of raptors in the mine area have been observed

- ***The mine is not predicted to cause a measurable change in raptor presence in the study area.***

Raptor presence within the study area has remained similar over the years

Observations:

Since May 2005, peregrine falcons have been seen nesting on Diavik buildings and pit walls. Pit wall/infrastructure inspections are completed each year to determine use by raptors. Nests were considered active if they were observed to have eggs or young. Once a nest was confirmed to no longer be active, no further inspections were undertaken.

In 2021, a total of 67 Pit Wall/infrastructure inspections were completed from 7 May until 5 September to determine use by raptors.

Two rough-legged hawk nests were recorded in 2021; one on the south side of the A21 South Ramp Highwall and one at the Site Services Lineup Wall. The nest at the A21 South ramp was first observed on 12 May when two adults were observed, one of which was constructing a nest. An adult was frequently observed in the nest throughout May to early July, and three nestlings were observed in the nest on 4 July, with the last observation occurring on 8 August when they were observed out of the nest. The nest at the Site Services Lineup Wall was first observed on 30 May with a single adult sitting on a nest. Three nestlings were observed on 11 July, with all three having fledged by 8 August when they were observed perched near the nest. Although not considered "raptors", common ravens (*Corvus corax*) are functional raptors and were confirmed nesting on the stairs of a fuel tank in the south Tank Farm. Additionally, one American robin (*Turdus migratorus*) was identified nesting on machinery in the heavy equipment laydown area. This resulted in the piece of equipment being taken out of operation while the nest was active. Table 18 below summarizing nests observed in 2021.

Two raptor mortalities occurred in 2021. On 2 August, a deceased rough-legged hawk was discovered by the dewatering shack at the south entrance of the A21 pit. On 10 October, a dead short-eared owl (*Asio flammeus*) was discovered in the middle of the road, halfway between the airport and the north inlet water treatment plant. The causes of both mortalities are unknown; however, due to the proximity to Mine roads, both mortalities were possibly the result of collisions with vehicles.

Table 18: Nests observed on Mine infrastructure and open pits in 2021.

Area	Species	Date	Observations
A21 South Ramp	Rough-legged hawk	12 May to 8 August	Nest building was observed on 12 May and a single adult was observed from May to early July sitting on the nest. On 4 July, three nestlings were observed in the nest. Nest was deemed successful with observations of three fledglings on 8 August.
Site Services Line Up Area	Rough-legged hawk	30 May to 8 August	An active nest was first observed on 30 May where a single adult was observed sitting in a nest. The nest was deemed successful as three juveniles had fledged from the nest and were observed on 8 August perched on rocks at the top of the Site Services Line Up area feeding.
South Tank Farm	Common raven	23 May to 2 August	An active common raven nest was recorded on 23 May through to 2 August. Nestlings were visible on 23 May. Nest success was not recorded.
Heavy Equipment Laydown	American robin	2 August to 8 August	An active American robin nest was recorded on 2 August and 8 August. Nestlings were first recorded on 2 August. Nest success was not recorded.

- In 2020, a total of 55 Pit wall/infrastructure inspections were completed from 9 May until 5 September. A rough legged hawk nest was observed on the A21 south ramp pit wall on 20 May, 2020. The nest was active through June and early July, and 3 chicks successfully fledged from the nest in August. Potential raptor nesting was also observed at A418, A154, and the Site Services Line-up. A peregrine falcon was observed harassing a common raven at A418 on 6 June and again on 12 June, potentially defending a nest site. A rough-legged hawk along with whitewash was also observed at A154 at a previous nest site on 14 June, with additional whitewash observed at this location on 17 August. Finally, a pair of peregrine falcons were observed perched on a wall behind the Site Services Line-up area on 28 June. No eggs or young were observed at these locations in 2020 so were not confirmed as active nests. Once the nest was confirmed to no longer be active, no further inspections were undertaken.
- Although not considered "raptors", common ravens are functional raptors and were confirmed nesting on a rock wall near the Site Services Line-up area in 2020.
- On 17 September, 2020, an unresponsive rough-legged hawk was discovered on Lakeshore Boulevard and died shortly after the discovery. The carcass was sent to ENR for necropsy, the cause of the mortality is unknown.
- In 2018, during the inspections, one peregrine falcon nesting site was confirmed at the Site Services Building. In addition, a rough-legged hawk was observed building a nest at A418; however, it is unclear if any eggs or young were present in this nest. Although not considered

"raptors", common ravens were confirmed nesting at the South Tank Farm with two young that fledged around the 11 July. A potential nest site on the pit wall for rough-legged hawk was observed at A154 in July but was not confirmed. There were no peregrine falcons found dead in 2018.

- Two active nest sites were found in each year from 2015 to 2017. Two rough-legged hawk and 1 peregrine falcon nest were found in 2014, 4 peregrine falcon nests were seen in 2013 and one in 2012, but no raptors were found nesting at the mine site in 2010 or 2011.
- There were no peregrine falcons found dead in 2017. In 2016, one peregrine falcon was found dead at the Mine. A peregrine falcon carcass was found near the main intersection for entry to the A21 area. The carcass had been picked clean by ravens and the cause of death could not be determined.
- There were no falcon deaths at the mine in 2014 or 2015. Two falcon mortalities occurred at the Diavik Mine site in 2013. On 20 July 2013, a peregrine falcon carcass with 3 wounds was found by the A154 dike; it is suspected to have hit a power line. On 17 November 2013, a juvenile carcass that had been heavily scavenged was found below the ore storage area in the A154 pit. There was no nearby infrastructure that would indicate that the mortality resulted from the Mine. No falcons died because of mine operations from 2009 to 2011, but one peregrine falcon was found dead in 2012.

Surveys

In 2020, a regional nest monitoring survey was completed over four days on 18 to 19 June and 27 to 28 July. The results of the 2020 nest monitoring survey are included in a regional database that is managed by ENR. Diavik provided monetary support to the project for fuel and helicopter flight time costs. The next regional nest monitoring survey is scheduled for 2025.

Diavik, Ekati and the GNWT conducted falcon productivity and occupancy surveys annually in the Daring Lake, Diavik and Ekati study areas from 2000-2010 (Table 19). The falcon monitoring results from Daring Lake have been used as control data for productivity from an undisturbed area. Previously identified potential nesting sites were visited by helicopter in May each year to determine if nesting sites were occupied, and again in July to count any young in the nest.

- Nest occupancy remained relatively high in the Lac de Gras region throughout those 10 years (raptors were preferentially using the area within 14 km of the mine), supporting the prediction that mine activity levels would have a negligible impact on the presence and distribution of raptors in the study area. Annual changes in nest success were also not related to the level of activity at the mine site.
- As a result of these findings, discussions during the wildlife monitoring program review process from 2009-2011 supported a change in falcon monitoring methods to align with the Canadian Peregrine Falcon Survey (which in turn is aligned with the North American Peregrine Falcon Survey). The survey took place in 2015. The monitoring was conducted by ENR biologists and included surveys of known nest sites in early and late summer to

determine nest use and the presence of hatchlings. The monitoring approach included a helicopter survey using fly-by techniques to minimize disturbance to nesting birds

- The CPFS is no longer completed; however, DDMI will still contribute surveys of nest use and success in the study area for regional monitoring by ENR and other researchers. Contribution of nest monitoring data to ENR for inclusion in regional and national databases is scheduled for every five years. The next regional survey is scheduled for 2025.
- Chick production in past years has ranged from zero to seven in the DDMI study area. Observations made over the years were consistently similar to those of the control site at Daring Lake, where productivity and occupancy rates have changed little since baseline.

Table 19: Falcon nest occupancy and production at Diavik and Daring Lake, 2000 to 2010.

Year	Survey Area	Total Sites	Occupied	Productive	Total Young
2000	Diavik	6	2	2	5
	Daring	-	-	-	-
2001	Diavik	6	2	0	0
	Daring	13	3	1	3
2002	Diavik	6	4	1	3
	Daring	18	10	9	15
2003	Diavik	6	1	0	0
	Daring	10	5	3	4
2004*	Diavik	6	5	4	7
	Daring	12	6	1	2
2005*	Diavik	6	3	1	2
	Daring	10	5	1	1
2006*	Diavik	6	3	0	0
	Daring	10	4	1	3
2007*	Diavik	6	3**	2	7
	Daring	10	1	2	8
2008*	Diavik	6	5***	2	3
	Daring	12	6	3	4
2009*	Diavik	6	4	2	5
	Daring	12	5	3	6
2010*	Diavik	8	6	3	7
	Daring	12	5	3	7

- Daring Lake data originates from the Daring Lake research station (S. Matthews, personal communication, ENR).
- *Diavik data includes spring (occupancy only) and summer (productivity only) monitoring data. Previous occupancy values based on productivity survey only.
- **Occupancy data for May provided by BHPB and GNWT – site DVK 11 not checked
- ***Does not include additional site (DVK 19-1) found occupied during the June survey

Waterfowl

Will the distribution or abundance of waterfowl be affected by the mine development?

EA Predictions and Overall Status:

- ***At full development, 3.94 km² of aquatic habitat will be lost; and***

The amount of aquatic habitat lost to date remains below the value predicted

- ***The mine is not predicted to cause a measurable change in waterfowl presence in the study area.***

Construction and operation of the mine has little effect on waterfowl

- ***Early open water or early vegetation growth might attract waterfowl during spring migration.***

Mine water bodies were used by birds in spring but they typically did not use them any earlier than shallow areas of Lac de Gras (e.g. east and west shallow bays)

Observations:

By the end of 2007, a total of 2.56 km² of shallow and deep water habitat had been lost due to mine development, and there had been no additional shallow or deep water areas developed since that time. With the start of development of the A21 dike in spring 2015, a total of 0.23 km² of additional water habitat was lost; 0.06 km² of shallow water and 0.17 km² of deep water. With continued A21 construction in 2016, a further 0.03 km² of shallow water and 0.47 km² of deep water habitat were lost. The total area of water habitat loss still remains below predictions (3.94 km²) at 3.15 km².

East Island shallow bays (natural bays in Lac de Gras) and mine-altered water bodies (ponds that have been changed or created for the mine site) were surveyed annually, on a daily basis, over a 5-week period during the peak spring migration (late May to late June) for waterfowl presence from 2003 to 2013. The results of surveys indicated that mine-altered water bodies are used by water birds, including ducks, geese, gulls, loons and shorebirds, during spring. However, the range of dates when water birds are first detected do not support the predictions that waterfowl or shorebirds are using mine-altered water bodies earlier than the East and West bays. As there is no similar control site that can be used for the shallow bays (they are a unique feature of the region), detailed statistical analysis on waterfowl presence is not conducted. Over the years, almost 20 different species of shorebirds have been observed, in addition to 5 species of dabbling ducks, 14 types of diving ducks and 4 kinds of geese. Each year, the shallow bays have the highest abundance of birds, followed by the north inlet. Overall, data collected suggest that construction and operation of the mine has had little effect on the presence of birds in the area.

Diavik consulted with Environment Canada, EMAB and other stakeholders about removing the requirement to monitor bird species abundance and diversity at East and West bays, given the results to date. This monitoring program was discontinued in 2014.

- Diavik has been operating 4 wind turbines since September 2012. During consultations with Environment Canada (EC) prior to installation, it was noted that no post-construction follow up monitoring for bird fatalities is required. However, Diavik voluntarily implemented a post-construction monitoring program in 2013 to assess the potential direct impacts the wind farm may have on birds. Surveys for bird carcasses below the turbines were undertaken to estimate bird strikes. Monitoring was completed by Diavik personnel twice per week, within a 50 meter radius of each turbine using the Baerwald Spiral method. In 2013, a total of 23 inspections were completed at the wind farm during post-construction mortality monitoring between 11 June and 23 August and no bird carcasses were observed. Instead of continuing with the more formal Baerwald surveys, Diavik now includes monitoring for bird mortalities at the wind turbines as part of the overall site compliance monitoring program. No bird mortalities have been observed during inspections of the wind farm area.

4. Community Engagement and Traditional Knowledge

Meetings with community leadership and members, as well as school and site visits are some of the methods used to engage with communities over the years. Diavik has an approved Engagement Plan (Version 2.1) with the Wek'èezhìi Land and Water Board that was developed with review and input from the Participation Agreement (PA) organizations. Additionally, Diavik also has an approved PKMW Engagement Plan that is specific to the PKMW Project and informs DDMI's engagement with potentially affected Indigenous Groups during the implementation of the PKMW Projects to ensure that water is safe for people, aquatic life, wildlife, and suitable for cultural use. Table 20 summarizes engagements relating to the environment that Diavik conducted in partnership with the PA organizations and potentially affected Indigenous organizations during 2021.

Where possible, Diavik tries to include community members in environmental monitoring programs. In 2021, a community participant from Lutsel'ke came to site to help with the Wolverine track survey program.

Additionally, organizations submit comments and recommendations to help Diavik improve their environmental monitoring programs, how results are presented or how Diavik responds to compliance concerns through letters to DDMI and the WLWB review process. Those submitted through the WLWB review process are recorded in the on-line registry, including DDMI's response to all recommendations. EMAB's online library also contains technical reviews, workshop summaries and Board meeting minutes that capture reviews and recommendations that EMAB may provide to Diavik outside of the WLWB process.

In 2021, in-community and in-person engagements were drastically impacted due to Covid-19 and the large majority of engagements were completed by telephone and videoconference. Diavik worked with community partners to ensure that engagements were adapted to suit the needs of community during this time. Use of technology, translation and other methods were modified to maintain engagement. While face to face engagements are preferred in any year, the consideration of safety, health and wellbeing of people and community was prioritized.

In 2021, significant engagement occurred regarding the Diavik Water License amendment application. This application was submitted to allow site reclamation activities (as approved in the current Closure and Reclamation Plan V4.1) to begin in certain areas before mine closure. This water licence amendment would give the Wek'èezhìi Land and Water Board the mechanism to allow Diavik to begin reclamation activities before mine closure including:

- Closing the A418 open pit and associated underground tunnels and begin depositing Lake water into the open pit.
- Removing water retention dikes in specific engineered collection ponds and returning those associated watersheds on the island to pre-development drainage patterns.

Table 20: Community engagement during 2021.

Engagement	Location	Date
Tłı̨chǫ Government		
Covid-19 discussions	Telephone	Multiple
PA Implementation	Multiple	Multiple
Frame Lake Fish Rehabilitation Project	Virtual Meeting	January 19
Water Licence amendment for Progressive Reclamation	Virtual Meeting	Multiple
Highway 3 safety concerns	Virtual Meeting	February 1
Joint Venture Winter Road closure update	Email	30 March
Closure plan and social impacts of closure	Multiple	Multiple
Reimagining Closure Project – engagement planning	Letter	July 8
Rio Tinto Corporation's First Step Business Accelerator Program request for business applications	Email	July 19
Notification of Injured Bear and ENR advice to euthanize, support granted by TG	Telephone	August 9
2021 TK Panel and AEMP TK Camp	Lac de Gras TK Camp	July 30 to August 8
2021 TK Panel and AEMP TK Camp	In Person Yellowknife	December 14 to December 16
Kitikmeot Inuit Association		
Covid-19 discussions	Telephone	Multiple
Reimagining closure project	Telephone	January 15
PKMW project cultural use water quality workshop summary report	Email	February, multiple
Joint Venture Winter Road closure update	Email	30 March
PA Implementation	Multiple	Mutliple
Diavik Water Licence Amendment to allow Progressive Reclamation	Multiple	Multiple
Reimagining Closure Project – engagement planning	Letter	July 8
Rio Tinto Corporation's First Step Business Accelerator Program request for business applications	Email	July 19

Engagement	Location	Date
Notification of Injured Bear and ENR advice to euthanize, support granted by TG	Call	August 9
2021 TK Panel and AEMP TK Camp	Lac de Gras TK Camp	July 30 to August 8
2021 TK Panel and AEMP TK Camp Verification meeting	In Person Yellowknife	December 14 to December 16
North Slave Metis Alliance		
Covid-19 Discussions	Telephone	Multiple
Frame Lake Fish Rehabilitation Project	NSMA Boardroom	January 20
PA Implementation	Multiple	Multiple
Joint Venture Winter Road closure update	Email	30 March
Indigenous Peoples Day Planning	Telephone	May 20
Reimagining Closure Project – engagement planning	Letter	July 8
Closure plan and social impacts of closure	Multiple	Multiple
Rio Tinto Corporation's First Step Business Accelerator Program request for business applications	Email	July 19
Notification of Injured Bear and ENR advice to euthanize, support granted by NSMA	Call	August 9
Diavik Water Licence Amendment to allow Progressive Reclamation	Virtual Meeting	August 31
PKMW Project Cultural Water Quality Criteria	Virtual Meeting	September 27
Request for donation of standup freezers at closure to use for traditional meats to replace NSMA's	Telephone	November 12
2021 TK Panel and AEMP TK Camp	Lac de Gras TK Camp	July 30 to August 8
2021 TK Panel and AEMP TK Camp	In Person Yellowknife	December 14 to December 16
Yellowknives Dene First Nation		
Covid-19 discussions	Telephone	Multiple
Joint Venture Winter Road update	Telephone	January 28, March 20
PA Implementation	Multiple	Multiple

Engagement	Location	Date
Business update	Dettah	February 23
PKMW Project – Cultural use of water criteria workshop	Dettah	June 3
Reimagining Closure Project – engagement planning	Letter	July 8
Rio Tinto Corporation's First Step Business Accelerator Program request for business applications	Email	July 19
Notification of Injured Bear and ENR advice to euthanize, support granted by YKDFN	Call	August 9
Diavik Water Licence Amendment to allow Progressive Reclamation to commence	Email	August 20
Advance notice of disposal of assets at site- opportunity to express interest in donation of equipment	Letter	October 26
2021 TK Panel and AEMP TK Camp	Lac de Gras TK Camp	July 30 to August 8
2021 TK Panel and AEMP TK Camp	In Person Yellowknife	December 14 to December 16
2021 AEMP TK Camp participation – concerns over use of Traditional Knowledge	Telephone	December 14
Lutsel K'e Dene First Nation		
PA implementation,	Multiple	Multiple
Covid-19 updates/discussions	Telephone	multiple
Diavik President visit to Luts'elke	In Person	June 5
Frame Lake Fish Rehabilitation Project – letter of support	Call, Email	June 23, 24
Reimagining Closure Project – engagement planning	Letter	July 8
Rio Tinto Corporation's First Step Business Accelerator Program request for business applications	Email	July 19
Notification of Injured Bear and ENR advice to euthanize, support granted by LKDFN	Call	August 9
Water Licence amendment to allow progressive	Multiple	Multiple

Engagement	Location	Date
reclamation to commence		
2021 TK Panel and AEMP TK Camp	Lac de Gras TK Camp	July 30 to August 8
2021 TK Panel and AEMP TK Camp Verification meeting	In Person Yellowknife	December 14 to December 16
Covid-19 Community outbreak support	Call	September 17
Advance notice of disposal of assets at site- opportunity to express interest in donation of equipment	Letter	October 26
Leadership Diavik Business update	Virtual Meeting	December 10
Potentially Affected Indigenous Organizations		
Deninu Kue First Nation		
PKMW Engagement Protocol - draft	Multiple	Multiple
Diavik Water Licence Amendment to allow Progressive Reclamation to commence	Letter, Telephone	October 2, October 6
Northwest Territory Métis Nation		
PKMW Engagement Protocol - draft	Multiple	Multiple
Cultural Water Quality Criteria workshop planning	Email	December 6
Fort Resolution Métis Government		
Engagement Protocol Development and CUWC	Multiple	Multiple
Capacity building – High school career fair and community contribution	Email	October 7
Cultural Water Quality Criteria Workshop planning	In Person during technical session on WL amendment	December 8-9
Water Licence Amendment for Progressive Reclamation technical session.	In Person	December 8-9

Traditional Knowledge Panel

Mindful of Covid-19 restrictions on site, and in order to accommodate visits to the tundra near Diavik, the 2021 TK Panel occurred off site on Lac de Gras immediately following the AEMP Community Based Monitoring (CBM) TK camp.

In 2021, the TK Panel Session #13 focused on vegetation health on the tundra around the mine, and options for monitoring vegetation health during and after mine closure. Due to the restrictions put in place during the camp because of Covid-19, there was no opportunity to formally respond to recommendations from Session #12 regarding pit closure options. The recommendations from Session #13 and DDMI's responses to past recommendations are included in Appendix III.

The goals of session #13 were to:

- Provide input into monitoring to ensure that water, fish and vegetation are healthy during and after pit closure;
- Discuss, shape, and give feedback on Golder and DDMI's first draft of a formal TK vegetation survey for sites;
- Identify additional sites for future watching;
- Build on discussions of previous TK Panel's exploring healthy vegetation and vegetation watching now, during closure, and post-closure; and
- For TK Panel members to "see with their own eyes" the health of the vegetation near the Diavik mine site

Through observation and discussion, key questions were considered that resulted in the following key guidance points:

- Traditional practices and protocols when out on the land watching vegetation should be respected in future programs and sessions;
- Both youth and Elders should work together in future watching;
- Climate change should be a consideration for all discussion / planning of watching programs going forward;
- Diavik dust collection sites and vegetation monitoring equipment should be left up long after the mine is closed, until significant regrowth of vegetation is verified by Elders;
- Watching should continue for at least 50 years after mine closure;
- Panel members should be able to quickly and easily access information being shared by DDMI, and outcomes of TK Panel sessions;
- Previous discussions and recommendations related to watching vegetation should be revisited (e.g. filtering contaminated water through moss, discussions of whether reseeding should occur) as this was the first opportunity for some participants to study vegetation first-hand away from the mine site during a TK Panel session; and
- Closure planning and watching should be conducted with transparency.

These guidance points and on the land observations contributed to the development of specific TK recommendations that were focussed on themes such as:

- Vegetation Health Indicators - What should be measured to understand vegetation health in a broad context going forward. Two recommendations were made that included expanding the size of vegetation monitoring plots and adding rainfall and wind data as factors that can help researchers understand vegetation health.
- Wildlife Monitoring - Inclusion of wildlife diversity, abundance and health as important indicators of vegetation health. Four recommendations were related to wildlife monitoring alongside vegetation monitoring, including animal scat analysis, wildlife species abundance and diversity monitoring, monitoring for new vegetation and wildlife species, and looking at vegetation in areas where animals were spotted in the same year.
- Three recommendations requested specific results of current monitoring programs including dust monitoring, AEMP dissolved oxygen levels in the lake, current fish and vegetation species in the lake.
- Monitoring Timeline – TK panel members recommended that vegetation monitoring should occur with Elders and youth for over 50 years past closure of the mine using both TK and Science.
- TK Incorporation – Diavik should consider all previous TK Panel recommendations related to vegetation

5. New Technologies and Energy Efficiency

There are four wind turbines that operate at the Diavik mine, and staff continued to make the most of the efficiency of these turbines throughout the year. The wind turbines offset 3.8 million litres of diesel fuel use and approximately 10,269 tonnes of emissions (CO_2e) in 2021. The turbines have flashing lights to help deter wildlife and reduce bird strikes from the rotating blades. Additionally, approximately 212,580 litres of waste oil was collected to be used in the waste oil boiler during 2021. Since it was commissioned in 2014, a total of 1.7 million litres of waste oil has been burned to create heat, rather than having to ship it off-site.

Diavik continues to look for new ways to reduce energy needs across site. Additional energy efficiency measures include; heat recovery from the electricity generators and boilers, use of LED lighting in buildings, photocells installed in outdoor light poles, installation of variable frequency drive pumps around site which limit energy requirements, installed light timers, decommissioning of unoccupied buildings, installing digital thermostats, and reducing heat in infrequently used buildings. In 2021, these energy savings projects saved approximately 116,000 litres of diesel fuel offsetting approximately 3,630 tonnes of emissions (CO2e).

In 2020, Diavik installed a new food waste dehydrator. The new kitchen food waste dehydrator system decreases weight and volume of kitchen waste that would otherwise report to the incinerator by 90% reducing storage needs which will limit presence of wildlife attractants at site as the dehydrated product is odourless. The dehydrator removes moisture from kitchen waste and will

help the incinerator burn more efficiently with the correct ratio of wet waste to dry waste, reducing greenhouse gas emissions. In 2020, DDMI also installed a new more efficient waste incinerator. This new incinerator has a larger capacity and no requirement for scrubber water in the incineration process. It can handle all of the waste produced at site on a daily basis and reduces the amount of diesel required for incineration by 50% compared to the old incinerator. It can incinerate 5.7kg of waste per gallon of diesel, compared to the old incinerator which burns 2.2 kg/gal diesel and has 25% of the capacity of the new incinerator per burn cycle. The old incinerator is now used as a backup if needed.

In 2018 Diavik changed how the Process Plant operates. The Plant removes diamonds from kimberlite rock, and the rock ends up as either a dry coarse sand (Coarse Processed Kimberlite/CPK) or a wetter fine sand (Fine Processed Kimberlite/FPK). The Plant used to make more fine than coarse sand, but the fine sand is harder to deal with at closure and takes up more space in the Processed Kimberlite Containment Facility (PKCF) because of the water in it. Beginning in 2016, Diavik tested new technology for removing water from Processed Kimberlite (PK) to increase the amount of CPK relative to FPK; the positive results from the trial which ended in 2018 allowed Diavik to continue to use this method. This change resulted in better use of PKCF storage capacity (more PK could be stored in the same area), improved ability to reshape the PKCF with coarse sand for closure, and improved ability to manage water in the PKCF.

6. Operational Activities & Compliance

The information below provides a summary of the operational activities that occurred during 2021 to maintain compliance with regulatory requirements outlined in Diavik's Water Licence, Environmental Agreement, Land Leases, Fisheries Authorization and Land Use Permits. More detailed information can be found in the Type 'A' Water Licence annual report. In 2021 operational and compliance activities include,

- Required SNP stations were sampled during each month. Where samples were unable to be obtained (e.g. safety concerns, weather, equipment issues), samples were re-scheduled or postponed. In 2021, parameters with Effluent Quality Criteria (EQC's) remained well below the maximum amounts allowed for in the Water Licence (Part H Item 26), including ammonia. Monthly SNP reports are submitted to the WLWB.
- Under ice AEMP in April/May 2021 and an interim year open water AEMP session in August/September 2021.
- Air quality and dust deposition monitoring.
- Quarterly toxicity samples from stations 1645-18 and 1645-18B were collected in February, June, September and December 2021.
- The open pit bottom elevations were at the 8880 (A154), 8880 (A418), 9291 (A21) level, or 133m, 120m below sea level (bsl), and 291m above sea level (asl), respectively. For comparison, the surface of the water on Lac de Gras is 415.5m asl.
- The total underground development for 2021 was 1,729m, which included 237m of lateral waste rock development, 58 m of vertical waste rock development, and 1,729m of ore development.
- Collection pond dewatering activities were conducted on a regular basis in 2021.
- The Tibbitt to Contwoyto Winter Road operations were successful and Diavik trucked loads of supplies to the mine site, and backhauled stored hazardous wastes for off-site recycling or disposal.
- The average camp population for the year was 558.

Surface Projects

- Phase 7 Processed Kimberlite Containment Facility dam raise to 471m
- PKCF Phase 7 dam liner and bedding placement
- Resloping, till and rock coverage of NCRP
- Remining of North Country Till Pile
- PKCF NW decant sump re-installed
- PKCF Phase 7 spillway completed
- Raising of PKCF roadway and spigot pipe benches

- PKCF West Dam seepage mitigation and till berm construction

Underground Projects (numbers below are associated with levels (masl) in the mine)

- Built pump station A8695
- Built N8800, N8825, N8850, A8870, A8895 bumper blocks
- Built Zacon Doors S8775
- Constructed SLR bulkheads for level closures A8870, A8845, S8800

Environmental Compliance

The 2020 Environmental Agreement Annual Report was deemed to be satisfactory by the Deputy Minister of the Government of Northwest Territories, Environment and Natural Resources on December 7, 2021. A copy of the Deputy Minister's letter on the 2020 Environmental Agreement Annual Report is provided in Appendix I.

- There was a total of 9 spills that were reported to the NWT spill line that occurred on the mine site or at exploration sites during 2021. Spill report forms are submitted to the GNWT and the Inspector follows up on spill clean-up.
- The GNWT Lands Inspector had no major concerns resulting from inspections in 2021.
- EMAB and other organizations submit comments and recommendations to help Diavik improve their environmental monitoring programs, how results are presented or how Diavik responds to compliance concerns through letters to DDMI and the WLWB review process. Those submitted through the WLWB review process are recorded in the on-line registry, including DDMI's response to all recommendations. The EMAB online library also contains technical reviews, workshop summaries and Board meeting minutes that capture reviews and recommendations that EMAB may provide to Diavik outside of the WLWB process.
- In 2021, DDMI responded directly to EMAB on comments and recommendations on the 2019 Environmental Air Quality Monitoring Report and the 2020 Wildlife Management and Monitoring Report.
- In 2021, one concern from PA partners was raised regarding the findings of the 2021 AEMP TK Camp. The engagement for this concern is ongoing, and fish collection for health testing is planned for summer of 2022 and winter 2023 to follow up.
- The four direct communications or letters from PA partners that were raised in 2020 were not related to the environment.

GNWT-Department of Lands Inspections Findings

In 2021, the GNWT – Department of Lands Resource Management Officer performed 7 in-person inspections of the mine and 1 virtual inspection in April 2021. In a letter from the GNWT regarding compliance and enforcement strategy, dated 19 March, 2020 it was decided that inspection reporting can be conducted using information provided by site personnel from the mine to complete inspection reports. For the virtual inspection, Diavik staff provided the inspector with photos and

information to document the state of requested locations. This was necessary due to active covid-19 cases on site. The inspector identified 14 minor concerns over 8 inspections. Below is a summary of minor concerns noted by the inspector and the follow-up actions taken.

- January 28: snow observed in spill trays beneath parked equipment, no hydrocarbons seen in spill trays
    - Snow removed from spill trays
- February 24: Waste drum storage concerns at Waste Transfer Area
    - Sent on winter road backhaul, 2021
- March 23: Snow in spill pad compartments, full canisters of used fuel spill pads, small leak on refueling pump at South Tank Farm. Snow observed in spill trays at Metcon laydown, no hydrocarbons present.
    - Fuel pump fixed, all contaminated material removed to Waste Transfer area.
    - Snow removed from spill trays
- September 23: Hydrocarbon staining beneath decommissioned vehicles in the Metcon laydown, ponded water seen in the South Tank Farm containment berm.
    - Diavik in process of removing vehicles for progressive reclamation.
    - Water pumped out by vacuum truck
- November 23: One spill kit required restocking at refueling station
    - Spill kit restocked.

In 2020, The GNWT – Department of Lands Resource Management Officer performed 5 in person and 2 virtual inspections. The inspector discovered 4 minor concerns over 7 inspections. Below is a summary of inspector concerns in 2020 and follow-up actions taken.

- May 22: Hydrocarbon staining on snow beneath a parked excavator in the Metcon laydown.
    - Snow and hydrocarbons cleaned up and sent to Waste Transfer Area landfarm. Spill trays already present and were cleaned of snow.
- October 22: Fuel barrels placed on Airport apron within 100m of Ordinary High Water Mark (OHWM) of waterbody.
    - Fuel barrels moved to lined barrel storage area east of Helipad away from OHWM
- November 27: Small leak in refueling hose at un-used refueling station. Water found in barrel meant to hold spill pads, and full black mega bags unlabelled.
    - Leaking hose removed from pipe and pipe capped to remove from service.
    - Barrel removed and black mega bags identified as shotcrete, subsequently used.

Planned 2022 Key Operational Activities;

- Complete the Phase 7 dam raise at the PKC Facility
- Closing of the A418 underground mine
- Complete pipeline for processed kimberlite to A418 underground mine (PKMW project)
- Continue efforts on placing cover materials for reclamation of the WRSA-NCRP
- Continue resloping of the WRSA-NCRP

- Continue development of the underground and open pit mines including a feasibility study on A21 underground development and A21 groundwater monitoring.
- Under-ice comprehensive AEMP session in April/May and open water comprehensive AEMP session in August/September.
- Slimy Sculpin fish health study in August, 2022 coinciding with AEMP
- Large bodied-fish health collection to follow up on 2021 AEMP TK Camp findings
- TK panel on site June 2022
- DDMI will continue to sample SNP stations as and when required by Water Licence WL2015L2-001.
- Wolverine track survey sessions, waste and compliance inspections, raptor surveys, record incidental wildlife sightings, and wildlife and air quality monitoring and dust deposition-monitoring programs.

References for Further Information

Water Quality

- Monthly Surveillance Network Program (SNP) Reports
- 2021 Reports: Type A Water Licence, Seepage Survey Report
- AEMP Study Design Plan, Version 4.1
- Three Year AEMP Results Summary for 2017 to 2019
- AEMP Reference Conditions Report, Version 1.4
- AEMP 2021 Annual Report

All reports are available on the WLWB online registry.

Wildlife

- Wildlife Monitoring Reports
- Wildlife Monitoring & Management Plan
- 2013-2016 Comprehensive Wildlife Analysis Report

All reports are available on the EMAB online library.

Closure/Re-vegetation/Traditional Knowledge/Community Engagement

- **CRP V4.1 (WLWB online registry)**
- Final Closure Plan – Waste Rock Storage Area/North Country Rock Pile, Version 1.2 (WLWB online registry)
- Diavik Community Engagement Plan V3.1 (WLWB online registry)
- TK Study for the Diavik Soil and Lichen Sampling Program, Tlicho Research and Training Institute (2013, http://www.research.tlicho.ca/research/partnerships-other-govt/traditional-knowledge-study-diavik-soil-and-lichen-sampling-study)

Air Quality

- Air Quality Monitoring Plan (EMAB online library)
- 2021 Air Quality Monitoring Report (EMAB online library)
- National Pollutant Release Inventory (http://www.ec.gc.ca/inrpnpri/default.asp?lang=En&n=B85A1846-1)

Socio-economics /Sustainable Development

- Environmental Agreement
- 2021 DDMI Sustainable Development Report

Management & Operating Plans (as per Table 2) and GNWT Inspection Reports

- Management and Operating Plans
- GNWT Inspection Reports

Appendix I GNWT ENR Minister Satisfactory Determination of the 2020 EAAR

Mr. Gord MacDonald
Principal Advisor, Sustainable Development
Diavik Diamond Mines (2012) Inc.
300, 5201 50TH STREET
YELLOWKNIFE NT X1A 2P8
gord.macdonald@riotinto.com

December 7, 2021

Dear Mr. MacDonald:

Satisfactory Determination of the 2020 Diavik Environmental Agreement Annual Report

On September 1, 2021 Diavik Diamond Mines (2012) Inc. (DDMI) distributed copies of the 2020 Environmental Agreement Annual Report (Annual Report) directly to Parties of the Environmental Agreement (the Agreement), including: Aboriginal Peoples (as defined by the Agreement), the Department of Environment and Natural Resources (ENR), and to the Environmental Monitoring Advisory Board (Advisory Board) per Article 12.1(a) of the Diavik Environmental Agreement.

An opportunity to review the draft Annual Report, and the final version of the Annual Report, was provided by ENR to the Advisory Board, the Department of Fisheries and Oceans Canada (DFO), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), and the Aboriginal Peoples as required under Article 12(e) of the Agreement. Responses containing a satisfactory determination for the final Annual Report were received from the Advisory Board and the Government of the Northwest Territories (GNWT)-Department of Lands (Lands) (attached). The Yellowknives Dene First Nation and the GNWT-Lands provided written comments (attached). No response on the final Annual Report was received from DFO, CIRNAC, Tłı̨chǫ Government, Łutsël K'é Dene First Nation, North Slave Métis Alliance, and the Kitikmeot Inuit Association. The GNWT encourages DDMI to address the comments from Parties. DDMI should ensure that concerns noted by Parties on the 2020 Annual Report are not carried forward into the 2021 Annual Report.

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In reviewing the written comments for both the draft and final reports, it has been previously noted on the 2019 Annual Report and the 2020 Annual Report that content related to air quality did not meet reviewers' expectations. The GNWT will address concerns related to Diavik's Environmental Air Quality Monitoring and Management Plan under a separate review.

The GNWT is satisfied that the contents of the Annual Report are in accordance with Article 12.1 and finds the 2020 Annual Report to be satisfactory.

If you have any questions about this process please contact Mr. Jeffrey Cederwall, Environmental Assessment Analyst, at Jeffrey_Cederwall@gov.nt.ca.

Sincerely,

Erin Kelly

Erin Kelly, Ph.D.
Deputy Minister
Environment and Natural Resources

Attachment

c. Honourable Caroline Cochrane
Premier

Grand Chief Jackson Lafferty
Tłı̨chǫ Government

Chief Edward Sangris and Council (Dettah)
Yellowknives Dene First Nation

Chief Fred Sangris and Council (N'dılǫ)
Yellowknives Dene First Nation

Chief Darryl Marlow and Council
Łutsel k'e Dene First Nation

.../3

President Bill Enge
North Slave Métis Alliance

President Stanley Anablak
Kitikmeot Inuit Association

Mr. Terri Enzoe, Sub-Chief
Łutselk'e Dene First Nation

Honourabe Shane Thompson
Minister, Environment of Natural Resources

Ms. Shaleen Woodward, Principal Secretary
Executive and Indigenous Affairs

Mr. Martin Goldney, Secretary to Cabinet/Deputy Minister
Executive and Indigenous Affairs

Mr. Paul Emingak, Executive Director
Kitikmeot Inuit Association

Mr. Geoff Clark, Director, Lands, Environment and Resources
Kitikmeot Inuit Association

Mr. Charlie Catholique, Director, Wildlife Lands and Environment
Łutselk'e Dene First Nation

Ms. Johanne Black, Director, Land and Environment
Yellowknives Dene First Nation

Ms. Charlie Catholique, Director, Wildlife Lands and Environment
Environmental Monitoring Advisory Board

Mr. John McCullum, Executive Director
Environmental Monitoring Advisory Board

Ms. Michelle Swallow, A/ Director, Environmental Stewardship and Climate Change
Environment and Natural Resources

…/4

Mr. Femi Baiyewun, Regulatory Manager
Yellowknives Dene First Nation

Mr. Michael Roesch, Senior Program Manager
Crown-Indigenous Relations and Northern Affairs Canada

Ms. Jessica Hurtubise, Manager Environment Department
North Slave Métis Alliance

Mr. Ryan Miller, Environment Department
Yellowknives Dene First Nation

Ms. Laura Duncan, Tłı̨chǫ Executive Officer
Tłı̨chǫ Government

Ms. Joline Huskey, Lands Regulator Coordinator
Tłı̨chǫ Government

Mr. Longinus Ekwe, Environmental Regulatory Specialist
Tłı̨chǫ Government

Ms. Grace Mackenzie, Mines Liaison Coordinator
Tłı̨chǫ Government

Mr. Mark D'Aguiar, Senior Fisheries Protection Biologist
Fisheries and Oceans Canada, Fish and Fish Habitat Protection Program

GNWT COMMENTS – DIAVIK DIAMOND MINE INC 2020 ENVIRONMENTAL AGREEMENT ANNUAL REPORT

#	TOPIC	COMMENT	RECOMMENDATION
1	Environmental Compliance (Page 106)	Page 106 has a comment at the start of the "*environmental compliance"* section which states: "*There were four direct communications or letters expressing concerns from the public about the mine or its operations during 2020".* The report would benefit from a brief discussion of the letter contents/concerns raised and details of how, as the next line states, "*all cases were subsequently managed and closed*".	We recommend DDMI provides a brief discussion on the letter contents/concerns raised and details of how, "*all cases were subsequently managed and closed*".
2	Environmental Compliance (Page 107)	Page 107, there is a note that: The GNWT Lands Inspector had no major concerns resulting from inspections in 2020 outside of the Phase 6 spillway modification on conformance. Though the modification incident is described elsewhere in the report, the report would benefit from a discussion of "minor" concerns raised during inspections, as well as dates and number of inspections conducted.	We recommend DDMI provides a brief discussion on minor concerns raised during inspections, as well as dates and number of inspections conducted.

From: Femi Baiyewun <femib@ykdene.com>
Sent: September 3, 2021 7:51 PM
To: LeeAnn Malley <LeeAnn_Malley@gov.nt.ca>; John McCullum (emab1@northwestel.net) <emab1@northwestel.net>; EMAB Env. Specialist (emab2@northwestel.net) <emab2@northwestel.net>; Charlie (charliecatholique@hotmail.com) <charliecatholique@hotmail.com>; Doris Enzoe <dorisenzoe@gmail.com>; Jessica Hurtubise <Jess.Hurtubise@nsma.net>; Johanne Black <jblack@ykdene.com>; jolinehuskey@tlicho.com; Laurie McGregor <Laurie_McGregor@gov.nt.ca>; lkdfnlands@gmail.com; lkdfnregulatory <lkdfnregulatory@gmail.com>; Longinus Ekwe <longinusekwe@tlicho.com>; Michael Roesch <michael.roesch@canada.ca>; Ryan Miller <ryanm@ykdene.com>; willie aglukkaq <waglukkaq@gmail.com>; Geoff Clark <dirlands@kitia.ca>; Georgina Carr <Georgina_Carr@gov.nt.ca>; Paul Emingak <execdir@kitia.ca>; D'Aguiar, Mark (Mark.D'Aguiar@dfo-mpo.gc.ca) <Mark.D'Aguiar@dfo-mpo.gc.ca>
Cc: Gord (Gord.Macdonald@riotinto.com) <Gord.Macdonald@riotinto.com>; Gray, Kyla (DDMI) (Kyla.Gray@riotinto.com) <Kyla.Gray@riotinto.com>; Boa-Antwi, Kofi (DDMI) (Kofi.Boa-Antwi@riotinto.com) <Kofi.Boa-Antwi@riotinto.com>; Michelle Swallow <Michelle_Swallow@gov.nt.ca>
Subject: RE: GNWT Call for Comments - DDMI 2020 Environmental Agreement Annual Report

Hi,
I comment as follows:
In the EAAR, under the performance reporting on water/fish (page v &vi)-
There is no comment on the scientific or water quality result from the 2018 AEPM program due to the mining activities. The comment referred to the TK which is corroborative evaluation to the scientific. The WQ at discharge points and the uncertainty of water management has a low confidence at this time (though this reporting referred to 2018, which may point to a severe impact as at 2021- yet to be confirmed from belated monitoring/sampling program).
On WQ monitoring/ reporting stewardship-The de-risking effort of the Diavik on elevated concentration and was not identified or addressed in the mitigation approach neither in their operation as deduced from the result of the sampling programs.
On Caribou and wildlife- The reporting did not contain credible, practical application that reduced the impact of their operation on the caribou, even with the studies so far.
I hope there can be possible improvement going forward as the end of mining is coming closer and being mindful of the post-mining impact on the environment (water and air qualities, and land)

Thanks &
Kind regards,

Femi Baiyewun
Regulatory Manager
Yellowknives Dene First Nation
Environment Department
901 Sikyea Tili, 2nd Floor Deton Cho Bldg

Tel. (867) 873-8951
Fax (867) 873-8545
E-mail femib@ykdene.com
Website www.ykdene.com

October 8, 2021 By Email

LeeAnn Malley
Manager, Environmental Assessment and Monitoring Unit
Environmental Stewardship and Climate Change
Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NT X1A 2L9

Re: Request for comments on the Diavik Diamond Mine 2020 Environmental Agreement Annual Report

Dear LeeAnn,

The Environmental Monitoring Advisory Board (EMAB) would like to thank the GNWT for its letter on September 2, 2021, requesting comments on the Diavik Diamond Mines (DDMI) 2020 Environmental Agreement Annual Report (EAAR).

EMAB submitted comments to DDMI on a draft of its 2020 EAAR on August 5, 2021. The comments that EMAB made were adequately addressed in the finalized version of the EAAR that was distributed to the Parties on September 1, 2021. We have no further recommendations regarding the 2020 EAAR.

If you have any questions, please contact John McCullum at the EMAB office.

Sincerely,

Charlie Catholique,
Chair

Cc:
EMAB Directors and Alternates (by email)
Parties to the EA (by email)

Appendix II Summary of Adaptive Management & Mitigation Measures

Table I-A Adaptive Management & Mitigation

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
Waste	- Minimize waste management issues. - Maintained dump site for inert waste materials. - Waste rock is managed to reduce the chance of acid runoff.	- All domestic and office wastes are incinerated at the waste transfer area. - Use of clear plastic bags in all areas for domestic and office space waste. - New WTA facility incorporated access road around the facility to allow equipment access and snow removal during winter to reduce opportunities for animals to climb over the fence; fencing angled and extended further in to ground to prevent access to burrowing animals; extensions placed on gate & gate automated in an effort to prevent animal access; improved sump facilities for contaminated soil containment area. - New incinerator housed in a building to further prevent animal attraction & rewards. - New, more efficient incinerator that burns more cleanly & completely. - Installed food waste dehydrator to improve incineration efficiency and reduce wildlife attractants. - Inert solid waste facility (landfill) access restricted. - A new landfill was approved within the WRSA-NCRP. - Storage procedure for empty waste bins to minimize wildlife incidents - Liner repairs conducted in areas where seepage from the dam was found. - More instrumentation was added in some areas to monitor dam and rock pile temperatures and movement.	- All employees and contractors are provided orientation on proper waste management. Color-coded collection bins and posters for non-food waste around site. - DDMI Environment Staff conduct regular toolbox meeting discussions regarding waste management. - Regular waste inspections are conducted by Environment Staff at the Waste Transfer Area and Landfill. A site-wide compliance inspection is completed weekly. - Site Services implemented clear plastic bags in all domestic and office areas to allow staff to verify contents prior to disposal. - Surface Operations staff collecting waste bins inspect bins prior to pick-up and notify Environment department to arrange for sorting. - Gate installed at inert solid waste facility to limit access to dump area. - Waste rock is classified according to sulphur level and is tested and sorted prior to disposal; Underground waste rock is all classified as Type III. - The waste rock pile is designed to encapsulate the rock with the highest sulphur content, and the PKCF contains the waste kimberlite rock; each of these areas are surrounded by collection ponds to capture seepage or runoff. - Water interception wells have been added to PKCF Dams to prevent seepage through the dam. - Granite (lowest sulphur content) is the rock permitted for use as a construction material at the mine site.	- During Inspector's visits in 2021, no concerns were raised regarding food waste, or the landfill. - Bear visits on East Island remained similar to past. - Wolverine visits on East Island were lower in 2021 than in previous years. - Improper disposal of waste is identified during DDMI waste inspections (including food waste) despite training and awareness sessions with site staff, but it is minimal when compared to the volume of waste disposed. - Installation of interception wells at the PKCF have proven effective. - Significant efforts undertaken to identify, inventory, remove, re-use or dispose of site infrastructure as a means of progressive reclamation. - Progressive reclamation opportunity for WRSA-NCRP continued with re-sloping and cover placement in 2021. - Development of the WRSA-SCRP continued in 2021 which includes reporting of any metasediments identified in the A21 pit and a 2% Type III rock trigger action response plan. No Type III was identified from the A21 pit in 2021.

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
		- Re-vegetation research is testing the use of waste rock as a substrate for plant growth. - Engagement conducted and Water Licence Amendment Application submitted with considerations for placing PK within mine infrastructure.	- Instruments were installed to monitor performance of structures such as the PKCF dam and the rock pile. - Extensive lab and field (test piles) experiments are done to test how the rock pile will perform. - Sewage sludge holding cell relocated to prevent human health concerns. - Installation of a waste oil heater for the batch plant. - New approach to waste management plans includes Solid Waste & Landfill, Hydrocarbon Contaminated Materials, Incinerator Management and Dust plans. - Storage and testing procedures developed and implemented for ash. - Investigation into rock management process that resulted in incorrect placement of Type III rock; areas where Type III rock was placed have been identified, recorded and tested as required. The Inspector is satisfied that concerns have been addressed.	

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
Water	- Effluent is treated before being discharged to Lac de Gras or is recycled. - Ammonia levels within water licence limits. - Prevent seepage water entering Lac de Gras. - Decrease freshwater use. - Have fish and water quality that are safe for use.	- Review loading and blasting procedures and materials for opportunities to reduce ammonia levels in pit and underground water. - Re-use North Inlet water as supply water to facilities at the mine site. - In 2009 the treatment plant was expanded to increase treatment capacity to accommodate increased flows from the underground. The expansion components are a "twin" of the original construction, except sand filters were not required to achieve water licence compliance and were not installed in the expansion. NIWTP treatment capacity was increased by bypassing sand filters. - Evaluated the use of treated effluent for dust suppression. - Conducted a study with the University of Alberta to evaluate the biological removal of ammonia and other nitrogen compounds in the North Inlet. - Special Effects Studies (SES) are completed when unexpected effects are measured during the AEMP. - Established Action Levels to respond to findings of various parameters of the AEMP. - Evaluate seepage prevention or interception methods upstream or downstream of areas of concern. - Investigate, assess and repair site infrastructure where seepage issues arise, and where possible. - Improve turbidity curtain anchors in response to elevated TSS levels due to deep water trench and site-specific exposure issues. - Retrofit Process Plant to change the waste stream ratio; reduce fine PK and increase coarse PK.	- The North inlet provides retention time for mine water before treatment, allowing for ammonia reduction by natural attenuation; mine water discharge located far away from treatment plant intake. - Influent and effluent in the NIWTP is monitored consistently via instream sensors (immediate feedback) and the SNP for parameters that are indicators of water treatment effectiveness. - Daily sampling of pit, underground & effluent water to produce trends & track compliance. - Plant able to automatically stop discharging treated water that meets or exceeds DDMI's *internal* limits (which are set below the water licence limits). - Ammonia Management Plan followed to minimize ammonia loss. - Batch and paste plants utilize treated effluent as a water source instead of fresh water. - Sumps and pumps installed underground to collect and transport water to the North Inlet. - Ability to re-use water from the North Inlet and PKCF, prior to treatment, to reduce freshwater intake volumes. - Frequent visual inspections of areas downstream of dams, dikes & ponds. - Water intercepted with the use of wells and pumps installed in PKCF dams. - Repairs to damaged seepage prevention infrastructure e.g. 2016 Pond 5 dam liner repair, 2016 Pond 4 dam repair, 2019 repair of liner Zone 7 East PKCF Dam, and various collection well repairs in the PKCF. - Source water (North Inlet, Collection Ponds, PKCF) chemistry around site are monitored as part of the SNP.	- Ammonia levels in 2021 were well below the licence limit of 12 mg/L. - Ammonia levels in mine water and effluent have remained low over time. - Parameters regulated in the Water Licence in NIWTP effluent remain well below discharge criteria. - Seepage was noticed in spring of 2021 from a natural depression at the toe of the WRSA-SCRP to a small interior lake SW of the rock pile. Seepage rates were monitored daily, and samples were collected whenever flow was present. A pump was installed to redirect water away from the receiving environment and the natural depression was infilled to remove the potential for standing water against the base of the WRSA-SCRP. All parameters tested, including toxicity, were below limits in Schedule 4 of ECCC's MDMER Regulations. -In May 2021 flowing water was observed at seepage location 6 west of the A21 pit. The flow reported directly to the A21 sump and did not impact the environment. No follow up actions required. -In November 2021 seepage from the west PKCF dam was observed bypassing an existing trench and reporting to the tundra adjacent to Lac de Gras. DDMI installed a pump to intercept the seepage and constructed a till berm and culvert to redirect the seepage to Pond 4. All parameters tested, including toxicity, were below limits in Schedule 4 of ECCC's MDMER Regulations. - Over 850 toxicity tests have been done on treated effluent since 2002 and have been non-toxic. - Traditional Knowledge study of fish and water health in Lac de Gras completed in 2021. - Action Level response plans for AEMP results are being identified and implemented.

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
		- Preventative work-stop measures and a TARP were established for A21 construction to reduce potential for TSS exceedances. - Clarification of Licence requirement for water against the PKCF dams with WLWB. - Seepage monitoring stations changed in response to observations over the years.	- SES to determine mercury concentration/availability in fish and sediments within Lac de Gras. - Evaluation of hydrocarbon levels in North Inlet. - Separation of water collection systems underground to capture clean groundwater and divert it to the North Inlet prior to it coming in contact with mine infrastructure/ water. - Use of absorbent berms or skimmers to remove oil from water in underground sumps. - Sediment collection sumps installed underground to separate dirt from the mine waste water. - Turbidity curtain and anchors for A21 dike construction redesigned and reinforced. - 2013 – Surface seepage monitoring stations and some groundwater wells removed from SNP to focus monitoring efforts on upstream water interception features. Deactivated seepage monitoring stations include: 1645-20, 1645-21, 1645-22, 1645-23, 1645-24, 1645-25, 1645-26. Deactivated Groundwater stations include: 1645-28, 1645-29, 1645-31, 1645-32. Groundwater well 1645-33 remains active.	- PK trial to reduce amount of water in fine PK and increase coarse PK completed and successful; methods implemented to Plant operations since 2018. - TSS exceedance during A21 construction; management actions in response to exceedance effective for remainder of construction season. - 2013 removal of SNP stations: surface runoff stations did not detect seepage from NCRP or PKCF up to summer 2013. 2009 investigation confirmed water was tundra runoff. Groundwater wells had been dry or frozen since installation. PKCF dam seepage is collected by interception wells and downstream collection ponds.

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
Wildlife	- Minimize wildlife-related compliance issues.	- Wildlife monitoring programs are adjusted based on results of previous years of studies. - Review of wildlife monitoring programs has been done with all 3 mines, Monitoring agencies, government and communities. - Study area expanded for caribou based on potentially larger mine zone of influence than predicted. - Participation in a regional wolverine DNA study with Ekati and GNWT to gain further insight on the wolverine population in the Lac de Gras region and around the mine. - Monitoring methods for grizzly bear changed to consider a more regional objective, while being safer for field crews; DNA study on the population in the Lac de Gras region. - Pit wall & infrastructure surveys for raptors that may nest in the pit or on other structures was added to the raptor monitoring program. - Raptor surveys changed to align with the North American Peregrine Falcon Survey. - Nests relocated or work activity ceased in response to wildlife presence. - Bird mortality monitoring conducted after installation of wind turbines. - Building installed to contain new incinerator and prevent wildlife attraction. - New Waste Transfer Area designed to minimize opportunities for scavengers to enter the area and access attractants/rewards. - Storage procedure for empty waste bins to minimize wildlife incidents. - Inclusion of community members in wildlife	- Orientation and environmental awareness training related to wildlife on site is provided to all employees. - Employees notify Environment department of any wildlife sightings; these are then recorded. - Caribou advisory board & site-wide radio notifications for caribou presence on island. - Waste inspections conducted regularly. - Waste management system in place. - Caribou are herded away from high-risk areas, such as the airstrip, as required. - Bears are deterred from the mine site, as required. - Problem wildlife is relocated or destroyed, in consultation with the GNWT. - Wildlife reporting system is in place site-wide, for wildlife observations. - Wildlife have the 'right-of-way' on site. - No hunting or fishing is permitted by employees. - Buildings are skirted and higher-risk areas are fenced or bermed in an effort to deter animal access. - Exterior man door handles have been covered with metal plates to prevent animal entry into buildings. - Surveys have been completed to look for caribou on roads, the rockpile and PKCF when caribou are getting close to the mine. - Wind turbines equipped with flashing beacons designed to reduce wildlife impacts. - Mine-altered pond water levels are kept low to discourage use by waterfowl. - Re-vegetation research has been on-going for 10 years and will help to determine habitat available for wildlife after closure. - TK Panel focuses on wildlife concerns when considering closure planning options and monitoring	- Mine-related wildlife incidents and mortalities have remained low over the years. - One caribou herding events occurred during 2021. - In 2021, a young bear was injured from a bear fight and under the direction from GNWT-ENR was euthanized. - No caribou mortalities or injuries caused by mining in 2021. - A rough legged hawk was found deceased and a short-eared owl was discovered on a road. The cause of death for both animals is unknown.

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
		monitoring programs to allow consideration of both TK and science when evaluating impacts. - Recommended reduction in PVP and lichen monitoring frequency based on results and slow growth of species in sub-arctic conditions.	programs. - Ground-based caribou surveys initiated when caribou are seen on site or collar maps show them approaching. - Revised storage procedure for empty waste bins on site.	
Dust	- Isolated higher deposition levels due to construction activities (dust deposition is expected to decrease as construction activities at Diavik decrease and the mine switches from open pit to underground operations).	- Evaluate dust control measures used to minimize dust released from construction and operations. - Evaluate the use of treated mine effluent for dust suppression, which would reduce fresh water use from Lac de Gras. - Evaluate dust suppressants that can be used in key areas to reduce dust levels. - Assess vegetation and dust sample locations to provide better coverage of the area for improved data collection. - Recalculate dust emission predictions to consider underground mining methods and construction activities. - Use of Alberta (British Columbia prior to 2019) guidelines and objectives for dustfall as a comparison for DDMI levels. - Addition and removal of snow core sample stations to program as and when required based on results or operational changes. - Addition and removal of dustfall monitoring stations to program as and when required based on results or operational changes.	- Dust suppression on roads and mine areas using water during non-freezing periods. - New crusher commissioned in 2009 is contained inside a building and has an advanced dust control and collection system. - Dust suppressant used on the apron, taxiway, airport parking lot and helipad (approved by both the Lands Inspector and Transport Canada). - Trial use of dust suppressant on parking pads and some site roads. - Addition of vegetation monitoring stations to improve ability to detect potential changes to plant cover or composition. - Modified lichen monitoring program to obtain more samples from further distances & link metal levels to caribou exposure. - Use of blast mats to control dust in smaller-scale blasts. -use of raw water to wet roads during summer months. - Obtained far-far-field (100 km away) lichen samples in 2016 to determine differences from far-field (40 km) results, in response to community concerns; little difference observed.	- Control of dust from crusher, small blast areas and roads. - Dust suppressant continued to be used on the airport's taxiway, apron, parking lot and helipad in 2021. - 2021 dustfall values were comparable with the 2020 data. The 2021 annual dustfall rates were less than the Alberta Ambient Air Quality objective for dustfall at industrial locations. As expected, dustfall rates decreased with distance from the mine. - TSP levels in 2018 were below the GNWT 24-hr Ambient Air Quality Guideline within the vicinity of the mine site (TSP no longer monitored for reporting purposes since 2018).

Aspect	Compliance	Adaptive Management Response	Mitigative Measures	Effectiveness of Measures
Air Quality	- Measure consumption of applicable sources of GHGs - primarily diesel combustion. - Meet Internal GHG Reduction Targets. - Report GHG Emissions to regulatory agencies and within Rio Tinto.	- Evaluate new technologies and equipment that may allow for pollution controls/reduced emissions. - Wind power generation research. - Determine energy draws, optimal use and options to reduce power requirements for buildings on site. - Various fuel consumption reduction initiatives, e.g. no idling. - Review of air quality monitoring program and equipment requirements. - Added monitoring of TSP in 2013 with 2 on-site stations (not monitored for reporting purposes after 2018). - Conducted energy audits on site buildings in 2014. - Determine optimal operating temperatures for the underground mine. - Evaluate energy efficient equipment options. - Evaluate and optimize transportation schedules and volumes to/from site.	- Use of low sulphur diesel. - Archaeological assessment for areas where wind turbines installed. - Installation of Delta V fuel consumption monitoring system for all key power consuming buildings on site. - Boiler optimization program. - Installation of 4 wind turbines, integrated into the power distribution system, to reduce fuel consumption. - New more efficient waste incinerator that uses less diesel. - "Waste" heat from powerhouse generators used to heat facilities connected to powerhouse (camps, maintenance shops, etc.). - Underground air quality monitoring conducted. - Improving efficiencies of plant operations to reduce power draw. - 2 TSP monitors installed at the mine site in 2013 (not monitored for reporting purposes after 2018). - Installation of waste oil heaters on site. - Adjust (lower) underground mine operating temperature by 1°C. - Install energy efficient motors on underground haul truck fleet. - Optimize the glycol heat recovery system in Powerhouse 2 to reduce boiler use. - Waste Management Plan revisions to test incinerator ash and stack tests procedures. New water fill station installed at A21 in 2019 for watering roads in the A21 area.	- DDMI reports GHG emissions annually to appropriate regulators and internally to Rio Tinto. - The wind turbines offset fuel consumption by 4.8 million litres of diesel in 2020. -Heat recovery, installation of variable frequency drive pumps and heat reduction in buildings offset 348,000 litres of diesel in 2020.

Appendix III TK Panel Session #13 Recommendations and DDMI Responses to Past Recommendations

DDMI Traditional Knowledge Panel Session #13

VEGETATION WATCHING AND MONITORING FOR CLOSURE (V4.0)

Community-Based Monitoring Camp near Diavik Diamond Mine, NT
August 6-8, 2021

Joanne Barnaby Consulting

Thorpe Consulting Services

Disclaimers

This document does not represent the results of community consultation. It is subject to the "No Prejudice" clauses of Article II, Section 2.1 of the *Environmental Agreement for the Diavik Diamond Project*. The document represents the work of the Traditional Knowledge (TK) Panel participants and does not necessarily reflect the views of any Party to the *Environmental Agreement*.

Since 2011, the Traditional Knowledge (TK) Panel has guided Diavik Diamond Mines (2012) Inc. (DDMI) through EMAB and then Diavik as an independent body consisting of representatives from the Kitikmeot Inuit Association (Kitikmeot Inuit Association / KIA), Łutsel K'e Dene First Nations (LKDFN), North Slave Métis Alliance (North Slave Métis Alliance / NSMA), Tłı̨chǫ Government (Tłı̨chǫ Government / TG), and Yellowknives Dene First Nation (YKDFN). With the support of DDMI and the TK Panel, Thorpe Consulting Services and Joanne Barnaby Consulting facilitated these sessions from 2012 through 2022. In early 2022, DDMI selected Ausenco and Det'on Cho Environmental as new facilitators for the TK Panel. Accordingly, Thorpe Consulting Services and Joanne Barnaby Consulting were not able to participate in the final verification of this report in-person with TK Panel members in June 2022, but were asked to finalize this report nevertheless. As with all TK Panel reports, this is a living document.

Suggested Citation:

Thorpe Consulting Services Ltd. and Joanne Barnaby Consulting. 2022. DDMI Traditional Knowledge Panel Session #13. Vegetation Watching and Monitoring for Closure. Prepared by Joanne Barnaby, Sarah Ravensbergen and Natasha Thorpe. Vancouver, BC. V.4.0

Cover Photo: TK Panel participants study vegetation at the Community Based Monitoring Camp on Lac de Gras in August, 2021. Photo by Sarah Ravensbergen.

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Watching vegetation on the land always includes picking berries!

Executive Summary

The thirteenth session of the Traditional Knowledge (TK) Panel was held August 6-8, 2021, at the Diavik Community-based Monitoring (CBM) TK Camp on Lac de Gras. While much of this work is often referred to as "monitoring" community members more commonly use the term "watching." During this session, participants watched, shared and discussed their broader visions around the land, with a focus on vegetation.

The TK Panel discussed priorities for watching vegetation and monitoring for closure and post-closure activities. The Panel held group discussions and field trips to watch and touch vegetation, and to explore whether community members feel the land and vegetation are healthy. They shared how they know whether the land is healthy, and how current and future watching of vegetation should proceed. Panel members developed several guidance points (related to watching, ways of knowing, and communication) and 13 formal recommendations related to ongoing initiatives to watch vegetation.

Guidance points:

- Traditional practices and protocols when out on the land watching vegetation should be respected in future programs and sessions;
- Both youth and Elders should work together in future watching;
- Climate change should be a consideration for all discussion / planning of watching programs going forward;
- Diavik dust collection sites and vegetation monitoring equipment should be left up long after the mine is closed, until significant regrowth of vegetation is verified by Elders;
- Watching should continue for at least 50 years after mine closure;
- Panel members should be able to quickly and easily access information being shared by DDMI, and outcomes of TK Panel sessions;
- Previous discussions and recommendations related to watching vegetation should be revisited (e.g. filtering contaminated water through moss, discussions of whether reseeding should occur) as this was the first opportunity for some participants to study vegetation first-hand away from the mine site during a TK Panel session; and
- Closure planning and watching should be conducted with transparency.

Recommendations:

- 13.1 – Complete chemical testing of rainfall at the mine site.
- 13.2 – Hold a future TK Panel Session focusing on current and future vegetation monitoring that involves Diavik scientists, to enable us to comment on their program.
- 13.3 - Ask Rio Tinto Exploration (or anyone operating in area) to watch caribou and record location, numbers and behaviour, back to communities (record or video as much detail as possible around the condition, size, and weight of caribou).
- 13.4 - Watch for any new species of plants and animals and report them to communities, if they find them.
- 13.5 – Diavik and Elders should sample all animal scat from animals close to the mine when it is fresh, to see what animals are eating. Diavik should share the scientific results with TK Panel members.
- 13.6 – Also watch outside of the perimeter of the vegetation plots, add new plots, expand the size of the existing plots, and note any changes to the vegetation occurring over time. Visit the sites in summer to watch those plants, and also check for metals.
- 13.7 - Diavik should share dust collection results with communities and the TK Panel members, including hard copies.
- 13.8 - Diavik should share water testing collection results with communities and the TK Panel. The main concern is related to dissolved oxygen.
- 13.9 - Diavik should share an update on what species are in the lake, both fish and vegetation.
- 13.10 - Diavik should consider all previous TK Panel recommendations related to vegetation.
- 13.11 - Monitoring should occur with Elders and youth for over 50 years, watching and testing using both TK and science.

A verification session took place in December 2021, where recommendations were finalized and responses from Diavik received.[1] An earlier report was distributed at (and before) this session.

[1] YKDFN participants did not attend the December 2021 verification session; LKDFN participants were able to attend the December 2021 verification.

Participants

Nancy Kadlun	Kitikmeot Inuit Association (Kitikmeot Inuit Association / KIA)
Jack Kaniak	Kitikmeot Inuit Association (KIA)
Vikki Niptanatiak	Kitikmeot Inuit Association (KIA)
Kathy Arden	North Slave Métis Alliance (North Slave Métis Alliance / NSMA)
Marie Adele Football	Tłı̨chǫ Government (Tłı̨chǫ Government / TG)
Peter D. Sangris	Yellowknives Dene First Nation (YKDFN)
Kelsey Martin	Yellowknives Dene First Nation (YKDFN)

**Regrets: Sarazine Basil, Albert Boucher, Doris Enzoe, Gloria Enzoe (Łutsel K'e Dene First Nation / LKDFN)*

Interpreters

Lena Drygeese	Yellowknives Dene First Nation (Yellowknives Dene First Nation / YKDFN interpreter)

Facilitators

Joanne Barnaby	Joanne Barnaby Consulting
Sarah Ravensbergen	Thorpe Consulting Services

Observers / Presenters

Myra Berrub	Diavik Diamond Mines (2012) Inc. (DDMI)
Gord Cumming	Diavik Diamond Mines (2012) Inc. (DDMI)

1 Background and Overview

Since 2011, the Traditional Knowledge (TK) Panel has guided Diavik Diamond Mines (2012) Inc. (DDMI) to consider TK appropriately and meaningfully in operations, environmental management and monitoring as well as closure planning at the Diavik Diamond Mine (Diavik). Since 2012, the TK Panel has been at least once a year to discuss select issues and concerns supported by EMAB and facilitators Thorpe Consulting Services Ltd. (Natasha Thorpe and Sarah Ravensbergen) and Joanne Barnaby Consulting. TK Panel #13 ('Vegetation Watching and Monitoring for Closure') was held August 6-8, 2021 at the Diavik Community-based Monitoring (CBM) TK Camp on Lac de Gras, approximately 3.5 km east of Diavik (Figure 1, Figure 3).[2] Table 1 describes the range of topics that previous TK Panels have explored.

Table 1 Summary of TK Panel Session Topics

TK Panel Session #1	A Way of Life: Bridging Science and Aboriginal Knowledge in Caribou Monitoring (2012)
TK Panel Session #2	Renewing our Landscape: Envisioning Mine Closure and Reclamation at the North Country Rock Pile (2012)
TK Panel Session #3	Revegetation and Rock Pile Site Visit (2012)
TK Panel Session #4	Checking Nets: Reflecting on Our Progress (2012)
TK Panel Session #5	Closure / Reclamation and Landscape History (2013)
TK Panel Session #6	Processed Kimberlite Containment (2013)
TK Panel Session #7	Re-vegetation (2014)
TK Panel Session #8	Fish Habitat Design & Water Quality (2015)
TK Panel Session #9	Post-closure Wildlife Monitoring (2016)
TK Panel Session #10	South Country Rock Pile & TK Monitoring Plan (2017)
TK Panel Session #11	Options for Processed Kimberlite (A418) (2018)
TK Panel Session #12	Options for Pit Closure (2019)
TK Panel Session #13	Vegetation Watching and Monitoring for Closure (2021)

[2] While previous sessions have taken place in Yellowknife or at the Diavik mine site, the 2021 session followed the 2021 Diavik Aquatic Effects Monitoring Program (AEMP) at the TK camp from July 31-August 5, 2021 in order for activities to take place on the land. A report and video-documentary from the AEMP are available.

This report outlines key themes related to vegetation monitoring / watching considered by the TK Panel during the thirteenth session and presents subsequent recommendations. Appendix A contains presentations to help participants prepare for the TK Panel session, presented during the June 23-25, 2021 Planning Session.

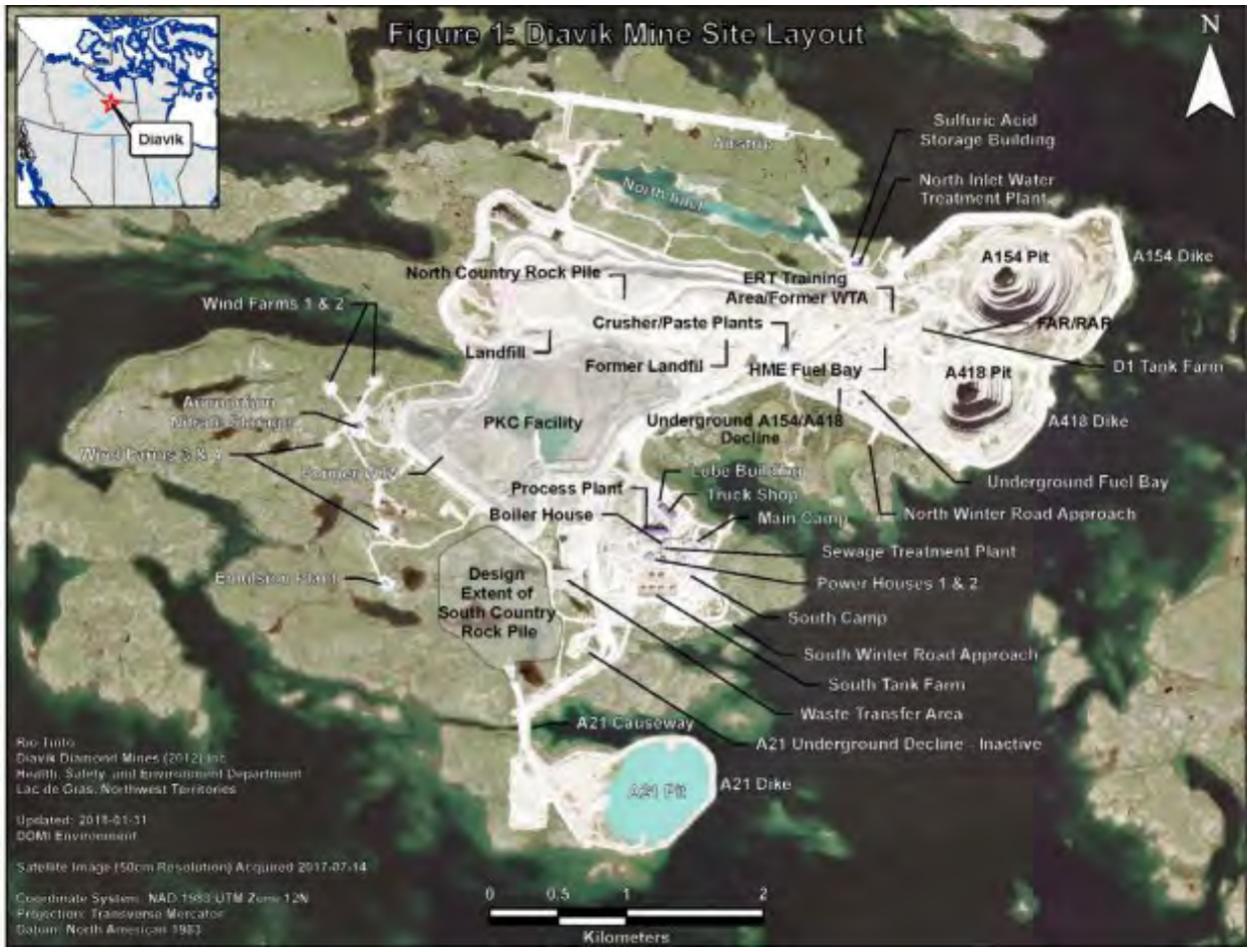


Figure 1 Map of Diavik Minesite

Appendix B contains the agenda and a blank copy of the informed consent form signed by participants. Attempts were made for daily notes to be reviewed and verified by each participant and are included in Appendix C. Appendix D contains the evaluation summary, while Appendix E contains the DDMI vegetation survey discussed and filled out during the session. Appendix F contains the breadth of previous TK Panel Recommendations and summarizes those specific to vegetation monitoring. Appendix G contains the Diavik Wildlife Management and Monitoring Plan factsheet shared during the Panel session, while Appendix H shows the Diavik maps of vegetation monitoring shared at the session.

2 Session Purpose, Goals and Activities

The purpose of TK Panel Session #13 was to watch vegetation in-person and to explore and consider future vegetation watching and monitoring for closure and post-closure activities.

As with previous TK Panel Sessions, the session format followed an agenda (Appendix B), with modifications during the session to accommodate participant feedback and weather conditions limiting certain activities.

The goals of the session were for TK Panel members to:

- Provide input into monitoring to ensure that water, fish and vegetation are healthy during and after pit closure;
- Discuss, shape, and give feedback on Golder and DDMI's first draft of a formal TK vegetation survey for sites;
- Identify additional sites for future watching;
- Build on discussions of previous TK Panel's exploring healthy vegetation and vegetation watching now, during closure, and post-closure; and
- For TK Panel members to "see with their own eyes" the health of the vegetation near the Diavik mine site.

The guiding questions posed during the planning session for the Panel to consider were:

- How can you tell the land (vegetation) is healthy?
- Are there particular plants that tell you about the health of everything (i.e., the ecosystem)? What are you looking at and for?
- What should be watched in a plant monitoring program during and beyond closure?
- Where, when and how should the land (vegetation) be watched?
- Are there key plants that should be monitored?
- How can we best use our time on-the-land to advance watching programs around plants now and into the future?

These guiding questions, and the DDMI vegetation survey (described below), were the basis of the activities for the session. The main activities of the session (in addition to the planning meeting held June 23-25, 2021 in Dettah, NT) were daily group discussions and two field trips at Lac de Gras, August 6-8, 2021.[3]

[3] Participants attended in person; due to COVID-19, Natasha Thorpe and Sarah Ravensbergen joined virtually using Microsoft Teams.

2.1 Planning Session

At the planning session, the purpose, goals and activities of the upcoming session were discussed. Several presentations on the background of the TK Panel and past TK Panel recommendations were shared and considered (Appendix A). Participants explored the importance of watching specific plants (especially lichen and other caribou food), and vegetation close to the mine, far from the mine, along the shore of Lac de Gras and other water bodies, and along caribou trails:

> It would be good to see plants in the water because we are across the lake from Diavik. Plants will look healthy away from the mine but may not be. I want to see if the berries are healthy. It's only three years ago that we were close to the rapids [at the Narrows between Lac de Gras and Lac du Sauvage]. We could stay close to the shore and the camp and look at plants, this would be good because the ground is rough for Elders to walk on. Elders can tell us which plants are healthy and which are not. [Doris Enzoe, LKDFN, June 25, 2021]

As in previous sessions, members emphasized the importance of considering the impacts of climate change. Participants also requested that the DDMI vegetation team check which monitoring sites were added in 2013 at the request of the TK Panel, and that clear maps of vegetation monitoring sites and zones be printed for each participant.[4] Appendix J shows the maps of Diavik vegetation monitoring sites shared during the session.

2.2 Session Discussions

Group discussions and field trips to watch vegetation close to the CBM camp were the focus of the TK Panel Session at the CBM camp.

The session was planned to coincide with the field season for Golder vegetation scientists, who were monitoring at specific vegetation plot sites in early August 2021 (Appendix J). Between the planning session and the TK Panel Session at the CBM camp, DDMI and Golder adapted a vegetation survey with the aim of having community members fill out surveys at vegetation plot sites they chose to visit. During the first day, participants met with facilitators and Diavik staff to discuss these survey questions as a group, give feedback to Diavik on the survey prior to the trips to vegetation plots, and decide which vegetation plot sites they would like to visit. Appendix E shows the vegetation survey and the modifications made by participants and facilitators (changes to the survey were made right on the forms). Changes included removing some questions seen as duplicates to keep the survey shorter and adding a question to determine if people are interested in vegetation watching in the future.

[4] DDMI confirmed that three new sites (NF21-23) were added in 2013 at the request of the TK Panel.

The final survey questions were agreed as follows:

- Q1: Is the vegetation in this area healthy? How can you tell?
- Q2: Would caribou like the vegetation here? What plants or lichens would caribou be attracted to?
- Q3: How does the dust affect these plants?
- Q4: How much food is there in this area for caribou?
- Q5: Are you seeing similar changes here as you are in other parts of the tundra?
- Q6: How would you recommend Diavik monitor vegetation and lichen going forward?
- Q7: Would you be interested in participating in future monitoring? If so, how?

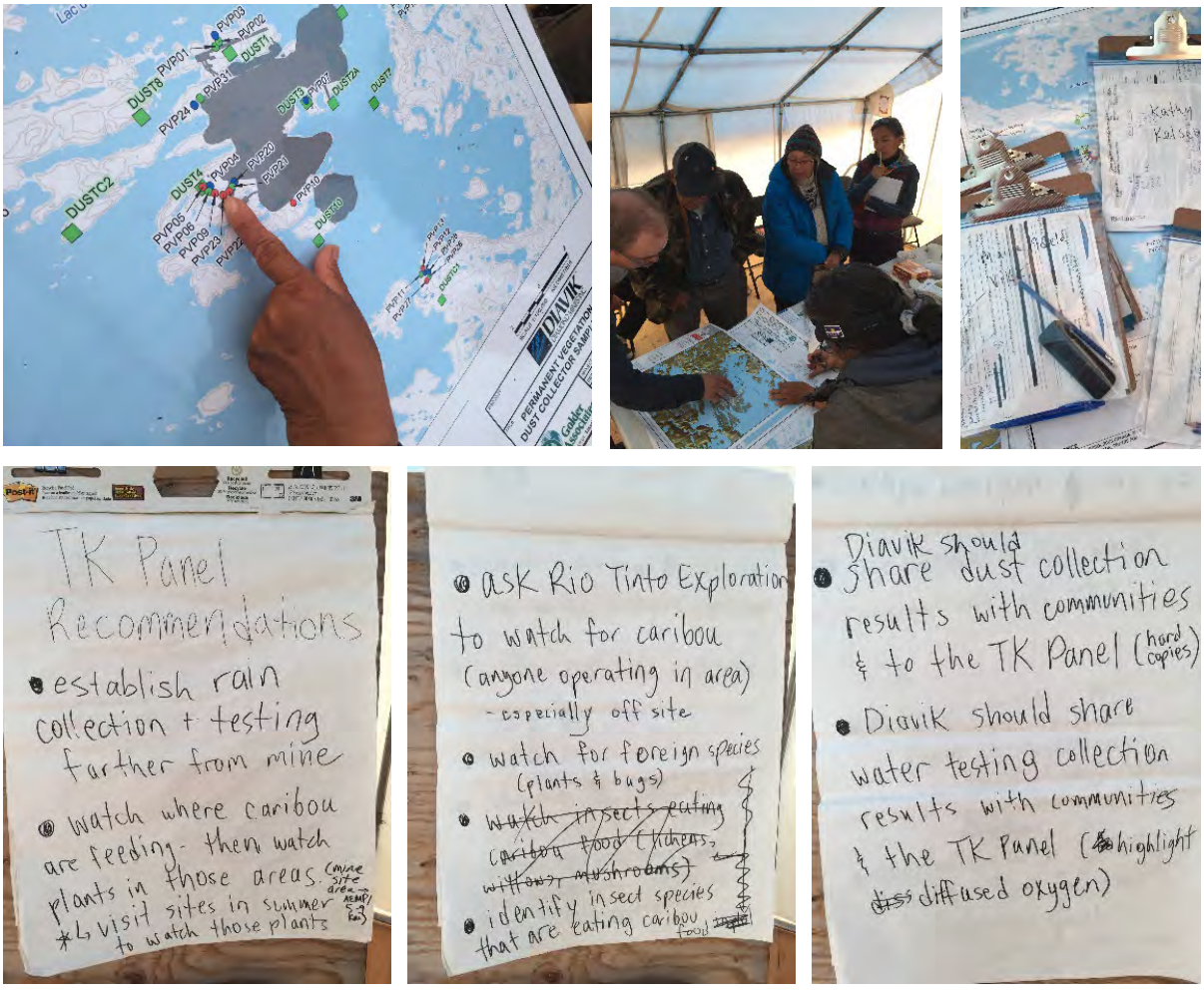


Figure 2 TK Panel Members Discuss Vegetation Watching and Recommendations

Beyond discussion of the vegetation survey questions, the group considered the importance and use of the land and vegetation in the Lac de Gras area, and observations / guidance related to watching, ways of knowing, and communication. Members explored current DDMI vegetation sampling with Gord Cumming (Diavik Environment Coordinator), who gave an overview of and answered questions about ongoing scientific monitoring of vegetation at plot sites. TK Panel members had questions for DDMI about ongoing operations, including how (methods, techniques), how often, and where, dust sampling and invasive species monitoring happens. TK Panel members also revisited and deliberated findings from previous TK sessions on vegetation, adding to previous observations and experiences (Appendix H).

In past TK Panel Sessions, discussions to finalize recommendations have taken place collaboratively between facilitators and participants, with Diavik offering initial responses directly at the session; this process provides strong consistency, feedback, and communication between the TK Panel members and Diavik staff. This year, COVID-19 prevented TK Panel members from being at the mine site, and logistical and technical constraints prevented the finalization of recommendations. Instead, recommendations were drafted to the best of the group's ability and finalized at the verification session where Diavik provided a preliminary response.

2.3 Field Trips

> ...I'm very happy to walk on my ancestors' trails, and I know my dad is here somewhere. Maybe I'm walking in his footsteps, or my grandpa's.
> [Marie Adele Football, TG, August 6, 2021]

Although participants first choice of field trip was the Narrows, this was not possible due to high winds and inclement weather (or trips anywhere with high wind exposure).[5] Instead, two field trips from the CBM camp were taken to sites closer to the camp: vegetation site / field trip #1 took place on August 6, 2021, and vegetation site / field trip #2 occurred on August 7, 2021 (Table 2, Figure 3). Participants divided up according to community/ language groups to record their observations of the land and vegetation in the area and to fill out the vegetation survey.[6] While some participants chose to write out their answers on the survey sheet, others selected to use voice recorders or their phones to verbally record the answers of those in their group. Few answers were recorded on forms as most participants chose to audio record. Once participants tried to answer the survey questions in the field, they found it challenging, and noted they would

[5] Participants discussed the desire to compare water in Lac de Gras and at the narrows of Lac du Sauvage, because of the way the water moves (from Lac du Sauvage west towards Diavik Island). Participants felt that water and fish may be different there and would like to check vegetation at the narrows given that it is also an important caribou crossing.

[6] LKDFN took part in initial discussions but not field trips or finalizing recommendations.

have liked more time to think about their responses. It was apparent that using surveys may not be the best way to address their observations and to provide TK input. This is something to consider for future field trips.

During the first field trip, the group took three Lund boats to the vegetation / field trip site (about a 15-minute boat ride from camp) and spent the morning walking the tundra and watching plants and the land, talking amongst each other and telling stories. During the second field trip, the group walked to the Golder vegetation monitoring plot and dust gauge directly adjacent to the CBM camp. Participants wanted to see what scientists are looking at and make comparisons. Gord Cumming shared information about the current monitoring program (e.g., how far apart the vegetation and dust collection plots are, how and when sampling occurs, what is tested). Inclement weather prevented long discussions outside, so discussions continued inside the cook tent later in the day.

Table 2 Details of Vegetation Watching Field Trips During TK Panel Session #13

Location Description	Easting	Northing	UTM Zone	Datum	Comments
Vegetation Site / Field Trip #1: Vegetation site in bay southwest of CBM TK camp (August 6, 2021)	540725	7151301	12	NAD 83	Participants ranged up to 500m away from coordinates observing vegetation. Participants wanted to watch plants close to the mine site. This site could be accessed safely even in high winds.
Vegetation Site / Field Trip #2: Vegetation site right beside CBM TK camp (August 7, 2021)	541128	7152124	12	NAD 83	Focused on the vegetation box immediately to the south of CBM TK camp (coordinates will be exact from the lichen/vegetation monitoring program completed by Golder, current coordinates are approximate from GIS). Participants wanted to see the site right behind camp and the dust gauge, as site could be safely accessed during high winds.

Following each field trip, Panel members met to consider and discuss what they saw as a group. On August 7 and August 8, 2021, group discussions on preliminary recommendations were held; these were reviewed again to a fuller extent on the following day (Section 4). Participants agreed they would be finalized at the verification session.

Through these discussions and field trips, key observations and guidance points (Section 3) and recommendations (Section 4) emerged.

Figure 3 Map of CBM Camp and Location of 2021 Field Trips / Vegetation Watching Sites

3 Key Observations and Guidance Points from the Session

As with previous TK Panel sessions, observations and guidance on current and future watching, ways of knowing, and communication, in addition to formal draft recommendations, were documented. TK Panel members spent several hours watching the land at each field trip / vegetation site (Figure 3) as well as answering questions from the DDMI vegetation survey (Table 3).[7] Participants saw many different types of vegetation at both sites. At site #1, species found included ground willow, Arctic willow, berries (blackberry, blueberries, cranberries, cloudberries, bear berries), mushrooms, mosses, medicines, and lichen. A common theme of discussion was how healthy vegetation supports people and wildlife:

> Plants need to grow for the animals, especially in August, before September comes and it gets cold. [Jack Kaniak, KIA, August 7, 2021]

[7] While the survey questions generated talks about a range of topics related to vegetation health, group discussions were critical for more detailed information-sharing. Indigenous community members have been "monitoring" (or "watching") their lands since time immemorial, and the nature of this way of knowing cannot be captured by survey questions alone. Very few participants chose to record information on the paper forms.

These kind [blackberries] there are lots in Wekweètì, they're big at this time. Any time as soon as spring comes, they're there. ... We eat these, mix them with cranberries or blueberries when we're cooking, especially when it's rainy. When the women go out for picking berries. [Marie Adele Football, TG, August 6, 2021]

Lena Drygeese: "...they call it. ... moss [kw'ah]?
Peter D. Sangris: Yes.
Lena Drygeese: Moss, spongey. You use it for pads, and for baby diapers. He said, you can use it for pillow [laughter]." [Lena Drygeese and Peter D. Sangris, YKDFN, August 6, 2021]

Figure 4 TK Panel Members Fill Out DDMI Vegetation Surveys

Beyond the survey questions, participants told stories and discussed use of the Lac de Gras area, including berry picking, traveling, hunting, trapping, fishing, gathering, storytelling and camping. TK Panel members emphasized that the presence of heritage resources found (e.g., campsites such as at the Narrows, fish markers at site #1), evidence of wildlife (e.g. old caribou trails) and healthy vegetation tell of the use and importance of the area by many different groups:[8]

Nancy described what to look for to show that an area was important for human use:

> They line them [rock structures known as inuksuit] up where they fish, because people don't have radio, they would tell you, if you see a marker like that, it's pointing, that means there's fish there. ...I'm pretty sure people lived here long before, because it's a migration route for caribou. And lots of fish. ...Our Inuit from down there have been here, we know that from this rock. I know there's all those-how many people find Arctic tools here, many. Mostly arrows. [Nancy Kadlun, KIA, August 6, 2021]

3.1 What to Watch: Observations from the DDMI Vegetation Survey

People saw and described their observations in different ways. Some TK Panel members talked about the vegetation at vegetation site / field trip #1 as 'dry', and 'dying' while others saw plants that were 'good' and 'healthy' (Table 3). Although some participants observed that the amount of recent rainfall is helping plants grow well, others observed dried (yellow) and dying birch, willow and lichen. At vegetation site / field trip #2, some participants described the area as 'moist', 'healthy', 'good' and 'growing', while others described it as 'dead' and 'not ripe'.

[8] As well as a *siksik* (ground squirrels) and ptarmigan, participants saw tufts of caribou winter fur and caribou scat, grizzly bear scat, old caribou trails, a caribou antler, a mouse, a jackfish head on the shore, and evidence of jackrabbits and wolves. Participants also noted changes in wildlife; several participants stated that there were fewer wildlife species than there should be in both locations (birds, e.g., ptarmigan and golden plover). Other changes in wildlife patterns were also noted (e.g., forest fires pushing moose north into the barrenlands to overlap with caribou habitat).

Table 3 Summary of DDMI Vegetation Survey Results (Questions #1-5) 2021		
	Vegetation Site / Field Trip # 1 (August 6, 2021)	**Vegetation Site/ Field Trip # 2 (August 7, 2021)**
Q1: Is the vegetation in this area healthy? How can you tell?	"Very good - some plants die off fast when colder outside. Right now all vegetation looks healthy." [Peter D. Sangris, YKDFN]	"My observations overall, they all look very healthy. ... Overall, they all look healthy, they're growing. The berries, I see new growth. There's not much lichen, I've seen some lichen that's dead. Overall the grasses, mosses, look healthy. The smaller vegetation in there looks healthy, and there's berries growing. Overall I would say it looks healthy." [Kathy Arden, NSMA]
	"Everything looks dry." [Marie Adele Football, TG]	"Things grow at their own pace here. Even the berries are not that ripe yet, they are still enclosed. It looks healthy right now, the way it looks now, the lichen. The moss looks good. Everything looks like it's growing the way it's supposed to, because everything grows slow in the tundra. ... It's growing the way it should look." [Peter D. Sangris, YKDFN]
	"For the most part, some lichen dying, cranberries just starting, lots of cloudberries, none bearing fruit yet, not much berries." [Kathy Arden, NSMA]	
	"Looks healthy from recent rain (heavy and high winds)." [Jack Kaniak and Nancy Kadlun, KIA]	
	"Everywhere is the same now, dry, hardly rain here maybe this year. Everywhere yeah. Getting dry everywhere." [Nancy Kadlun, KIA]	
Q2: Would caribou like the vegetation here? What plants or lichens would caribou be attracted to?	"Yes. See pictures." [Written observation, Peter, YKDFN]. Barrenland mushroom. ... [Caribou] they avoid [eating] it, because they know there's something in the middle there. Once it gets soft, it's worms or something, bugs in there. Caribou eat only this kind, this lichen. Caribou scratch over it with their fingernails, they eat it. They just love it, caribou food. When it's wet, they like it, they get fat right away. When dry ground, they don't like it. Too dry to swallow. Wintertime, snow on it, they dig for it, they want to eat it." [Peter D. Sangris, YKDFN]	"There's not much caribou vegetation here. I see no mushrooms, the lichen is very sparse, which is what the caribou are attracted to. I don't see any willows. There is a little tiny birch, don't see too much of it around here. I don't think the caribou would be attracted to this vegetation here. … Nothing in caribou trails, I don't think they come to this area very much, it's very wet." [Kathy Arden, NSMA]
	"If they're hungry they'll eat." [Marie Adele Football, TG]	"When they go on their migration route, sometimes they travel fast, and sometimes they are slow, they just look around for

Table 3 Summary of DDMI Vegetation Survey Results (Questions #1-5) 2021		
	Vegetation Site / Field Trip # 1 (August 6, 2021)	**Vegetation Site/ Field Trip # 2 (August 7, 2021)**
		their food. And then as soon as they have little bites here and there, they go on again. It's up to the caribou. Caribou is the boss." [Peter D. Sangris, YKDFN]
	"Possible, no lichen or mushrooms." [Kathy Arden, NSMA]	"Grasses, moss, but mostly lichen... the problem is they overstudy them, they are gone now." [Jack Kaniak, KIA]
	"Yes, yellow / white lichens." [Nancy Kadlun, KIA]	
Q3: How does the dust affect these plants?	"Depends on which way wind is blowing. We are on Northeast. Wind blows north-northeast with dust from Diavik." [Peter D. Sangris, YKDFN] "There won't be too much around this. The mine is over there and the wind is mostly from the north, northeast, and southeast, not much west wind. Wintertime, not much west wind. Just in the summer. So the mines, the smoke blows the other way, that way, towards the west from the east. Not much wind from the west to the east. So there's not much around here. ... Rain is like a wash, it washes the land." [Peter D. Sangris, YKDFN] [Sarah Ravensbergen: "If there's dust on the plants, how does it change the plants? Would caribou eat those still if they had dust on them?"] "Again, it depends on the weather. So whichever way the wind is blowing, it would blow dust all around, like you've seen before from the camp, you're standing there and there's dust. So if the wind is blowing this way, it would cover these. But when it rains, it washes it all off, the rain drops here are huge. So the dust would fall off. But it's not saying that the land is going to be healthy all the time. Because it depends on the weather. … [And if it goes into the soil] It would affect the growth of it." [Peter D. Sangris, YKDFN]	"The dust affects the lichen. Lichen is very sensitive to dust, and they'll die off pretty quick. Other plants I don't think are affected as much by dust as the lichen are. Like the birch, the broad leaves, if in a rain the dust will get washed off, grasses like dust, they grow along those roadsides and they thrive in those areas, so they're doing quite well. There are quite a few grasses, lots of grass in here, I think that's natural though for the area. The moss is looking pretty good because it's moist in here, I think they're happy right where they are. There are a lot of cloudberries in the area because of the moisture. They are all coming up now. Not ready to pick. I've seen a few cranberries coming out. They're small, but green, and crowberries as well. I imagine, I think caribou would like to eat some of the berries as well. I don't know how far the cloudberries go in here, but in this plot, there's quite a few cloudberries all over the place. Overall, I don't think there is enough food here for caribou, because their main diet is lichen or mushrooms, and I don't see any in here much." [Kathy Arden, NSMA]

Table 3 Summary of DDMI Vegetation Survey Results (Questions #1-5) 2021		
	Vegetation Site / Field Trip # 1 (August 6, 2021)	**Vegetation Site/ Field Trip # 2 (August 7, 2021)**
	"Dust affects lichen greatly. It's looking pretty good actually. I found a bear berry, this one here, it's really nice and green but it's hard to tell if there's dust here. Most of the dust seems to be going that way, not so much this way. Even though we have the prevailing winds that seem to always come this way, it's hard to tell. I think you maybe have to give them a swish with water to see if there's any sediment on them. There's also a lot of cloudberry. I don't see any blooming yet, these ones right here. ... that's all cloudberry, bear berry, there's some cranberry there, a small little cranberry there. Last year's cranberry. And this here, this yellow moss looks like a type of moss that the caribou eat. Although some have died, over there. Apparently lichen is very sensitive to pollution and they die very quickly. So maybe that's what's happening here. See this, this is all dried out." [Kathy Arden, NSMA]	"If the wind blows this way and the dust falls in this area right here, when it rains, heavy rain, it kind of washes away the dust off the plants. But if it doesn't rain for a long time, it dries up. … By the way it looks right now, it looks like heavy rain, with the grass growing. But the only thing is the berries, the cloud berries should have been opening... they open lots of rain, sunshine. [Peter D. Sangris, YKDFN]
	"Dust (human-made) different." [Jack Kaniak and Nancy Kadlun, KIA]	"Heavy dust will cover it and keep plants from breathing. But if it's light dust it will easily be blown away... washed away." [Jack Kaniak, KIA]
		"In terms of a good [weather] year, lots of water and wind blowing the dust away, and the sun. Rain, wind, and sun – these are the factors that matter for a good weather year [and therefore effects of dust on plants]." [Jack Kaniak, KIA]
Q4: How much food is there in this area for caribou?	"Lots and covered grounds. Good quality." [Peter D. Sangris, YKDFN]	"Not much, the lichen is very sparse and few between. No, not much food in here. The quality is good, but there is just not much of it at all. It's-no, they have to consume a lot, and the lichen is very thin and sparse, spread out all over the place. It's not in nice big clumps like you can find sometimes, see how that's gathered up over there? They can get bigger than that and they can come-it's too sparse. … There is still caribou food

Table 3 Summary of DDMI Vegetation Survey Results (Questions #1-5) 2021		
	Vegetation Site / Field Trip # 1 (August 6, 2021)	**Vegetation Site/ Field Trip # 2 (August 7, 2021)**
		that we see around, that first day we got in, I asked Myra to take me up on the hill as the helicopter was coming in. There were no blueberries but some were white and now after a few days they turn a bit blue... that's good. Cranberries greenish, light green, they will be ready by the end of the month. ... There are still blueberries and cranberries going so it's good, and there is still caribou food but I know it takes years to grow back." [Kathy Arden, NSMA]
	"Lots; looks good." [Marie Adele Football, TG]	"Yes. There seems to be a lot of lichen for caribou. When we're looking around there seems to be a lot in this area." [Peter D. Sangris, YKDFN]
	"Very little, poor quality, lichen spread out and thin." [Kathy Arden, NSMA]	"...seems to be a small plot ... this little plot, there's some caribou food." [Jack Kaniak, KIA]
		Marie Adele: "Ice ... permafrost, there's permafrost under it, it melts a little and you see it." [Marie Adele Football, TG]
Q5: Are you seeing similar changes here as you are in other parts of the tundra?	"Hardly any changes that I've seen so far. All over tundra looks the same and have food for caribou." [Peter D. Sangris, YKDFN]	"I've never been on the tundra before. Judging from where we were yesterday to here, there is more moisture here in this area, so the plants are looking pretty healthy. The lichen in the other areas too was very sparse, there was also some dying over there, you see big clumps of it that were dying. I think there are changes between this and the place we were at [yesterday], about 4 or 5, maybe 7 km from here to the bay, back in the bay. There were more berries there, blueberries, cranberries were starting, bearberries were starting, crowberries were just starting, and here you can see some crowberries that are just starting, but there's lots of cloudberries. Those are the differences, I couldn't tell you

Table 3 Summary of DDMI Vegetation Survey Results (Questions #1-5) 2021		
	Vegetation Site / Field Trip # 1 (August 6, 2021)	**Vegetation Site/ Field Trip # 2 (August 7, 2021)**
		about similar changes from the past, because it's my first time on the tundra. Thank you." [Kathy Arden, NSMA]
		"Sometimes the temperature changes, it gets really hot, too much sun. And then the water will be literally drained down into the ground. And then the ground will get more water. The permafrost too is under this mossy ground. So if the ground stays wet with the rain, everything will kind of grow. That area we went to yesterday, there seemed to be like this year, when there was lots of caribou lichen. It's almost the same, because we are on the same area. Seems to be similar." [Peter D. Sangris, YKDFN]
		"Yes, similar changes to what we saw in previous plot." [Nancy Kadlun, KIA] "Yes, similar..." [Jack Kaniak, KIA]
		"I noticed the vegetation here since I started coming here. From all that heavy rain and wind, it cleans up all the surroundings, so I'm not seeing any difference." [Nancy Kadlun, KIA]

TK Panel members agreed that weather and climate (e.g., amount of wind and rain, direction of wind, and weather patterns) greatly determine how much dust affects plants, and that lichen generally are very sensitive to dust. At both vegetation sites / field trips, participants felt that caribou would feed on vegetation there:

> See the white stuff [lichen]: caribou food. Food. There too, white stuff. In the wintertime, they dig in the snow. Dig in the snow, and they look for that kind. Caribou food. They like to eat it when it rains, when it's wet. They just love it. It's like steak for them! [Peter D. Sangris, YKDFN, August 6, 2021]

People (within their language groups) scattered over the land in different directions once the boats docked at field trip #1; it is not clear if this was why there was such differences in some of the comments made. If participants were in one large group, there might have been a consensus drawn through discussion. Elders like to hear each other and reconsider their own preliminary thoughts after hearing others; this is why they like to work in groups. Traditionally, people would gather after someone went on the land, and they would share what they observed in a group. All members would discuss these findings and analyze them and decide if they had enough information to reach conclusions.[9] Often, they would flag issues that they should continue to monitor before reaching conclusions.

3.2 Ways to Watch

3.2.1 Watching Guidance

While questions #6 and #7 from the survey generated comments on future community engagement with vegetation watching, most guidance points were developed during group discussions. Some TK Panel members felt that the current vegetation monitoring program operated by Golder every five years is adequate, although others felt it should happen every two-three years:

> I also observed lichen that's dying out there. It could be from dust. They are affected greatly from dust. Perhaps they could just check to see if there is any death to lichen in those plots. Even if not, writing it down, just to check and see if they are dying. ...they should make a note of it for sure. I know they are looking for growth but because of the dust we want to see if they are dying more than they are growing. ... I think they're on the right track for monitoring vegetation and lichen, because lichen grows slow. You can't monitor it every year, you're not

[9] Barnaby, J. 2009. Indigenous decision-making processes: what can we learn from traditional governance? Prepared by Joanne Barnaby with contributions from Allice Legat, Jackie Price, and Niklas Labba. December 17, 2009. https://arcticgovernance.custompublish.com/indigenous-decision-making-processes-what-can-we-learn-from-traditional-governance.4667318-142902.html

going to see a change. You'll just see slow growth, you want to make sure you see a difference. So I think the five year plan on lichen is good." [Kathy Arden, NSMA, August 7, 2021]

Monitor the changes in these greens, the berries, and anything that is growing on the land, and lichen for the caribou that is here. If you see it drying up, it means the weather is changing, there is hardly any rain. But if it's green like this right now, there's some rain over the summer nights. So if there's been rain off and on, off and on, it's going to grow good. But if isn't hardly rain, it's just going to be dry, yellow, and it won't be food for wildlife to feed on, especially caribou. Because you've seen that caribou trail, right. So they do come this way to feed. [Peter D. Sangris, YKDFN, August 6, 2021]

All TK Panel members expressed a desire to participate in current and future watching programs including the DDMI monitoring programs. Consistent with recommendations and outcomes from previous sessions, community members expressed the following guidance points regarding watching.

- **Both youth and Elders should work together in future watching programs that include both scientific and Indigenous knowledge:**

  Yes, I would [like to participate in future monitoring], I have always been interested in things like this, and the how, is if I have a youth with me. I would really want to just keep coming back with them, so they can get stronger and willing, and have fun, have the strong feet, to do it. And talk and talk and talk to them about it, until it sinks into their head, about our land, and also about them, then they can come to, after they learn and have all the experience, then they can carry it off to another youth that will be replacing them. [Myra: We should try to bring the same youth back?] The same youth back, maybe for 2, 3, 4, 5 years, then at that time, they will be an Elder and they can bring another youth. [Would it be good if we tried to find someone to work at the mine site? Or a different program?] No, a different program, just like monitoring the land, the water, things like that. There would be some who I know they don't want to work at the mine. They would rather be in the land like this, and learn, at a camp like this, or like TG's. That's the way they will learn, and bring knowledge home and talk to their friends, or share with their friends what happened on the land. [Marie Adele Football, TG, August 7, 2021]

  Sometimes I will talk and talk, especially to my kids, because I want them to grow to be strong. ... I'm happy I can teach my kids, who can help me when I'm not moving anymore, because I like to go on the land. ... You can learn from anybody, especially your Elders, because they want you to know everything. [Nancy Kadlun, KIA, August 6, 2021]

- **Climate change should be a consideration for all discussion / planning of watching programs going forward, not limited to vegetation:[10]**

  We have to always think about the weather too, the sun. If there's been no rain for a long time, everything is going to dry. We have to be consistent, every two years monitoring would be really good, to make sure that as we go along with climate change, we keep track of how things are growing. Because if there's no rain and only sun every day like this... Everything depends on the weather." [Peter D. Sangris, YKDFN, August 7, 2021]

  About the rock pile, I didn't see them cover it, it's supposed to be frozen for 200 years? We have climate change so this is a big deal to say. It's not going to be the same in the future with different species and the changes; is it supposed to stay frozen for 200 years? [Doris Enzoe, LKDFN, June 25, 2021]

  After the mine shuts down, they should still continue doing the monitoring, because it takes a long time for everything to grow back the way it was. But I don't think it will be the same, this area, because we are so close [to the mine]. Everything will change, the climate, it could get more hot, things could start drying up, even the permafrost underneath here could start melting, and things could change. Maybe one day, we won't even have lichen here, we don't know, because things change. It takes a long time to grow back, for the lichen to grow. So it's really hard to say how it will look. But the monitoring has to continue, long after the mine is closed. [Peter D. Sangris, YKDFN, August 7, 2021]

- **Diavik dust collection sites and vegetation monitoring equipment should be left up well after mine is closed, until significant regrowth of vegetation has been verified by Elders:**

  Leave it [dust collection sites] standing up. Even after the mine is closed, people are still going to be there, slowly closing up, and using machines, so just leave it there. [Peter D. Sangris, YKDFN, August 7, 2021]

[10] Participants had many questions during the planning session and group discussions at camp regarding DDMI climate modelling projections; how DDMI knows the core of the pit will remain frozen; how percolating water and rain will affect permafrost at the mine site; acid generating rock; how materials will be kept frozen (naturally or mechanically); and the effects of climate change on all of these topics / issues.

Figure 5 Vegetation and Heritage Resources Found on Field Trip #1

- **Until we see significant regrowth. There's going to be lots of dust still flying off that big hill. We are talking about monitoring a site many years after closure. That could be one of the ways they do it. [Kathy Arden, NSMA, August 7, 2021]**

  [It should be] long - four or five years ... As long as the dust is covered, maybe with grass, plants here and there, it should continue. As long as the mine is healed by itself, with all the waste on it. That's what I want. [Marie Adele Football, TG, August 7, 2021]

- **Watching (including vegetation) should continue for at least 50 years following mine closure:**

  Nancy: We would like them to monitor at least 50 years, not just 20. Our land is important to us, especially our water. And our fish is hungry. I would like to keep it at least 50 years. ... Don't just take off after 20 years. Can you promise us for at least 50 years, not just 20? This is a whole big project they are doing. It hurts me if I say okay 20 years, that's nothing. We have so many people, we are sad for our

land. We need to try and feel better.
Myra: If things were really good tomorrow would you still want to do 50 years?
Nancy: I would still, because it's already not good. Let's not say if, it has already been done.
Peter: Write it down, 50 years.
Nancy: There's no more if.
[Nancy Kadlun, KIA, Peter D. Sangris, YKDFN, August 7, 2021]

3.2.2 Ways of Knowing Guidance

As with previous sessions, a key strength of the TK Panel is that members recognize that both scientific understandings and TK must be considered in closure planning; some panelists have advised that scientific testing (using the ability to study things at a microscopic level or through a reductionist approach) should be done before getting the 'big picture' available from TK. However, in all cases, scientists and knowledge holders must work together to watch the land; scientific monitoring and watching should be balanced. Expertise and understandings grounded in TK should provide the framework for discussions held at the TK Panel, so that TK can be braided into closure planning:

> It's important to look at the plants and fish close to shore. The bears eat all summer and get fat, hibernate. Willows, grass, all the vegetation around the mine that grows should be watched. Sometimes places where they throw out grey water from the mine, the grass doesn't grow because there's stuff in the water. And the birds and ducks, fish, bugs, they are in the grass, and eat the grass, and eat what is in the grass. Fish eat in the grass in the water. Flies fall into the water, and fish eat those [so anything in the water goes through the ecosystem]. I one time saw ants in fish stomachs, they blew off the island [Diavik], and fish eat it. And fish don't stay in one place, they travel around, and people get sick from fish. … There are changes to the water but they [Diavik] don't tell us what they are. … We should go as far as we can toward the mine to watch things, berries, blueberries. I am Dene and travel on the land, I know contamination. We should go by boat, travel, and look on the shore, and show kids what to look for. We have to know what to look for when we go out. … Scientists come and that's good, but we are acting like scientists too when we are out there, because we know the land and lie on it. We know if it will be a good or warm summer or if the berries will be edible. [Albert Boucher, LKDFN, June 25, 2021]

> Hopefully all the people who are doing the science work are also trained Aboriginal youth. That would be really nice. [Nancy Kadlun, KIA, August 8, 2021]

At camp, TK Panel members expressed the importance of respecting practices and protocols when out on the land watching vegetation and how these should be respected in future programs and sessions. Participants at the planning session too noted it is very important to be respectful and pay respect to the land and water when at camp; participants also expressed the importance of taking the time to listen, learn, and share stories and teachings.

> Dangerous to walk on barrenlands wearing red. Wear only green and black. [Marie Adele Football, TG, August 6, 2021]

> Just don't look one place like that-keep your eye moving all around, once in a while, look good, if there's some big animal coming or something, you see, you move. If hungry, it'll try to get you ... it's just like jungle animals hunting their prey, like a tiger ... same thing. Always watch. Old timer people talk to young guys like that, tell them, young guys, when you travel on barrenlands alone, you think about [what] your grandpa told them. Keep in his head. Some, they don't care. Some young guys like that. You have to tell them over and over again. [Peter D. Sangris, YKDFN, August 6, 2021]

> Like Peter says, if it rains lots in a certain area, lots of plants, berries grow, so people would always keep a lookout like he said, on the horizon, for animals, for everything. So - if you see-you watch the weather. If you see it's raining way over there, then when it's a clear day, they would know to walk there to see if there's any berries or anything, these things they can use for fire, you roll it up and use if for fire. Always watching the weather, watching the horizon, all the time. You watch the clouds, which way the weather is blowing, it's always got to be something to do with the weather. Even right now, you notice which way the wind is blowing. Then you stop and you smell something once in a while, and there might be another group of people over the hill making a fire. If you smell fire, you know there is people around. You always have to be aware, have to use your eyes, your mind, your nose, your senses, your feelings, your touch. ... [Peter D. Sangris, YKDFN, August 6, 2021]

3.2.3 Communications Guidance

TK Panel members frequently spoke of the importance of transparency, consistency and longevity in communications and community engagement. Several themes were repeatedly emphasized.

- **As noted in the TK Panel #12 report, TK Panel members need to be able to quickly and easily access information being shared by DDMI, and outcomes of TK Panel sessions:**

  > And we should have a book to see the changes, scientific and IK, that have happened since the monitoring started. Because the mine doesn't show members

at home what is happening at the mine site. So we have less caribou now and it's because the mines are built right on their travel route. And three years ago people were fishing and there were worms. I know there was also spills. I hope this year that we can see what is happening out there. And I don't mind seeing it every three years but then it [information] goes to the Wildlife offices in communities and we [TK Panel members] don't see the results. People should get a binder in the mail with results. Then people can see changes and understand what is happening and why the camp happens. [Doris Enzoe, LKDFN, June 25, 2021]

[Sarah Ravensbergen: How could Tłı̨chǫ people be involved?] You can always do more. Talk to them, talk to them, make sure we go to meetings. Even our Elders that started with the mine, going to meeting after meeting, so they carry that, their son-in-law or grandkids. That's how our grandkids, young kids, they should continue talking to them about it. Keep talking about it and make sure they bring them here. And look around and make sure that Diavik is healthy again. -Marie Adele

- **TK Panel members discussed ideas presented in previous sessions with reference to vegetation (Appendix H). The desire to revisit and respect previous discussions and recommendations was discussed (e.g., past TK Panel sessions discussed using moss to filter contaminated runoff from pits, and reseeding of areas):**

  …I know that they were thinking of doing a reseeding program using the natural plants that are here. Some people said just let it grow back on its own, don't touch it. Other people said no, we want you to plant seeds from the area, and they are being stored for planting after the mine closes. I guess it's a matter of whether we replant, or let it be. … I just wanted to add, correct me if I am wrong Joanne, one of the things Diavik-I remember going to one TK where Diavik said, in the very beginning they collected seeds from the area, we had a discussion about that, whether we wanted to plant or transplant - ...but we never really came to a decision, it's a subject that still has to be discussed. [Kathy Arden, NSMA, August 7, 2021]

- **It is important for TK Panel members to feel that closure planning and further watching is done with transparency and 'done right', especially given previous experiences (e.g., Giant Mine) that have left community members nervous about the post-closure relationship:**

  I have the same sentiment towards TK Panel [as others expressed in the closing circle] working so hard and agreeing and working together. And if you were not aware, this is the first mine that has this type of stuff [a TK Panel]...So, the world will be watching to see what happens here. [Jack Kaniak, KIA, August 8, 2021]

> The land you see all around here is like the mine ... everything that grows on the land is food for the wildlife that roam on this land. We do not want food to be destroyed or contaminated for the wildlife ... we always have to raise questions, we always have to try to find answers. I'm thankful that I'm here with you to be part of this. [Peter D. Sangris, YKDFN, August 8, 2021]

The following recommendations made at TK Panel #12 continue to be important (follow up and implementation is required):

- All TK Panel reports need to be uploaded to a central online location (e.g., EMAB);
- At the end of each TK Panel session, a print-out of the points of guidance and recommendations will be distributed to each member; and
- TK Panel members need to be notified by email or by phone when their communities receive the reports such that they can access a copy and speak to it with other community members.

4 Recommendations

> Our voices need to be heard on our land. Especially if we are getting videoed, we have to put our voice out for the future. ... [Nancy Kadlun, KIA, August 6, 2021]

The TK Panel made a total of 13 formal recommendations related to vegetation (Table 4). Recommendations are numbered to reflect the TK Panel session identification (i.e., Session 13). Diavik will consider these and add them to their longstanding Recommendations Tracking Table once finalized at the verification session. As per the established practice, Diavik's response will be presented back to the TK Panel at the next session.

Table 4 TK Panel #13 Formal Vegetation Recommendations	
Recommendation	**Rationale**
13.1 – Complete chemical testing of rainfall at the mine site.	People want to understand why they are seeing changes now that they did not see before.
13.2 – Hold a future TK Panel Session focusing on current and future vegetation monitoring that involves Diavik scientists, to enable us to comment on their program.	As some caribou are returning to the area, people want to know where they are feeding. Watch where caribou and other animals are feeding, then visit sites in those areas to test plants for contaminants (in the mine site area, 5-9 km from the AEMP TK Camp).
13.3 - Ask Rio Tinto Exploration (or anyone operating in area) to watch caribou and record location, numbers and behaviour, back to communities (record or video as much detail as possible around the condition, size, and weight of caribou).	People want to know as much as possible about what is happening with returning caribou.
13.4 - Watch for any new species of plants and animals and report them to communities, if they find them.	
13.5 – Diavik and Elders should sample all animal scat from animals close to the mine when it is fresh, to see what animals are eating. Diavik should share the scientific results with TK Panel members.	Elders can compare this to their knowledge to see if there is any change. As much information about how old the scat is would help to identify the source of where they are getting their food.
13.6 – Also watch outside of the perimeter of the vegetation plots, add new plots, expand the size of the existing plots, and note any changes to the vegetation occurring over time. Visit the sites in summer to watch those plants, and also check for metals.	Share with Elders.
13.7 - Diavik should share dust collection results with communities and the TK Panel members, including hard copies.	Elders are concerned that cumulative impacts are causing the water to heat up.
13.8 - Diavik should share water testing collection results with communities and the TK Panel. The main concern is related to dissolved oxygen.	Community members are concerned that water in Lac de Gras is not as clear as they would expect.
13.9 - Diavik should share an update on what species are in the lake, both fish and vegetation.	Want to know if there are new species of vegetation and fish that could be impacting the lake and the fish.

Table 4 TK Panel #13 Formal Vegetation Recommendations	
Recommendation	**Rationale**
13.10 - Diavik should consider all previous TK Panel recommendations related to vegetation.	
13.11 - Monitoring should occur with Elders and youth for over 50 years, watching and testing using both TK and science.	Need to get ready to empower communities to carry out watching long after the mine closes.

5 Next Steps

One verification session took place in December 2021, where the list of recommendations was finalized (Table 4). TK Panel members present agreed on the following order of priorities for TK Panel Session #14 and beyond:

1. Monitoring at and after Closure (i.e. Post-Closure)
2. Updates on PKC closure options
3. North Inlet
4. Closure Criteria and Session with Diavik scientists (so they can describe the monitoring programs and answer questions on the findings) would like community visits first, and then a TK Panel Session on this
5. Closure Inspection Details: building demolition, metal disposal, waste disposal, contaminants, laydown areas, airports, roads, etc.

Traditional Knowledge Panel Recommendations 2012 to 2019

Prepared by Det'on Cho Environmental for Diavik Diamond Mines (2012) Inc.
6-2-2022

TK Panel Recommendations Sessions #1 to 12: Wildlife

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.1	A Way of Life, 25 Oct 2012, pg. 19	During July/August, a regular training session should be planned for Diavik staff in ways of properly respecting caribou and other animals	Cross-cultural learning is important when there are two ways of knowing wildlife. Scientists and Environment staff have a different way of doing work and understanding wildlife compared to that of TK holders. Respect for wildlife by TK holders means following the traditional laws that govern the relationship between humans and individual species. A successful monitoring program requires good communication, and this can be challenging in a cross-cultural setting. Strong relationships and a special effort to understand the differences are key to success.	Diavik staff and community assistants participating in the monitoring program undergo onsite and field training prior to initiation of the program. In addition, standard operating procedures are revisited in the field throughout the process. In 2012 and 2013, Diavik invited community Elders and youth to participate in the monitoring program to observe staff performance and evaluate procedures. Minor changes were suggested and are currently being reviewed.	Accepted
1.2	A Way of Life, 25 Oct 2012, pg. 19, 25	When elders are brought to site for staff training exercises, youth delegates should also be involved	The youth are living in a changing and complex world now. They have skills that the Elders don't, and they can help in the future. Everywhere that the Elders are called upon to share knowledge or observe changes, the youth should be with them to both learn and share. Teaching stewardship is the responsibility of each generation of elders.	Due to the nature of remote field work, seating capacity may be limited. Adding a youth component to this program limits Elder participation but has generally been supported by the communities.	Accepted
1.3	A Way of Life, 25 Oct 2012, pg. 19	The TK-Science camp at the mine site is an important place for developing skills and capacity in cross-cultural caribou monitoring	Elders feel that they can be creative in collaborating with Diavik in a cross-cultural setting that includes observations and knowledge exchanges at the TK/IQ Camp.	Recommendation is outside the scope of the Caribou Behavioural Monitoring SoP. Such opportunities may be considered for future camps, depending upon the focus of the camp.	Accepted

TK Panel Recommendations Sessions #1 to 12: Wildlife

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.4	A Way of Life, 25 Oct 2012, pg. 19	The TK-Science camp (known as the CBM Camp) should be moved to a location north of Diavik on Lac du Sauvage. The setup must be in the Aboriginal way, not in a square, so that it's not threatening to the caribou.	In keeping with traditional laws governing relationship with caribou, the camp should be closer to the caribou migration route in order to develop skills and capacity in cross-cultural caribou monitoring. Aboriginal camps on the land have a specific way of being set up, and this should be respected for the set-up of the TK/IQ camp.	The camp site has been established in consultation with community members under a land use permit with the WLWB and will not be relocated. The footprint of buildings and other infrastructure will not be changed significantly, in order to reduce further impacts on the environment.	Not Accepted
1.5	A Way of Life, 25 Oct 2012, pg. 19	Monitoring results should be reported back to the communities on a consistent basis.	Participants expressed frustration at the lack of communication (and involvement) with community members relating to caribou monitoring at the mine site to date.	Diavik prepares annual wildlife monitoring reports and an Environmental Agreement (EA) summary report. Additionally, EMAB produces an annual report that summarizes findings and recommendations. Wildlife monitoring updates are also included in annual presentations to communities. Diavik welcomes any further recommendations on how best to ensure that this information reaches individual community members.	Accepted
1.6	A Way of Life, 25 Oct 2012, pg. 19	It will be valuable to "check nets" and synthesize what's already been done by Diavik to incorporate TK/IQ into its processes, and document/share lessons learned from these experiences in order to avoid repeating work already done.	Participants felt that they are often repeating themselves (to same and different companies) about many of these topics/concerns. A sign of being respected is 'being heard'; so to have to continually repeat themselves, TK holders feel disrespected. There is value in reviewing what Diavik has done to incorporate TK/IQ into their work.	Unclear if recommendation is addressed to the TK/IQ Panel or Diavik. Diavik is open to sharing information about current and upcoming TK/IQ plans and programs with the Panel for their review. Literature reviews have also been done to determine TK/IQ use for closure planning and vegetation.	Accepted

TK Panel Recommendations Sessions #1 to 12: Wildlife

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.7	A Way of Life, 25 Oct 2012, pg. 20	Use pictures and/or other visual tools as part of the form for caribou behavioral scans.	Visual representation of the different behaviours of caribou is likely more accurate and would be helpful for people conducting the scans, especially new hires. People see things through a cultural lens and may interpret what is seen differently.	An effort to take photos displaying various caribou behaviours was undertaken during the 2012 and 2013 monitoring seasons.	Accepted
1.8	A Way of Life, 25 Oct 2012, pg. 20	TK holders should be hired on a seasonal basis (i.e. spring through summer) to work with Diavik staff in caribou monitoring.	A TK holder on staff would be helpful in conducting cross-cultural training and monitoring considerations. Tradition requires TK holders to report their observations to each other and to discuss interpretation of those observations.	Most caribou monitoring is completed from August - October. DDMI brings Elders to site to participate in these monitoring programs each year.	Accepted
1.9	A Way of Life, 25 Oct 2012, pg. 20	Community meetings are a good way to gather more information on how caribou are doing	This can be a means of extending traditional monitoring practices to include scientists. Both parties are able to share their observations on caribou in a face-to-face meeting. Such an approach provides a good opportunity for community members to learn about what is happening at the mine in relation to caribou. And mine employees have a chance to learn what the communities are seeing in their areas.	Recommendation is outside the scope of the Caribou Behavioural Monitoring SoP. Diavik hosts annual community meetings that include discussions on caribou and other wildlife. Diavik has also coordinated and participated in many wildlife forums to discuss caribou health and management with numerous stakeholders.	Not Accepted
1.10	A Way of Life, 25 Oct 2012, pg. 20	Caribou observation logs can also be used by community members when they are on the land	TK holders adapt and are willing to use new tools to carry out their stewardship responsibilities. Harvesters in the community may find the Diavik forms useful, and it may be helpful information for ENR.	Recommendation is outside the scope of the Caribou Behavioural Monitoring SoP. Diavik can supply the field sheets to communities, if requested.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.11	A Way of Life, 25 Oct 2012, pg. 20	Include more behaviors in the list for observation	Participants felt that there were other common behaviours not captured in the list. Community members are more familiar with different caribou behaviours and could help to expand the list and capture more detailed information. The intricate TK about caribou and caribou behaviour is required to inform good decisions. For example, caribou that are scared will often put their nose in the air, sometimes jump and then gallop fast; they are threatened because they do not know what is going on.	Elders from the YKDFN, NSMA and Tlicho participated in caribou behavior surveys in the fall of 2012 and 2013. One additional behavior has been recommended so far: curious (approached).	Accepted
1.12	A Way of Life, 25 Oct 2012, pg. 20; Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.6	Include more categories for herd composition and behaviour; involve two individuals nominated by the TK Panel to assist with updating the SOP.	Community members see caribou herds differently than scientists. For example, there are leaders and followers within a herd. Participants felt this would be helpful information to record because the relationship between herd members is important to understand in making decisions to reduce impacts on caribou.	Elders from the YKDFN, NSMA and Tlicho participated in caribou behavior surveys in the fall of 2012 and 2013. No additional categories have been recommended to date.	Accepted
1.13	A Way of Life, 25 Oct 2012, pg. 20	Utilize Aboriginal terms/concepts as identifiers	Participants expressed that there are Aboriginal terms that capture caribou activity or behaviour, perhaps more accurately than English terminology for them. Specific terms and concepts contain unique understandings important in governing the way we treat or 'manage' caribou. Specific terms and concepts contain unique understandings important in governing the way we treat or 'manage' caribou. Addition of such terms to the data form may be helpful for community members participating in surveys.	This may be beneficial in the future if caribou behavioural monitoring were to transition to communities.	Not Accepted
1.14	A Way of Life, 25 Oct 2012, pg. 20	Injured animals should be sent to ENR for assessment	It would be helpful to have as much information as possible about injured or dead caribou, so that community members are made aware of the cause. TK holders may have other ideas about how to safeguard caribou in the future.	Recommendation is outside the scope of the Caribou Behavioural Monitoring SoP. Diavik has a specific policy and procedures in place for reporting and handling of injured or deceased wildlife, and this involves ENR.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Wildlife

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.15	A Way of Life, 25 Oct 2012, pg. 20	Scientists and TK holders analyze dead caribou together	It would be helpful to have as much information as possible about injured or dead caribou, so that community members are made aware of the cause, can share information and learn the way that government analyzes caribou carcasses. TK holders and scientists can exchange ideas on causes and ways to prevent future deaths.	Recommendation is outside the scope of the Caribou Behavioural Monitoring SoP. Diavik has a specific policy and procedures in place for reporting and handling of injured or deceased wildlife. Diavik staff do not analyze dead caribou themselves; it is done by ENR.	Not Accepted
1.16	A Way of Life, 25 Oct 2012, pg. 20-23	Four key areas for monitoring: 1. Behaviours 2. Herd composition 3. Caribou health 4. Environmental conditions	These were identified as the key concerns of community members that are all factors considered in the traditional monitoring system; they should be monitored by Diavik. Indicators or signs of herd condition were identified within each of these areas.	Many of the indicators recommended that relate to herd composition, health and environment are more appropriate to be studied by government at a regional level. Behaviours and local conditions are included in the current SoP.	Not Accepted
4.1.1	Checking Nets, 23-25 Oct 2012, pg.8; Closure/Reclamation and Landscape History Interim Report, 23-25 October 2012, pg.8	The TK/IQ Panel should develop a report that more fully represents our knowledge and practice for maintaining the well-being of the caribou. TK assumes that all who live on the land of the caribou have stewardship responsibilities and must take these responsibilities seriously.	Many planning and monitoring gaps exist in relation to caribou and Diavik that have yet to be addressed, such as: Aboriginal monitoring approach (harvest camp), stewardship (traditional caribou laws), movement & cumulative impacts (monitor migration with youth), behaviour and herd composition (response to environmental influences, not just to mining). Preference is to monitor the herds when they are moving, north of Diavik.	Recommendation is to the TK/IQ Panel, however Diavik does not view this as within the mandate of the Panel. The Panel could recommend considerations for planning and observing caribou well-being in relation to the development of closure plans & post-closure monitoring programs.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.3	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Use traditional techniques (e.g. flags, trees) to keep caribou away from areas that are unsafe (both near and far from site).	Caribou will find their old migration routes, but they also make their own trails that change over time. Some participants recognized that it is important to try to encourage caribou away from harmful areas far before they reach the mine site/East Island. Others felt that it would be impossible to prevent animals from coming to the mine site area. Consideration for guiding caribou on the mainland or around the island is a possible topic for future discussions.	DDMI proposes to hold a TK Panel session in the spring 2016 to discuss wildlife monitoring and management at closure. Further discussions to advance this concept would be well suited to this meeting.	Accepted
7.5	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Create safe passage for caribou over the rock pile and through the site following their old migration routes on the north and south east sides (refer to map developed during session).	Panel members felt that it was not necessary to plan too much for the animals safe passage, as caribou will ultimately go where they want and will find the ramp, road or easy way. Preference was to align the path with the old migration route and to keep the slope similar to that of the test pile - as natural as possible. There are some big rocks at the bottom of the rock pile that would need to be covered. It was seen as important to think about the slope in the winter too - how wind will deposit snow - not just when it is snow free. The berms on top of the rock pile were viewed as a barrier to caribou movement, so it would be preferred to remove them and also to remove the berm around the top of the pile.	This is very similar feedback to what community members said at a 2009 workshop relating to caribou at closure. Current closure plans, most notably for the rock pile, generally support this recommendation and the underlying reasons for the recommendation.	Accepted
7.8	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Allow more time for the TK Panel to discuss options for keeping animals away from certain areas (e.g. fencing).	Inuksuit are used to mark caribou crossings (nalluit) in Inuit culture. Other cultures use different techniques as well - e.g. flags, trees. More discussion on traditional and modern methods that can be used to prevent or deter animal presence in certain areas of concern may be useful. For example, some Panel members felt that a fence would be beneficial, while others felt it may be harmful and hard to maintain over time.	DDMI proposes to hold a TK Panel session in the spring 2016 to discuss wildlife monitoring and management at closure. Further discussions to advance this concept would be well suited to this meeting.	Accepted
9.5	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Sponsor or co-sponsor a contest to gather ideas from communities on how to help the caribou get strong.	Many Elders felt that community youth, in particular, may have some good or new ideas on ways to improve caribou numbers, health, spirit, etc that are facing the population. They felt that a contest may encourage people to submit their ideas for consideration.	Diavik views this suggestion as better suited for communities themselves to undertake and then share relevant results with various stakeholders.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.3	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	In future programs, document why certain fish are rejected by Elders.	It was noted that one of the participants in the 2015 AEMP TK Study rejected two fish for processing, but the reasons why were not well documented. It would be helpful to capture these reasons in future studies.	Diavik agrees that the reasons why fish are selected or rejected should both be documented.	Accepted
8.4	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Water testing should be done by tasting fresh water and by boiling the water, letting it set overnight and drinking it the following day (observe scum and clarity).	Panel members recognized that not all people may drink tea, and that it would be better to use plain water to taste the lake water quality. In this way, the water is natural and any impurities would be easier to identify. However, the benefit of also boiling the water allows people to see if anything with the water changes after being heated, e.g., has a layer of scum, or materials settle out. It was agreed that people could make tea with the lake water on their own, if that was important to them.	Diavik supports the water quality testing method that is preferred by TK holders. Any change to methods used should be communicated and documented during the planning phase of the 2018 AEMP TK Study.	Accepted
8.5	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Set fish nets on both sides of the island (north and south).	Panel members felt that it is important to capture fish on both sides of East Island and closer to the mine itself. They would like to plan ahead for this for the next AEMP TK Study in 2018.	Nets can be set in a variety of locations, and Diavik supports the idea of determining where best to set nets during the planning phase of the 2018 AEMP TK Study. However, weather conditions may limit the ability to access certain areas as safety rules for site restrict boat travel if winds exceed 15 knots.	Accepted
8.6	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Ensure two Elders and two youth from each group attend future camps and meetings.	Panel members expressed that having young people participate in the AEMP TK Study, meetings and monitoring is critical for effective monitoring in the future. Having two young people from each community present increases their comfort level, as many are shy, and helps to make sure that the Elders are properly cared for. Members recognized that they could help support this process by talking with their organizations and encouraging them to find youth to attend.	It would be very beneficial to have TK Panel members assist in identifying and recruiting youth to participate in TK programs. The TK camp footprint is small and space is limited to what can be supported with existing beds/tents and cooking facilities. Most community organizations can send 4 people to the camp and this is usually 2 Elders, 1 youth and 1 interpreter. Should an interpreter not be required, Diavik would consider having 2 youth from the community attend.	Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.7	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Sample fish and water from the Narrows (In both LdG and LdS).	Concerns over future development of the Jay Pipe in Lac du Sauvage was a driver for Panel members to recommend sampling water and fish from the area around the Narrows (between LDS and LDG) as part of the AEMP TK Study.	The current area identified for fishing in LDG includes the area of the lake below the Narrows. For safety reasons, Diavik would like to avoid taking boats up the Narrows. Any concerns or interest in sampling LDS in relation to the Jay Pipe should be directed to Ekati.	Not Accepted
8.8	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Consider additional water sampling locations from different areas.	At closure, or with future development, community members may want to add water sample locations to the AEMP TK program.	Water samples can be taken in a variety of locations, and Diavik supports the idea of determining where best to obtain samples during the planning phase of the 2018 AEMP TK Study. However, weather conditions may limit the ability to access certain areas as safety rules for site restrict boat travel if winds exceed 15 knots.	Accepted
8.10	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Focus water quality monitoring on the NCRP.	The NCRP has been identified as one of the main concerns of Panel members who feel that climate change may affect its integrity and release contaminated water into the environment. As such, Panel members want to make sure that water from the pile is monitored for quality.	Many stakeholders are interested in the performance and integrity of the rock pile, as well as the quality of water seeping from the pile. As such, long-term water monitoring plans would be incorporated into the development of the post-closure monitoring program.	Accepted
8.12	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Monitor fish spawning areas closely, especially in the SE part of island (i.e. area just south of the pits).	Panel members are concerned about fish spawning in potentially contaminated areas, so they want to know if fish are using the areas close to the mine after closure.	Community members could monitor spawning areas at a variety of locations in LDG, and Diavik supports the idea of determining where best to monitor during the planning phase of post-closure TK studies.	Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.13	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Monitor and test water in pits and around East Island regularly.	Panel members were concerned with pit water quality once the pits were refilled with water because of potential contaminants. It is recommended to sample the water frequently and watch for wildlife using the water (drinking, swimming). If wildlife avoid water, there could be a concern about the water quality. Similarly, other areas around the mine site should also be monitored for water quality where water can run off into Lac de Gras.	Diavik currently monitors water quality around East Island and this practice would be incorporated into a post-closure monitoring program, along with open pit water quality. Incorporating a TK perspective of observing wildlife using the water is supported as part of a post-closure monitoring program.	Accepted
8.14	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Regularly stock on-island pond water with bugs to improve water quality.	Many Panel members identified that bugs in the water and on the bottom of lakes are beneficial to fish and the environment. Their continued presence is also an indicator of good water quality. Adding bugs to areas that were previously disturbed could help to reclaim those areas.	Diavik is interested in this idea and plans to explore the feasibility of incorporating this method into closure plans.??	Not Accepted
8.15	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Test water scientifically and not by tasting.	Panel members are uncomfortable with the idea of tasting water, as a way to test water quality, for water that is on the mine site. Panel members noted that scientific sampling is important for water testing, as it tests for things that cannot be seen or tasted. They also noted that visual inspections of the water (in the same areas that science samples would be taken) would be important for community members after closure.	Diavik currently monitors water quality around East Island and this practice would be incorporated into a post-closure monitoring program. Incorporating a TK perspective of visual observations of the water is supported as part of a post-closure monitoring program. It is Diavik's hope that community members will be the ones taking scientific samples and observing the water themselves, at the same time.	Accepted
8.16	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Regularly measure heavy metals all around island.	Panel members were concerned with water quality around the island, largely in respect to animals consuming it and water from the island entering the lake. Metals can be a concern because of equipment and infrastructure that were used for the mine.	Diavik currently monitors metal concentrations in water quality around East Island and this practice would be incorporated into a post-closure monitoring program.	Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.17	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Monitor water in late May and early June as these are critical times (i.e. melt).	Panel members know from experience that spring thaw produces the greatest amount of water that would runoff the island and into the lake over a short period of time. The volume can also pick up a lot of dirt and material from the ground and transport it to the lake. Therefore it is important to monitor water quality during this time, in addition to regular sampling.	Diavik currently monitors water quality around East Island, including during freshet, and this practice would be incorporated into a post-closure monitoring program. Incorporating a TK perspective of visual observations of the water is also supported during this time of year. It is Diavik's hope that community members will be the ones taking scientific samples and observing the water themselves.	Accepted
8.18	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Regularly measure water quality in all bays, drainage and run-off.	Panel members know from experience that water runs off the island and into the lake, taking many materials from the land along with it. Therefore it is important to monitor water quality in runoff and in areas that receive the runoff.	Diavik currently monitors water quality around East Island and in Lac de Gras, and this practice would be incorporated into a post-closure monitoring program.	Accepted
8.19	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Annually check for algae growth around shorelines as too much can be an indicator that there is less oxygen for the fish.	Panel members have experience with lakes in their home regions that have changed over the years. Many noted how algae and moss can be helpful in cleaning water, but too much build up of algae, especially along shorelines, may be an indicator that the water is not of good quality for fish. This is something that community members can help to identify through visual inspections of shoreline areas near the mine.	Diavik currently monitors water quality around East Island and in Lac de Gras, and this practice would be incorporated into a post-closure monitoring program. Incorporating a TK perspective of visual observations for algae in the water is also supported. It is Diavik's hope that community members will be the ones taking scientific samples and observing the water themselves.	Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
11.4	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	TK holders know that fish generally go where there is food (nutrients) and oxygen so they are unlikely to go to the depth where PK would be.	When considering filling the underground and pit with PK, Diavik is interesting in learning from the Panel how far from the surface of the water the PK should be filled, if that option is preferred and approved. The Panel discussed at length what this level might be and did not come to a consensus (6 to 100m).	Diavik agrees	Not Accepted
11.5	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The Panel would like additional scientific research to see what the effects of PK (ingestion) might be on fish specific to Lac de Gras.	Panelists were particularly interested in knowing whether PK would affect fish and water, and expressed significant concern that fish might ingest PK or that PK may affect fish gills. Diavik presented results from the PK toxicology study that found that PK does not contaminate water or chemically harm fish.	If Diavik receives approval to deposit processed kimberlite in mine workings then additional toxicological testing will be done on pore water collected from the deposited PK. There is no expectation that particulate PK will occur in the surface 40m where fish live.	Accepted
11.6	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	If PK were to go in any mine area, the Panel requests an opportunity to learn more about the depth of water for fish habitat to cover PK (TK and western science).	When considering filling the underground and pit with PK, Diavik is interested in learning from the Panel how far from the surface of the water the PK should be filled, if that option is preferred and approved. The Panel discussed at length what this level might be and did not come to a consensus (6 to 100m).	Diavik's water license amendment to permit PK to mine workings has been referred to Environmental Assessment. A decision by the review board is expected by the fall of 2019. If approved, Diavik has committed to a water cover greater than 50m.	Accepted
12.9	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Set nets for fish testing near the dikes in Lac de Gras to help get baseline information on current fish health and continue once the dikes are breached to compare.		Baseline information existing. Slimy sculpin testing just outside N. Inlet dike every 3 years - done through AEMP. Based on modelling, do not expect impacts outside of pit lakes.	Accepted

TK Panel Recommendations Sessions #1 to 12: Fish & Water

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.11	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Put fish in pit lakes to be monitored, tested and sampled before the dike is completely breached once water is deemed "safe" (i.e., at least 2-6 years of monitoring). If the fish are the same as fish in Lac de Gras according to TK testing (e.g., liver, heart, gills, bladders, etc.), carry out a second stage breach for fish passage.	The TK Panel struggled with deciding whether they considered it respectful and safe to encourage fish to be allowed back into the pits, particularly if they were filled with PK. In the end, the group decided that breaching the dikes for fish would be part of a second phase after people were confident that the water was safe.	Challenges associated with collecting test fish in pit lakes.	Not Accepted
12.12	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Monitor fish from pit lakes according the AEMP protocols, but only taste test them if there is an acceptable comfort level and scientific results confirm that the fish are safe for eating.		Agreed	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.0	A Way of Life, 25 October 2012, pg. 9	Ensure that any caribou trails are clean and clear of debris.	TK provides insights into caribou needs. Caribou are really sensitive about their feet and knowledge passed down over generations tells that it is important to make sure that any areas where caribou travel are clean so that their feet are well taken care of. From Renewing Our Landscape: Caribou feet are really soft so they prefer to travel on sand and eskers, and sometimes hills. Sand is really important. Soft sand can be used to cover jagged rock at water crossings so that caribou can get into and out of the water safely.	Additional information on what is considered 'clean' is needed in order for Diavik to implement such a recommendation when designing caribou trails for post-closure use. e.g. TK Panel members have discussed the possibility of using fine PK as sand along wildlife access areas (Session 6), but Diavik would need to evaluate the properties of PK in relation to animal health before determining if its use is suitable for caribou trails.	Accepted
1.17	A Way of Life, 25 October 2012, pg. 17	A monitoring program that includes (western) science and TK/IQ is the most practical and preferred approach.	Provide an opportunity to continue practicing and integrating different ways of knowing and learning from each other. The mine's presence makes it necessary to develop cross-cultural ways of learning and sharing knowledge. Need to be creative in collaborating with Diavik. A successful program requires good communication and strong relationships.	The TK/IQ Panel is Diavik's preferred method to consider and develop closure monitoring options that incorporate science and TK/IQ. Work to develop trust and communication protocols with the Panel and communities is a part of this approach.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.18	A Way of Life, 25 October 2012, pg. 24	Work with Aboriginal knowledge holders to investigate and experiment with the possible use of deflection zones (e.g. 20 miles away from the mine and another closer to the mine), based on knowledge of migration routes that may help to guide caribou movements away from the mine.	Humans do not control nature, but must take steps to provide for caribou needs when nature has been disrupted. There is no way that you can keep an animal out of its migrating route. Its either going north or south, and they follow different routes. They will go over anything in their path. Traditionally, spruce and other markers such as inuksuit have been used to direct caribou to certain areas. These could be used to try and reduce risks and stress on animals. If they are in a straight line, caribou will follow them and they won't go in between the markers, even if there is a large gap. From Renewing Our Landscape: East Island is a shelter for young and injured caribou; they get to it by swimming along the channel (on the north side of the island). South of the lake is jagged rock where caribou could get injured. The east side of the lake is better; there is a sandbar, muskeg and rocks and its good for caribou migration.	Current mine activity levels appear to be sufficient to deter caribou from visiting East Island. Methods such as this may be effective as the mine transitions to closure and post-closure, depending on wildlife use preferences identified for mine site areas by community members.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.19	A Way of Life, 25 Oct 2012, pg. 25; Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.6	Ensure that TK/IQ knowledge that has been shared in the past is incorporated into future planning, specifically in relation to caribou and vegetation.	Early work that was done for Diavik's Environmental Impact Statement and other planning processes included knowledge about caribou that should be reviewed and used. Include a review of Elder site visits and best practices from the Golder Associates literature review.	Diavik is interested in incorporating historical information on caribou and other areas of the environment from the companies documents, as well as external sources such as the West Kitikmeot Slave Study and community TK archives, particularly with respect to mine closure planning. The literature review that was completed by Golder Associates was a first step in identifying the type of information that is available to the public.	Accepted
2.5	Renewing Our Landscape, 7 December 2012, pg. 35	Seasonality of monitoring must be taken into consideration when planning for post-closure monitoring.	Land, water and air are the three key areas of concern for Aboriginal people. TK monitoring seasons are: winter for hare, foxes, wolverine, etc; spring for caribou; summer for fish and water; fall for berries in muskeg and plants.	Diavik is interested in further exploring ideas for closure monitoring with communities. Seasonality should be accounted for in these discussions.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
3.4	Renewing Our Landscape, 7 December 2012, Appendix D, pg.14; Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.5	Leave the airstrip intact with one or two small buildings nearby; do not revegetate it.	Excellent infrastructure for the north as an emergency landing strip for aircraft. A small building can provide emergency shelter, or shelter for those using the area for hunting or fishing.	Maintenance and liability issues are the key challenges with leaving the airstrip and/or a small building after closure. Diavik would be open to Transport Canada or another party acquiring this airstrip. Alternatively, Diavik would consider leaving the airstrip intact (no reclamation, no on-going maintenance/liability), were this to be preferred by communities & approved by the Board.	Accepted
4.1.2	Checking Nets, 23-25 October 2012, pg.18; Closure/Reclamation and Landscape History Interim Report, 23-25 October 2012, pg.8	Diavik should carry out and make public a review of its use of TK/IQ in its environmental plans and programs. This review should document the successes and lessons learned from TK/IQ studies, and what changes or improvements in adaptive management can be attributed to TK/IQ.	Key concerns in relation to this recommendation are whether Diavik is doing what they said they would do, and community members are concerned with repeating themselves over the years without seeing any results from their suggestions. Community members feel that Diavik needs to demonstrate their use of TK, in respect to the Elders.	DDMI had a report prepared by Golder Associates titled "Literature Review of Traditional Knowledge Related to the Resource Sector - July 2011". Beyond this, DDMI does not feel that it is necessary to produce a separate report that documents where TK/IQ has been incorporated into its past processes. Many of these initiatives were established during the early years of the mine and it would be difficult to effectively represent the knowledge and provide lessons learned.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
5.4	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.5	Smooth slopes on the sides of roads and the airstrip so that they are less steep, and remove large boulders from these areas. Scarify engineered surfaces such as the camp areas, plant site, roads and laydowns. Revegetate to support biodiversity.	Consider revegetating the sides of the airstrip and roads so that they can filter runoff, but avoid revegetating the surfaces. Keep all roads to the pits and airstrip intact to allow access for monitoring. Sides of old roads and the airstrip should be made less steep and revegetated to filter runoff. They should be relatively smooth and free of boulders so that wildlife can move over the areas safely.	The current closure plan supports this recommendation and includes contouring of roads, restoration of drainage, surface scarification and revegetation. Some travel routes will be planned, connecting key areas of the old mine footprint for human and wildlife travel.	Accepted
5.5	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.5	Remove equipment, unused buildings, pipes, toxic materials and non-biodegradable items from the island.	Panel members refer to traditional practices of always leaving a clean campsite and respecting the land for your use. Buildings, equipment and materials no longer needed should be redistributed to Aboriginal communities if requested.	An approved landfill exists at Diavik (within the rock pile) and will continue to be used for non-hazardous waste materials. Hazardous materials are backhauled off site on the winter road. An evaluation of building or equipment condition would need to be conducted in advance of providing any materials to communities; if the materials were deemed suitable, Diavik would be interested in communities acquiring such items.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.1	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Do not disturb new areas and protect natural vegetation areas that exist on the Island (with the exception of planned development areas for A21, the rock pile for A21 and any future closure work that involves covering natural vegetation in order to flatten slopes for safe wildlife passage).	Panel members were able to visit areas of natural vegetation and most were happy with how these looked, and recognized the importance of preserving these, where possible. Comments: "I was looking for dust on berries and willows, but I saw that they were pretty clean; seeing it first hand helps." "The berries and leaves in the undisturbed areas look the same as before." "I feel peaceful and good after going out on site; I saw a fox and wolf and ground squirrels." " There were caribou trails at the south side of the airstrip; it looks good. Its good to see the land looks healthy." Panel members also recognized that it is important to balance preservation of natural vegetation with making sure that wildlife can pass through the site safely. For example, participants felt it more important to widen the base of any future rockpile associated with the A21 development, in order for the pile to be lower and less steep for wildlife movement.	DDMI understands and respects community interests in protecting areas of natural vegetation that remain on the mine site property while recognizing where it may be beneficial to lose some natural areas in order to promote the safe passage of wildlife through the mine property. The Panel has provided clear guidance on where and when it is appropriate to cover natural vegetation and this aligns well with DDMI's closure plan.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.2	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Study vegetation east and north of the Island to understand good caribou habitat.	Participants felt that tundra vegetation is very powerful; like there is something underneath that is helping it. They noted the importance of moisture for growth. Many participants felt that the environment is powerful, that nature will heal itself and that vegetation at the mine site will grow again on its own. Others felt that what has happened on East Island is not natural, so it cannot be left to Nature alone to heal; Nature needs help in this case. Still others noted that climate change will result in differences; e.g. willows are taller now at places where Panel members used to camp and different species are coming to the north (which Elders predicted in the past). Some participants thought that vegetation on the East Island is different from the mainland (and that this could be from human activity, introduced species or climate change).	Since 2010, DDMI has incorporated a TK component to the lichen study that is conducted on East Island and the mainland. The main focus of the TK component of this study is to identify plants and habitat areas that are used by caribou in various locations on the tundra, up to 40 km (25 mi) away from the mine. This study is done every 3 years and is next planned for 2016.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.4	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Test both natural vegetation and seeded plants (re-vegetation plots) for toxicity.	Vegetation itself was not seen as a concern; the worry is about hazards and concerns for caribou if they eat the plants. Panel members want to be sure that vegetation on the mine site is safe to eat and similar to that farther away on the mainland. Many participants noted that wildlife smell food before they eat it; they may roam around but not eat. Caribou are smart and this is an indication that they know when plants are not healthy for them.	This is planned as part of the re-vegetation study being conducted with the University of Alberta (U of A). Field samples to test for plant toxicity were planned for summer 2015, but the amount of plant material available to sample was too low. U of A plans to conduct greenhouse studies using the same materials and native plants to test for toxicity in the short term, as they can grow plants quicker under controlled conditions. They will then wait until the plants in the plots at the mine are large enough to sample and test as well, so that we have results from both the lab and field.	Accepted
7.6	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Use fine crushed rock on passage-ways to protect the feet of the caribou (similar to what is on the sides of the airstrip right now – August 2014).	Participants noted that caribou are the most important species to look after and that they must be respected. From 1.0 (above): Caribou are really sensitive about their feet and knowledge passed down over generations tells that it is important to make sure that any areas where caribou travel are clean so that their feet are well taken care of.	Diavik will evaluate options for crush size on caribou passage ways. A very fine crush, such as that at the airstrip, may not be possible. However, participants noted that the test pile slope material was also considered safe for passage. DDMI will use the surface of the test pile slope to guide final surface material design for caribou passage ways.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.9	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Create slopes on the sides of roads similar to that on the test pile to support safe travel for animals, and use crushed rock (like at the airstrip) on the surface.	All Panel members showed a clear preference for road reclamation that included a relatively flat top with downward sloping sides at a low angle. The material preferred for use in reclaiming such areas is crushed gravel. It was recognized that natural revegetation may be lost by pushing out the sides of roads in order to ease the slope, but this was seen as an overall positive because it allowed safe passage for wildlife.	The Panel's preferred design for roads at closure is supported. Preference for top surface is to be similar to test piles rather than placing additional crushed gravel.	Accepted
7.10	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Transplant a variety of natural 'tundra mats' and compare them to seeded test plots; this will help natural recovery by maintaining the biodiversity of the area.	The re-vegetation plots were visited and Panel members found it interesting to see the different plants that were growing there (e.g grasses) when compared to the tundra beside the plots. Many also felt that there seemed to be little vegetation given that it had been 10 years. Researchers explained that growing grass allows the soil to build (nutrients, moisture, etc.) and is the first phase in helping other natural tundra plants to then establish. Panel members felt that there could be benefit in taking natural 'tundra mats' from areas being impacted by mine development (e.g. future A21 rock pile area) and re-planting them in re-vegetation areas.	Diavik initially planned to try this approach in the re-vegetation plots established in 2004. However, this approach requires access to an area planned to be disturbed (to take "tundra mats") while at the same time having areas available that require re-vegetation. This situation has not been identified. Currently DDMI does not see an opportunity for this approach.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.11	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Use the natural tundra mat to guide plant selection to ensure natural balance.	Similar to recommendation 7.2, it is seen as beneficial to "learn from Nature's quilt" and study the plants that grow together in various areas.	The focus for re-vegetation studies to date is to utilize native plants from 'nature's quilt'. The goal for re-vegetation is to establish primary growth (such as grasses) that help to grow soil nutrients, which then allows plants from the surrounding tundra to move in and establish. In this way, Diavik helps to promote growth while allowing for natural processes and plants to occur over time.	Accepted
7.12	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	When using fertilizers, use natural local fertilizers like droppings from local animals. The question of treated human sewage needs to be revisited.	Participants noted how caribou droppings have often resulted in better plant growth at traditional camp sites or other areas of the tundra. It was felt that use of such natural fertilizers may be beneficial in the re-vegetation work that Diavik will be doing. Participants were not sure how they felt about using treated human sewage as a fertilizer - a product that is readily available on site and has been used with some success in the re-vegetation test plots. Panel members would like to learn more about what is in the treated sewage before deciding on whether this is an acceptable fertilizer.	Diavik is interested in using treated human sewage waste as fertilizer, given that it is available on site and considered safe to use from a health perspective. The plan is only to use this material as fertlizer during the first couple of years after closure, as it promotes plant growth in the early stages of use and then loses its effectiveness over time. Local animal droppings would only be considered long-term, natural fertilizer and its use would not be a planned activity.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.15	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	The re-vegetation maps developed in this session are not yet complete and more time needs to be spent discussing and finalizing these.	Participants worked hard to classify various areas of the site in terms of zones for which they would prefer to 1) deter wildlife use, 2) encourage plant growth or 3) engineer areas of safe passage or use for wildlife. The map developed by the women during a break out session was the most supported approach to date, but Panel members felt that this requires more discussion at both the Panel and the community levels.	Diavik is grateful for the maps developed at this session and views these as a useful tool for discussions with community members, community organizations, regulators and the TK Panel.	Accepted
7.16	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	The TK Panel would like to use maps that show the TK of traditional caribou migration routes as the basis for evaluating the "big picture" and identifying areas for sloping (modification) on East Island at closure.	Panel members recognized that it would be helpful to have access to some of the early work produced prior to mine development that identified the traditional trails used by caribou and identified by Elders during the Environmental Assessment. Participants felt that it would be useful to compile that information onto a map that could then be marked up to show the 3 types of zones to be considered for animal use of the mine area after closure (deter wildlife use, encourage plant growth or engineer areas of safe passage or use for wildlife).	DDMI proposes to hold a TK Panel session in the spring of 2016 to discuss wildlife monitoring and management at closure. Further discussions to advance this concept would be well suited to this meeting.	Accepted

TK Panel Recommendations Sessions #1 to 12: Landscape & Re-Vegetation

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.1	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Maintain current TK camp site until at least 2018	Community members prefer a more traditional approach to spending time on the land. The connection to the land that can be felt at the camp is stronger than what people experience at the mine site, given all the rules and limited ability to be outside. The connection to the land supports each AEMP TK Study participant and lends to a feeling of family and a willingness to share knowledge, which contributes to the success of the program.	DDMI understands and respects community members' desire to continue to hold the AEMP TK Study at the TK camp site. DDMI agrees that the camp provides a more authentic experience and results in better information being shared. The current lease for the TK Camp area expires in May 2017. DDMI plans to renew the lease and currently supports holding the 2018 AEMP TK Study at the camp. DDMI would then re-evaluate plans for the TK camp after the 2018 session.	Accepted
8.2	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Consider options to donate camp facilities to people traveling to LdG after the mine closes.	TK Panel members are very interested in continuing to monitor the water and fish in the Lac de Gras area after the mine is closed. Leaving the camp in place would provide them with a base from which to do this. Communities would appreciate the camp facilities and supplies being "sold" ($1) or donated to a community organization or coordinating body that would oversee such work. Alternatively, if it is not possible to keep the camp intact, Daivik should consider leaving a tent frame in place for travellers that may need emergency shelter.	DDMI prefers not to leave the camp facilities in their current location, as the preference is to close the camp, reclaim the land and relinquish the lease. DDMI would consider 'selling' or donating the camp equipment to community organizations or a coordinating body, pending legal review, for their own use. The mine site itself is only a short distance away and is likely to have one or two buildings left behind after closure that could be used for emergency shelter.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.10	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Consider alternative uses for A21 material: - Cover the Processed Kimberlite Containment (PKC) area after removing slimes. - Assuming the slimes are gone, slope the south face/wall between the NCRP and the north end of the PKC to allow for caribou movement. - Extend the west end of the NCRP and slope it for caribou. - Cover areas that may have been contaminated after clean-up like the hydro-carbon containment area. - Smooth edges of roads, airport and building areas	The Panel applies their traditional approach of respecting everything nature provides and being resourceful. The 'waste' rock supplied by mining activities in A21 should be used wherever possible, rather than simply being discarded into a pile on the tundra. In the Panel's view, if closure plans for the PKC area change (e.g. dry vs. pond), the suggestions relating to access to this area may also change.	Diavik is planning to use A21 material for closure, including some of the items identified by the Panel. Details for each area have yet to be finalized, and we commit to continue updating and discussing this with the Panel as closure plans progress.	Accepted

TK Panel Recommendations Sessions #1 to 12: North Inlet

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.14	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Relating to re-vegetation, the North Inlet requires further discussion in terms of it being a no go zone, replanting zone or encouraging zone for wildlife.	The men and women had separate break out sessions to develop their ideas on how best to manage various areas of the mine after closure. Many of their ideas were similar, but the suggestions for the North Inlet differed greatly. Panel members recognized that more information is needed from Diavik relating to the water quality and closure plan for the North Inlet pond, before a decision can be made on vegetation and wildlife access.	Diavik is grateful for the maps developed at this session and views these as a useful tool for discussions with community members, community organizations, regulators and the TK Panel. Further information relating to the North Inlet water quality and closure plan will be planned for a future TK Panel session.	Accepted
9.24	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Do not reconnect the North Inlet, open pits and PKC area with the lake/land; keep dams and dikes intact unless the water and sediments in those areas is proven to be clean and the same as Lac de Gras.	The Panel members would prefer that areas with the potential for contaminating Lac de Gras waters or fish (e.g. North Inlet) remain separate from the rest of the lake. Similarly, the dam around the PKC should remain in tact unless the area would not pose a risk of contaminating the land or animals surrounding it. In order for the Panel to recommend or support plans to reconnect these areas back to Lac de Gras or East Island, Diavik would need to prove that the water, lake bottom and closure surface is clean and safe.	Diavik understands the Panel's concerns. Currently-approved closure plans would see the open pit/ underground areas and the North Inlet reconnected to Lac de Gras. Diavik has conducted several studies to determine if there are risks (potential for contamination) to the environment, should they be reconnected to LDG. Current plans also provide for multiple years of monitoring prior to possibly reconnecting these areas. Closure plans for the PKC include breaches in the dam in certain areas. It is Diavik's preference from a liability perspective to not retain regulated containment structures on the site.	Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.9	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Do not breach dikes until the TK Panel is satisfied with the water quality through visual inspection and reviewing results from scientific analysis.	Panel members have repeatedly expressed the importance of 'seeing with their own eyes'. It is important to continue to involve Panel members in key decisions during the closure phase of the mine. One of the most important phases to supporting this process will be prior to breaching the dikes. If Panel members are satisfied with what they see and learn, they can support reconnecting the dike areas to Lac de Gras.	Continued engagement of the TK Panel through site visits during closure is Diavik's preferred approach to sharing plans and progress, and continuing to build the Panel's knowledge and expertise of closure activities.	Accepted
8.20	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Leave the land between the pits and the dikes as it is for natural regrowth when flooding.	Much of the natural lake beds that are exposed inside the dike have been undisturbed for many years and have had substantial growth of terrestrial (land) plants. Panel members felt that these plants should be left in place. While they will likely die once they are under water, they will help to establish other water plants and provide food for bugs that live in the water.	The plant growth that has occurred in these areas is something that was not anticipated during the environmental assessment. Diavik is in agreement with the Panel on their recommended approach, but recognizes that other stakeholders, such as DFO, will be interested in considering the best option for these areas at closure.	Accepted
8.21	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Leave dikes as they are (i.e. do not modify the slope or current construction).	Panel members had much discussion over the dikes. In the end, many felt that the dikes will act as islands and offer protection from wind and waves inside (good for small and resting fish). The outside of the dikes would be perfect for bigger fish and other fish to swim along, and many Panel members stated that this is where they would set nets.	This recommendation aligns with Diavik's current closure plans. The only changes to the dikes would be the areas that are breached to reconnect the pits back to Lac de Gras.	Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.22	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Vary depths of built reefs.	Keeping some parts of the reef deeper and some shallow allows for current to run through the area. Keeping the reefs under water will allow the water to freeze and the ice to grow really thick for safe travel. Building islands that extend out of the water was considered by the Panel at one point, but they ultimately preferred keeping the reefs under water, given that the dikes will become islands once they are breached.	This recommendation aligns with Diavik's current closure plans.	Not Accepted
8.23	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Don't build, or minimize building reefs on previous lake bottom areas inside the dike area (i.e. protect undisturbed and naturally vegetated areas).	Similar to the feedback received during the revegetation session (#7), Panel members were interested in preserving areas inside the dike that had not been disturbed by mining activities. Reef construction should be focussed on areas within the dike where disturbance has already occurred.	This recommendation aligns with Diavik's current closure plans.	Accepted
8.24	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Ensure good fish habitat for rearing, feeding and resting on reefs inside dike.	A combination of sand and gravel are the preferred materials to use for building reefs and new areas of lake bed, as this is what was there in the beginning (i.e. before mining). Fish that are just born like shallow areas with gravel and a bit of sand or till (original lake bottom sediments). Little fish don't like too much sand, though, and minnows will often die in these types of areas. There was a lot of debate about what type of habitat to develop inside the dikes, but Panel members ultimately felt that there was enough good spawning habitat elsewhere in Lac de Gras, so the focus for this area should be shelter for feeding and resting.	This recommendation aligns with Diavik's current closure plans.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.25	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Stock water in open pits with bugs to improve water quality.	Many Panel members identified that bugs in the water and on the lake bottom are beneficial to fish and the environment. Their continued presence is also an indicator of good water quality. Adding bugs to areas that were previously disturbed could help to reclaim those areas.	Diavik is interested in this idea and plans to explore the feasibility of incorporating this method into closure plans.??	Not Accepted
8.26	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Provide opportunity for the TK Panel to view the present shoreline when snow-free to consider further recommendations (in spring).	Panel members have repeatedly expressed the importance of 'seeing with their own eyes'. This Panel session was held in December in Yellowknife, so many members were basing their discussions on memory and hadn't closely looked at the shoreline areas of the pits in the past. In order to confirm their preferences, Panel members would like to visit the shoreline areas within the dike when there is no snow on the ground.	A visit to these areas is planned for May 2016, during TK Panel Session 9.	Accepted
8.27	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Break-up the 1 km cliff on pit A418 with slopes (to make it safe for caribou).	There was a concern that a cliff feature at the edge of a lake could result in caribou or other animals being injured or killed, especially if it was used by predators as a hunting technique. Additionally, the length of the existing cliff would mean that caribou would have to swim up to 1 km to get out of the water. As such, it was felt that adding slopes at regular intervals would be helpful for animals to get in/out of the water safely.	Diavik plans to accommodate this request when finalizing closure designs for the A418 pit. A visit to this area is planned for May 2016, during TK Panel Session 9, and it would be helpful to have the TK Panel confirm that this recommendation still holds after seeing the area with their own eyes.	Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.28	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Leave current roads into the pits (e.g. A154).	Panel members found it acceptable to leave the ramps (that are currently used for vehicles to enter the pits) in place at closure, as they could provide safe access for wildlife into and out of the lake.	This recommendation aligns with Diavik's current closure plans.	Accepted
9.25	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Given that the pits are going to be refilled with water, that Diavik is considering putting processed kimberlite and 'slimes' into the pits and underground shafts and concerns about tremors and seismic activity, the TK Panel requests a tour of the pits and underground shafts to see the 'receiving environment' with their own eyes.	As with many other aspects of the site, TK Panel members find it helpful to see things with their own eyes in order to better understand an area and the related closure considerations for that area.	DDMI understands the Panel's interest in viewing the open pits and underground to better understand the closure objectives for this area. A visit underground is very time consuming with many safety considerations and special equipment; not all Panel members may be comfortable going underground. DDMI suggests that a future TK Panel session focus on the option to store PK underground and that a tour of the open pit and underground areas would be arranged for those who wish to view them, in conjunction with that session.	Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.4	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Fill the pits from the bottom up with Lac de Gras water so that water is not running down the walls of the pits. Let the water settle for a minimum of two years.	A concern that has been raised in previous sessions is the potential for contamination from the pit walls such that the water might be contaminated when the pits are filled. The TK Panel wants to see the pits filled from the bottom up in order to minimize the water running down the pit walls as well as to minimize missing or stirring up of PK with water by controlling the way in which water is added to the pits.	Diavik advised that several studies have been carried out to "wash the walls" and test the resulting water quality and that no concerns have been raised. Recent model updates indicate that if water conditions are good sooner than two years, better to breach earlier rather than later (to avoid concentration build-up).	Accepted
12.8	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	When scientists and the TK Panel agree that the pit water is safe (i.e., drinkable) and stable (i.e., consistent), then breaching of the dikes can occur to allow water to flow back and forth but prevent fish from entering the pits, at least initially.	After much discussion and clarification was provided over the session, the TK Panel decided that the first phase of breaching the dikes should allow for water movement, but not fish movement particularly for pits containing PK.	Per EA measure 2, DDMI is conducting cultural use water quality criteria workshops to inform criteria for dike breaching.	Accepted

TK Panel Recommendations Sessions #1 to 12: Open Pits

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.10	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Whether or not the dikes allow fish passage, do not build up fish habitat within the shallow pit areas where PK is placed as fish will return naturally if they sense it is safe and the nutrients and oxygen that they need are there. Focus DFO requirement for fish habitat enhancement in pits where there will be no PK. The TK Panel needs to be there to watch and provide guidance on how to enhance fish habitat.	Fish are known to have an acute sense of smell, just like animals. This sense will guide fish to know whether it is safe to enter the pits once the dikes are breached. Fish are known to be smart and use temperature to guide their movements. The TK Panel discussed the fact that it would take time before fish would return to the pits after the dikes are breached because there needs to be enough food for them. One panelist suggested that it would be important to see how the micro-organisms survive in the pit water: if the fish food doesn't survive, people will know that the fish won't survive.	Agreed	Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.1	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Cover PKC area with a combination of natural sand and soil to ensure that the PKC is not over-heating the area (and melting permafrost) and to support natural re-vegetation	Concern was expressed that the dark colour of both the coarse PK and the liner would attract more sun (heat) that would result in permafrost melt. There was also a desire to see the area revegetated as Panel members expect that caribou and other wildlife will attempt to access the area after closure.	The revised closure plan discussed in the October 2013 TK Panel session was approved by the WLWB in May 2014. The current plan includes a rock cover that would be lighter in colour and serve the same purpose as the sand and soil cover proposed by the TK/IQ Panel. The rock cover required to contain the Processed Kimberlite and protect it against wind & water could limit opportunities for revegetation.	Accepted
6.2	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	If there were eskers within the PKC area, reclaim these to their original state or as close as possible	A key goal expressed by the TK Panel was to return the landscape to a more natural state.	Need to consider technical requirements that would provide stability of the dam structure after closure. This is likely to limit the ability to re-design the PKC area with features such as an esker.	Not Accepted
6.3	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Re-vegetate the PKC area according to baseline traditional knowledge and science	A key goal expressed by the TK Panel was to return the landscape to a more natural state. Panel members thought that vegetation may help to stabilize the ground.	The current closure plan does not include revegetation of the PKC area. It is unlikely that vegetation would help to stabilize the ground in this area given the substrate, cover materials and permafrost development, and also in consideration of the limited root systems of sub-arctic plants. Lichen development on rock/ boulders may develop over time.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.4	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Create wildlife habitat and stabilize ground with transplanted willow	TK/IQ Panel members first leaned toward deterring animals from using this area after closure, but the Panel came to realize through their discussions that caribou and other wildlife will attempt to access the area after closure. For this reason, the vision of the Panel for this area shifted to recreating habitat similar to what was present before the mine was constructed. A key concern that Diavik noted was the instability of the fine PK 'flatlands' or 'beaches' that are contained inside the PKC dam.	The current closure plan does not include revegetation of the PKC area. It is unlikely that vegetation would help to stabilize the ground in this area. Diavik would need to explore possible options and their associated risks if revegetation of the PKC was to be considered.	Not Accepted
6.5	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Create marshy areas with moss, lichen and berries	This type of vegetation would provide a food source and safe travelways for animals. It would also resemble what the area looked like before the mine was built.	The main focus in closing the PKC is to direct PKC seepage and/or runoff water to marshy areas on the tundra that have moss cover and allow for natural filtration. It is currently preferred to keep the flatland area within the PKC dams dry and sloped toward a planned pond. This would help to stabilize the PK underneath the cover material.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.6	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Removal of the slime from the mine site upon closure.	Traditional laws and stewardship of the land imply that you do not leave human-made materials behind as it is harmful to water, air or animals. The removal of slime provides a level of comfort and certainty to northern communities that is not otherwise available. This preference is based on the acknowledged problems created by leaving the slurry/slime onsite, in particular safety concerns for people and wildlife and the uncertainties associated with impacts from environmental change (e.g., a rise in temperature and associated drought, permafrost melting, earthquakes) long into the future. Further, it provides an opportunity to return the landscape to a more natural state which is a key goal expressed by the TK Panel throughout sessions to date.	Diavik understands the motivation to remove the slimes from site. However, should the material prove to be non-toxic to people and wildlife, Diavik plans to leave the slimes on site. Should the material be used or accessible to wildlife (directly or indirectly) at closure, it would be beneficial to conduct a toxicological study on the material.	Not Accepted
6.7	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 5	Removing the slime offsite remains the preferred option until Diavik can demonstrate through chemical and toxicological analysis that the slime is not harmful to the environment (i.e. plants, wildlife, fish, and humans).	Upon discussion, Panel members stated that should the slimes prove to be non-toxic, they would be more willing to assess on-site containment options for this material. TK holders need to see for themselves that something is not harmful to the environment. Participants would want to be confident in the results of the scientific testing.	Should the material prove to be non-toxic to people and wildlife, Diavik plans to leave the slimes on site and determine the preferred method for containment that allows for safe use or passage of wildlife in the PKC area.	Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.8	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Return the lake and shoreline to their natural states, as much as possible (e.g. gradual slope)	This approach would create safe access for wildlife, as it is assumed that wildlife will try to use this area after closure.	It is likely that the shoreline of any reclaimed pond will differ from a natural pond, but it may be possible to recreate some elements of interest to communities.	Accepted
6.9	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Ensure that the shoreline (of the PKC lake) is stable and that rocks are of the correct size to be safe for wildlife, especially caribou.	This approach would create safe access for wildlife, as it is assumed that wildlife will try to use this area after closure.	Another closure goal for Diavik is to have land areas that are physically stable and safe for people, wildlife and aquatic life.	Not Accepted
6.10	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Line the lake bottom with granite, gravel and rocks and other natural materials that were there before	Create a more natural and stable lake bottom that would be safe for caribou use during the warm months.	One of Diavik's closure goals is to create a final landscape guided by pre-development conditions & TK. Consideration of materials available and suitable for use are evaluated as part of the closure planning process.	Not Accepted
6.11	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Re-vegetate the lake with water plants of this area	Such plants contribute to biodiversity as they are a food source for other fish and animals. Plants feed fish but may also clean the water that wildlife may to drink and birds are likely to land on.	Current closure plans do not include revegetating lakes with water plants. Because the water pond within the PKC would not be stocked with fish (see below), efforts would also not be made to revegetate lakes with water plants. DDMI prefers to construct this lake in a manner that would not attract wildlife or promote its use.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.12	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Re-stock lake with fish and bugs	The desire of Panel members is to recreate pre-mine conditions. The limitations of water movement after closure were discussed in relation to elevation changes in this area; historic water flow patterns between Lac de Gras and the PKC area that would be necessary to support fish and bug life would be incredibly difficult to achieve.	Current closure plans do not include re-stocking fish and bugs in East Island lakes, and this includes the lake within the PKC area. Water flow patterns that would be similar to historic conditions and possibly allow for fish and bug life in the PKC pond are not planned for this area. As discussed, elevation changes from mine development would prevent this from occurring.	Not Accepted
6.13	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Recreate small ponds along the drainage route to encourage settling and healing of the water and fish habitat	There is a strong belief expressed by the Panel that nature heals itself and that it can be disrespetful to interfere with nature, but that humans can help to create the conditions to support healing. Encouraging longer drainage paths that utilize small ponds increases the chance of having cleaner water when it reaches Lac de Gras.	Diavik agrees with this recommendation and the proposed drainage path for a pond within the PKC area flows across the tundra, and passes through 3 small ponds along the way.	Not Accepted
6.14	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Support the drainage streams to encourage fish to migrate from Lac de Gras to the reclaimed lake	The desire of Panel members is to recreate pre-mine conditions. The limitations of water movement after closure were discussed in relation to elevation changes in this area; historic water flow patterns between Lac de Gras and the PKC area that would be necessary to support fish and bug life would be incredibly difficult to achieve.	The footprint of the PKC extends close to the shoreline of Lac de Gras which could make it very difficult to reduce the slope of the dam in some key areas. The elevation difference for the PKC area at closure will be significant when compared with the original lake in that area, making it very difficult to re-establish baseline conditions. Technical considerations also need to be taken into account; the dam walls still need to contain PK material that would remain after closure.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.15	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Make the closure lake as similar to the original lake, as much as possible	The desire of Panel members is to recreate pre-mine conditions and plan for safe usage of the area by wildlife.	Material availability will be limited and Diavik prefers to use material available at the site, without disturbing new areas. It is likely that the shoreline of any reclaimed pond will differ from a natural pond, but it may be possible to identify and recreate some elements of interest to communities.	Not Accepted
6.16	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Provide sufficient travel-ways for caribou and muskox over the dam through re-sloping and topping with smaller material	This approach would create safe access for wildlife, as it is assumed that wildlife will try to use this area after closure.	The current closure plan does not include re-shaping of the PKC dams. Any proposed changes would need to be evaluated for possible risks and discussed with communities. The footprint of the PKC extends close to the shoreline of Lac de Gras which could make it very difficult to reduce the slope of the dam in some key areas. Technical considerations also need to be taken into account; the dam walls still need to safely contain PK material that would remain after closure.	Not Accepted
6.17	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Recognizing that caribou may return, provide areas of soft materials that are good for caribou feet so that they may pass over the reclaimed site	TK holders care about the comfort of animals and want to avoid creating stress for them. This approach would create safe access for wildlife, as it is assumed that wildlife will try to use this area after closure.	The current closure plan does not include cover materials that would provide access over the PKC dams. Any proposed changes would need to be evaluated for possible risks and discussed with communities.	Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.18	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Leave some areas steep to encourage snow accumulation for wolverine and other denning wildlife (e.g. wolf, bear, fox, ground squirrel, etc.)	This approach would create safe access for wildlife, as it is assumed that wildlife will try to use this area after closure.	This would be achieved with the current closure plan.	Accepted
6.19	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	Open up sections of the dam to recreate natural water flow	The desire of Panel members is to recreate pre-mine conditions. The limitations of water movement after closure were discussed in relation to elevation changes in this area; historic water flow patterns between Lac de Gras and the PKC area would be incredibly difficult to achieve.	The footprint of the PKC extends close to the shoreline of Lac de Gras which would result in a very short pathway for water to travel and heal before entering Lac de Gras. This conflicts with previous guidance to route water overland for as long as possible, and DDMI's preference is the latter. Technical considerations also need to be taken into account; the dam walls still need to safely contain PK material that would remain after closure.	Not Accepted
6.20	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	The TK Panel requests that DDMI starts to remove any new slime from site, effective immediately	The Panel felt it important to stop adding to the volume of slimes that has already accumulated on site.	DDMI is unable to immediately start removing slimes from site, as there is no alternative storage options available or permitted, nor is there an acceptable method of transport available.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
6.21	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	The TK Panel requests that DDMI provide an overview of the sixteen closure options that have been considered and the preferred five options identified (including costs). Further, the TK Panel requests that DDMI provide an overview and cost estimate to remove the slime from the mine site.	The options, reasons and costs were important for the TK/IQ Panel to understand in consideration of their own assessment.	The options were reviewed with Panel members, though cost information was not available at the time the information was presented.	Accepted
6.22	Processed Kimberlite Containment Interim Report, 24-28 October 2013, pg. 6	The TK Panel recommends that DDMI explore ways of treating and removing slurry/slime with other diamond mines in the area to make it feasible	The assumption here is that costs will be reduced by working together.	Should such measures be necessary in the future, DDMI would be willing to explore such options in cooperation with other mines.	Not Accepted
7.7	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Create barriers and other means between the rock pile and PKC to discourage animals from going into the PKC area	Diavik provided feedback to the Panel at the start of Session 7 that a number of their recommendations from Session 6 (PKC) would not be possible, so Panel members had to re-evaluate their preferred approach to managing this area after closure. Participants realized that more discussion is required to develop alternate recommendations for the PKC. However, Panel members also noted that it is important to consider having a barrier between the rock pile and PKC that would prevent or deter animals from going into the PKC area. Keeping a steep slope on the side of the rock pile that is beside the PKC was recommended by the Panel.	The Panel's preferrance for design that prevents or deters caribou from travelling from the (north country) rock pile to the PKC is supported. The design approach to achieve this will need to be considered, as maximum slopes required for cover placement may not be sufficient in themselves to act as a barrier to movement.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Processed Kimberlite Containment (PKC) Area

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.11	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Monitor and filter two streams from the east and west sides of the PKC by Mother Nature through mosses, bogs; moss should be placed throughout the channel. In the short term, install an industrial filtering system. Monitor this water quality.	Another key concern for communities is the water quality of the PKC. Natural methods to filter water (e.g. moss) and planning for water to follow a long pathway to Lac de Gras are the Panel members preferred, long-term water treatment approaches. Recognizing that the development of moss may take time, it would be prudent to consider using an industrial filtering system to treat water flowing from the PKC once the mine closes and until such time as a natural filtering system has established. Water flowing from the PKC should be monitored scientifically for water quality.	Diavik currently monitors water quality in the PKC and this practice would be incorporated into a post-closure monitoring program. Routing options for water leaving the PKC after closure will be assessed, and DDMI agrees with the Panel that the distance it flows before entering Lac de Gras will be an important consideration. However, options may be limited in some areas, particularly on the west side. Should site-specific treatment of PKC water be required, relevant options (both industrial and natural) to achieve the required performance would be evaluated.	Not Accepted
9.8	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Place a circle of boulders around the PKC pond, in an area that is stable enough to support the weight and where they won't sink into the slimes, and around the shore of the North Inlet (refer to map).	Panel members prefer to find a way to deter caribou and other wildlife from accessing the PKC pond after closure. Panel members would prefer that the PKC pond not become a drinking water source for animals. Additionally, there is a risk of animals becoming trapped in the water, or stuck in the unstable slimes material at the edge of the pond. Man-made fences can sometimes injure wildlife or be used in predation, and require maintenance, so the preference is to use a natural way of deterring animals from accessing the pond.	Diavik is still evaluating options for closing the PKC area. The current plan includes a pond in the centre of the PKC post-closure, but other options that could omit the need for a pond are being assessed in accordance with the recommendations recieved from past TK Panel sessions. The TK Panel's recommendation for the use of boulders around the pond has been noted for consideration, should the preferred closure plan result in the need for a pond in the PKC. Diavik is committed to arranging a future TK Panel session to re-visit the PKC closure plans, once further information on closure options have been further evaluated.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
11.1	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	If the PK goes to the mine area, the TK Panel recommends that all of the PKC slimes also be put into the pits. There is interest in moving as much of the slimes as possible from the PKC into the mine area and away from the surface where wildlife might gain access.	Panel members weighed the options of disposing PK into the PKC versus the pits/underground, considering the potential effects on wildlife, fish and the environment. As discussed during previous sessions, Diavik reminded the Panelists that a concern about the PKC are the slimes that form a consistency like toothpaste and can be harmful to wildlife or people that may get stuck in it owing to its physical properties.	If Diavik receives approval to deposit PK in mine workings then Diavik will proceed to evaluate the feasibility/practicality of also moving EFPK ("slimes") to the mine workings including anticipated benefits to closure of the PKC facility.	Not Accepted
11.2	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	If Diavik moves ahead with putting PKC slimes into the mine areas, the Panel requests to review any changes to the PKC closure plan. For example, if it is not possible to move all of the slimes in the PKC to the mine area and some of the slimes remain in the PKC, the TK Panel may recommend that the PKC is topped with large boulders to discourage wildlife and people from entering.	Panel members weighed the options of disposing PK into the PKC versus the pits/underground, considering the potential effects on wildlife, fish and the environment. As discussed during previous sessions, Diavik reminded the Panelists that a concern about the PKC are the slimes that form a consistency like toothpaste and can be harmful to wildlife or people that may get stuck in it owing to its physical properties.	If Diavik receives approval to deposit PK in mine workings then Diavik will proceed to evaluate the feasibility/practicality of also moving EFPK ("slimes") to the mine workings including anticipated benefits to clsoure of the PKC facility.	Accepted
11.3	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The beach materials and rough kimberlite should stay in the PKC area (i.e., anything that can support a rock cover).	Panel members weighed the options of disposing PK into the PKC versus the pits/underground, considering the potential effects on wildlife, fish and the environment.	Diavik agrees	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.1	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	The TK Panel would prefer to have the soft material that is produced from processing kimberlite (slimes) stored away from the surface so animals and humans cannot access it and accidently get caught in it. The Panel supports the option of putting the existing slimes that are in the PKC plus new slimes produced, in the bottom of the pit so that animals and people do not have access to it.	The TK Panel revisited previous discussions around the PKC and reminded one another how a rock cover would not be too effective given that the rocks would sink into the slimes which can behave like quicksand. Several panelists advised that it would be much better to put the slimes and PK back into the pits in part because that would mean that the rock pile above the PKC could be kept lower and more stable.	If Diavik receives approval to deposit PK in mine workings then Diavik will proceed to evaluate the feasibility/practicality of also moving EFPK ("slimes") to the mine workings including anticipated benefits to closure of the PKC facility.	Not Accepted
12.2	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Remove the slimes that are currently in the PKC such that Diavik can start to cover the PKC to create a safe and hard surface at least three years earlier than the original closure plan.	The TK Panel revisited previous discussions around the PKC and reminded one another how a rock cover would not be too effective given that the rocks would sink into the slimes which can behave like quicksand. Several panelists advised that it would be much better to put the slimes and PK back into the pits in part because that would mean that the rock pile above the PKC could be kept lower and more stable.	If Diavik receives approval to deposit PK in mine workings then Diavik will proceed to evaluate the feasibility/practicality of also moving EFPK ("slimes") to the mine workings including anticipated benefits to closure of the PKC facility.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
2.2	Renewing Our Landscape, 7 December 2012, pg. 22	Do not allow water to pool on top of the rock pile	Once a small pool of water forms, it gets bigger and becomes a lake that attracts animals. Animals then start to use it. Because the Panel is concerned with the quality of water within or flowing from the pile, there is concern for the health of caribou and other wildlife.	Diavik is not planning to have a water pond on top of the rock pile at closure.	Accepted
2.3	Renewing Our Landscape, 7 December 2012, pg. 23	Have a 'moat' around the rock pile as a way of being able to contain and monitor the water that is coming out of the pile.	Relates back to the concern of water quality coming off/out of the pile. Eskers have cold water flowing out of them because of the permafrost within the esker. The same is likely to happen with the rock pile as permafrost builds up within the pile over the years.	The existing collection ponds surrounding the rock pile serve this purpose and current plans have the ponds remaining until adequate water quality has been demonstrated.	Accepted
2.6	Renewing Our Landscape, 7 December 2012, pg. 45; Appendix D, pg. 8	Some revegetation should be planned for the rock pile. Consider use of good, black soil from the tundra or other eskers in the area. Plant native shrubs such as dwarf birch and willow in the soil near the bottom and allow the remainder to revegetate naturally.	Respect for the land includes respecting natural systems - there is a reason for each plant being there. Introduced species can be harmful and quickly take over; preference is to use naturally occurring plants. Using soil from elsewhere may be acceptable because the Diavik island is a traditional place for caribou to roam and is a good feeding/resting area; another option is to use till from A21. Revegetation will take time but it is the right thing to do. Consider visiting old archaeological sites or other esker sites to view re/growth; exposure will dictate what grows where (shade, leeward, side, top).	The current closure plan does not account for revegetation on the rock pile. Harvesting soils from outside the mine footprint is not being considered. Re-vegetation priority for DDMi is still plant site, laydowns and roads.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
3.1	Renewing Our Landscape, 7 December 2012, Appendix D, pg.6; Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.4	Simulate an esker when considering the final shape of the rock pile.	Traditional stewardship means leaving things as natural as possible. Make it look as natural as possible by imitating the effects of glaciers and prevailing easterly winds on the surrounding landscape. This includes sloping the top edges so they are rounded, sloping the sides so they are less steep (similar to the test pile) and have varying levels of steepness. Place rock from the pile back into the pit. The top should be flat with berms removed so that caribou can walk safely as there would be fewer places for predators to hide; they may want to use the hill to get away from bugs. Big boulders should be removed, particularly at the bottom of the pile and on the north slope, as wildlife will likely get injured trying to walk over them. The north side should be the most gradual slope, as this will be the area for wildlife and people to access the top.	Simulating a large esker is a preferred approach to re-shaping the rock pile. Closure plans do not include placing rock back in the pit. Diavik anticipates that re-shaping efforts would eliminate the need for large boulders to be removed.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
3.2	Renewing Our Landscape, 7 December 2012, Appendix D, pg.7; Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.5	Safe wildlife access needs to be considered for all seasons when designing the final shape of the rock pile. There needs to be soft material in areas where caribou will be; consider the use of PK material for animal paths.	Prevailing winter winds (NE) will result in a smooth snow cover that drops straight down on the lee side of the pile so need to consider TK/IQ in relation to snow drifts. In summer, caribou will go on top of the pile to avoid flies; consider having something for them to eat up there. In fall, caribou will swim across to the island from the northwest, following their old migration path; consider having a caribou ramp across the pile that connects with this access point. Use waste rock to slope the pile and consider an esker 8 miles NE of Diavik as an example. Refer to comment 1.0, Landscape for further information on suitable materials for caribou feet.	A caribou 'ramp' (safe access on, off and across the pile) for the rock pile is included in the current version of the closure plan. Additional ideas on design options to provide safe access for wildlife are being discussed with communities, along with technical considerations for design and performance. Diavik would need to evaluate the properties of PK in relation to animal health before determining if its use is suitable for caribou trails.	Accepted
3.3	Renewing Our Landscape, 7 December 2012, Appendix D, pg.12 & 13	Channel water flow to prevent contaminants from reaching Lac de Gras.	Consider using geotextile to line drainage channels downstream of the pile and revegetate these areas. Snow drifts and areas of accumulation need to be considered when planning for drainage. The lake water needs to remain healthy as the people of Kugluktuk live downstream.	Closure plans for the mine consider the use of drainage paths that allow additional time for water to travel over the tundra before reaching Lac de Gras. Diavik's closure goals include land and water that is physically and chemically stable and safe for people, wildlife and aquatic life.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
5.1	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.4	Preference is to lower the height of the rock pile. However, if that is not possible, keep the rock pile height as low as possible while ensuring that contaminants within the Type II and III rock areas are contained.	The biggest concern that Panel members have is chemicals seeping from the pile into the lake or being ingested by wildlife drinking the water. While the pile is considered an eyesore and Panel members would like to see it smaller (lower) on account of wildlife concerns, participants also recognize that it is most important for the pile to function well in containing chemicals from entering the environment.	The rock pile has reached its maximum height and matches what was originally permitted for the mine, though capping materials will result in a slightly higher final elevation. Diavik's primary closure goal is to contain Type II and III rock and ensure that water quality from the rock pile seepage is safe for wildlife and humans.	Accepted
5.2	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.4	Cap the rock pile with the best materials for biodiversity based on TK and science, using nearby hills as a reference.	Many Panel members believe that nature needs a helping hand; it will heal itself, but conditions to allow re-growth need to be created. Everyone recognizes that things grow slowly in the north, but that over time the area should heal. Panel members desire to see the land as close as possible to how it looked before is the main factor in guiding recommendations. While it is acknowledged that the area will never be the same again, efforts to reclaim areas in a way that resemble natural features is preferred.	Material availability will be an important aspect of closure planning. Diavik's preference is to use materials available at the mine site, without having to disturb other areas. Mine rock and till will be the materials available in greatest supply and these are currently being considered for use in capping the rock pile.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
5.3	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.5	Experiment with different types of wetlands for filtering water that collects at the base of the rock pile.	Traditionally, people tried different things to solve problems and TK holders want to be involved in any new experiments. This method should be combined with current or alternate purification system(s) to treat remaining contaminants. There are opportunities for Aboriginal people to be trained to do this type of monitoring. Panel members recognize that it is not ideal to have a water treatment plant on site forever and that more natural treatment options, similar to many used in communities, are preferred in the long term.	Wetland drainage has been effective in this area in the past and that is what is currently planned for managing water from the rock pile.	Accepted
EMAB-2	Environmental Monitoring Advisory Board TK/IQ Panel Recommendations from February 2013, Letter from EMAB, 8 Oct 2013, pg.2	EMAB recommends that Diavik incorporate into its ICRP research the following question: Will vegetation on the waste rock pile increase snow trap, which will increase run off and increase the chance of leaching?	TK/IQ Panel members have highlighted considerations for snow accumulation in relation to prevailing winds, but have not discussed this in relation to vegetation on the pile.	Not supported as current closure plans for the rock pile do not include revegetation.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
EMAB-3	Environmental Monitoring Advisory Board TK/IQ Panel Recommendations from February 2013, Letter from EMAB, 8 Oct 2013, pg.2	EMAB recommends that Diavik shape rock piles in a way that directs freshet runoff away from Lac De Gras through natural wetlands in order to naturally filter the runoff.	Supports discussions of the TK/IQ Panel preferences of wetland treatment and diverting water away from Lac de Gras for as great a distance as possible.	Diavik supports this approach wherever possible but notes that runoff and seepage will eventually reach Lac de Gras. Suggest re-wording to: "...direct freshet runoff and seepage away from Lac de Gras and through seepage wetlands *for as long a distance as possible*..." Diavik has also applied this recommendation to the proposed PKC closure option.	Accepted
7.9	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Create slopes on the rock pile similar to that on the test pile to support safe travel for animals.	Panel members felt that it was not necessary to plan too much for the animals safe passage, as caribou will ultimately go where they want and will find the ramp, road or easy way. Preference was to align the path with the old migration route and to keep the slope similar to that of the test pile - as natural as possible. Boulder size and angles were also a concern. Panel members noticed some big, sharp rocks at the bottom of the north country rock pile that would need to be covered. It was seen as important to think about the slope in the winter too - how wind will deposit snow - not just when it is snow free. The berms on top of the rock pile were viewed as a barrier to caribou movement, so it would be preferred to remove them and also to remove the berm around the top of the pile.	This is very similar feedback to what community members said at a 2009 workshop relating to caribou at closure. Current closure plans, most notably for the rock pile, generally support this recommendation and the underlying reasons for the recommendation.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.30	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Ensure long term scientific monitoring of NCRP to determine if it remains frozen and stable.	The NCRP has been identified as one of the main concerns of Panel members who feel that climate change may affect its integrity and release contaminated water into the environment. As such, Panel members want to make sure that pile remains frozen in the core, as it was designed to be.	Many stakeholders are interested in the performance and integrity of the rock pile. As such, long-term monitoring plans would be incorporated into the development of the post-closure monitoring program.	Accepted
9.1	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Re-vegetate the base of the NCRP around the ponds.	While some members of the TK Panel initially hoped that the NCRP would be re-vegetated, others preferred to let nature take its course and heal itself over time. After much discussion, Panel members concluded that it would be beneficial to focus re-vegetation efforts to the areas where ponds are located at the base of the NCRP. This would help to both naturally filter water coming in to or flowing out of the ponds, as well as to possibly help the pile re-vegetate naturally over time.	Diavik has not yet finalized the closure plans for the ponds at the base of the NCRP, but the TK Panel's recommendation for these areas will be considered when developing these plans.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.2	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	A limited number of large boulders (e.g. 3-4) should be placed on top of the NCRP to provide some shade for caribou, create habitat for small mammals and encourage natural re-vegetation	Panel members felt that a small number of large boulders could be beneficial for caribou, without harming the chemical stability of the pile. Many members think that caribou will go up the pile, primarily to get away from bugs, so it would be good to have some shade for them. If there were only a small number, it would be unlikely that they would be used by predators, but they could create habitat for smaller mammals as well as help with natural re-vegetation by sheltering seeds and water/snow to encourage growth.	While there are no current plans to incorporate a small number of large boulders on top of the NCRP, Diavik would consider adding these if communities identified a need for these as a result of observations from a TK monitoring program, or discussions with Elders once the final landscape of the NCRP can be observed. The Final Closure Plan for the NCRP also identifies this option for future consideration.	Accepted
9.3	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Study the wind and snow accumulation on caribou ramps/trails as well as the top of the NCRP before finishing/finalizing the sloping and grading of the NCRP.	The Panel wants to be sure that the caribou/wildlife pathway that was located along a route recommended by community members will allow safe access throughout the year, including during spring conditions when the caribou are heading north. It would be beneficial to study the wind and snow accumulation along the pathways to determine if the conditions are safe for caribou or other wildlife passage in all seasons. If this is done before the pile is completely finished, the Panel feels that Diavik should be able to fix any grading or sloping issues that communities may identify.	Diavik appreciates this suggestion and hopes that the TK Panel incorporates this monitoring into a site-specific, Traditional Knowledge wildlife monitoring program for the Diavik mine.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.4	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Ensure a gradual slope on the top of the NCRP so that there is a slight dome down the centre.	Panel members wanted to ensure that any water or snow that may fall or collect on the top of the pile would naturally drain off of the pile. This would minimize the amount of water that could seep into the pile. The Panel considers this another way to make sure that there is long-term protection for the land and water. Once there are no more people at the site, the water and snow must be able to drain safely off the pile.	Diavik appreciates this suggestion. The Final Closure Plan and design for the North Country Rock Pile includes this feature.	Accepted
10.1	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Avoid disturbing new areas (e.g. tundra) with A21 material at the SCRP as much as possible. The proposed SCRP area is part of a major caribou migration and feeding corridor and should not be disturbed.	The TK Panel recognizes the importance of the SCRP area to caribou and would prefer that this area not be developed. However, recognizing that the SCRP location has already been approved and established, they are interested in minimizing the size (footprint and height) of the SCRP.	Diavik shares the opinion of the Panel and prefers to utilize A21 material for other purposes (i.e. NCRP closure cover), thereby reducing the overall size of the SCRP. Diavik has now obtained regulatory and financial approvals to proceed with constructing the NCRP cover. This will begin in spring 2018, and A21 rock and till will be used for the cover. Other opportunities for the use of A21 materials for closure will continue to be evaluated as the CRP progresses.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.2	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	If this area must to be used, minimize the size (i.e. volume/amount) and height of the SCRP and slope all sides like an esker so that animals can easily walk over it. We recommend the slope should be at 3:1.	The TK Panel has evaluated the covered test pile and observed the re-sloping efforts undertaken on the NCRP. The 3:1 slope on these structures has been supported for the safe movement of wildlife and the Panel is interested in applying that same design to the SCRP at closure.	While the SCRP is being constructed, side slopes will be at the angle of repose. As noted above, Diavik's preference is to minimize the size of the pile, however current closure plans do not provide for re-sloping the entire pile, as no closure cover is necessary for the SCRP. A wildlife pathway has been planned, and that would be re-sloped (3:1) and smoothed to facilitate safe movement across the pile.	Accepted
10.3	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	If the SCRP is large, designated pathways become more important and must follow caribou routes known through TK.	Recognizing that there is a possibility that the SCRP could include all the rock from A21 (i.e., if the NCRP cover is not approved) and that the sides of the SCRP may not be re-sloped, the Panel notes that designated wildlife pathways would be very important, and that they must be safe and utilize known caribou routes across the pile.	Diavik has currently planned for pathways over and across the SCRP at closure. We will work with the TK Panel and/or other community contacts as required to finalize their location prior to closure.	Accepted
10.4	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	We recommend that rock from A21 that could go to SCRP be used to cover the NCRP.	The Panel applies their traditional approach of respecting everything nature provides to mine closure planning. The 'waste' rock supplied by mining activities in A21 should be used wherever possible, rather than simply being discarded into a pile on the tundra.	Diavik is in agreement with the TK Panel and was awaiting approval on the NCRP cover from the WLWB at the time of Session 10. DDMI has since received the necessary approvals for the cover and plans to begin progressive reclamation of the NCRP, that includes using rock from A21 that would otherwise go to the SCRP, in the spring of 2018.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.5	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Drain the pond that would be covered by the SCRP before using the proposed area.	The Panel understands that the pond under the proposed SCRP is non-fish bearing and prefers to have this drained prior to filling it with rock. There were two reasons for this: one was to prevent that water flowing over the tundra to Lac de Gras and the second was to allow more room for rock to fill the area, because it would be covered anyway.	Diavik notes that this was not originally planned for the pond identified. This was a very helpful observation and recommendation that was completed during the fall of 2017.	Accepted
10.6	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Have all SCRP water tested (both science and TK) before releasing into Lac De Gras.	As noted in past TK Panel sessions, Panel members see value in both scientific and TK monitoring of water on East Island at closure. Water that would flow from the mine area to Lac de Gras should be tested at closure, similar to what is done during operations.	Diavik continues to work with the TK Panel to identify more specific locations for closure and post-closure monitoring and we agree that the drainage channel from the SCRP is important to sample. DDMI plans to establish a monitoring station in this location.	Accepted
10.7	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Use natural filtration methods in areas where water will run off the SCRP on site.	As noted in past TK Panel sessions, nature has the ability to heal and natural filtration to treat runoff water (e.g. rain, snow melt) at closure is encouraged. Runoff water from the site should be routed to travel across the tundra and naturally undergo some filtration before entering Lac de Gras.	There are no plans for infrastructure in the area downstream of the SCRP where drainage water would flow at closure. As such, the water will flow over native tundra allowing natural filtration to occur before reaching Lac de Gras. While it is not a particularly long drainage path, it will exist.	Accepted

TK Panel Recommendations Sessions #1 to 12: Rock Piles

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.8	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Diavik must plan for the same values, principles and goals held by the TK Panel for the NCRP, to the SCRP (e.g. maintain low height, 3:1 slope for caribou).	The TK Panel has evaluated the covered test pile and observed the re-sloping efforts undertaken on the NCRP. The 3:1 slope on these structures has been supported for the safe movement of wildlife and the Panel is interested in applying that same design to the SCRP at closure.	Diavik has now obtained the necessary approvals to be able to use A21 rock to cover the NCRP. We are also evaluating other options for using A21 rock for reclamation material as closure planning for the site continues. This would help to reduce the overall size of the SCRP. Diavik is planning for a wildlife pathway across the SCRP, with reduced slope angles that we anticipate to be at 3:1. However, the remainder of the pile is not currently planned to be re-sloped. The reason for this is that there is no need for a cover on the SCRP as it contains no T3 rock.	Accepted

TK Panel Recommendations Sessions #1 to 12: Spiritual & Cultural

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
2.4	Renewing Our Landscape, 7 Dec 2012, pg. 25	Renew relationship with the area after closure.	Spiritual ceremonies to invite the spirits to return to the mine site will be required responsibilities require people to make amends to the spirits of the land for the damage created by the mine. It is important that current and future generations maintain their relationship with their homelands that surround the mine. Aboriginal harvesters will travel where the caribou go, and provided that the area is made safe and accessible for caribou, they will go there again. For this reason, Aboriginal people's connection with the land needs to be renewed and/or maintained after closure.	Diavik is open to recommendations on how best to approach this with each of the five Aboriginal Participation Agreement communities.	Accepted
4.3.1	Closure/Reclamation and Landscape History Interim Report, 23-25 October 2012, pg.6	Visit burial, archaeological and heritage resource areas close to the mine.	Provide comfort to community members that important sites have been preserved and that this historical connection still exists with the land in this area; important for youth to know the locations and stories behind these sites.	This type of activitiy could be incorporated into plans to renew the community's relationship with the land in this area after closure.	Accepted
4.3.2	Closure/Reclamation and Landscape History Interim Report, 23-25 October 2012, pg.6	Conduct a tobacco (or other) ceremony when the company is ready to leave the island.	Heal and reconciliate the relationship with the land once all work is complete. The type of ceremony may be different for different cultures.	This type of activitiy could be incorporated into plans to renew the community's relationship with the area after closure.	Accepted

TK Panel Recommendations Sessions #1 to 12: Spiritual & Cultural

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.6	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Recognize and honour the importance of ceremony in healing the relationship to caribou and contribute to healing events that are currently being planned by communities.	N/A	Diavik works through Implementation Committees that have been established with each of their Participation Agreement communities to determine priority areas for financial contributions. We recommend speaking with your community organizations to identify this request for their consideration.	Accepted
9.22	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Respect spiritual beliefs and the importance of healing ceremonies of Aboriginal communities, work with the TK Panel to plan spiritual gatherings on site now through 2030: one would be held early to help people on site understand Aboriginal ceremonial ways, possibly timed with a TK Panel session (e.g. 2017-8), second would be to start healing the environment (e.g. 2020), third would be designed to seek guidance on the finalization of closure plans (e.g. 2023) and fourth would be large and involved to formally invite the spirits to return to the Island before Diavik leaves (all communities invited, e.g. 2030).	Building in the practice of healing and/or guidance ceremonies is important and can be of interest to workers at the mine, as well as the TK Panel members. It would be helpful to start this practice sooner rather than later.	Diavik is open to further recommendations from the Panel as to when and how this could occur. If the Panel is comfortable with helping to define this, such practices could be incorporated into the TK monitoring program that Diavik is interested in having the Panel develop.	Accepted

TK Panel Recommendations Sessions #1 to 12: Spiritual & Cultural

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.23	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Whenever the TK Panel and community members come on-site, allow opportunity, time, space, etc. for the TK Panel to practice 'feeding the land or water' by Panel members and others (visitors or workers) travel to/from the site and consider other ways to raise awareness (e.g. signage).	It is important to recognize and honor customs. While it is easy for the company to focus on their own safety, it is equally important for the Panel to have the opportunity to feed the land or water, as is traditionally done for safety on the land.	Diavik recognizes the importance of this practice to community members and supports any practices that promote safety and wellbeing at the mine site. This practice will be incorporated into future TK Panel meetings, or other community visits to the site.	Accepted
10.24	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Research or monitoring methods that are offensive to elders (e.g. caribou collars) should lead to getting alternative method advice from elders. Diavik should check with the TK Panel as to whether any aspects of the current monitoring program is offensive and revise them accordingly.	The Panel focuses on closure planning and monitoring, but they are also interested in Diavik's operational monitoring and would like to learn more about monitoring programs, methods and results in order to determine if these are suitable and appropriate from a community perspective.	Diavik can share details of each of the current (operational) monitoring programs with the Panel at a future session to determine if methods used are appropriate. This may also help to inform the Panel's recommendations relating to closure monitoring for wildlife.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
1.20	A Way of Life, 25 October 2012, pg. 25	Youth should be involved with the TK/IQ Panel and included in discussions about closure.	Youth live in a changing and complex world and have skills that the Elders do not. They need to learn about their culture and history, as well as about the mines. They will be the future caretakers of the land and the ones speaking for their communities in the future, so they must be a part of the discussions and decisions.	Diavik sees value in having youth participate in TK/IQ Panel sessions, where possible.	Accepted
2.1	Renewing Our Landscape, 7 December 2012, pg. 9; 19 July 2012 e-mail from EMAB	Arrange for a visit to the mine site to see some of the structures that are being discussed for closure, specifically the North Country (waste) Rock Pile. Preference is to stay at a camp on the land, rather than in mine site accommodations.	In order to provide effective and helpful advice, Panel participants need to see areas in person. A fundamental principle in TK/IQ is that "being knowledgeable" requires an experiential context of what is being discussed, as TK comes to the forefront of peoples minds when they are on the land that they are discussing. This helps to understand the area as it was traditionally and to comprehend the change and scale of the current landscape.	Diavik sees value in having TK/IQ Panel members visit the mine site. For safety reasons, visitors stay at the mine site accommodations.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
4.1.3	Checking Nets, 23-25 October 2012, pg.19; Closure/Reclamation and Landscape History Interim Report, 23-25 October 2012, pg.8	Diavik to develop and maintain a tracking sheet for documenting progress on recommendations and action items and present progress to the panel at the beginning of sessions.	Desire for Panel members to see the results of their work and obtain a response from Diavik. Shared learning and acknowledging contributions of others is an important tradition. There is an opportunity to learn from their experience and any recommendations that are implemented. There may be a need to revisit recommendations that are either ineffective or are carried out or interpreted incorrectly. It is also an opportunity to celebrate successes achieved by the Panel and Diavik.	Diavik is committed to providing a response to all Panel recommendations. Diavik also requested that EMAB provide past Panel recommendations to DDMI for response.	Accepted
4.1.4	Checking Nets, 23-25 October 2012, pg.20	Women to have opportunities to participate in TK/IQ Panel – especially for discussions on caribou and vegetation.	Women have specific roles in Aboriginal communities and the knowledge they can contribute is different from that of men. There needs to be respect for the distinct knowledge of women, as Elder women have special gifts and understandings that are important for carrying out stewardship responsibilities.	Recommendation is to the TK/IQ Panel or their community organizations. DDMI does not select Panel participants but could request community organizations to include women participants, as recommended by the Panel.	Not Accepted
4.1.5	Checking Nets, 23-25 October 2012, pg.20	Extend length of Panel sessions to 4 days.	Three days is not enough to review documents, learn about the context of the topic(s) and share new knowledge. The fourth day is key to completing the review and verification necessary to respectfully document knowledge and develop a complete document that all parties are happy with.	A longer meeting is supported, provided that it results in an approved set of transcripts and recommendations by the end of the session.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
4.1.6	Checking Nets, 23-25 October 2012, pg.21	Include Aboriginal words or terms in reports as appropriate. Keep wording in reports simple and make summary notes available soon after a meeting.	Some Aboriginal languages include concepts that are very precise and reflect a more complete understanding than what can be translated. Language contains distinct concepts unique to TK so the spiritual premise of certain terms contained within the language can often get lost in translation. Plain language should be used so that all people can understand it, regardless of their language or reading skills. It is important for participants to review their words and make sure they were recorded and/or interpreted correctly while the words are still fresh in participant's minds.	TK/IQ Panel members should work with their interpreters and the facilitators to ensure that important Aboriginal words or terms are captured within transcripts and/or reports. Diavik makes efforts to report the results of their programs in different ways, for different audiences.	Accepted
4.1.7	Checking Nets, 23-25 October 2012, pg.21	An Aboriginal facilitator would be of benefit to the TK/IQ Panel.	Panel meetings should be organized in a way that fits with the Aboriginal way of knowing. This leads to improved communication, interpretation and understanding of the value of participants messages.	Diavik sees value in having an Aboriginal facilitator involved in the TK/IQ Panel sessions, provided that this approach continues to be supported by Panel members.	Accepted
4.2.1	Working Together, 23-25 October 2012, pg.8	Develop a TK/IQ Panel manual that would be regularly revised to reflect the Panel's process, topics and lessons learned over time.	There are few models for this type of organization or work so it is important to document the Panel's mandate, protocols and procedures. This approach should be recorded in an effort to develop best practices and learn from challenges. Panel facilitators would be responsible for updating the document, for review and verification by Panel members.	Diavik supports the development of, and on-going updates to a TK/IQ Panel Manual. Discussions relating to Panel priorities and schedule should also be included in such a document.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
5.6	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.6	Identify opportunities for Aboriginal participation in closure activities.	The TK/IQ Panel identified landscaping, planting, design and experiments as ideal for Aboriginal participation. Training youth to assist with site activities at closure will be important.	Diavik expects that the majority of closure activities will be completed by Aboriginal people and companies, and plans to work with communities over the next few years to identify and realize such opportunities.	Accepted
5.7	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.6	Engage the TK/IQ Panel in preparations for Elder programs at the mine site.	Panel members see an opportunity for them to assist with defining discussion topics, seeking input on how to prepare Elders and make full use of the visit and how to respectfully document their observations. The Panel can also advise on proper methods for Elder care during such site visits.	Diavik is currently re-evaluating its approach to community engagement with communities. There may also be an opportunity for the TK/IQ Panel to assist with this process.	Accepted
5.8	Closure Reclamation & Landscape History Interim Report, 19-22 February 2013, pg.6	Ensure experts are available to TK/IQ Panel members as needed, based on discussion topics.	It is important for Panel members to have access to technical and/or scientific experts for the topics being discussed, so that they can learn as much information as possible and therefore make informed recommendations. Such an approach supports the cross-cultural learning style that the Panel follows and allows for quicker progress.	Diavik views this approach as beneficial as well, and has supported the Panel with such expertise in the past.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
EMAB-1	Environmental Monitoring Advisory Board TK/IQ Panel Recommendations from February 2013, Letter from EMAB, 8 Oct 2013, pg.2	EMAB feels that Diavik is proceeding in the right direction in working towards answers to these and other questions but recommends that DDMI conduct on-site workshops or community consultations or a combination of both. When this work is completed then EMAB will review the results and if necessary we will convene the TK/IQ Panel in order to review the process, methodology, and results.	References DDMI questions posed by DDMI at the February TK/IQ Panel session relating to NCRP shape, reclamation of roads & laydowns, and revegetation.	October 2013 TK/IQ Panel session was at the mine site. Diavik consults with communities through Closure Working Groups and public meetings held within the communities. In accordance with a letter received on 7 August 2013, EMAB gave Diavik permission to administer the TK Panel.	Not Accepted
7.13	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Complete the TK literature review report so that it can be used as a guide in the vegetation program and closure plan, and be available to communities.	As previously suggested by the Panel, there is value is compiling the existing TK that has been captured by community or company research in the past. Much of this information was compiled prior to Session 7, but a report was not completed. The Panel would like to see a complete report.	Diavik supports the completion of the literature review report that was initiated for TK Panel Session 7.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.17	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Have a women's only session in the field next summer to address vegetation and other issues of interest to them.	Some Panel members felt that there would be a benefit to holding a 'women's only' session in the future, as this may create a more acceptable space for sharing the knowledge that is specific to women.	Diavik's preferred approach, that has also been supported by Panel members, is to focus on creating an opportunity for women to participate in the TK Panel sessions on a regular basis, rather than holding specific women only sessions for certain topics. There is important knowledge that women have to share on all topics.	Accepted
7.18	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Diavik must meet its commitments to support a minimum of two TK Panel sessions a year.	Panel members felt that momentum is necessary to keep the Panel engaged and not have to start from scratch every time they meet. Participants recognize the number of topics and discussions that should occur prior to closure, and that this will take time.	Diavik is committed to the TK Panel and supports meeting on a regular basis. However, the number of meetings per year is not seen to be as important as making sure that we have the right information available to share and that session topics are relevant to the most current closure considerations. For example, during 2015, many TK Panel members were involved in multiple meetings for the AEMP TK Study, making it difficult to arrange a TK Panel session during the summer.	Not Accepted
7.19	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	TK panel members need to verify TK recommendations with elders back home.	Panel members feel that the results of each session are important to be shared with Elders in their respective communities. While Diavik has a role to play in doing this as well, Panel members felt that they also have a responsibility to discuss each session outcome with respected Elders on a more informal basis, and incorporate any feedback they receive into future Panel sessions.	Diavik encourages Panel members to informally share what they learned and recommended with their elders and organizations back home. Any feedback they receive can be shared with the Panel during the recommendations review in the next session.	Not Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.20	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Require one male and one female member from each community organization on the TK Panel (or formal alternates); where possible, members must know the LDG area (directed to Aboriginal governments).	Panel members recognize the different knowledge that males and females have, and that both types of knowledge must be recognized and incorporated into the TK Panel closure planning process. While there has been much success in keeping Panel members consistent over time (in an effort to build knowledge and familiarity with the mine and its closure plans), past participants have only been males. Incorporating females into the Panel will result in a change in Panel membership in the near future, but the value and depth of knowledge this change would bring is more important to Panel members than maintaining consistency of past membership.	Diavik has incorporated this recommendation into the meeting notifications sent to the community organizations that arrange for their member participants. It is ultimately the community organization's decision of who to send, so we encourage TK Panel members to also relay their recommendation in person to their community's staff.	Accepted
7.21	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Formalize our recommendations to Aboriginal governments to have youth participate.	All participants recognize the important role that youth play as future custodians of the land. Because of this, it is important that they are included in the closure planning process now, so that they are educated, aware and able to contribute to decisions made that will impact future generations.	Diavik has incorporated this recommendation into the meeting notifications sent to the community organizations that arrange for their member participants. It is ultimately the community organization's decision of who to send, so we encourage TK Panel members to also relay their recommendation in person to their community's staff.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
7.22	Re-vegetation Report, TK Panel Session #7, 14-18 August 2014	Celebrate our TK Panel as a model for other mining companies.	Panel members are happy with the work they are doing. They recognize how unique the Panel is, and the opportunity it provides to contribute to future planning. Seeing the importance of learning from what works, it is felt that the process and results the Panel has developed should be shared with others.	The results of the Panel's sessions are shared widely within the NWT. Panel session reports are provided as part of DDMI's annual closure updates to the WLWB, and this is shared more broadly with all reviewers on the WLWB distribution list. The process and results that you have produced to date are being noticed and celebrated.	Accepted
8.29	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Explore long term monitoring options including how to coordinate and administer an ongoing post-2030 program that continues to integrate TK and science and involves both Elders and youth trained in science. (Consider funding, and if some of the bond can be used).	TK Panel members are very interested in continuing to monitor the land and water in the Lac de Gras area after the mine is closed. Panel members are interested in exploring options for doing such work and determining how best to organize and fund such an initiative. There is a strong interest from the Elders to make sure that the youth of today are the future monitors for this work, which requires early involvement as well as capacity building in scientific and TK environmental monitoring.	While communities may be interested in monitoring past 2030, Diavik needs to plan for ultimate closure and relinquish ownership of the property back to the government. Once this is complete, monitoring would no longer be conducted or organized by Diavik. As such, any long-term monitoring plans past 2030 would need to be funded and coordinated by other parties. DDMI suggests that this recommendation is better directed to community organizations and/or governments.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
8.31	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Continue to provide the TK Panel with teaching and communication 'tools' (i.e. videos, books, photos), to share progress and findings on closure planning with communities.	Panel members felt that information and materials that they can have and use to communicate with other Elders and people in their home communities are helpful to show the progress and importance of the work they are doing and knowledge they are sharing. Items like the AEMP TK Study videos and copies of reports are good.	Diavik continues to provide the Panel and their associated community organizations with reports, videos, maps, pictures or other materials that assist in sharing the work and success of the Panel. Further guidance as to what is helpful and effective for Panel members to use in communicating with others would be appreciated.	Accepted
8.32	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Plan for climate change hundreds of years into the future.	There is concern that climate change will affect performance of some mine infrastructure and inadvertently impact the environment, for example by release of contaminated water. As such, Panel members want to make sure that climate change scenarios are considered in closure design and planning work in order to protect the environment long into the future.	Accepted climate change scenarios have been incorporated in to the planning models that guide design and construction decisions for site infrastructure. This includes planning for long-term performance after closure.	Accepted
8.33	Reefs & Monitoring Water Report, TK Panel Session #8, 2-4 December 2015	Re-seed land and use dirt and *safe* sewage to facilitate re-growth.	As discussed in Session 7 on Revegetation, Panel members are interested in re-seeding the land around the mine to help plants grow back, but it should only be northern species that are used. A change from Session 7 is that Panel members are open to the idea of using human sewage from the on-site treatment plant as fertilizer, provided that Diavik can demonstrate that it is safe to do so (for animal and human health).	Treated sewage is currently stored on site, with plans to use it as a soil amendment to aid in reclamation activities. Diavik is working to determine if the treated sewage is considered safe from an animal and human health perspective.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.9	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Contribute to training community monitors in using both traditional knowledge and western science so that common approaches across communities are used and results can be pulled together from many places.	The Panel felt that it is important to support capacity building for community members to actively participate in the closure process, particularly closure monitoring. They recognize that strength in monitoring can be achieved when western science (WS) and TK are conducted together. There is also value to ensuring that the similar techniques and methods are used across industry and communities so that this information is comparable.	Diavik provides site-based training to new hires and contributes to formal training programs through the Mine Training Society and support for the Aurora College BEAHR environmental monitor training program, as well as the College's Environmental Monitor Certification program. If it is necessary to revise or expand existing training programs to meet the needs of closure monitoring, Diavik suggests that this is best coordinated through these professional training institutes. DDMI also provides scholarship funding to community members through their PA's. Diavik suggests that the communities themselves are best suited to provide training in monitoring using Traditional Knowledge.	Accepted
9.11	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Recognizing that Aboriginal communities are committed to their traditional responsibility to take care of the environment, participate with Diavik and other partners (e.g. Dominion Diamonds) to explore ideas and develop capacity to establish a Cumulative Effects Monitoring and Management Station (CEMMS) using the TK camp as a base that has program links to the GNWT Daring Lake Research Station.	The Panel viewed the TK camp as an ideal base for studying the Lac de Gras area after the mine was closed. The GNWT's Daring Lake Research Station is also in a good position to further support such research and the Panel saw value in coordinating efforts with the Government's programs at Daring Lake. In order to achieve this, the Panel identified the need for mines, government and other regulators to work together to determine how best to coordinate and implement a CEMMS (or similarly structured) program.	Diavik intends to continue its scientific monitoring programs through the closure phase. Diavik also encourages the Panel to develop a TK Monitoring Program for the Diavik site. While there are no formal plans for how or who would coordinate regional monitoring in the future, or where to base such monitoring initiatives, Diavik expects that any such regional program would build upon the existing site-specific programs to ensure that similar information is collected to evaluate trends over time.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.12	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	In partnership with communities and the GNWT, begin planning a joint TK and WS monitoring program that would begin in 2023 to be ready for implementation in 2025 by building on and expanding the current Diavik monitoring program.	Panel members consider intergenerational plans and programs, recognizing that there is a need for long-term monitoring in the Lac de Gras region long after the mining companies are gone. Given that it can take time to coordinate these types of programs, the Panel sees value in starting these discussions now so that plans are in place for when the Diavik mine is closed.	Diavik intends to continue its scientific monitoring programs through the closure phase. Diavik also encourages the Panel to develop a TK Monitoring Program for the Diavik site. While there are no formal plans for how or who would coordinate regional monitoring in the future, Diavik expects that any such regional program would build upon the existing site-specific programs to ensure that similar information is collected to evaluate trends over time.	Accepted
9.13	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Offer monitor training to provide traditional land users with new skills and techniques to monitor from mine closure through to when Diavik completely leaves the site (expected to be 2030) and beyond for long term monitoring.	The Panel felt that it is important to support capacity building for community members to actively participate in the closure process, particularly closure monitoring. They recognize that strength in monitoring can be achieved when western science (WS) and TK are conducted together.	Diavik provides site-based training to new hires and contributes to formal training programs through the Mine Training Society and support for the Aurora College BEAHR environmental monitor training program, as well as the College's Environmental Monitor Certification program. If it is necessary to revise or expand existing training programs to meet the needs of closure monitoring, Diavik suggests that this is best coordinated through these professional training institutes. DDMI also provides scholarship funding to community members through their PA's.	Accepted
9.15	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Design monitoring training with the objective of understanding what is happening in the eco-system with cumulative effects.	Communities are most concerned about cumulative impacts to the Lac de Gras region. For this reason, monitoring should focus on cumulative effects.	Existing scientific monitoring training programs focus on techniques that evaluate the state of the environment and contribute to understanding cumulative effects through the analysis of the data collected.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
9.16	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Employ community monitor trainees and ensure they have a meaningful role in the design of various aspects of closure work, including the building of wildlife ramps; the reclamation of the PKC, the North Inlet and contaminated sites; and any re-vegetation work on site.	It is important to the Panel to have community members employed on site and participating in healing the land and ensuring a safe environment for future use by wildlife and humans.	Diavik has and will continue to focus on employing people from the PA communities at the mine site. This includes the closure work identified by the Panel. We also see value in incorporating community members in inspecting and evaluating reclamation work in relation to the objectives and plans for each area, whether this be the TK Panel or other community representatives and we are hopeful this will form a part of the site-specific TK monitoring plan.	Accepted
9.17	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Employ and ensure opportunities for high level employment/career advancement of trained community monitors (graduates of the training program) funded by Diavik and/or others. In addition to community members, a minimum of one Elder and one youth from each community should participate in the training program.	It is important that community members have meaningful jobs at the mine, throughout the closure process.	Diavik has and will continue to focus on employing people from the PA communities at the mine site. This includes closure monitoring identified by the Panel. We also see value in incorporating community members in inspecting and evaluating reclamation work in relation to the objectives and plans for each area, whether this be the TK Panel or other community representatives and we are hopeful this will form a part of the site-specific TK monitoring plan.	Accepted
9.21	Focus on Caribou, TK Panel Session #9, 13-16 May 2016	Support the focus of long term monitoring goals for cumulative effects (CEMMS) on natural re-vegetation, return of caribou and other wildlife, and water quality in the Lac de Gras area.	The Panel is hopeful that Diavik recognizes the importance of contributing to long-term, regional monitoring that will continue after the mine is closed.	Diavik intends to continue its scientific monitoring programs through the closure phase. Diavik also encourages the Panel to develop a TK Monitoring Program for the Diavik site. While there are no formal plans for how or who would coordinate regional monitoring in the future, Diavik expects that any such regional program would build upon the existing site-specific programs to ensure that similar information is collected to evaluate trends over time.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.11	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Some start-up watching projects might look at: - what plants are growing on disturbed ground and why/why not; - presence of grounds squirrels on the East Island; - health of the shorebirds on the water (as an indicators for health of water); - snow accumulation and natural revegetation around boulders atop the test pile; - watch and monitor dust impacts on water and plants as an important part of the food chain; - animal scat, this should be part of a TK Watching program; - look at possible impacts on plants, with special consideration for those used for medicine.	The TK Panel is interested in starting to identify the types of things that are of interest to elders and youth to monitor. They recognize that more time and discussion is needed to build on these ideas and confirm what and how to watch the area, but that it is but that it is important to start documenting what has been shared to date.	Diavik is interested in further discussions for TK/community-based monitoring programs that can support or enhance other (western) scientific monitoring programs that will be conducted at the site.	Accepted
10.12	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Pair every adult with a youth monitor. Scientists should also be involved. Consider the TK camp as a good model, bringing elders and youth together with scientists.	The TK Panel members see great value in mentoring youth and advocate for including youth in TK programs wherever possible. The TK Panel recognizes that people learn from one another and respect the different kinds of knowledge that each person contributes. They view this as a good model to carry forward for closure monitoring.	Recognizing that there are still many details to work out in relation to closure planning and monitoring, Diavik is generally supportive of an approach that involves Elders, youth and scientists working together.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.13	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Ideally, watching would occur all year round. At a minimum, watching must occur in all seasons.	The land and animals behave differently depending on the season. There are important indicators to watch throughout the seasons and year to make sure that the land and animals are healthy. Panel members are interested in watching programs that would occur across all seasons.	Recognizing that there are still many details to work out in relation to closure planning and monitoring, Diavik is generally supportive of this approach.	Accepted
10.14	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Watchers should be trained by trained monitors from existing guardianship programs (e.g. Ni Hat'ni Dene, Tlicho, Dehcho). From there, trained watchers will train new watchers through a pay-it-forward model.	Existing guardianship programs are celebrated as good models from which to learn. The next step will be to determine how best to apply their practices, resources, and support systems. Collaboration and sharing are keys to success.	Diavik's understanding of existing Guardianship programs is that they are largely organized and operated by community organizations. It is important to continue discussing this model to determine what role Diavik and others may play in such an approach; e.g. funding agreement for Guardianship program, in-kind donations, program coordination, etc.	Accepted
10.15	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Be designed for long term watching/monitoring as impacts may take a long time to show up (i.e. a plant may look healthy now but in the future it may not be strong if dust or contaminated water affect it).	Community members understand that nature has great power to heal, but that this can take a long time. The TK Panel wants to be sure that there are plans in place for long term watching and monitoring so that they can be confident that closure was successful and the land is healthy again.	Recognizing that there are still many details to work out in relation to closure planning and monitoring, Diavik is generally supportive of this approach and is interested in continuing discussions with communities and regulators to determine a suitable approach for this type of work.	Accepted

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.16	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Watch and check everything (water, wildlife, birds, bugs, small mammals, plants, weather, etc.).	The TK Panel is interested in starting to identify the types of things that are of interest to elders and youth to monitor. They recognize that more time and discussion is needed to build on these ideas and confirm what and how to watch the area, but that it is but that it is important to start documenting what has been shared to date.	Diavik is interested in further discussions for TK monitoring programs that can support or enhance other (western) scientific monitoring programs that will be conducted at the site.	Accepted
10.17	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Ensure long-term, ongoing and significant funding.	Funding and resources are important to secure when planning for long-term watching programs. The Panel recognizes that more discussions are required to determine how best to secure and maintain funding for this type of work.	Recognizing that there are still many details to work out in relation to closure planning and monitoring, Diavik is generally supportive of this approach and is interested in continuing discussions with communities and regulators to determine a suitable framework to support this type of work.	Accepted
10.18	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Be grounded in strong communication and traditional laws around sharing, exchanging and stories.	Collaboration and sharing are the keys to success. Watching programs should be structured to include opportunities for sharing the rich stories that tell the history of the land and enrich monitoring outcomes. Scenarios that encourage sharing should be strongly supported.	Recognizing that there are still many details to work out in relation to closure planning and monitoring, Diavik is generally supportive of this approach and is interested in continuing discussions with communities and regulators to determine a suitable framework for this type of work.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.19	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Start training for watching programs during mine operations by inviting community members to site, i.e. train-the-trainer program. For example, bring up people to work with Environment dept, starting with one weekend a month and scaling up over time.	The Panel recognizes the benefit of training monitors now in order to carry forward those skills for closure and post-closure monitoring at Diavik and other sites. The Panel is supportive of community monitors that are able to work in both worlds of knowledge - traditional and western scientific.	Diavik currently invites and involves community members in some of their on-site monitoring however, it is largely program-specific. Additionally, we have had community members as employees throughout operations. Diavik will evaluate options for community assistants on some weekends. We also continue to support and encourage participation in the BEAHRS Environmental Monitoring program and the Environment and Natural Resources Technology Program offered through Aurora College.	Accepted
10.20	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Diavik should support and encourage the TK Panel to assess and review existing monitoring methods and results to help us determine what and how we should monitor in the future.	The Panel focuses on closure planning and monitoring, but they are also interested in Diavik's operational monitoring and would like to learn more about monitoring programs, methods and results in order to determine if they are suitable for closure monitoring and, if so, how best to apply these to closure.	Diavik supports the TK Panel in this work. We have previously engaged the Facilitators for the TK Panel to compile some examples of TK and other monitoring to assist the Panel in developing ideas for monitoring at Diavik. We have also dedicated some of the past TK Panel sessions to monitoring and continue to plan for future sessions on this as well.	Accepted
10.21	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Encouraging all of the communities working together and supporting each other long into the future will give us strength. Diavik has helped us do this and we must continue into the future.	The collaborative approach that the TK Panel has developed has been effective for all parties to learn and understand everyone's interests, views, ideas and limitations in relation to Traditional Knowledge, the mine and planning for the future.	Diavik views this as a recommendation to the TK Panel members and community organizations. We are pleased that the Panel recognizes the efforts we have undertaken to encourage collaborative work.	Not Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
10.22	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Diavik should plan to leave some buildings (and possibly the airstrip) to support Watching Programs for this and other mines in the surrounding area.	In order to conduct a watching program in the mine area long after closure, it would be helpful to have some buildings present that could be used for accommodation and monitoring activities. Communities will be interested in visiting and observing the area long after the mines are gone.	Diavik is aware of the Panel's interest in having some buildings or infrastructure remain. Options for this will continue to be discussed with communities and regulators. Liability concerns and maintenance requirements may preclude some areas/buildings from being left but we understand that this is important in the North.	Accepted
10.23	Watching/Monitoring and the WRSA-SCRP, Session #10, 14-18 September 2017	Diavik should support the development of a 'best practices' document that explains the Panel's approach to integrating TK into mine closure planning.	The TK Panel is proud of their cooperative efforts to ensure that TK informs mine closure planning in a meaningful and transparent way. The TK Panel is interested in summarizing and sharing their knowledge and approach with others, in hopes that others considering projects in the north of elsewhere can benefit either now or in the future.	Diavik is generally supportive of this idea, though we also think that the Panel's presentations and reports do a good job of summarizing the process and principles that underly the Panel's recommendations and guidance. Something like this may be more valuable further in the future, once closure plans advance and more is learned about how to practically apply these recommendations and guidance.	Accepted
11.7	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel recommends a future TK Panel session dedicated to the health of the North Inlet upon closure and to decide if there is anything to address with the sediments.	The TK Panel is very interested in water quality and wants to focus a session on the North Inlet as a key area to monitor.	Diavik will dedicate a TK Panel session to the North Inlet Closure Plan.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
11.8	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The Panel requests that Diavik provide a list of items/equipment that will remain and be removed from underground before flooding or filling the mine with PK/water.	The TK Panel wants to better understand what might remain in the pit in terms of how this waste may affect water, fish and the nature of the pit upon closure. The TK Panel embraces their stewardship role to make sure that waste is not left behind.	Diavik is developing this list with the Inspector based on what was done previously at Ekati; it will be provided to the Panel when complete.	Accepted
11.9	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel recommends that their members are present for at least some of the time when the slimes are moved from the PKC into the A418.	The TK Panel suggested that the PK should be monitored for a time before the dikes are breached to ensure the PK is as expected.	Diavik has made development of TK-Based assessment of pit lake conditions with deposition of PK a priority and expects to address at Session 12 - September 2019.	Not Accepted
11.10	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel wants to monitor how water behaves when placed on PK. They would like to see the PK and water in the A418 as soon as it is safe to do so and when there is a good visual of the material, as well as at regular intervals afterwards.	The TK Panel suggested that the PK should be monitored for a time before the dikes are breached to ensure the PK is as expected.	Diavik has made development of TK-Based assessment of pit lake conditions with deposition of PK a priority and expects to address at Session 12 - September 2019.	Accepted
11.11	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel recommends that they monitor the fish habitat within the pits, shoreline modifications (e.g., ramps) for wildlife as well as the stability of the dikes on a regular and ongoing basis.	The TK Panel suggested that the PK should be monitored for a time before the dikes are breached to ensure the PK is as expected.	Diavik has made development of TK-Based assessment of pit lake conditions with deposition of PK a priority and expects to address at Session 12 - September 2019.	Accepted
11.12	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel recommends that they monitor freeze-up and break-up within the contained areas (i.e., within the dikes) to see if the formation and melting is any different—with a view towards safety for people and wildlife.	The TK Panel suggested that the PK should be monitored for a time before the dikes are breached to ensure the PK is as expected.	Diavik has made development of TK-Based assessment of pit lake conditions with deposition of PK a priority and expects to address at Session 12 - September 2019.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
11.13	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel would like to see the PK vegetation plots again.	The TK Panel is particularly interested in seeing "with their own eyes" how revegetation is working.	Accept. Can be done during any TK Panel Session.	Accepted
11.14	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel recommends that we test slimes/PK in a fish tank to see if any water plants would grow on the PK.	The TK Panel discussed ways of minimizing the suspension of PK once it is put in the underground/pit ranging from installing screens to covering pit walls to adding soil, sediment or aquatic vegetation to try to stabilize the lake bottom.	Diavik does not accept this recommendation as aquatic vegetation is not expected to occur at over 100m of water depth due to light limitations.	Not Accepted
11.15	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel would like to see wind behaviour on water within the contained pits/dikes over a period of time (i.e. throughout all seasons).	Concerns were expressed about the effects of wind on the pit areas at closure, particularly nowadays with climate change and winds becoming stronger.	Diavik suggests the collection of video during different periods of wind behaviour would be a better method for making these observations; videos could be presented at the TK Panel Sessions.	Accepted
11.16	Options for Processed Kimberlite, TK Panel Session #11, 10-14 May 2018	The TK Panel would like to see wind behaviour on Lac de Gras in and around the dikes. [How is the water on the outside of the dikes and breach areas affected by wind?]	Concerns were expressed about the effects of wind on the pit areas at closure, particularly nowadays with climate change and winds becoming stronger.	Diavik suggests the collection of video during different periods of wind behaviour would be a better method for these observations; videos could be presented at the TK Panel Sessions.	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.3	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	The TK Panel needs to be on site to witness transfer of slimes and filling the pits with water (i.e., two TK Panel sessions).	Feeling comfortable with any approach is difficult for people given environmental uncertainties and the complexities of mine closure processes. This challenge of 'feeling comfortable' applies to pit closure regardless of whether they contain PK. Panelists affirmed the importance of balancing scientific information with traditional knowledge so that a greater understanding informs pit closure planning. As always, people reiterated the importance of "seeing with their own eyes" so that they feel comfortable with what is happening during mine closure.	If Diavik receives approval to deposit PK in mine workings and if Diavik determines that it is feasible/practical to also move EFPK ("slimes") to the mine workings, Diavik will accommodate the request of the TK Panel to witness the transferring of slimes into the pit. Regardless of the presence of PK and slimes in the pits, Diavik will accommodate the request of the TK Panel to witness the filling of the pits with water.	Not Accepted
12.5	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Ensure scientific tests are done every season and throughout the year to understand the health of the water and to compare water in the pits to water in Lac de Gras. Scientific water testing should include, but not be limited to temperature, turbidity, clarity, colour. The presence of micro-organisms should be measured as well as oxygen levels. Such tests should be done at various depths in the water column as far down as the PK. The results should be regularly shared with the TK Panel.	When it comes to water, the TK Panel discussed the importance of science to first identify if the water is healthy before people would like to test water quality by tasting. People are familiar with scientific water quality monitoring and discussed the importance of measurements to determine whether the water is safe for fish and animals. Small "bugs" in the water are also important for fish and need to be measured to know whether the water is healthy. The TK Panel don't want the dikes to be breached until there was enough food in the water for them. It is important that scientific testing take place throughout all seasons and at multiple depths in the water column. TK Panel members want to make sure that results are shared widely with community members.	If Diavik receives approval to deposit PK in mine workings and if Diavik determines that it is feasible/practical to also move EFPK ("slimes") to the mine workings, Diavik will accommodate the request of the TK Panel to witness the transferring of slimes into the pit. Regardless of the presence of PK and slimes in the pits, Diavik will accommodate the request of the TK Panel to witness the filling of the pits with water. Diavik currently conducting Cultural use WQ criteria workshops.	Accepted

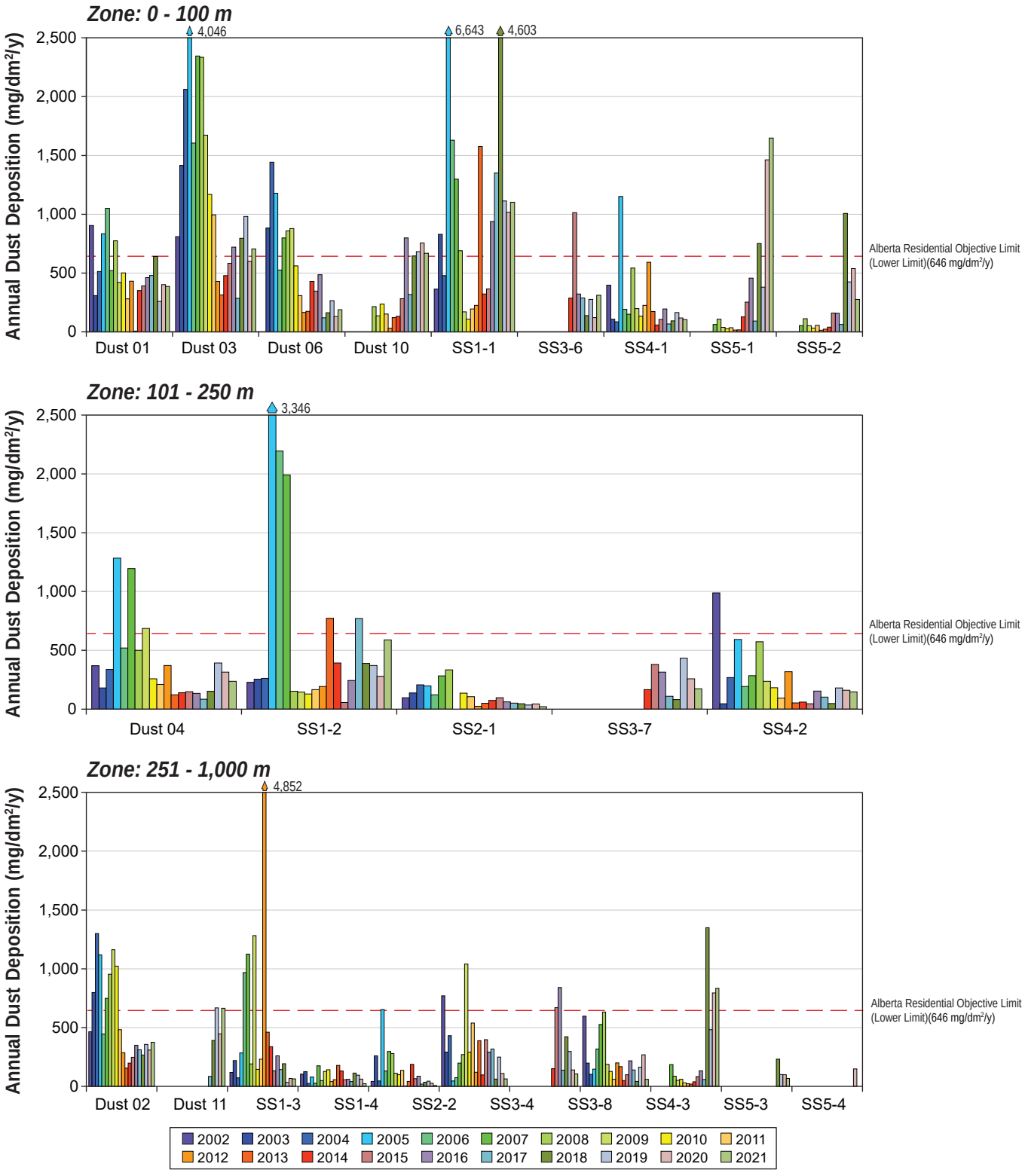
TK Panel Recommendations Sessions #1 to 12: Monitoring & General

NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.6	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Diavik should collect baseline information on Lac de Gras from around the dikes so that impacts of breaching can be measured. The TK Panel should work with scientists to record ice thickness, wind behaviour and snow-drifting before and after dikes are breached.	Members of the TK Panel worry that plans today won't accommodate changes tomorrow. Scientific monitoring of these key indicators must be carried out for several years in order for panelists to feel comfortable with the results and to support any breaching of the dikes.	Baseline info existing through AEMP Program.	Accepted
12.7	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	The TK Panel would like Diavik to test water in the pits for at least two years (until the water is deemed good) and compare this to water in Lac de Gras. Water samples will be collected from multiple depths at various times throughout each year and tested according to the AEMP protocols. Taste tests will be done after scientific sampling tells us the water is drinkable where they will watch for smell, clarity (turbidity), temperature, colouration, scum on the water or tea, and water and tea for taste.	The TK Panel agreed that the water and fish must be deemed "safe" from a scientific perspective before any traditional knowledge tasting tests can occur. Watching water according to traditional knowledge is well understood by the TK Panel members who have worked hard to develop protocols being used at the AEMP TK Camp. These protocols should be used for ongoing monitoring on-site both within the pits and outside the dikes in Lac de Gras. Panelists expect that the water within the pits will smell differently when there is PK rather than natural sediments and want to make sure there is enough time for settling to occur.	Per EA measure 2, DDMI is conducting cultural use water quality criteria workshops to inform criteria for dike breaching. Recent model updates indicate that if water conditions are good sooner than two years, better to breach earlier rather than later (to avoid concentration build-up).	Accepted
12.13	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Install motion activated cameras around the dikes to monitor wildlife activity to see if birds and animals are trying to access pit water. Test animals if possible through non-invasive methods. Any dead animals should be tested for contaminants. Report all findings to communities and the TK Panel.	The TK Panel generally supports monitoring approaches that are gentle and cause the least disturbance to the land, air, water, fish and animals. Innovative and non-invasive monitoring approaches are preferred. Monitoring according to TK can be carried out in ways that minimize disturbance.	DDMI currently has cameras historically used for grizzly bear DNA program. Need to determine expected goal (presence/absence?).	Accepted

TK Panel Recommendations Sessions #1 to 12: Monitoring & General

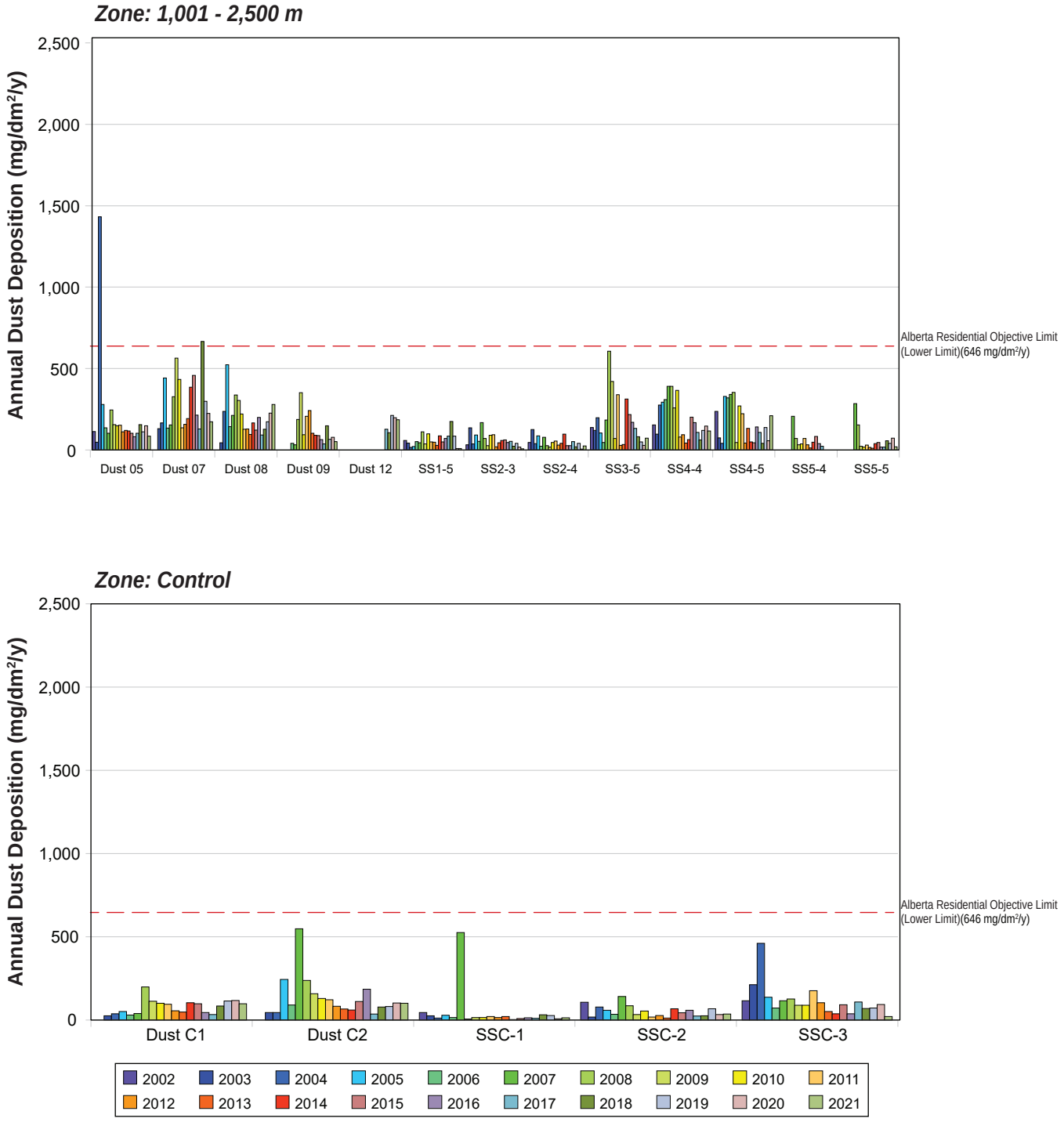
NUMBER	REFERENCE	RECOMMENDATION	CONTEXT	DDMI RESPONSE	Status
12.14	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Monitor plant life, sediments and bugs in the water within the pits in the spring (after break-up), summer, and fall (before freeze-up) through our own eyes. Combine this with scientific test results. Further discussion is needed to detail this monitoring approach.	In-person and on-the-ground monitoring is important so people can feel comfortable.	Per EA measure 2, DDMI is conducting cultural use water quality criteria workshops to inform criteria for dike breaching.	Accepted
12.15	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Develop details of monitoring programs (including training and employment) and action plans for community members. Expand the aquatic effects monitoring program and camp to include the TK Panel and a base for TK monitoring as one step in this plan.	In-person and on-the-ground monitoring is important so people can feel comfortable.	DDMI's general plan is to develop a monitoring program with a TK component, alongside western science; AEMP is expected to be modified for closure per cultural water quality workshop outcomes	Accepted
12.16	Options for Pit Closure, TK Panel Session #12, 12-16 September 2019	Develop an online location where all TK Panel materials will be stored and made accessible. Request that EMAB host these on their website. Communications presentations should be developed and uploaded so that they can be used by TK Panel members within their communities.	The TK Panel discussed the importance of their work reaching a broader audience and the difficulties they experience in accessing reports from the TK Panel sessions.	Agreed	Accepted

Appendix IV Annual Dust Deposition Figures



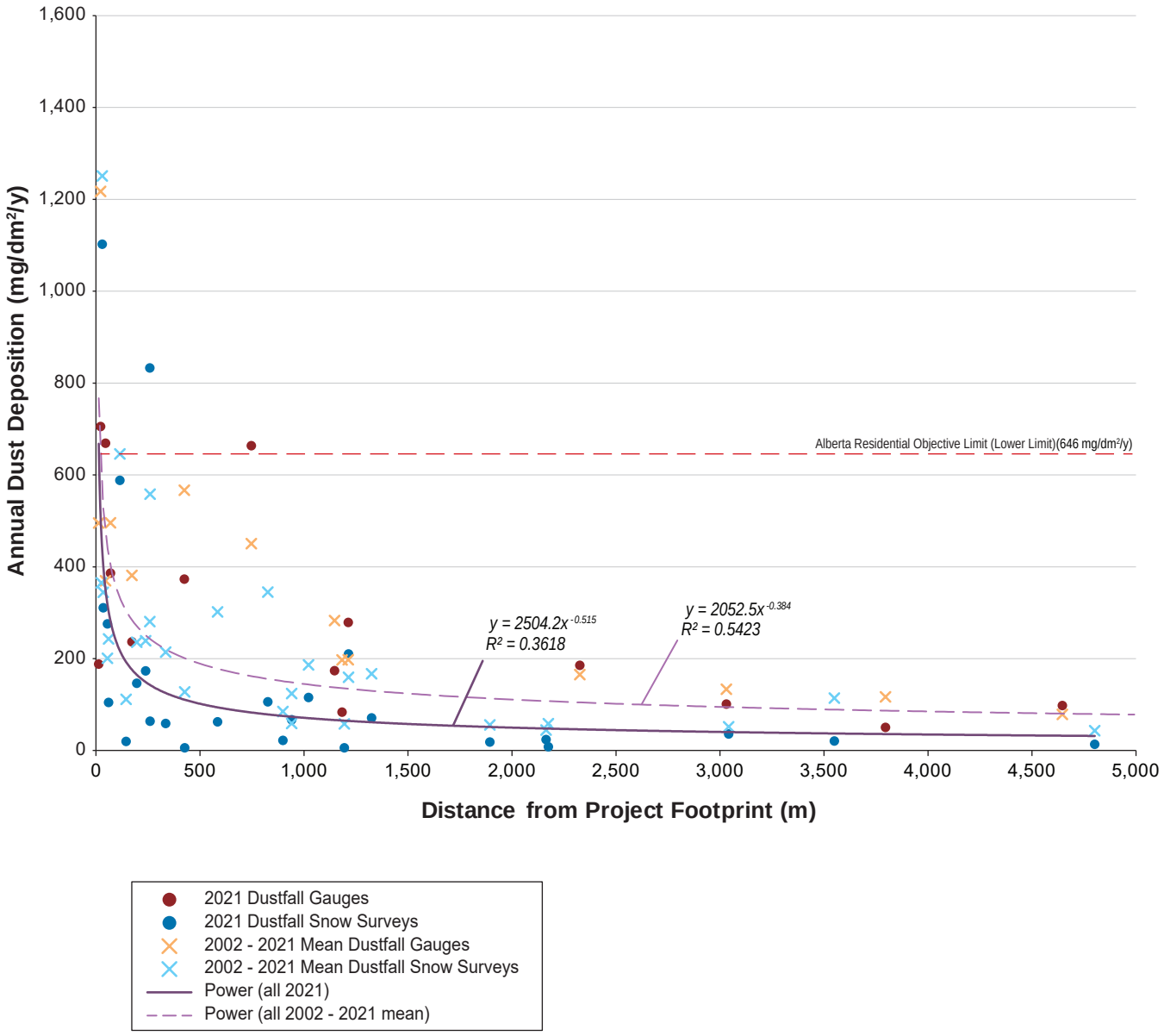
Notes: Annual deposition was calculated using the methodology described in Section 2.
See Table 2-1 for actual 2021 sample exposure times.
Station locations have been grouped into zones based on their distance from the 2019 Project footprint (see Section 3 for further details).
SS5-4 moved to 251-1,000 m zone in 2018

Figure 3.1-2: Calculated Annual Dust Deposition Rates at Dustfall Gauges and Snow Survey Locations up to 1,000 m from the Project Footprint, Diavik Diamond Mine, 2002 to 2021



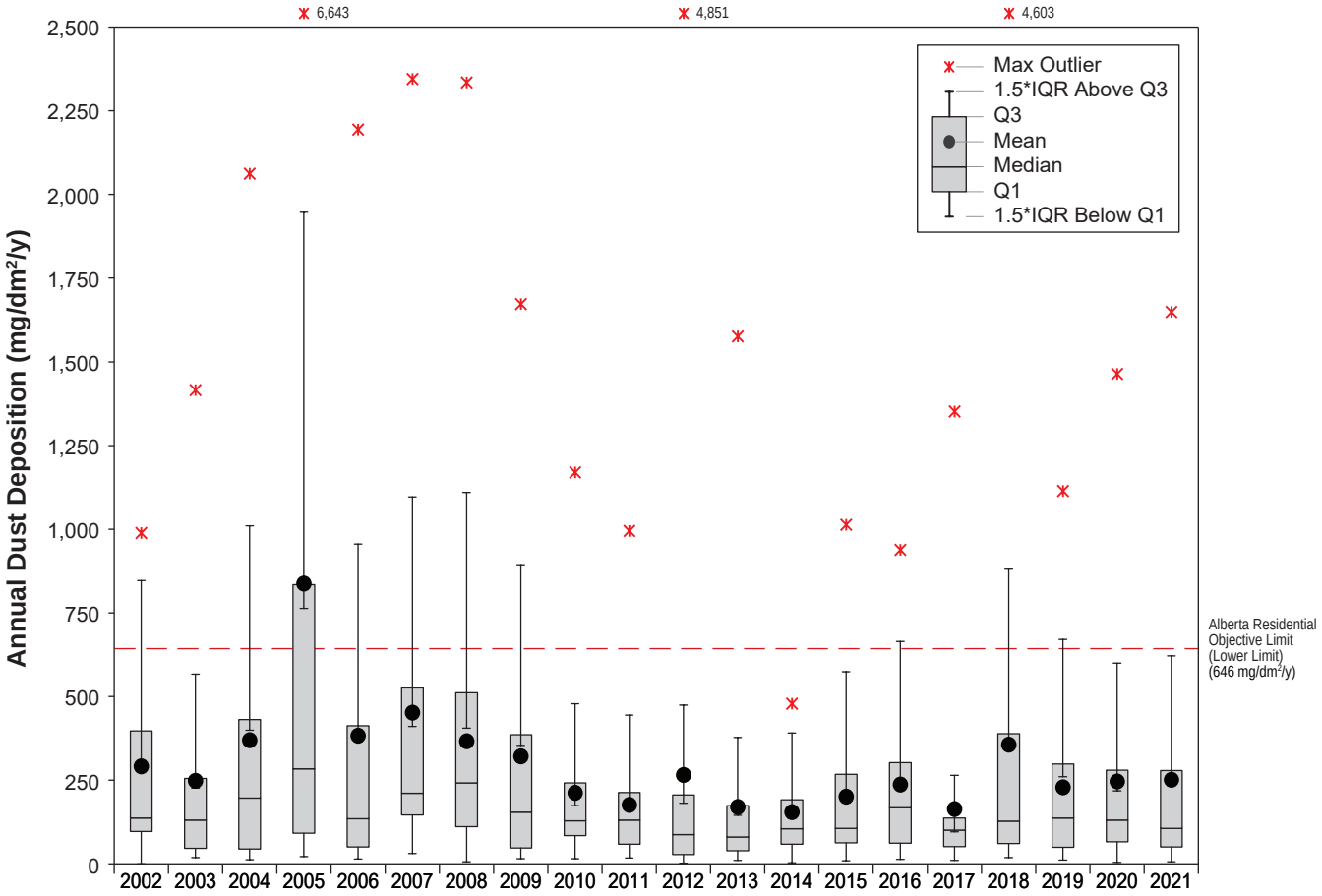
Notes: Annual deposition was calculated using the methodology described in Section 2.
See Table 2-1 for actual 2021 sample exposure times.
Station locations have been grouped into zones based on their distance from the 2019 Project footprint (see Section 3 for further details).
New locations added in 2019only include FFA-4, FFB-4, FF1-2 and LDS-1
SS5-4 moved to 251-1,000 m zone in 2018

Figure 3.1-3: Calculated Annual Dust Deposition Rates at Dustfall Gauges and Snow Survey Locations greater than 1,000 m from the Project Footprint, Diavik Diamond Mine, 2002 to 2021



Notes: Annual deposition was calculated using the methodology described in Section 2.
See Table 2-1 for actual 2021 sample exposure times.

Figure 3.1-4: Dust Deposition Versus Distance from Project Footprint, Diavik Diamond Mine, 2021



Notes: Box plots represent the magnitude distribution of the annual dustfall rates.
Annual deposition is calculated using the methodology described in Section 2.
See Table 2-1 for actual 2021 sample exposure times.
Q1: Lower quartile (25% of data are less than this value),
Q3: Upper quartile (25% of data are greater than this value),
IQR = Q3 – Q1 (the interquartile range).

Figure 3.1-5: Dust Deposition Box Plot, Diavik Diamond Mine, 2002 to 2021

Appendix V Annual Snow Water Chemistry Figures

zones in 2021. The 95% CI was exceeded at two sites in each of the 0 m to 100 m zone (SS1-1 and SS5-1) and the 251 m to 1,000 m zone (Dust 11 and SS5-3), one site in the 101 m to 250 m zone (SS1-2) and at four sites in the 1,001 m to 2,500 m zone (Dust 7, Dust 8, Dust 12 and SS4-5). In the 0 m to 100 m zone, the exceedance can be explained by the adjacent location to the airstrip for SS1-1 and the A21 open pit for SS5-1, while the exceedance at the 251 m to 1,000 m zone is likely explained by the proximity to the A21 open pit for both sites. The exceedance of the 95% CI in the 1,001 m to 2,500 m zone is associated with dust from the ice road for Dust 7 and likely with the airstrip for Dust 8. The low dust deposition rate at some sites in this zone (e.g., SS1-5 and SS2-3; Table 3-1) resulted in a relatively low value of the 95% CI, which led to four exceedances for this zone.

Annualized dustfall estimated from snow survey stations in 2021 were generally comparable to 2020 dustfall estimates (Figure 3.1-5), with several stations recording higher rates in 2021 than 2020 (Figures 3.1-2 and 3.1-3). The annualized dustfall rates estimated from snow surveys in 2021 never exceeded the upper limit (which applies to industrial locations) of the Alberta Ambient Air Quality Objectives and Guidelines at any station, while only SS1-1, SS5-1, and SS5-3 exceeded the lower limit of these guidelines (which applies to residential and recreational areas).

3.3 Snow Water Chemistry

A summary of the snow water chemistry results for each variable of interest (i.e., variables with EQC and phosphorus) is provided below. The full suite of analytical results for snow water chemistry is included in Appendix D. For QA/QC purposes, duplicate samples were collected at stations SS1-4, SS3-7 and SSC-3 station. An equipment blank sample was also collected. Results of QA/QC samples are discussed in Section 3.4.

All 2021 sample concentrations, except aluminum at one site, were less than their associated reference levels as specified by the “maximum concentration of any grab sample” in Water Licence W2015L2-0001.

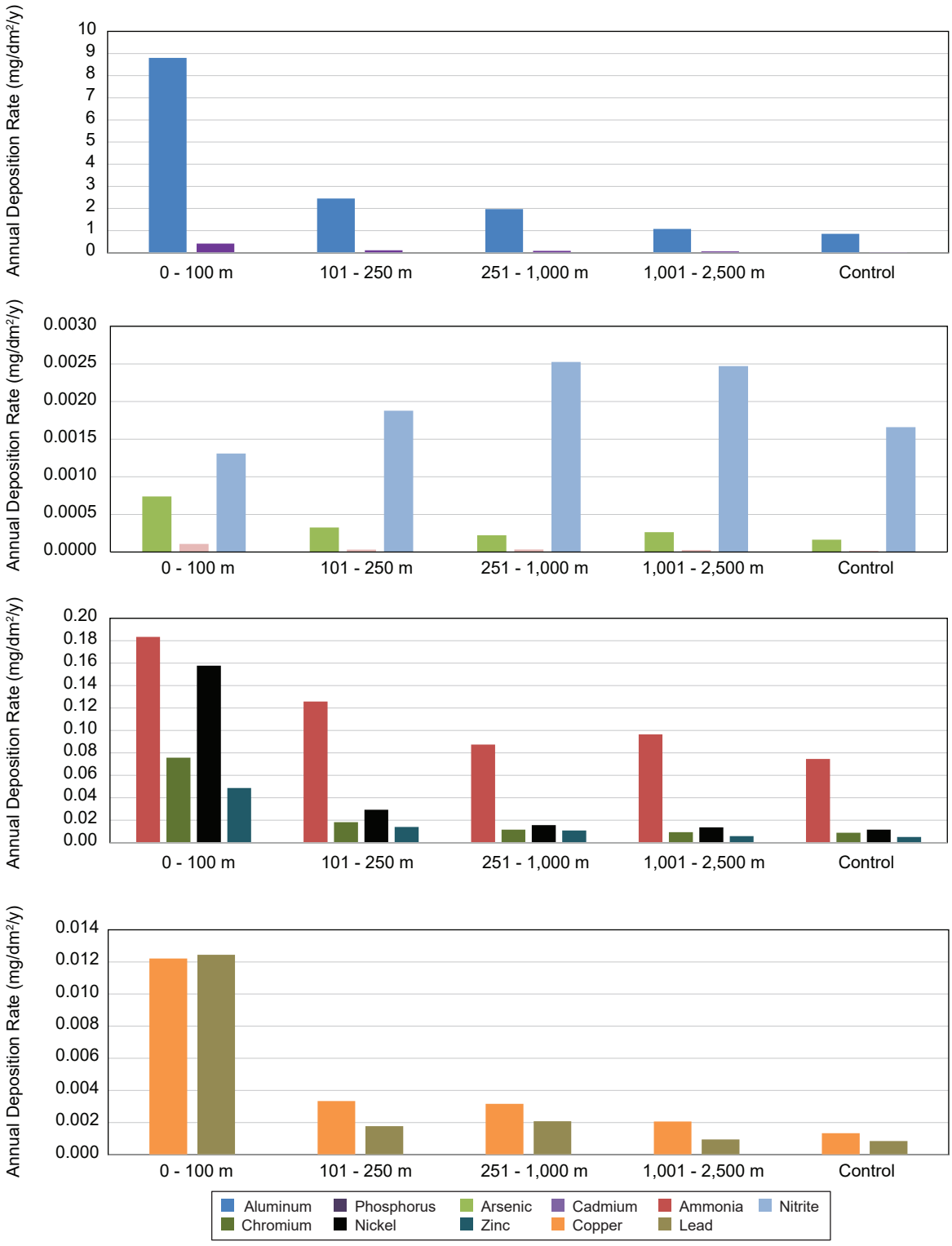
In 2021, most concentrations within the closest zone from the mine footprint (0 m to 100 m zone) were generally higher than 2019 and 2020 records (e.g. aluminum, arsenic, chromium, copper, lead, nickel, phosphorous and zinc). The average concentrations and areal deposition rates of snow water chemistry variables of interest decreased with increasing distance from the Project (Figure 3.3-1).

3.3.1 Aluminum

Aluminum concentrations in 2021 were considerably higher than 2019 and 2020 results in all zones (Figure 3.3-2). Aluminum areal deposition rates measured in 2021 ranged from 0.3 mg/dm^2/y at SSC-1 station in the control zone to 8.8 mg/dm^2/y at station SS3-6 in the 0 to 100 m zone (Table 3-1). All 2021 aluminum concentration except SS3-6 were below the EQC concentration specified in the Water Licence for maximum grab sample concentrations (3,000 µg /L; Figure 3.3-2). The concentration at SS3-6 was 3,360 µg/L.

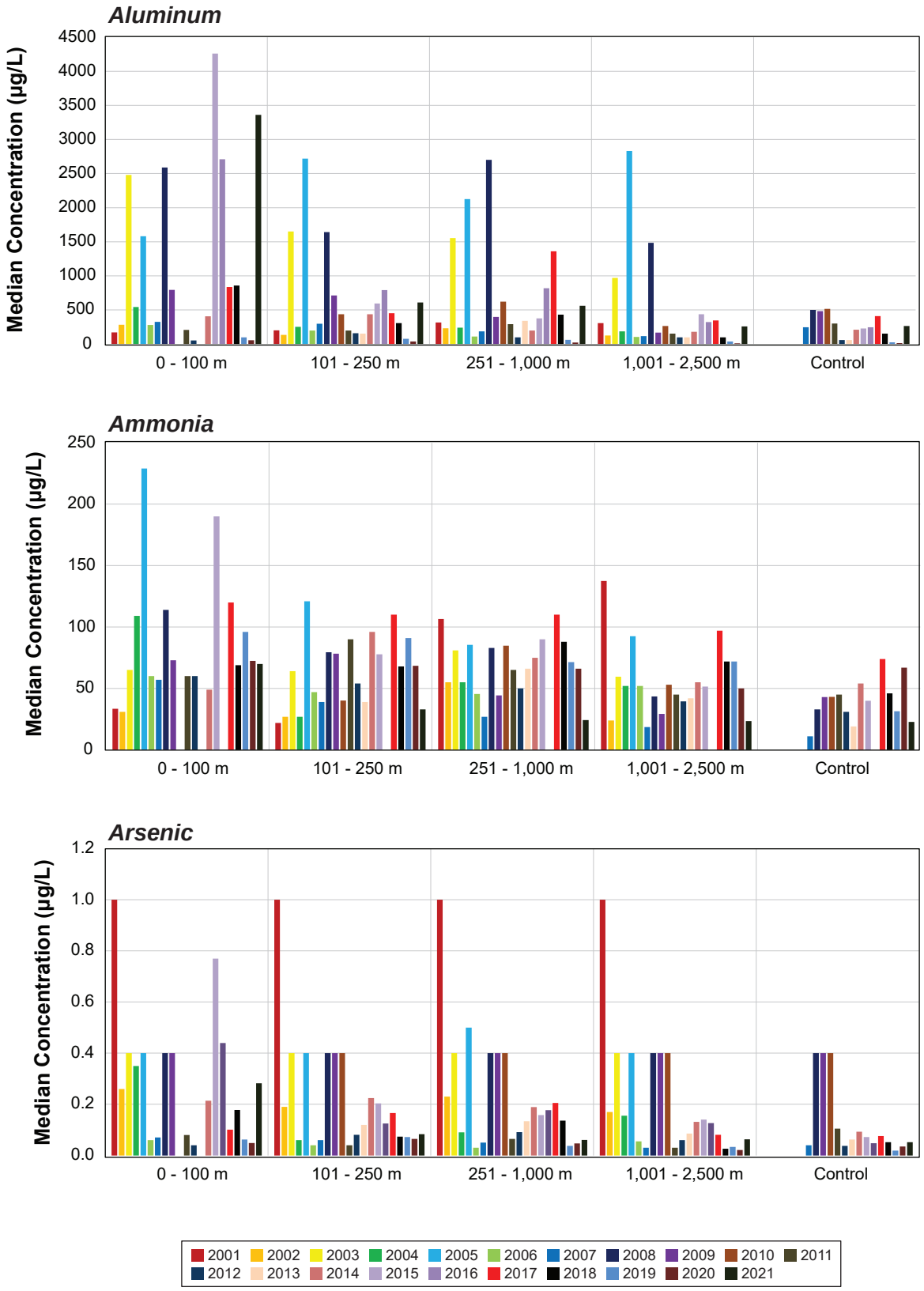
3.3.2 Ammonia

Ammonia areal deposition rates measured in 2021 ranged from 0.06 mg/dm^2/y at SS2-2 station in the 1,001 to 2,500 m zone to 0.18 mg/dm^2/y at SS3-6 station in the 101 to 250 m zone (Table 3-1). The 2021 median concentrations in all zones were generally similar to historical data (Figure 3.3-2). The ammonia 2021 areal deposition rates varied little among zones except for zone 0 to 100 m, which had relatively high deposition rates (Figure 3.3-1). All 2021 and historical ammonia concentrations were well below the EQC specified in the Water Licence for maximum grab sample concentrations (Figure 3.3-2).



Notes: *Values used for the 0-100 m zone represent one sample rather than the median.*
EQC (µg/L) = 3000 for Aluminum, 12000 for Ammonia, 100 for Arsenic, 3 for Cadmium, 40 for Chromium, 40 for Copper, 20 for Lead, 100 for Nickel, 2000 for Nitrite, 20 for Zinc, no EQC specified for Phosphorus

Figure 3.3-1: Snow Water Chemistry Results: Aluminum, Ammonia, Nitrite, Phosphorus, Arsenic, Cadmium, Chromium, Copper, Lead, Nickel and Zinc, 2021



Notes: Values used for the 0-100 m zone represent one sample rather than the median.
EQC (µg/L) = 3000 for Aluminum, 12000 for Ammonia, and 100 for Arsenic

Figure 3.3-2: Snow Water Chemistry Results: Aluminum, Ammonia and Arsenic, 2001 to 2021

3.3.3 Arsenic

Arsenic areal deposition rates measured in 2021 ranged from less than the analytical detection limit (< 0.00005 mg/dm^2/y) at SS2-2 and SS3-5 to 0.00074 mg/dm^2/y at SS3-6 in the 0 to 100 m zone (Table 3-1). Arsenic 2021 areal deposition rates were similar at all distances from the Project except for the 0 to 100 m zone (Figure 3.3-1), and the 2021 median concentrations were generally similar to historical median concentrations (Figure 3.3-2). All concentrations were well below the EQC specified in the Water Licence for maximum grab sample concentrations.

3.3.4 Cadmium

Cadmium areal deposition rates measured in 2021 ranged from less than the analytical detection limit (< 0.000014 mg/dm^2/y) at multiple stations to 0.0001 mg/dm^2/y at SS3-6 in the 0 to 100 m zone (Table 3-1). Cadmium concentrations in 2021 were similar or less than historical medians and concentrations (Figure 3.3-3). All concentrations were well below the EQC specified in the Water Licence for maximum grab sample concentrations.

3.3.5 Chromium

Chromium areal deposition rates measured in 2021 ranged from 0.002 mg/dm^2/y at SS2-4 in the 1,001 to 2,500 m zone to 0.076 mg/dm^2/y at SS3-6 (Table 3-1; Figure 3.3-1). The 2021 median concentrations were comparable to historical concentrations in each zone (Figure 3.3-3). The chromium 2021 areal deposition rate decreased with increasing distance from the Project footprint (Figure 3.3-1), and none of the concentrations exceeded the EQC specified in the Water Licence for maximum grab sample concentrations (Figure 3.3-3).

3.3.6 Copper

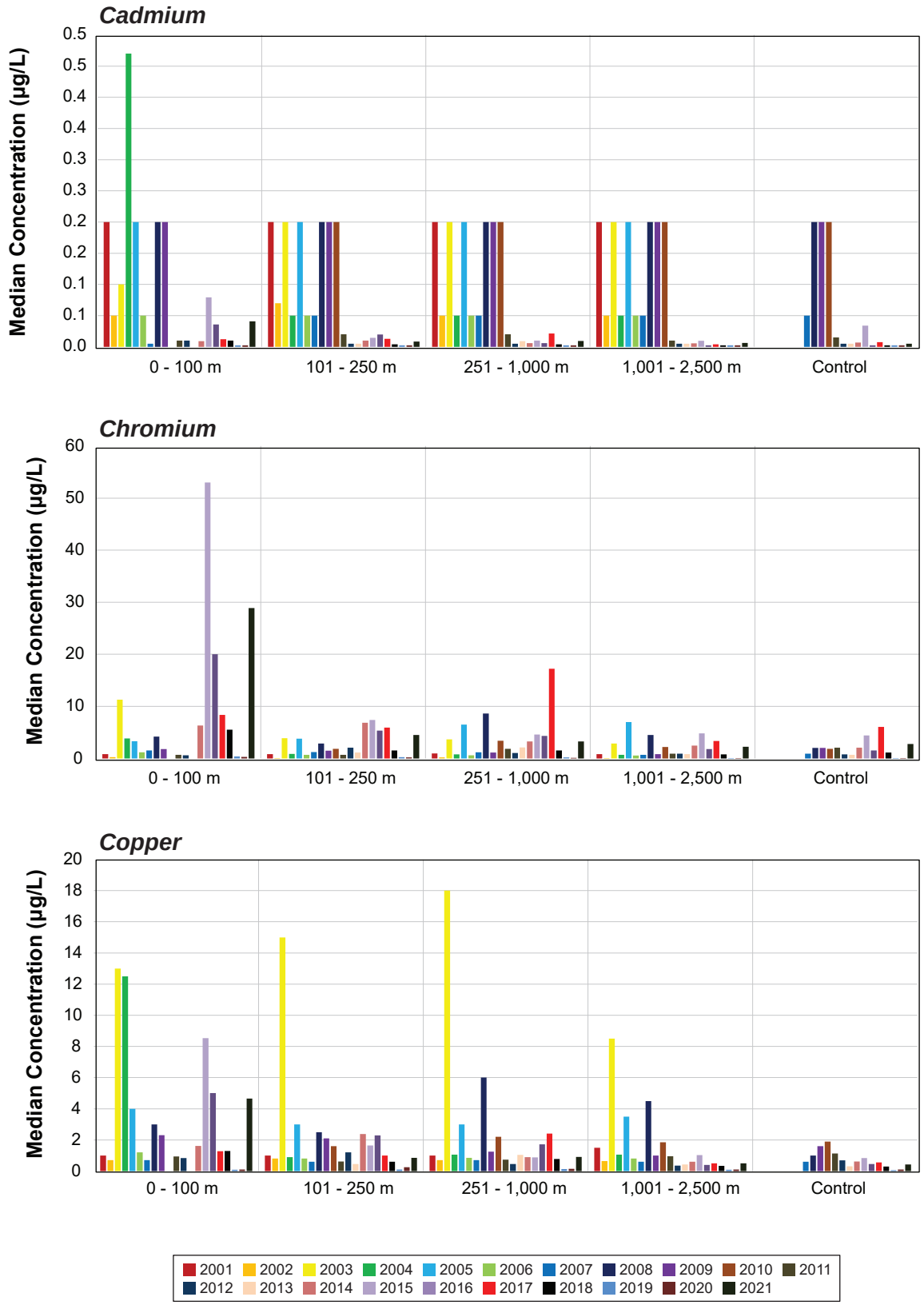
Copper areal deposition rates measured in 2021 ranged from 0.0006 mg/dm^2/y at SS3-5 in the 1,001 to 2,500 m zone to 0.012 mg/dm^2/y at SS3-6 (Table 3-1). Median 2021 copper concentrations were generally comparable to historical levels (Figure 3.3-3). All concentrations were less than the EQC specified in the Water Licence for maximum grab sample concentrations.

3.3.7 Lead

Lead areal deposition rates measured in 2021 ranged from 0.0004 mg/dm^2/y at SS2-4 and SS3-4 in the 1,001 to 2,500 m zone to 0.012 mg/dm^2/y at station SS3-6 (Table 3-1). The 2021 lead median concentrations in the 0 to 100 m zone (only one station) were considerably higher than 2019 and 2020 levels. The concentration in all other zones were similar to historical levels, with little variance among zones except for the 0 to 100 m zone (Figures 3.3-1 and 3.3-4). All concentrations were well below than the EQC specified in the Water Licence for maximum grab sample concentrations.

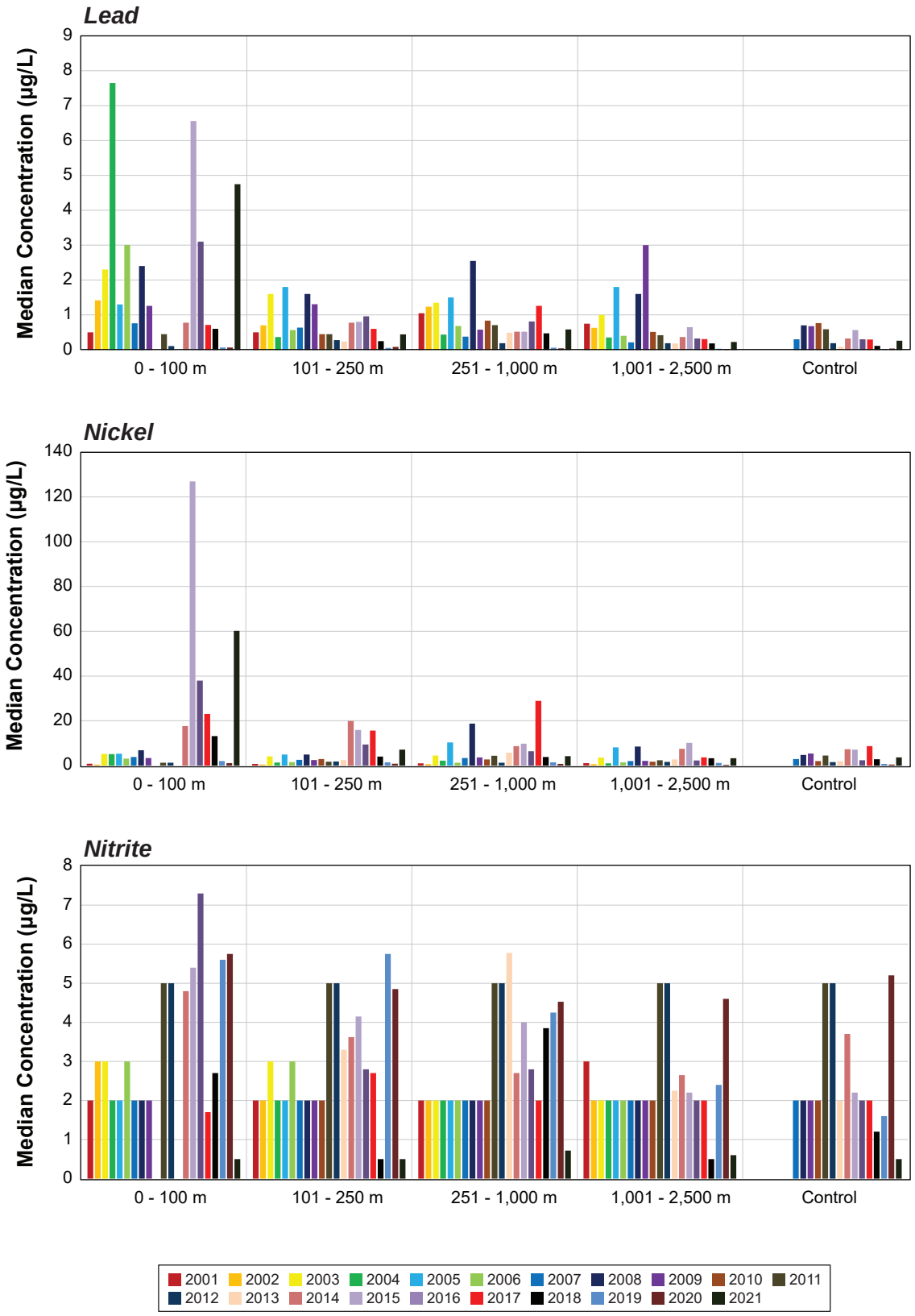
3.3.8 Nickel

Nickel areal deposition rates measured in 2021 ranged from 0.0021 mg/dm^2/y at SSC-1 station to 0.157 mg/dm^2/y at SS3-6 station (Table 3-1). Similar to lead, median 2021 nickel concentrations in the 0 to 100 m zone were higher than the 2019 and 2020 levels (Figures 3.3-4). The concentration in all other zones show little variance (Figure 3.3-1). All concentrations were well below than the EQC specified in the Water Licence for maximum grab sample concentrations.



Notes: Values used for the 0-100 m zone represent one sample rather than the median.
EQC (µg/L) = 3 for Cadmium, 40 for Chromium, and 40 for Copper.

Figure 3.3-3: Snow Water Chemistry Results: Cadmium, Chromium and Copper, 2001 to 2021



Notes: Values used for the 0-100 m zone represent one sample rather than the median.
EQC (µg/L) = 20 for Lead, 100 for Nickel, and 2000 for Nitrite.

Figure 3.3-4: Snow Water Chemistry Results: Lead, Nickel and Nitrite 2001 to 2021

3.3.9 Nitrite

Nitrite areal deposition rate measured in 2021 ranged from 0.0013 mg/dm^2/y at SS3-6 in the 0 to 100 m zone to 0.0059 mg/dm^2/y at the SS5-3 station in the 251 to 1,000 m zone (Table 3-1). Dissolved nitrite 2021 areal deposition rate were higher at the 101 to 250 m, 251 to 1,000 m and 1001 to 2,500 m zones (Figure 3.3-1). All concentrations were well below the EQC specified in the Water Licence for maximum grab sample concentrations.

3.3.10 Phosphorus

Phosphorus areal deposition rates measured in 2021 ranged from 0.003 mg/dm^2/y at SSC-1 station to 0.414 mg/dm^2/y at station SS3-6 (Table 3-1). Phosphorous 2021 areal deposition rates decreased with increasing distance from the Project (Figure 3.3-1) and were generally comparable to historical rates (Figure 3.3-5). Although the Water Licence has a load limit for phosphorus, there is no EQC specified for this parameter.

3.3.11 Zinc

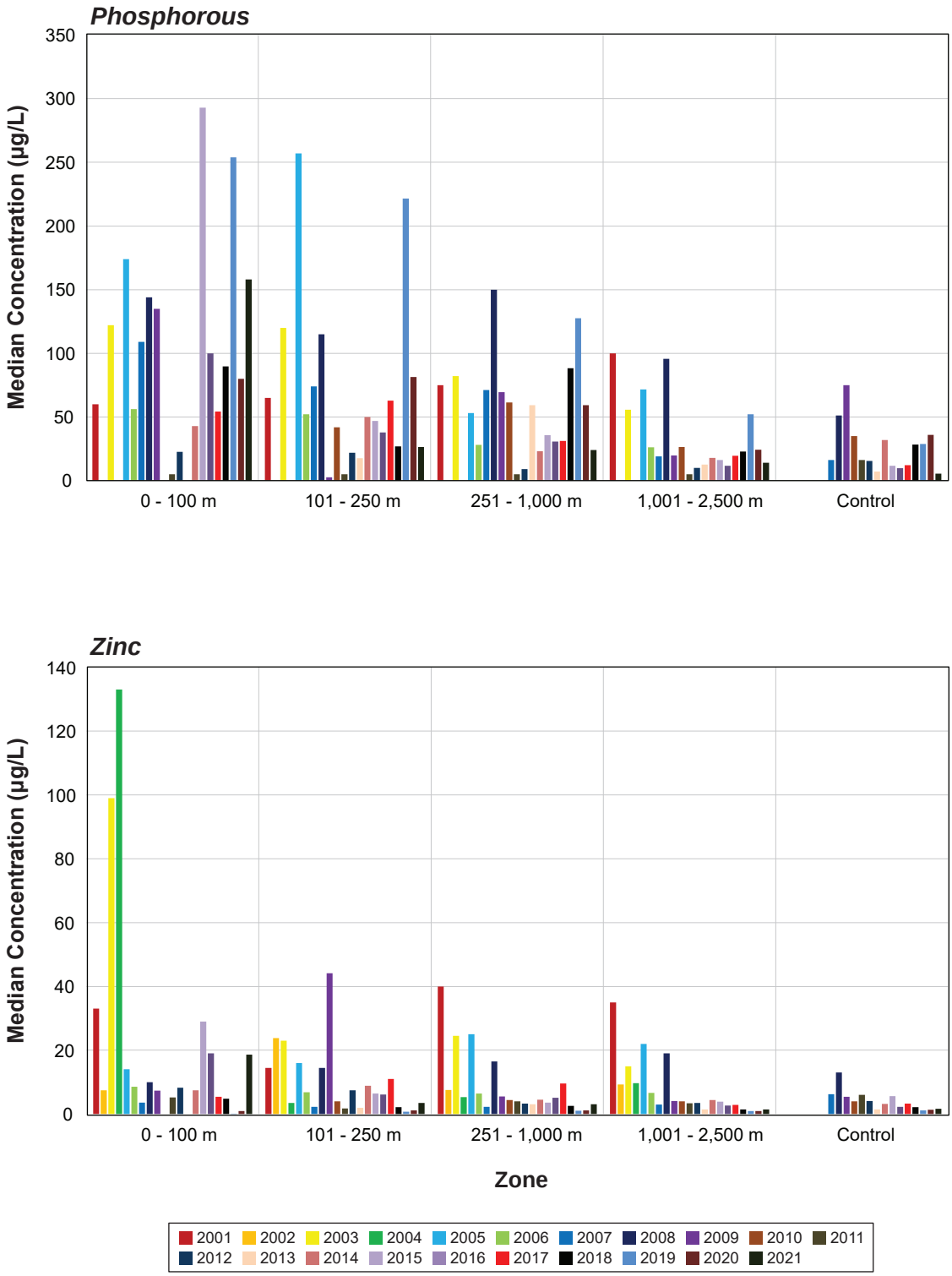
Zinc areal deposition rates measured in 2021 ranged from 0.002 mg/dm^2/y at multiple stations to 0.049 mg/dm^2/y at SS3-6 station (Table 3-1). Similar to lead and nickel, the median 2021 zinc concentration in the 0 to 100 m zone (one station only) was higher than 2019 and 2020 levels (Figure 3.3-5). There was little variability among other zones (Figure 3.3-1). All concentrations were well below the EQC specified in the Water Licence for maximum grab sample concentrations.

3.4 Evaluation of Existing Control Sites

The lowest dustfall rates in 2021 were at stations SS2-3 and SS2-2, which are 1,194 m and 427 m from mining activity, respectively. The second lowest dustfall rate was at station SS1-5, 2,175 m from mining operations. In addition, the mean dustfall rate in the control zone was the lowest of all the zones. The SS2 transect stations (SS2-1, SS2-2, SS2-3 and SS2-4), in addition to station SS1-5 all recorded low dustfall rates. Stations SS2-2, SS2-3 and SS1-5 recorded lower dustfall rates than the control sites SSC-1, SSC-2 and SSC-3, indicating that the rates at these two control sites may not be representative of background values and that dustfall rates at the control sites are potentially affected by the Project. However, the potential effects of the Project on the dustfall in the control zone have marginal impacts on the dustfall monitoring program since dustfall rates at the control zone are lower than rates within zones closer to the Project area (e.g., zones 0 m to 100 m, 101 m to 250 m). Concentrations of several snow water chemistry variables were generally consistent with distance from mining activity (zinc, nitrite, copper, ammonia, arsenic, cadmium) indicating that snow chemistry concentrations for these variables are likely not influenced by Project activity.

3.5 Quality Assurance and Control

Dustfall gauge, dustfall snow survey and snow water chemistry sampling and analysis were conducted by experienced technicians following SOPs ENVI-908-0119, ENVI-909-0119, and ENVI-902-0119 to ensure proper field sampling and laboratory analysis. As part of SOP ENVI-909-0119, duplicate and blank samples were taken for some snow survey and snow water chemistry sample sites (Table 2-1). The results from these samples are summarized in Tables 3.5-1 and 3.5-2.



Notes: Values used for the 0-100 m zone represent one sample rather than the median.
EQC (µg/L) = 20 for Zinc, no EQC specified for Phosphorus.

Figure 3.3-5: Snow Water Chemistry Results: Phosphorus and Zinc, 2001 to 2021

Appendix Vl NPRI Air Emissions

Year	CAS Number	Substance	Units	Release to Air
2009	208-96-8	Acenaphthylene	kg	5.68
2007	208-96-8	Acenaphthylene	kg	10.572
2008	75-07-0	Acetaldehyde	tonnes	-
2008	107-02-8	Acrolein	tonnes	0.004
2008	120-12-7	Anthracene	tonnes	0.001
2021	NA - 02	Arsenic (and its compounds)	kg	2.512
2020	NA - 02	Arsenic (and its compounds)	kg	2.981
2019	NA - 02	Arsenic (and its compounds)	kg	3.445
2018	NA - 02	Arsenic (and its compounds)	kg	4.521
2017	NA - 02	Arsenic (and its compounds)	kg	5.72
2016	NA - 02	Arsenic (and its compounds)	kg	4.324
2015	NA - 02	Arsenic (and its compounds)	kg	4.026
2014	NA - 02	Arsenic (and its compounds)	kg	0.91
2013	NA - 02	Arsenic (and its compounds)	kg	0.979
2012	NA - 02	Arsenic (and its compounds)	kg	0.797
2011	NA - 02	Arsenic (and its compounds)	kg	0.801
2010	NA - 02	Arsenic (and its compounds)	kg	0.004
2009	NA - 02	Arsenic (and its compounds)	kg	-
2008	NA - 02	Arsenic (and its compounds)	kg	-
2007	NA - 02	Arsenic (and its compounds)	kg	-
2006	NA - 02	Arsenic (and its compounds)	kg	-
2008	71-43-2	Benzene	tonnes	0.369
2021	NA - 03	Cadmium (and its compounds)	kg	3.028
2020	NA - 03	Cadmium (and its compounds)	kg	3.147
2019	NA - 03	Cadmium (and its compounds)	kg	2.746
2018	NA - 03	Cadmium (and its compounds)	kg	9.087
2017	NA - 03	Cadmium (and its compounds)	kg	3.6
2016	NA - 03	Cadmium (and its compounds)	kg	2.55
2015	NA - 03	Cadmium (and its compounds)	kg	2.05
2014	NA - 03	Cadmium (and its compounds)	kg	2.29
2013	NA - 03	Cadmium (and its compounds)	kg	2.6
2012	NA - 03	Cadmium (and its compounds)	kg	3.11
2011	NA - 03	Cadmium (and its compounds)	kg	2.92
2010	NA - 03	Cadmium (and its compounds)	kg	1.58
2009	NA - 03	Cadmium (and its compounds)	kg	-
2008	NA - 03	Cadmium (and its compounds)	kg	-
2007	NA - 03	Cadmium (and its compounds)	kg	-
2006	NA - 03	Cadmium (and its compounds)	kg	-
2021	630-08-0	Carbon monoxide	tonnes	712.933
2020	630-08-0	Carbon monoxide	tonnes	800.643
2019	630-08-0	Carbon monoxide	tonnes	718.989
2018	630-08-0	Carbon monoxide	tonnes	662.478
2017	630-08-0	Carbon monoxide	tonnes	674.82
2016	630-08-0	Carbon monoxide	tonnes	619.91
2015	630-08-0	Carbon monoxide	tonnes	589.69
2014	630-08-0	Carbon monoxide	tonnes	587.76
2013	630-08-0	Carbon monoxide	tonnes	679.07
2012	630-08-0	Carbon monoxide	tonnes	669.13
2011	630-08-0	Carbon monoxide	tonnes	738.69
2010	630-08-0	Carbon monoxide	tonnes	904.06
2009	630-08-0	Carbon monoxide	tonnes	801.77
2008	630-08-0	Carbon monoxide	tonnes	749
2007	630-08-0	Carbon monoxide	tonnes	1,320.10
2006	630-08-0	Carbon monoxide	tonnes	372.737
2005	630-08-0	Carbon monoxide	tonnes	315.732
2004	630-08-0	Carbon monoxide	tonnes	285.177
2021	NA - 05	Cobalt (and its compounds)	kg	0.003
2020	NA - 05	Cobalt (and its compounds)	kg	0.004
2019	NA - 05	Cobalt (and its compounds)	kg	0.005
2018	NA - 05	Cobalt (and its compounds)	kg	0.007
2017	NA - 05	Cobalt (and its compounds)	kg	-
2016	NA - 05	Cobalt (and its compounds)	kg	-
2015	NA - 05	Cobalt (and its compounds)	tonnes	-
2014	NA - 05	Cobalt (and its compounds)	tonnes	-
2013	NA - 05	Cobalt (and its compounds)	tonnes	-
2012	NA - 05	Cobalt (and its compounds)	tonnes	-
2011	NA - 05	Cobalt (and its compounds)	tonnes	-
2010	NA - 05	Cobalt (and its compounds)	tonnes	-
2009	NA - 05	Cobalt (and its compounds)	tonnes	-
2008	NA - 05	Cobalt (and its compounds)	tonnes	-
2007	NA - 05	Cobalt (and its compounds)	tonnes	-
2006	NA - 05	Cobalt (and its compounds)	tonnes	-
2021	NA - 06	Copper (and its compounds)	tonnes	0.001
2020	NA - 06	Copper (and its compounds)	tonnes	0.001
2019	NA - 06	Copper (and its compounds)	tonnes	0.001
2018	NA - 06	Copper (and its compounds)	tonnes	0.001
2017	NA - 06	Copper (and its compounds)	tonnes	0.001
2016	NA - 06	Copper (and its compounds)	tonnes	0.001
2015	NA - 06	Copper (and its compounds)	tonnes	0
2014	NA - 06	Copper (and its compounds)	tonnes	0.001
2013	NA - 06	Copper (and its compounds)	tonnes	0.001
2012	NA - 06	Copper (and its compounds)	tonnes	-
2011	NA - 06	Copper (and its compounds)	tonnes	0.001
2010	NA - 06	Copper (and its compounds)	tonnes	-
2009	NA - 06	Copper (and its compounds)	tonnes	-
2008	NA - 06	Copper (and its compounds)	tonnes	-

2007	NA - 06	Copper (and its compounds)	tonnes	-	
2006	NA - 06	Copper (and its compounds)	tonnes	-	
2021	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2020	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2019	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2018	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2017	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2016	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2015	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2014	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2013	NA - D/F	Dioxins and furans - total	g TEQ		0.0005
2012	NA - D/F	Dioxins and furans - total	g TEQ		0.0007
2011	NA - D/F	Dioxins and furans - total	g TEQ		0.0007
2009	NA - D/F	Dioxins and furans - total	g TEQ	-	
2008	NA - D/F	Dioxins and furans - total	g TEQ	-	
2007	NA - D/F	Dioxins and furans - total	g TEQ	-	
2006	NA - D/F	Dioxins and furans - total	g TEQ	-	
2005	NA - D/F	Dioxins and furans - total	g TEQ	-	
2006	74-85-1	Ethylene	tonnes		47.39
2005	74-85-1	Ethylene	tonnes		40.142
2004	74-85-1	Ethylene	tonnes		36.257
2009	86-73-7	Fluorene	kg		8.27
2007	86-73-7	Fluorene	kg		14.66
2008	50-00-0	Formaldehyde	tonnes		0.038
2021	118-74-1	Hexachlorobenzene	grams	-	
2020	118-74-1	Hexachlorobenzene	grams	-	
2019	118-74-1	Hexachlorobenzene	grams	-	
2018	118-74-1	Hexachlorobenzene	grams	-	
2017	118-74-1	Hexachlorobenzene	grams	-	
2016	118-74-1	Hexachlorobenzene	grams	-	
2015	118-74-1	Hexachlorobenzene	grams	-	
2014	118-74-1	Hexachlorobenzene	grams	-	
2013	118-74-1	Hexachlorobenzene	grams	-	
2012	118-74-1	Hexachlorobenzene	grams	-	
2011	118-74-1	Hexachlorobenzene	grams		0
2009	118-74-1	Hexachlorobenzene	grams	-	
2008	118-74-1	Hexachlorobenzene	grams	-	
2007	118-74-1	Hexachlorobenzene	grams	-	
2006	118-74-1	Hexachlorobenzene	grams	-	
2005	118-74-1	Hexachlorobenzene	grams	-	
2021	7647-01-0	Hydrochloric acid	tonnes	-	
2020	7647-01-0	Hydrochloric acid	tonnes	-	
2019	7647-01-0	Hydrochloric acid	tonnes	-	
2018	7647-01-0	Hydrochloric acid	tonnes	-	
2017	7647-01-0	Hydrochloric acid	tonnes	-	
2016	7647-01-0	Hydrochloric acid	tonnes	-	
2015	7647-01-0	Hydrochloric acid	tonnes	-	
2021	NA - 08	Lead (and its compounds)	kg		41.096
2020	NA - 08	Lead (and its compounds)	kg		41.978
2019	NA - 08	Lead (and its compounds)	kg		36.253
2018	NA - 08	Lead (and its compounds)	kg		139
2017	NA - 08	Lead (and its compounds)	kg		49.59
2016	NA - 08	Lead (and its compounds)	kg		28.56
2015	NA - 08	Lead (and its compounds)	kg		23.51
2014	NA - 08	Lead (and its compounds)	kg		29.55
2013	NA - 08	Lead (and its compounds)	kg		34.16
2012	NA - 08	Lead (and its compounds)	kg		44.86
2011	NA - 08	Lead (and its compounds)	kg		41.46
2010	NA - 08	Lead (and its compounds)	kg		27.07
2009	NA - 08	Lead (and its compounds)	kg	-	
2008	NA - 08	Lead (and its compounds)	kg	-	
2007	NA - 08	Lead (and its compounds)	kg	-	
2006	NA - 08	Lead (and its compounds)	kg	-	
2021	NA - 10	Mercury (and its compounds)	kg		1.853
2020	NA - 10	Mercury (and its compounds)	kg		1.891
2019	NA - 10	Mercury (and its compounds)	kg		1.635
2018	NA - 10	Mercury (and its compounds)	kg		4.96
2017	NA - 10	Mercury (and its compounds)	kg		1.97
2016	NA - 10	Mercury (and its compounds)	kg		1.36
2015	NA - 10	Mercury (and its compounds)	kg		1.25
2014	NA - 10	Mercury (and its compounds)	kg		1.54
2013	NA - 10	Mercury (and its compounds)	kg		1.73
2012	NA - 10	Mercury (and its compounds)	kg		1.94
2011	NA - 10	Mercury (and its compounds)	kg		1.83
2010	NA - 10	Mercury (and its compounds)	kg		0.84
2009	NA - 10	Mercury (and its compounds)	kg	-	
2008	NA - 10	Mercury (and its compounds)	kg	-	
2007	NA - 10	Mercury (and its compounds)	kg	-	
2006	NA - 10	Mercury (and its compounds)	kg	-	
2021	NA - 11	Nickel (and its compounds)	tonnes		0.001
2020	NA - 11	Nickel (and its compounds)	tonnes		0.001
2019	NA - 11	Nickel (and its compounds)	tonnes		0.001
2018	NA - 11	Nickel (and its compounds)	tonnes		0.001
2017	NA - 11	Nickel (and its compounds)	tonnes		0.001
2016	NA - 11	Nickel (and its compounds)	tonnes		0.001
2015	NA - 11	Nickel (and its compounds)	tonnes		0.001
2014	NA - 11	Nickel (and its compounds)	tonnes		0.001

2013	NA - 11	Nickel (and its compounds)	tonnes		0.001
2012	NA - 11	Nickel (and its compounds)	tonnes	-	
2011	NA - 11	Nickel (and its compounds)	tonnes		0.006
2010	NA - 11	Nickel (and its compounds)	tonnes	-	
2009	NA - 11	Nickel (and its compounds)	tonnes	-	
2008	NA - 11	Nickel (and its compounds)	tonnes	-	
2007	NA - 11	Nickel (and its compounds)	tonnes	-	
2006	NA - 11	Nickel (and its compounds)	tonnes	-	
2021	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,277.00
2020	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,376.25
2019	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,320.06
2018	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,185.96
2017	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,274.59
2016	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,335.59
2015	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,221.96
2014	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,214.18
2013	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,293.45
2012	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,273.65
2011	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,551.78
2010	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,313.12
2009	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		2,085.77
2008	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		1,606.67
2007	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		4,235.88
2006	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		1,731.63
2005	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		1,466.80
2004	11104-93-1	Nitrogen oxides (expressed as nitrogen dioxide)	tonnes		1,324.85
2011	85-01-8	Phenanthrene	kg		26.3
2010	85-01-8	Phenanthrene	kg		28.16
2009	85-01-8	Phenanthrene	kg		25.38
2007	85-01-8	Phenanthrene	kg		46.73
2021	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		324.515
2020	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		326.816
2019	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		363.993
2018	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		425.864
2017	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		238.371
2016	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		328.16
2015	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		296.22
2014	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		171.7
2013	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		155.94
2012	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		313.74
2011	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		1,145.94
2010	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		678
2009	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		481.04
2008	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		729.272
2007	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		3,178.04
2006	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		121.845
2005	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		103.211
2004	NA - M09	PM10 - Particulate Matter <= 10 Micrometers	tonnes		93.223
2021	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		72.543
2020	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		73.553
2019	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		76.108
2018	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		87.419
2017	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		56.43
2016	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		65.3
2015	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		66.44
2014	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		46.81
2013	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		45.96
2012	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		63.35
2011	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		74.42
2010	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		124
2009	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		82.33
2008	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		96.605
2007	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		467.415
2006	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		121.845
2005	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		103.211
2004	NA - M10	PM2.5 - Particulate Matter <= 2.5 Micrometers	tonnes		93.223
2011	115-07-1	Propylene	tonnes		1.791
2010	115-07-1	Propylene	tonnes		1.98
2009	115-07-1	Propylene	tonnes		1.74
2008	115-07-1	Propylene	tonnes		1.328
2007	115-07-1	Propylene	tonnes		3.196
2006	115-07-1	Propylene	tonnes		28.566
2005	115-07-1	Propylene	tonnes		24.197
2004	115-07-1	Propylene	tonnes		21.855
2021	NA - 12	Selenium (and its compounds)	kg		0.003
2020	NA - 12	Selenium (and its compounds)	kg		0.003
2019	NA - 12	Selenium (and its compounds)	kg		0.003
2018	NA - 12	Selenium (and its compounds)	kg		0.003
2017	NA - 12	Selenium (and its compounds)	kg		0.003
2016	NA - 12	Selenium (and its compounds)	kg		0.003
2015	NA - 12	Selenium (and its compounds)	kg		0.003
2014	NA - 12	Selenium (and its compounds)	kg		0.003
2013	NA - 12	Selenium (and its compounds)	kg		0.004
2012	NA - 12	Selenium (and its compounds)	kg		0.035
2011	NA - 12	Selenium (and its compounds)	kg		0.015
2021	9/5/7446	Sulphur dioxide	tonnes		8.175
2020	9/5/7446	Sulphur dioxide	tonnes		7.303

2019	9/5/7446	Sulphur dioxide	tonnes		5.159
2018	9/5/7446	Sulphur dioxide	tonnes		5.362
2017	9/5/7446	Sulphur dioxide	tonnes		3.022
2016	9/5/7446	Sulphur dioxide	tonnes		0.85
2015	9/5/7446	Sulphur dioxide	tonnes		0.77
2014	9/5/7446	Sulphur dioxide	tonnes		0.72
2013	9/5/7446	Sulphur dioxide	tonnes		3.25
2012	9/5/7446	Sulphur dioxide	tonnes		3.82
2011	9/5/7446	Sulphur dioxide	tonnes		26.06
2010	9/5/7446	Sulphur dioxide	tonnes		36.83
2009	9/5/7446	Sulphur dioxide	tonnes		15.53
2008	9/5/7446	Sulphur dioxide	tonnes		9.495
2007	9/5/7446	Sulphur dioxide	tonnes		132.257
2006	9/5/7446	Sulphur dioxide	tonnes		113.807
2005	9/5/7446	Sulphur dioxide	tonnes		87.072
2004	9/5/7446	Sulphur dioxide	tonnes		87.072
2008	108-88-3	Toluene	tonnes		0.134
2021	NA - M08	Total particulate matter	tonnes		814.77
2020	NA - M08	Total particulate matter	tonnes		815.911
2019	NA - M08	Total particulate matter	tonnes		964.328
2018	NA - M08	Total particulate matter	tonnes		1,194.70
2017	NA - M08	Total particulate matter	tonnes		726.051
2016	NA - M08	Total particulate matter	tonnes		1,047.65
2015	NA - M08	Total particulate matter	tonnes		781.93
2014	NA - M08	Total particulate matter	tonnes		511.98
2013	NA - M08	Total particulate matter	tonnes		451.31
2012	NA - M08	Total particulate matter	tonnes		984.57
2011	NA - M08	Total particulate matter	tonnes		1,145.41
2010	NA - M08	Total particulate matter	tonnes		2,065.22
2009	NA - M08	Total particulate matter	tonnes		1,437.58
2008	NA - M08	Total particulate matter	tonnes		2,293.64
2007	NA - M08	Total particulate matter	tonnes		6,480.06
2006	NA - M08	Total particulate matter	tonnes		121.845
2005	NA - M08	Total particulate matter	tonnes		103.211
2004	NA - M08	Total particulate matter	tonnes		93.223
2021	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		56.625
2020	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		59.361
2019	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		58.431
2018	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		55.345
2017	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		57.82
2016	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		59.51
2015	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		56.56
2014	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		56.24
2013	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		57.99
2012	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		58.13
2011	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		54.27
2010	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		84.33
2009	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		55.55
2008	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		38.985
2007	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		208.473
2006	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		141.343
2005	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		119.727
2004	NA - M16	Volatile Organic Compounds (VOCs)	tonnes		108.14
2008	1330-20-7	Xylene (all isomers)	tonnes		0.092
2021	NA - 14	Zinc (and its compounds)	tonnes		0.001
2020	NA - 14	Zinc (and its compounds)	tonnes		0.001
2019	NA - 14	Zinc (and its compounds)	tonnes		0.001
2018	NA - 14	Zinc (and its compounds)	tonnes		0.001
2017	NA - 14	Zinc (and its compounds)	tonnes		0.001
2016	NA - 14	Zinc (and its compounds)	tonnes		0.001
2015	NA - 14	Zinc (and its compounds)	tonnes		0.001
2014	NA - 14	Zinc (and its compounds)	tonnes		0.001
2013	NA - 14	Zinc (and its compounds)	tonnes		0.001
2012	NA - 14	Zinc (and its compounds)	tonnes		0.001
2011	NA - 14	Zinc (and its compounds)	tonnes		0.001
2010	NA - 14	Zinc (and its compounds)	tonnes	-	
2009	NA - 14	Zinc (and its compounds)	tonnes	-	
2008	NA - 14	Zinc (and its compounds)	tonnes	-	
2007	NA - 14	Zinc (and its compounds)	tonnes	-	
2006	NA - 14	Zinc (and its compounds)	tonnes	-	