

INDEPENDENT ENVIRONMENTAL
MONITORING AGENCY



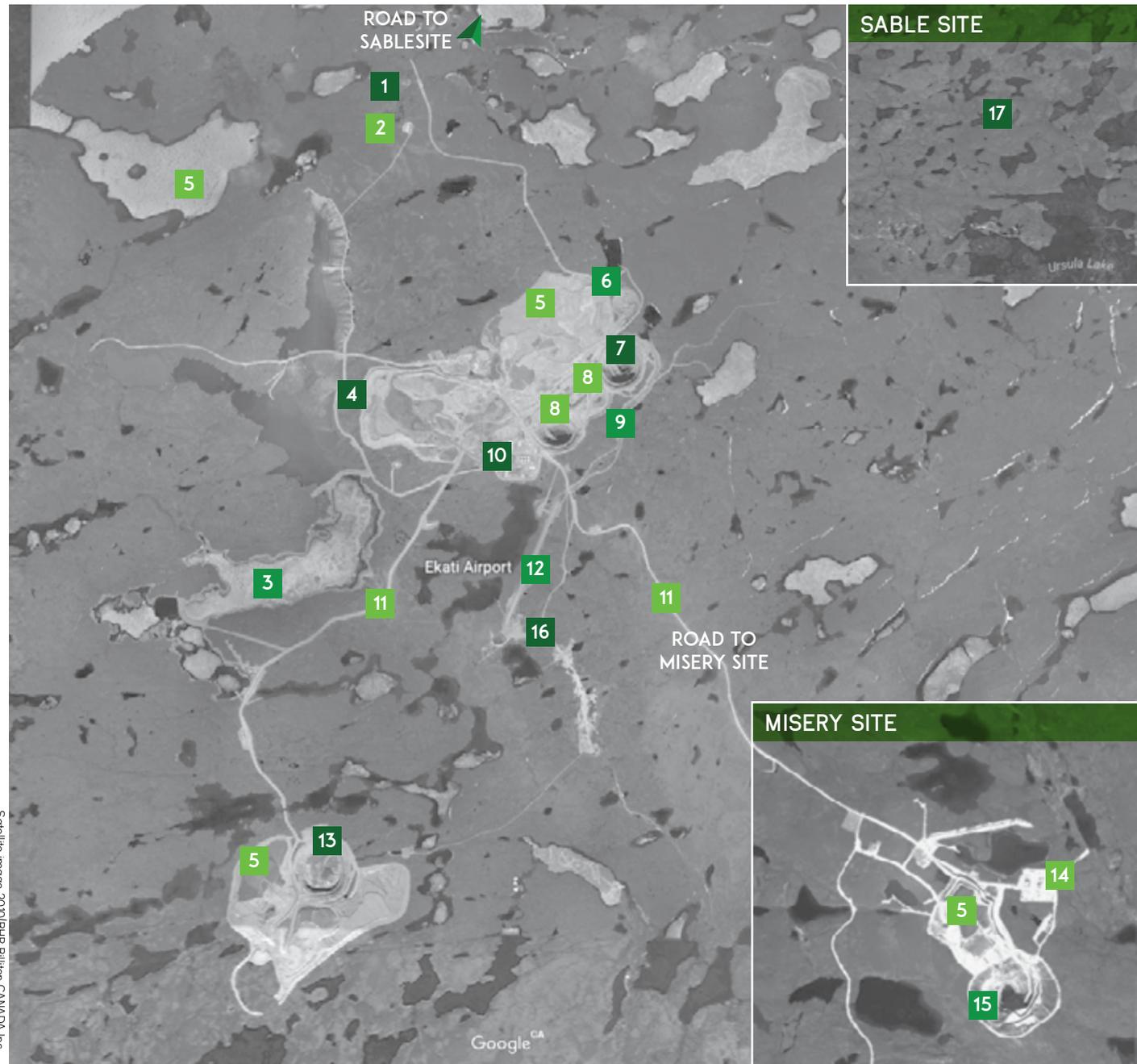
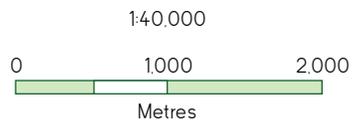
2016-17 ANNUAL REPORT

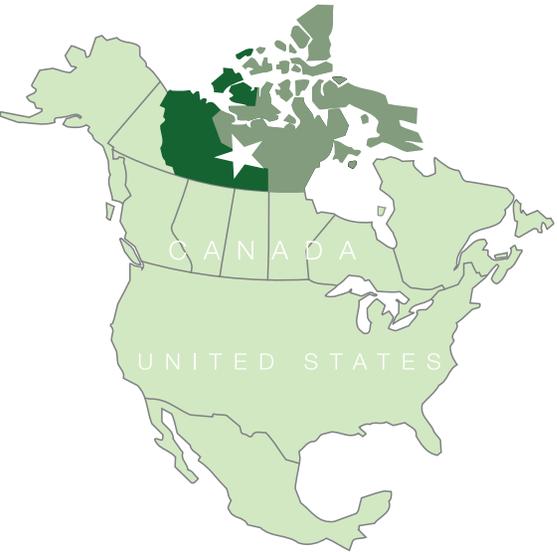
TECHNICAL

EKATI DIAMOND MINE

LEGEND

- 1** PIGEON STREAM DIVERSION
- 2** PIGEON PIT
- 3** LONG LAKE CONTAINMENT FACILITY (CELLS A-E)
- 4** INCINERATORS
- 5** WASTE ROCK PILES
- 6** BEARTOOTH PIT
- 7** PANDA PIT
- 8** KOALA AND KOALA NORTH PIT
- 9** PANDA DIVERSION CHANNEL
- 10** MAIN CAMP
- 11** HAUL ROADS
- 12** AIRSTRIP
- 13** FOX PIT
- 14** MISERY CAMP
- 15** MISERY PIT
- 16** OLD CAMP
- 17** SABLE PIT





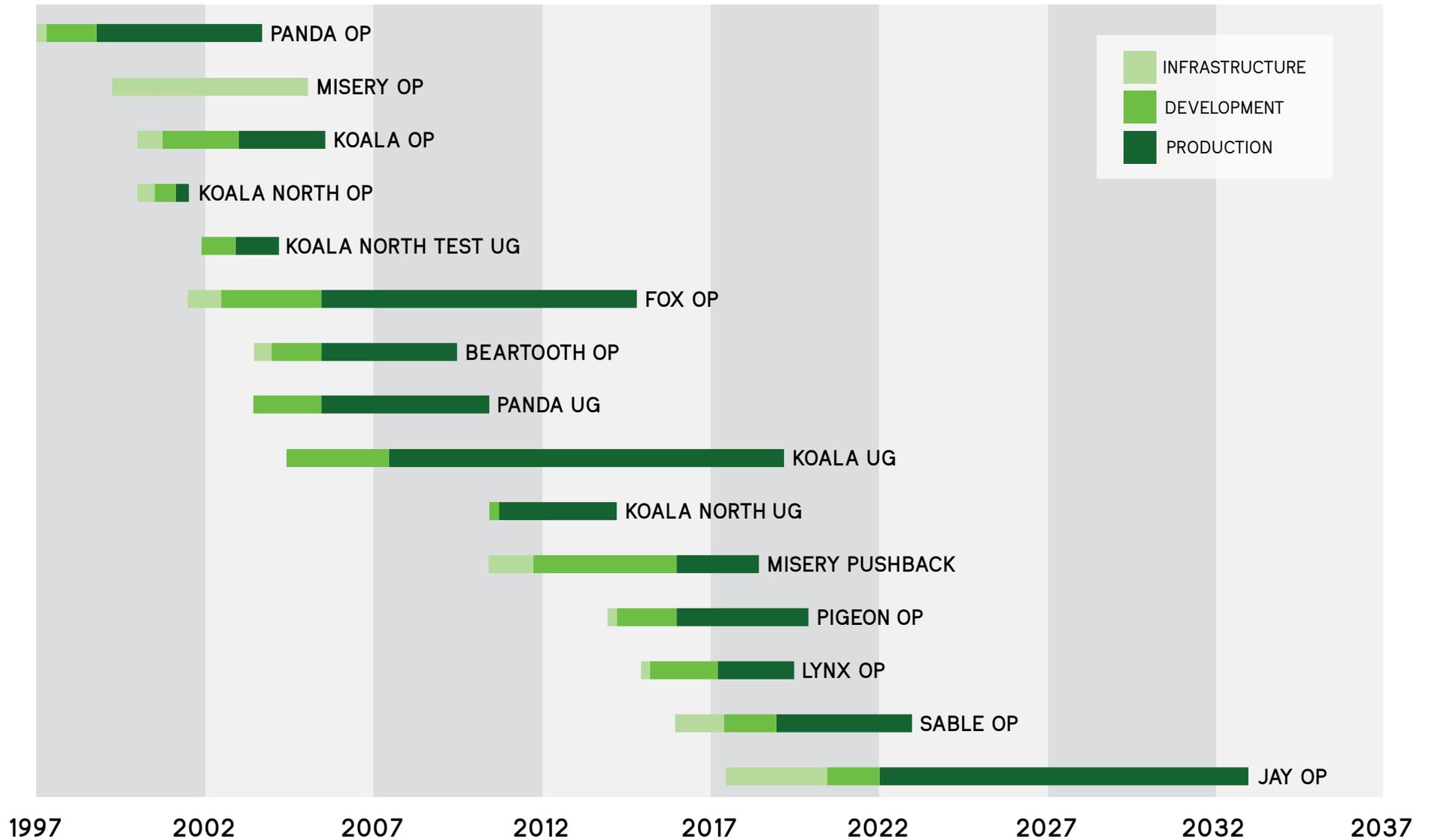
- NORTHWEST TERRITORIES
- NUNAVUT

MINE FOOTPRINT | 35KM²

- MAIN SITE TO SABLE PIT 16KM
- MAIN SITE TO MISERY PIT 25KM
- MISERY PIT TO JAY PIT 5KM

MINE UPDATE

Life of Mine Plan: The Ekati Diamond Mine officially opened in October 1998. With approval of the Jay Project, active mining at Ekati mine is currently estimated to continue until the year 2033.



MESSAGE FROM THE CHAIR



AGENCY CHAIRPERSON: JAIDA OHOKANNOAK

I am pleased to present the 2016-17 Annual Report of the Independent Environmental Monitoring Agency (Agency). The report summarizes the Agency's activities and offers recommendations for Dominion Diamond Ekati Corporation (DDEC) and for the regulators.

This year was another busy year for the Agency with our major focus being on the Jay Project regulatory process. We reviewed the Jay early works and road land use permit applications and participated as an intervenor in the water licence process. This included participating in technical meetings, providing written interventions, presenting our position at the public hearing in Yellowknife in December as well as reviewing the draft water licence.

Another key activity for the Agency this year was participating in the Environmental Impact Review (EIR). The EIR is required by the Environmental Agreement and compares the results of environmental monitoring activities conducted at Ekati Diamond Mine for the current reporting period (2012 to 2016) with predictions of the 1995 Environmental Impact Statement. The Agency reviewed the report and participated in technical and public sessions. We were generally pleased to see an improvement over the previous EIR, however we had a number of comments and suggestions for improvements to future documents.

The Agency also participated in the Aquatic Effects Management Plan (AEMP) Re-evaluation and provided recommendations on methods to improve the AEMP. We retained a consultant and participated in the review of the Waste Rock Storage Area Closure Ecological Risk Assessment, which provided a good starting point for discussion and highlighted some uncertainties, which can be used to inform the next versions of the Interim Closure and Reclamation Plan and the Reclamation Research Plans. The Agency also participated in a number of workshops and provided comments on management plans for air quality and wildlife, aquatic response plans, and on the general monitoring program reports.

A change in Directors occurred at the end of the year, with Doug Doan leaving the Agency and Ron Allen joining us. I would like to take this opportunity to thank Doug for his contributions to the Agency and welcome Ron to the Agency Board of Directors.

Over the next year the Agency will continue to work to ensure that Ekati Diamond Mine continues good environmental practices. ■

Jaida Ohokannoak

May 31, 2017

DIRECTOR BIOGRAPHIES



JAIDA OHOKANNOAK | CHAIRPERSON

APPOINTED DECEMBER 2003
APPOINTED BY KITIKMEOT INUIT ASSOCIATION

Jaida Ohokannoak lives in Cambridge Bay, Nunavut, and has lived and worked in small northern communities for more than 20 years. She is experienced in environmental assessment, renewable resource management, research and monitoring studies. Jaida believes mining can be conducted in an environmentally responsible manner that benefits both industry and local people. Jaida served as the Agency's Secretary-Treasurer from 2004 to December 2014, and was elected Chairperson in December, 2015.



EMERY PAQUIN | VICE CHAIRPERSON

APPOINTED MARCH 2015
APPOINTED BY DOMINION DIAMOND, GOVERNMENT OF THE NORTHWEST TERRITORIES AND GOVERNMENT OF CANADA (IN CONSULTATION WITH THE ABORIGINAL GOVERNMENTS).

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



KIM POOLE | SECRETARY/TREASURER

APPOINTED JULY 2015
APPOINTED BY THE TĪCHQ GOVERNMENT

Kim Poole is an independent wildlife biologist with 30 years of experience in the Northwest Territories, Nunavut and British Columbia in the areas of wildlife research and assessment of impacts due to forestry, mining and tourism. Kim also served as an Agency Director from 2006 – 2015, and was reappointed by the TĪchq Government in 2015.



ARNOLD ENGE

APPOINTED MARCH 2015
APPOINTED BY THE NORTH SLAVE MÉTIS ALLIANCE

Arnold has 30 years of experience working in the North with the federal and territorial governments as well as Rio Tinto. Arnold is of North Slave Métis ancestry and represents the North Slave Métis on several Boards monitoring the environmental impacts of northern projects.



JESSE JASPER

APPOINTED APRIL 2016
APPOINTED BY DOMINION DIAMOND, GOVERNMENT OF THE NORTHWEST TERRITORIES AND GOVERNMENT OF CANADA (IN CONSULTATION WITH THE ABORIGINAL GOVERNMENTS).

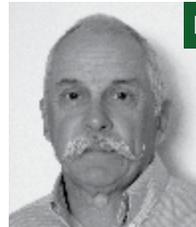
Jesse retired in 2011 from the Government of Canada after 39 years of service. Since 1971 he has worked exclusively in northern Canada, focusing on land and water resource development, water monitoring studies to evaluate impacts on development. He coordinated a number of reviews and technical presentations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



TIM BYERS

APPOINTED MAY 2001
APPOINTED BY AKAITCHO TREATY 8 FIRST NATIONS (LUTSEL K'E DENE FIRST NATION AND YELLOWKNIVES DENE FIRST NATION).

Tim Byers is an independent consultant living in Manitoba who has been working on projects in the Canadian Arctic since 1980. He specializes in studies of fish, Arctic seabirds and marine invertebrates and has assisted Aboriginal communities in documenting their indigenous environmental knowledge. Tim would like to see more Aboriginal youth engaged in the environmental sciences and Traditional Knowledge used more effectively in environmental monitoring, research and impact assessments. Tim served as the Agency's Vice-Chairperson from 2004 to December 2014.



RONALD ALLEN

APPOINTED MARCH 2017
APPOINTED BY DOMINION DIAMOND, GOVERNMENT OF THE NORTHWEST TERRITORIES AND GOVERNMENT OF CANADA (IN CONSULTATION WITH THE ABORIGINAL GOVERNMENTS).

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

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RECOMMENDATIONS

1

THE GOVERNMENT OF THE NORTHWEST TERRITORIES, IN COOPERATION WITH THE WEK'ÉEZHII LAND AND WATER BOARD, DEVELOP WRITTEN POLICIES, GUIDELINES, OR DIRECTIVES TO STANDARDIZE THE PROCESS FOR DETERMINING WHETHER, AND WHAT PORTION, OF SECURITY SHOULD BE HELD BACK FOR FUTURE LIABILITIES UPON COMPLETION OF RECLAMATION ACTIVITIES.

GNWT Response

When reviewing the security requirements for a mining project, the GNWT relies on the Mine Site Reclamation Policy for the Northwest Territories, developed by Indigenous and Northern Affairs Canada (INAC) in 2002. Post devolution, when the GNWT took over responsibilities for land and water management and holding of associated financial securities, the GNWT adopted the federal Mine Site Reclamation Policy on an interim basis. This policy describes the requirements for any ongoing monitoring once reclamation work is deemed complete, and confirms that financial security can be held back to cover future requirements for sites that may necessitate long-term care and maintenance. Although the GNWT strives for consistency in applying the policy, determining whether, and how much, security may need to be held back would be determined on a project-by-project basis.

The GNWT is aware that the land and water boards have identified clarifying matters relating to securities and progressive reclamation as a priority for future discussions among boards, government, proponents and others. The GNWT has previously provided additional information on appropriate approaches to determining how much security to hold back when reclamation is completed in an information request submitted to the Wek'èezhii Water Board (WLWB) in September 2016. Moving forward, the GNWT expects to develop its own policies and guidelines related to reclamation security, and would work with the land and water boards and other stakeholders to develop that guidance. In 2017, the GNWT is reviewing the legislative, regulatory and policy framework for land and water securities, and will be consulting and engaging as part of that work. The GNWT commits to providing IEMA with updates as progress is made.

2

THE GOVERNMENT OF THE NORTHWEST TERRITORIES, IN COOPERATION WITH THE WEK'ÉEZHII LAND AND WATER BOARD, DEVELOP WRITTEN POLICIES, GUIDELINES, OR DIRECTIVES TO STANDARDIZE THE PROCESS FOR DETERMINING THE APPLICATION, CONSIDERATION AND APPROVAL OF STAGED CLOSURE AND RECLAMATION SECURITIES.

GNWT Response

When reviewing the security requirements for a mining project, the GNWT relies on the Mine Site Reclamation Policy for the Northwest Territories, developed by Indigenous and Northern Affairs Canada (INAC) in 2002. Post devolution, when the GNWT took over responsibilities for land and water management and holding of associated financial securities, the GNWT adopted the federal Mine Site Reclamation Policy on an interim basis. Again, this policy outlines the requirement for conducting progressive reclamation, reporting on reclamation progress, and adjusting securities as required due to completed reclamation activities.

The GNWT is aware that the land and water boards have identified clarifying matters relating to securities and progressive reclamation as a priority for future discussions among boards, government, proponents and others, and the GNWT has addressed specific board questions in recent information request responses. Moving forward, the GNWT expects to develop its own policies and guidelines related to reclamation security, and would work with the land and water boards and other stakeholders to develop that guidance. In 2017, the GNWT is reviewing the legislative, regulatory and policy framework for land and water securities, and will be consulting and engaging as part of that work. The GNWT commits to providing IEMA with updates as progress is made.

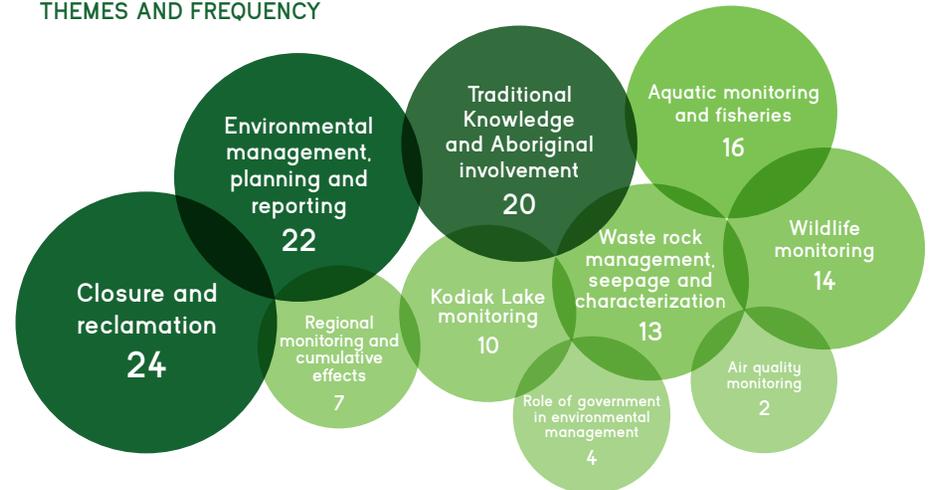


AGENCY STAFF IN DISCUSSION WITH DDEC STAFF.

Figure 1: Agency Recommendation Themes 1997-2017

RECIPIENTS	# OF RECOMMENDATIONS
Dominion Diamond Ekati Corporation (DDEC - Previously BHPB)	96
Government (GNWT, Government of Nunavut, Government of Canada)	19
Water Boards (NWT Water Board, Mackenzie Valley Land and Water Board, and Wek'eezhii Land and Water Board)	11
Environmental Agreement signatories	3
Aboriginal Society Members and DDEC	3
Aboriginal Society Members	1
All Agency Society Members	1
Total	134

THEMES AND FREQUENCY



AGENCY ACTIVITIES

HIGHLIGHTS

- + Four Board Meetings, annual general meeting, and a Community Information Session with North Slave Métis Alliance (NSMA).
- + Participation in the Jay Project water licence process.
- + Review of the Environmental Impact Report (EIR) and AEMP Re-Evaluation
- + Site visit to Ekati mine.
- + Production of a new communications video.

ACTIVITIES 2016-17

The Agency held four board meetings in 2016-17, each held in Yellowknife, and a Community Information Session for members of the North Slave Métis Alliance (NSMA) and the public.

During the Community Information Session discussions focused on the mine's environmental programs and footprint which is approximately 35 km², including 136 km of road. The Agency continues to be concerned about the degree to which roadways and other infrastructure may be acting as barriers to wildlife movement, and is not confident these concerns are adequately addressed in the current Wildlife Effects Monitoring Program and the Caribou Road Mitigation Plan.

The Agency heard from members of NSMA that the incorporation of Traditional Knowledge (TK) in DDEC's environmental management programs is difficult to measure. This comment is consistent with the Agency's 2015-16 recommendations that DDEC show how TK has changed or contributed to company monitoring programs, how it was used, and how TK data were collected. Participants in the Community Education Session also wanted to know if the Agency believes that DDEC is receptive to our suggestions and recommendations. The Agency responded that we feel DDEC is genuinely trying to do a better job at environmental management and collect more and better data.

The Agency held its annual general meeting (AGM) in December where changes to the Society Bylaws were approved. These changes included updating the names of the Society Members and clarification of how Society Members are notified of meetings and how many votes each Society Member receives. These changes bring the Bylaws in line with the *NWT Societies Act*.

Table 1: Incoming Correspondence 2016-17

SENDER	# OF PIECES
INAC	0
Agency Society Members	5
DDEC	32
ECCC	2
EMAB and/or SLEMA	0
DFO	0
GNWT	22
WLWB	43
Others	8
Total	112

SUBJECT	# OF PIECES
Administration	2
Air quality	5
Aquatics, including AEMP, PSD, PDC widening and monitoring, SNP monitoring, pumping	15
Closure and reclamation (including ICRP, draft guidelines and policies and financial security)	3
Community engagement and consultation	0
Environmental Agreement and Water Licence Annual Report, EIR	11
PK and waste rock management, including WPKMP, WROMP, PK deposition plan and seepage reports	8
Traditional Knowledge	0
Water licence (including inspections, approvals and renewals)	56
Wildlife (including WEMP, grizzly bear monitoring program)	4
Other	11
Total	115

Table 2: Outgoing Correspondence 2016-17

RECEIVER	# OF PIECES
INAC	0
Agency Society Members	1
DDEC	6
GNWT	2
WLWB	17
Others	1
Total	27

SUBJECT	# OF PIECES
Administration	0
Aquatics, including AEMP	8
Community consultation	0
Water licence renewal	8
Traditional Knowledge	0
Wildlife	1
Waste rock management, including WPKMP and WROMP	3
EIR	3
Closure and reclamation including Environmental Agreement	0
Other	3
Total	26

ACTIVITIES 2016-17 (CONTINUED)

In January 2014, Indigenous and Northern Affairs Canada (INAC) announced that, as a result of Devolution, it will be seeking a 'mutual release of Canada from all future rights and obligations it may have under the Environmental Agreement starting from April 1, 2014.' After consulting with the Agency and Society Members, INAC agreed it will continue to be part of the Environmental Agreement but in a diminished role. The Agency continues to pursue a formal amendment to the Environmental Agreement.

In June 2016, Directors conducted their annual site visit to Ekati Diamond Mine. The Agency visited Cell B of the Long Lake Containment Facility to view progress on revegetation and reclamation planning and conducted a helicopter tour to view the Sable Road construction along with the Sable Pit, Leslie Lake, and Beartooth Pit. The Agency discussed a number of issues with DDEC staff, including dust monitoring and management at the mine, the trial run for the new dust suppressant EnviroKleen, and how TK is being incorporated into Ekati's monitoring programs.

Directors thanked Doug Doan for his participation on the Agency as his term expired March 31, 2017 and welcomed Ron Allen to the Agency's Board of Directors.

"As a result of feedback provided at a community visit to Behchokq in March 2016, the Agency has produced a short video on who we are and what we do, that also shows some of the operations at Ekati mine."

TECHNICAL REVIEW AND INPUT

The Agency participated in a number of major reviews:

The Wek'èezhii Land and Water Board (WLWB) held public hearings for the Jay Project water licence application in December 2016 with closing arguments in March 2017. A decision from the responsible Minister on the licence application is expected by July 2017. Additional information on the Jay Project application and participation by the Agency can be found in the chapter entitled Jay and Sable Expansion Projects.

DDEC produced a draft Environmental Impact Report (EIR) in accordance with the Environmental Agreement and conducted technical sessions on the EIR in July and public workshops in October. The final proposed EIR was then submitted to the GNWT Minister of Environment and Natural Resources in November 2016. The Agency's main concerns continued to be how TK is recorded and incorporated into the management plans and mine operations. The Agency also expressed concern over how the draft EIR was distributed to reviewers. The Agency, Society Members, and other parties received the EIR only the day before the scheduled EIR public workshop, which did not provide sufficient time to review the document.

According to DDEC's water licence, a re-evaluation of the Aquatics Effect Monitoring Program (AEMP) is scheduled to occur every three years, but in this case, it was delayed a year to coincide with release of fish monitoring data. Through the AEMP, DDEC carries out a number

of programs and studies to determine if detected changes in the lakes and streams downstream of Ekati mine are the result of mining activity. The Agency contracted Michael Patterson an aquatic ecologist from IISD-Experimental Lakes Area to examine the whole-lake interactions in the Ekati area. As a result, the Agency was able to make several suggestions for how the AEMP could be improved for better water and aquatic monitoring. The Agency also suggested the WLWB hold a workshop to give parties an opportunity to discuss comments and suggestions on any changes needed to the monitoring program. Unfortunately, the workshop did not take place.

DDEC completed a major series of studies to evaluate the impact of seepage from the coarse processed kimberlite (PK) and waste rock storage areas (WRSAs) to determine effects these could have on adjacent lakes and aquatic life following closure of the mine. With the assistance of Agency consultant Dr. Kevin Morin, a geoscientist and hydrologist from Minesite Drainage Assessment Group, the Agency reviewed the results of the thermal evaluation of coarse PK and WRSAs, water quality monitoring, and WRSA Closure Ecological Risk Assessment. Overall, the Agency recommended that DDEC start to collect onsite data necessary to reduce uncertainties associated with the studies and repeat the assessment in 2022. Additional information on the studies and Agency's findings can be found in the chapter entitled Waste Rock and Processed Kimberlite Management.

AGENCY COMMUNICATIONS AND COLLABORATION

The Agency hosts an environmental workshop each year, except in years when there is an Environmental Impact Report (EIR). Because the EIR was provided in 2016 along with accompanying workshops, the Agency did not host an environmental workshop.

As a result of feedback provided at a community visit to Behchokò in March 2016, the Agency has produced a short video on who we are and what we do, that also shows some of the operations at Ekati mine. The video will be available on the Agency's website in 2017 and will ultimately be translated.

In 2013, the Agency set up a Facebook account at [facebook.com/monitoringagency](https://www.facebook.com/monitoringagency) to notify the public about Agency events and initiatives we continue to work on.

The Agency also maintains a website at www.monitoringagency.net. We have been working on a new and improved website, with plans to launch the new site in 2017.

Two Environmental Agreement Implementation Meetings are held each year between the Government of the Northwest Territories (GNWT), Indigenous and Northern Affairs Canada (INAC), DDEC, and the Agency. These meetings are intended to ensure coordination and communication among the Agency and the signatories to the Environmental Agreement and provide each party with opportunities to give updates on its activities. The Agency also reports on its financial expenditures and future plans.

At the Environmental Agreement Implementation meeting in January 2017, the signatories and the Agency agreed that two face-to-face meetings

each year are not necessary. Much of what is normally discussed at the winter meeting can be discussed at a regularly scheduled Agency board meeting. A face-to-face meeting will continue to be held as usual in June of each year to coincide with release of recommendations contained in the Agency's annual report.

There were no Inter-Agency Coordinating Team (IACT) activities undertaken in 2016-17. IACT consists of the Agency and government regulators, including the GNWT, INAC, Fisheries and Oceans Canada, and Environment and Climate Change Canada. IACT typically meets twice each year, including a site visit. The Agency feels there is a benefit to revitalizing this group as its purpose is to facilitate the sharing of information related to the environmental management of Ekati. ■

Table 3: Main Agency Activities

DATE AND LOCATION	PURPOSE	MAIN ISSUES
May 19, 2016 Yellowknife	Sable Project Baseline Workshop	Hosted by DDEC, this workshop focused on the baseline sampling for the Sable AEMP, the potential influence of Sable development on the proposed reference lakes, the zone of influence, and the amount of baseline data available for Northeast reference lakes.
May 20, 2016 Yellowknife	Conference Call	Hosted by DDEC, the topic was to address the Waste Rock Storage Area Seepage Analysis as per a WLWB directive.
June 7, 2016 Yellowknife	AEMP Re-evaluation and Redesign Workshop	DDEC invited all interested parties to discuss the draft AEMP Re-evaluation and Redesign proposals. The workshop provided reviewers with their first opportunity to review the documents which covered a number of topics including proposed changes to the AEMP Design Plan.
June 14, 2016 Yellowknife	Environmental Agreement Implementation Meeting	DDEC, GNWT and the Agency met to discuss the preliminary content of the 2015-16 Annual Report and report on communications and responsibilities of all parties.
June 14, 2016 Yellowknife	Agency Board Meeting	ENR, inspectors and WLWB gave updates to Agency Directors, including a Jay Project update. Directors also reviewed items including the AEMP Annual Report, AEMP Response Plan, AEMP Re-evaluation and Redesign, the Community Engagement Plan, and the EIR.
June 15, 2016 Ekati Diamond Mine	Agency Site Visit	Directors visited the mine site. Areas visited were Cell B of the Long Lake Containment Facility to view the reclamation research, a helicopter tour of Sable Road construction, the Sable Pit area, Leslie Lake, and the Beartooth Pit. The Agency discussed a number of issues with DDEC staff, including dust monitoring, the new dust suppressant EnviroKleen, and how Traditional Knowledge is incorporated into the Ekati's monitoring program.

DATE AND LOCATION	PURPOSE	MAIN ISSUES
July 19-21, 2016 Yellowknife	EIR Technical Session	Society Members and the Agency met to discuss the technical version of the EIR report, including the key environmental risks for air, water, wildlife and land. Also discussed were adaptive management strategies for various topics.
August 9, 2016 Yellowknife	NWT Air regulations meeting	ENR met with the Agency to present and discuss the proposed NWT Air Regulatory Framework and changes to the <i>NWT Environmental Protection Act</i> .
September 12, 2016 Yellowknife	Board Meeting	Directors met to discuss upcoming review items and Agency administration including finances and communications. DFO gave presentations on changes to the Fisheries Act (<i>italics</i>) and the Agency Board presented on the North Country Rock Pill and TSS at Diavik Diamond Mine.
September 14, 2016 Yellowknife	AQEMMP Workshop	The purpose of this DDEC workshop was for Society Members and the Agency to discuss the details of the draft AQEMMP with company officials and its consultants to help clarify any outstanding issues.
September 13, 2016 Yellowknife	WEMP/CRMP Workshop	DDEC hosted workshop to review proposed changes to the WEMP and CRMP.
September 21-22, 2016	EIR Public Workshop	Society Members and the Agency met to discuss the contents of the EIR Report.
September 26-28, 2016 Edmonton	Canadian Ecotoxicity Workshop	The Agency's Executive Director attended the workshop and made a plenary presentation on the Agency's mandate, the Environmental Agreement and why the Agency is effective.
October 4-6, 2016 Behchokq	Technical Session for the Jay Project Water Licence and Land Use Permit Application	Hosted by WLWB staff, this is a forum where parties can seek clarification and discuss concerns about the applications directly with the proponent and its consultants. The purpose is to increase each party's understanding of the issues. Discussions included the schedule of major events, management plans, Jay and North Dykes Construction, Waste Rock and Ore Management, water and waste water management, the AEMP for Jay Project, and closure.
October 31, 2016 Yellowknife	Pre-Hearing Conference	The Pre-Hearing Conference allows parties to better understand the public hearing process and provide clarity on the issues that will be discussed at the Public Hearing. This meeting is typically attended by both the company and intervenors, with their respective legal counsel.
November 8, 2016 Yellowknife	Board Conference Call	The purpose was to review the Agency's Jay Project WL and LUP intervention before it was submitted to the WLWB by November 11, 2016.
December 6, 2016 Yellowknife	Board Meeting	Directors met to discuss the upcoming AGM, review items that are currently out for review including the Jay Project water licence, Road Construction Plan, EIR final comments, Jay Project type B draft water licence and closure. There was also a presentation by ENR on the CIMP Lac de Gras Study.
December 7, 2016 Yellowknife	Annual General Meeting	The purpose of the AGM is for the Agency Society Members. Members received an update on Ekati operations and the Jay Project and discussed possible amendments to the Environmental Agreement, changes to the Society By-Laws, contents of the Agency's annual reports, and Agency finances and communications.
December 13-15, 2016 Yellowknife	Water Licence Public Hearing – Jay Project	Hosted by the WLWB, this was an opportunity for reviewers to discuss any remaining outstanding issues with DDEC, regulators and members of the WLWB. There were also opportunities for public comments.
January 18, 2017 Yellowknife	Environmental Agreement Implementation Agreement Meeting	DDEC, ENR, INAC and Agency representatives reviewed the findings and recommendations from the Agency's 2015-16 Annual Report, DDEC's proposed programs and operations for 2017 and the Agency's 2016-17 budget.
January 24, 2017 Yellowknife	Ekati – Closure Ecological Risk Assessment	DDEC hosted a technical workshop on the WRSA seepage closure thermal modeling, water quality evaluation and ecological risk assessment studies prior to the submission of reviewers' comments. The workshop provided an opportunity for DDEC's consultants to answer questions and provide clarification.
March 1-2, 2017 Yellowknife	Board Meeting	Directors met to finalize the 2017-18 workplan and budget and prepare for the Agency's 2016-17 Annual Report.
March 1, 2017 Yellowknife	Community Information Session	Agency directors provided the North Slave Metis Alliance with updates on current conditions at Ekati Mine.
March 15, 2017 Yellowknife	Metal Mining Effluent Regulations - Information Session	This information session was hosted by ECCC to inform people of the changes to the Metal Mining Effluent Regulations.

WASTE ROCK MANAGEMENT

HIGHLIGHTS

- + Waste Rock Storage Area Closure Ecological Risk Assessment (Closure ERA) completed.
- + Permafrost is being established in the Panda-Koala-Beartooth waste rock storage area (WSRA) and side slopes of the Misery waste rock storage area.
- + The Fox and Coarse Processed Kimberlite storage areas remain largely unfrozen.

PANDA/KOALA/BEARTOOTH WASTE ROCK STORAGE AREA (UPPER LEFT), BEARTOOTH PIT, AND UPPER PANDA LAKE FLOWING INTO THE PANDA DIVERSION CHANNEL.

WASTE ROCK STORAGE AREAS

Seepage Monitoring

In March 2017, Dominion Diamond Ekati Corporation (DDEC) provided the 2016 Waste Rock and Waste Rock Storage Area Seepage Survey Report that interprets the results of all past waste rock storage area seepage survey annual reports dating back to the beginning of operations.

PANDA-KOALA-BEARTOOTH WASTE ROCK STORAGE AREA (WRSA)

Monitoring results during spring freshet indicate that WRSA seepage is being diluted by snow melt while in the fall, seepage tended to have higher concentrations of measured variables as the surface dries and active layer deepens over the summer. While seeps located along the northeast edge of the WRSA, which contains kimberlite, indicate some localized sulphide oxidation and metal leaching is taking place, materials in the majority of the Panda-Koala-Beartooth WRSA are generally not indicating the occurrence of oxidization and leaching. Where leachate in seepage has been found, concentrations have shown a gradual increase since 2010.

MISERY WRSA

Schist deposited within the Misery WRSA in 2016 was sampled and confirmed to be potentially acid generating (PAG). DDEC believes that the layering, or co-placement, of this PAG material with non-PAG granite within the pile will mitigate any risk of acid rock drainage (ARD).

FOX WRSA

Seepage surveys of the Fox WRSA indicate flushing of rock fines, or sediments, and blasting residues is taking place, which has resulted in water licence Effluent Quality Criteria (EQC) for total suspended solids (TSS) and nitrate being

exceeded. DDEC has committed to investigate potential sources of the rock fines in seeps from the WRSA in 2017.

Seepage samples taken from areas that contain kimberlite indicate oxidation of sulphide materials is also occurring within the WRSA, which results in exceedances of other EQCs in some seeps. The oxidation of sulphide is an exothermic reaction which generates heat, contributing to a large portion of the WRSA remaining unfrozen. This unfrozen state facilitates further sulphide oxidation which generates additional heat within the pile.

PIGEON WRSA

Acid based accounting, or the process used to assess the likelihood of rock to produce ARD, was conducted in 2016 for the different types of waste

rock found in the Pigeon WRSA. While the results show the schist rock and 85% of the granite rock tested was non-PAG, the one seep at Pigeon WRSA indicated moderate leaching of waste rock.

COARSE PROCESSED KIMBERLITE STORAGE AREA (CPKSA)

Acid based accounting results indicate 25% of samples taken from the CPKSA during 2016 show uncertain ARD potential, but greater than the long-term median value. The report also concluded that, in general, sufficient neutralizing potential is present within the CPKSA to neutralize any acid produced by the oxidation of sulphides. Despite the overall neutralizing potential of the CPKSA, seeps collected near the southwest corner show sulphide oxidation and strong kimberlite leaching is occurring.



PIGEON WASTE ROCK PILE.



PIGEON WASTE ROCK PILE.

Thermal Monitoring

PANDA-KOALA-BEARTOOTH WRSA

The WRSA is primarily composed of granite along with small quantities of till and waste kimberlite. A total of nine ground temperature cables (GTC) were installed at various locations in the WRSA between 2000 and 2002 to monitor ground temperatures and determine the rate of permafrost growth. The last readings using the GTCs were taken in November 2015. These readings indicate the WRSA is in a frozen state. Ground temperature measurements taken close to the central area of the top bench were the warmest, ranging between -2°C and -4°C. This suggests that cooling in the waste rock found near the toe berms and slope benches likely play a significant role in cooling the WRSA.

MISERY WRSA

The Misery WRSA is currently in operation. It was originally designed with an internal layer of PAG schist or metasediment, surrounded by non-PAG granite and capped with a 5 metre thick granite rock cover. A total of four GTCs were installed at the Misery WRSA in 2001 and 2002. Unfortunately, ground temperature information is no longer available from these locations due to damaged cables. Two additional GTCs were

installed in 2005 near the side slope of the WRSA, with one now unusable after being buried under waste rock in 2014. Temperature readings from the remaining functional GTC indicate the rock in the edge areas is in a frozen state. There is currently no reliable information on thermal conditions within the central portions of the Misery WRSA.

FOX WRSA

The Fox WRSA was used until 2014 to store waste granite and till materials and low grade kimberlite. Approximately two-thirds of the WRSA is kimberlite and mixed kimberlite-granite overlain with a layer of granite. The remaining one-third is waste kimberlite. Three GTCs were installed at Fox WRSA toe berm in 2004, three in 2006 at the waste kimberlite and granite dumps, and five in 2015 at locations inland from the toe berms and side slopes. All GTCs remain functional. Monitoring results from 2015 indicate that large interior portions of the WRSA remain unfrozen with temperatures reaching almost 13°C. GTCs located near the edges of the WRSA indicate that the low permeable lacustrine sediment core in the toe berms is in a frozen state.

CPKSA

The CPKSA is currently in operation. Two GTCs were installed in the CPKSA in 2001. No ground temperature readings are currently being obtained as one GTC was destroyed in 2005 and the other intentionally buried in 2014 to enable continued use of the storage area. The latest readings taken in 2014 indicated that coarse processed kimberlite at depths 5 metres below the ground surface remain unfrozen at temperatures around 0°C. DDEC has suggested that release of large latent heat and ongoing placement of wet, warm coarse processed kimberlite may be the reasons for delayed freeze back.

Expansion of the Misery Waste Rock Storage Area

In February 2017, the WLWB approved a request from DDEC to change the design of Misery WRSA. This change enables storage of an additional 1.07 million m³ of schist through the construction of a new bench. At closure, the additional schist will be capped with granite similar to the remainder of the WRSA. Construction of the new 15 m bench will increase overall final height of the WRSA to 65 m above adjacent tundra. Although the overall volume of the WRSA will increase, the total footprint will remain unchanged at 1.4 km².

The redesign request resulted from changes to the mine plan that became an urgent operational matter. Normally, mine planners would be expected to identify these operational matters well in advance.

WASTE ROCK STORAGE AREA RESEARCH

WRSA Risk Framework

In response to directions provided by the WLWB following review of the 2012 Waste Rock Storage Areas Seepage Survey Final Report, DDEC proposed to undertake an ERA for seepage originating from the WRSAs. The risk assessment was intended to evaluate the impact seepage may currently be having on water, land, wildlife and fish.

DDEC submitted the thermal modelling, geochemistry evaluation and ERA reports in 2015. Following an extensive review, which included input from the Agency, the WLWB determined that the reports formed an acceptable framework for further work and directed DDEC to complete an ERA for WRSA seepage conditions that may exist following closure of Ekati mine.

In 2016, DDEC submitted the three predictive studies that focused on thermal conditions of Panda-Koala-Beartooth, Misery, and Fox WRSA and CPKSA: seepage water quality and screening-level seepage closure ERA.

Thermal Conditions

A series of one-dimensional computer-based models were developed to simulate thermal conditions in Panda-Koala-Beartooth, Misery, Fox and CPKSA, and track movement of the frozen/unfrozen phase change front. According to the study, each of the storage areas is expected to freeze over time but will undergo permafrost development at various rates because of their different waste rock compositions. The study also concluded that the storage areas will remain frozen for at least 100 years under the high greenhouse gas emission climate change scenario.

Seepage Water Quality

Seepage water quality during the remaining years of mine operation and into closure (2018-2115) were predicted by developing water quality models for the Panda-Koala-Beartooth, Misery, Fox and CPKSA. According to the study, seepage flow rates and concentrations are sensitive to the placement of waste rock and cover material, moisture content of the piles, precipitation infiltration rates and, arguably most important, whether the core of the waste rock storage areas become frozen. With only a few exceptions, concentrations of variables are expected to be highest in seepage that originate from the Panda-Koala-Beartooth WRSA, mainly due to the large mass of this WRSA.

The study also provided recommendations to address existing information gaps. These include the need to increase frequency of seepage flow monitoring during periods of high flow, reduce uncertainties related to loading rates from the granite cover and weathering of metasediment materials, monitor moisture content of the storage areas, and corroborate model results by 'hindcasting' using the results of ongoing seepage and flow chemistry monitoring programs.

Ecological Risk Assessment

The ERA integrated the results of baseline water quality data for nearby lakes and streams, waste rock seepage quality predicted during remaining years of operation and into the closure period, and wildlife and aquatic life characteristics and toxicity reference values. This is key in helping to assess whether exposure to seepage after mine closure would present health risks to wildlife and aquatic life. The study concluded that overall, seepage quality at mine closure will not pose an unacceptable risk to wildlife and aquatic life.

"In the opinion of the Agency, the management of waste rock and processed kimberlite represents one of the most significant challenges for the eventual closure and reclamation of Ekati mine."

AGENCY ASSESSMENT

WRSA are comprised of different rock types with varying chemical properties. They are huge structures with the tallest, the Misery WRSA, eventually reaching a height of 65 metres above the adjacent tundra. They will be permanent fixtures on the Lac de Gras landscape long after mining operations have ended. In the opinion of the Agency, the management of waste rock and processed kimberlite represents one of the most significant challenges for the eventual closure and reclamation of Ekati mine.

The programs to monitor ground temperatures in Panda-Koala-Beartooth and Fox WRSAs are providing valuable information on the thermal conditions within waste rock piles. However, as reported in the Agency's 2015-16 Annual Report, we remain concerned by the lack of functional GTCs in both the Misery WRSA and CPKSA. The Misery WRSA has limited recent thermal information and no centrally located GTCs. The CPKSA remains unfrozen with no functioning GTCs. The Agency again encourages DDEC to monitor temperatures in the Misery WRSA and CPKSA, similar to what is being carried out in the Panda-Koala-Beartooth and Fox WRSAs.

The existence of relatively high temperatures in the interior of the Fox WRSA, and presence of water during geotechnical investigations, suggests there are unique geochemical processes affecting this WRSA. These processes may have implications for future closure and reclamation of Fox WRSA and warrant continued investigation.

The thermal conditions, seepage water quality and ERA studies are important closure research

initiatives. They provide valuable information for WRSA closure planning and highlight some of the uncertainties around future seepage quantity and quality. Despite their limitations, the initiatives are expected to inform upcoming revisions to the Interim Closure and Reclamation and Reclamation Research plans.

Limited thermal and seepage data exists for several WRSAs and the CPKSA. This data, when used as input variables in thermal and water quality models, result in a large amount of uncertainty in model outputs and conclusions. Until this uncertainty is reduced, predicted outcomes remain questionable. The Agency believes that DDEC should focus efforts, as recommended in the water quality monitoring study, on collecting site-specific data that will reduce current uncertainties in thermal and seepage water quality predictions which the closure ERA is based on.

Similar to modelling studies, the reliability and accuracy of the closure ERA is dependent on the inputs and assumptions used. The Agency is concerned that the closure seepage ERA conclusions are based on limited measured data, simplistic models, and questionable assumptions. The result of this is a high degree of uncertainty in the conclusions of the risk assessment. Overall, the thermal evaluation, water quality modelling and closure seepage ERA should be repeated in the future using relevant site-specific data collected in the interim. ■



WASTE ROCK PILE AT EKATI MINE.

CLOSURE AND RECLAMATION

HIGHLIGHTS

- + A timeline for the next Interim Closure and Reclamation Plan has not been established.
- + A process for the relinquishment of financial securities following reclamation is needed.
- + Delays in reclamation research remain a serious concern.

CURRENT CLOSURE PLANNING

Dominion Diamond Ekati Corporation (DDEC) is required by the Wek'èezhii Land and Water Board (WLWB) to have an approved Interim Closure and Reclamation Plan (ICRP) in place during active mining operations and to periodically report on and update the ICRP. Overall, reclamation planning at Ekati mine is guided by the goal of returning the mine site to a viable and self-sustaining ecosystem that is compatible with a healthy environment and human activities.

The current work plan is to flood the open pits and connecting underground mines to create pit lakes which are reconnected with their surrounding watersheds. Ursula Lake, Upper Exeter Lake, and Lac de Gras are identified as potential water sources for flooding, which is expected to take approximately 35 years. DDEC will construct berms around the perimeter of the pits to deter wildlife during the flooding process.

The Sable, Pigeon, Panda-Koala-Beartooth, Fox, Lynx and Misery waste rock storage areas (WRSA) will remain in place after mining operations have ceased. They will be covered with granite or glacial till and allowed to revegetate naturally. Their design takes into account their permanency by including a stepped profile and a flat top that prevents snow build-up and encourages establishment and maintenance of permafrost over the long term.

The Long Lake Containment Facility (LLCF) processed kimberlite tailings will be re-contoured and capped with a combination of rock and vegetation, and reconnected with the surrounding watershed through a system of drainage channels

1 RECOMMENDATION

The Government of the Northwest Territories, in cooperation with the Wek'èezhii Land and Water Board, develop written policies, guidelines, or directives to standardize the process for determining whether, and what portion, of security should be held back for future liabilities upon completion of reclamation activities.

2 RECOMMENDATION

The Government of the Northwest Territories, in cooperation with the Wek'èezhii Land and Water Board, develop written policies, guidelines, or directives to standardize the process for determining the application, consideration and approval of staged closure and reclamation securities.

and ponds. All dikes and dams within the LLCF will be breached upon closure to allow water to flow through.

The Panda Dam will continue to divert water through the Panda Diversion Channel (PDC) and will have a spillway to allow freshet to flow to Panda and Koala pit lakes. The Pigeon Stream Diversion will also remain in place to divert stream flow from the Upper Pigeon Stream to Fay Bay.

All buildings, storage tanks, power lines and other physical structures will be removed and either buried in a landfill or shipped off site. Roads, lay down pads, and the airstrip will remain in place and decommissioned so they are safe for human and wildlife use after the mine is closed.

CHANGES TO CLOSURE PLANNING AND FINANCIAL SECURITY

The total amount of financial security required at any time during the operating life of Ekati mine should be equal to the total outstanding anticipated cost of reclamation. The WLWB met in May 2016 to consider changes to the mine closure and reclamation cost estimates proposed by DDEC. The accepted changes resulted in a revised security under Ekati's water licence of \$257 million. This represents a decrease of \$3 million from previous security levels. When combined with a security of almost \$20 million for obligations under the Environmental Agreement and \$427,000 under the Pigeon

land use permit, the total security held by the Government of the Northwest Territories (GNWT) for Ekati mine now exceeds \$277 million .

In addition, the WLWB provided a number of significant instructions to DDEC regarding reclamation planning and research activities.

Return of Securities Following Progressive Reclamation

Acknowledging DDEC's efforts to complete progressive reclamation work on the PDC, the WLWB relinquished a portion of the security held for reclamation of the structure, while retaining \$657,000 for remaining residual risk. This decision was consistent with the GNWT's recommendation that the 'contingency amounts' held in security for the PDC stabilization project be maintained. This request represents the first time the WLWB has been asked to consider the amount of security to be held back upon completion of reclamation work at Ekati.

Reclamation Research Schedule

As noted in previous reports, the Agency is concerned that research tasks to resolve uncertainties about reclamation continue to slip behind schedule, some by many years. The WLWB appears to share this concern and, following its meeting in May 2016, directed DDEC to submit an updated schedule identifying end dates for all reclamation research tasks. This was intended to provide a single comprehensive timeline for completion of reclamation research tasks. The Agency believes DDEC's response to the WLWB was inadequate, as it simply referred the WLWB back to Appendix Table C-1 of the 2015 Closure and Reclamation Progress Report as being the most up to date information.

Submission of an Updated ICRP

When the current version of DDEC's ICRP was approved by the WLWB in 2011, the WLWB believed 2015 was an appropriate timeframe for submission of the next updated plan. However, because closure planning is expected to change significantly with construction and operation of the Jay Project, a revision of the ICRP has been deferred by DDEC. Many parties, including the Agency, believe that due to the passage of time and changes in overall mine planning, an updated single integrated ICRP incorporating all major developments is now required. Possible submission timeframes are currently being considered by the WLWB as part of the Jay Project water licence process.

In December 2016, DDEC requested a number of further security updates resulting from changes in land disturbance and specific requests made by the WLWB. The updates result from changes to:

- Misery WRSA metasediment exposed areas (increase of \$1.497 million);
- Scarifying and revegetation of disturbed areas (increase of \$204,000);
- Fuel tank decontamination costs (increase of \$47,000); and
- Relinquishment of PDC residual risk security (decrease of \$597,000).

If approved, these changes would result in an increase of \$1.15 million to the security currently held under the water licence. This request has not been considered by the WLWB at the time of writing this report. The outcomes of this process will be reported in our next annual report.

RECLAMATION ACTIVITIES IN 2016

Limited reclamation of disturbed areas that are no longer needed for active mining operations, also known as progressive reclamation, was undertaken in 2016. This section outlines those reclamation activities that were completed at Ekati mine during the reporting period.

Old Camp

Due to the process plant fire that occurred in June, resources were not available to undertake reclamation work at Old Camp originally scheduled for completion in 2016. This includes the removal of hydrocarbon contaminated soil and contouring of the Old Camp pad, final reclamation of the Phase 1 processed kimberlite North Pond and minor regrading to prevent surface erosion and promote drainage throughout the site. It is currently unclear when the remaining reclamation activities as outlined in the Old Camp Closure and Reclamation Plan will be completed.

Water samples were taken in 2016 in the Phase 1 North Pond collection and drainage trenches that flow in a southwesterly direction through a small lowland area into Larry Lake. All samples were in compliance with effluent quality criteria established by Ekati's water licence, with the exception of total arsenic at the drainage trench and dissolved aluminum at the collection trench.

PDC Reclamation Monitoring

An engineering inspection of the PDC for any indications of settlement, seepage or cracking, as well as observations of channel operation and blockage, was completed in August 2016. According to the inspection report, the stabilization works are performing well and

maintenance issues are expected to be limited to minor repairs to restore localized settlement and maintain channel drainage.

Salvage of Topsoil

Topsoil material was salvaged from development of the Misery crusher pad and Sable Road for future use in reclamation activities.



A DRAINAGE CHANNEL IN THE LONG LAKE CONTAINMENT FACILITY UNDERGOING RECLAMATION ACTIVITIES.

RECLAMATION RESEARCH AND PLANNING

Reclamation research at Ekati mine is focused on seven general areas: pit lakes: the underground: waste rock storage: processed kimberlite storage: dams, dikes, and channels: buildings and infrastructure: and the general site including closure criteria, vegetation, and the incorporation of Traditional Knowledge (TK). The overall research plan contains 24 individual research initiatives designed to address uncertainties in how site closure and reclamation is to be put in place.

Research planning is a constantly changing process. While it must evolve to accommodate ongoing updates in research findings, mine operating schedules, environmental management plans and changes to the ICRP, the Agency expects DDEC to initiate and complete the approved tasks in a timely manner.

Closure and Reclamation Research on Schedule

Reclamation research in 2016 focused on development of a closure risk assessment for WRSA seepage: field work in Cell B of the LLCF and processed kimberlite deposition in Beartooth Pit. A summary of this research is provided below.

CLOSURE SEEPAGE ECOLOGICAL RISK ASSESSMENT

As early as 2015, DDEC completed a series of studies and evaluations culminating in an ERA of waste rock storage area seepage for current conditions. The risk assessment was intended to evaluate the impact seepage is currently having on water, land, wildlife, and fish and to satisfy the needs of several existing reclamation research tasks. Following an extensive review coordinated by the WLWB, which included input from the

Agency, DDEC was then directed to undertake a forward-looking risk assessment of WRSA seepage conditions predicted to exist at the time of mine closure. DDEC submitted the closure risk assessment and supporting documents to the WLWB during 2016 and represent a significant research initiative. The studies concluded that:

- **Thermal Modelling** - the WRSAs will remain frozen for at least 100 years under the high greenhouse gas emission climate change scenario:
- **Water Quality Modelling** - seepage flow rates and concentrations from the WRSAs are sensitive to the placement of waste rock and cover material, moisture content of the piles, precipitation infiltration rates and, arguably most important, whether the core of the WRSAs remain frozen:
- **ERA** - with the exception of sulphate in Coarse Kimberlite Rejects Storage Area seepage, which is predicted to slightly exceed Canadian guidelines established for livestock, seepage quality at mine closure will not pose an unacceptable risk to wildlife and aquatic life.

While the Agency commends DDEC for undertaking the risk assessment, the Agency identified several significant questions and uncertainties with the studies' conclusions. Additional information and the Agency's assessment of the WRSA seepage risk assessment can be found in the Waste Rock and Processed Kimberlite chapter of this report.

LONG LAKE CONTAINMENT FACILITY RECLAMATION

Field-scale cover vegetation trials continued in Cell B of the LLCF using perennial grasses and triticale annual crop to observe growth and establish additional organic material in ground

cover. Other activities that took place included monitoring and evaluating natural colonization by native plant species; investigating optimal planting strategies; evaluating the feasibility of using organic material from the Ekati composter as a soil enhancer; completing a sodium geochemical weathering analysis on processed kimberlite collected from the LLCF; and evaluating the stabilization characteristics of extra-fine processed kimberlite.

BEARTOOTH PIT WATER QUALITY

Kimberlite slurry from the processing plant is currently discharged into Beartooth Pit as well as the LLCF. Because the long-term plan is to reconnect the pit lake with its surrounding watershed, research is being undertaken to monitor the consolidation of fine processed kimberlite in the bottom of the pit and predict the quality of pit water at closure. Studies completed in 2016 concluded there is good settlement of processed kimberlite solids taking place throughout Beartooth Pit and that the water column above the consolidated solids was stratified at a depth of approximately 5 metres. This stratification enabled DDEC to transfer a portion of the surface water from the pit to the LLCF for eventual discharge into the environment.

Closure and Reclamation Research Slippage

While some closure and reclamation research was completed in 2016, the Agency notes that many of the scheduled tasks continue to be on hold because, according to DDEC, potential changes are anticipated through development of Jay Project and the ICRP update process. As noted in previous reports, the Agency remains concerned that investigations to resolve major uncertainties about reclamation strategies are continuing to slip behind schedule, some by many years.



RE-VEGETATION TEST PLOT IN CELL B OF THE LONG LAKE CONTAINMENT FACILITY.

Some of the investigations that were further deferred include:

- Identification of pit perimeters requiring barriers and safe shoreline access for pit lakes;
- Location and mitigation of unstable parts of pit walls;
- Development of a pit lake perimeter and connector channel design plan;
- Reporting of results on modelling of pit water quality during and after pit flooding;
- Development of a conceptual groundwater study;
- Consultation with communities on WRSA wildlife access ramp designs;
- Consolidation and freeze concentration testing on high-water-content processed kimberlite; and
- Development of closure objectives and criteria for long-term geotechnical stability of WRSAs, LLCF internal drainage channels, dams and dikes, roads, the airstrip, and other mine infrastructure.



DDEC STAFF, WITH AGENCY DIRECTORS AND STAFF CHECKING OUT THE RECLAMATION RESEARCH AREA IN CELL B OF THE LONG LAKE CONTAINMENT FACILITY.

AGENCY'S ASSESSMENT

The WLWB's review of the ICRP Annual Progress Report continues to be rigorous. The Agency takes particular note of the WLWB's decision to amend Schedule 2 of the water licence to reflect a \$3 million decrease in financial security including a holdback of \$657,000 for remaining residual risk of the PDC. While DDEC's overall closure and reclamation performance is encouraging, the legacy of mining projects in the North demonstrate that environmental liabilities should never be allowed to exceed the posted security.

In order to be consistent with NWT Mine Closure Guidelines, the Ekati ICRP should be updated every three to five years. The current ICRP was approved six years ago in 2011. Since that time, additional projects have commenced (e.g., Pigeon Pit, Lynx Pit, Sable Pit, and Misery power line) and several changes have been made to closure objectives and criteria. The Agency believes these operational changes, together with the passage of time, are sufficient to warrant a document update. The Agency looks forward to clarity being provided on this matter in 2017.

The Agency views the continued slippage in reclamation research as an increasingly serious issue. The May 2016 directive from the WLWB that DDEC submit an updated schedule with anticipated end dates for all research tasks leads the Agency to believe other agencies and communities share this concern. The Agency believes that the clarity sought by the WLWB has not been adequately addressed as DDEC's response simply referred the WLWB back to Appendix Table C-1 of the 2015 Closure and Reclamation Progress Report as being the most up to date information.

"The Agency views the continued slippage in reclamation research as an increasingly serious issue."

For the first time the WLWB was asked to relinquish security following completion of reclamation work at Ekati. Neither the GNWT nor the WLWB currently have a written policy, guideline or directive for determining whether, and what portion, of the security should be held back in such cases for possible future liabilities. The Agency believes this matter will become increasingly important as progressive reclamation is undertaken.

While recognizing the operational challenges that resulted from the process plant fire, the Agency is disappointed that the Old Camp reclamation work scheduled for completion in 2016 was deferred. We now look forward to DDEC providing a revised schedule for completion of activities previously approved under the Old Camp Closure and Reclamation Plan. ■

AQUATIC EFFECTS

HIGHLIGHTS

- + Aquatic Response Plans now in place.
- + Three-year Aquatic Effects Monitoring Program (AEMP) Re-evaluation has been completed.
- + DDEC showed progress in assessing aquatic biota changes through the Aquatic Ecology Synthesis.

Each year Dominion Diamond Ekati Corporation (DDEC) carries out a number of programs and studies to determine if changes in the aquatic environment downstream of its operations are occurring as a result of mining activities. There are three watersheds (Koala, King-Cujo, and Pigeon-Fay-Upper Exeter) which may be affected by the mining operation. Lakes and streams in these three systems, as well as background sites, are sampled each year under the Aquatic Effects Monitoring Program (AEMP), which is a requirement specified in DDEC's Class A Water Licence. Using information collected through the AEMP, any changing trends in water and sediment quality, benthic macroinvertebrate communities, phytoplankton and zooplankton, and fish populations and health, can be identified.

The three-year AEMP Re-evaluation, released in 2016, enables reviewers to provide recommendations on methods to improve the AEMP and DDEC's ability to identify significant changes in aquatic environments at Ekati mine.

MAJOR ACTIVITIES 2016-17

Processed kimberlite (PK), treated sewage and surface sump water continued to be discharged into the Long Lake Containment Facility (LLCF) while 2.6 million cubic meters ($M m^3$) of process plant slurry was pumped to the Beartooth Pit in October to December 2015 and January to September 2016. More than 15.5 $M m^3$ of effluent was released from the LLCF from October to December 2015 and May to October 2016, entering the Koala watershed through Leslie Lake and being diluted as it flowed downstream through Moose Lake and eventually entering Lac de Gras (Figure 1). The LLCF effluent comprised the main source of potential water contaminants to the aquatic environment from Ekati operations.

A second source of potential contamination to the aquatic environment is effluent discharged from Misery and Lynx pits. Water from King Pond Settling Facility (KPSF), collected from Desperation Pond and Misery and Lynx pits, was pumped into Cujo Lake in October 2015 and September 2016.

AEMP MONITORING RESULTS

Each year DDEC reports the results of its AEMP to the Wek'èezhii Land and Water Board (WLWB) and provides highlights in its Environmental Agreement and Water Licence Annual Report.

This is the 19th year of monitoring for the Koala watershed, the 16th year for the King-Cujo watershed and the 3rd year for Pigeon-Fay-Upper Exeter. AEMP reference lakes and outflow streams are shown in Figure 1. Mining effects on water quality in the Koala and King-Cujo watersheds are shown for selected variables in Table 5.

SUMMARY OF WATER QUALITY RESULTS

AEMP results suggests that changes in water quality continue to result from the discharge of effluent from Ekati operations. Concentrations of all water quality variables shown in Table 4 remain elevated above levels found in reference lakes. In general, the extent to which concentrations have changed decreases with downstream distance from both the LLCF and KPSF.

Koala and King-Cujo Watersheds

Dissolved oxygen (DO) concentrations were below Canadian Council of Ministers of the Environment (CCME) Guidelines for the Protection of Aquatic Life through most of the water column under ice

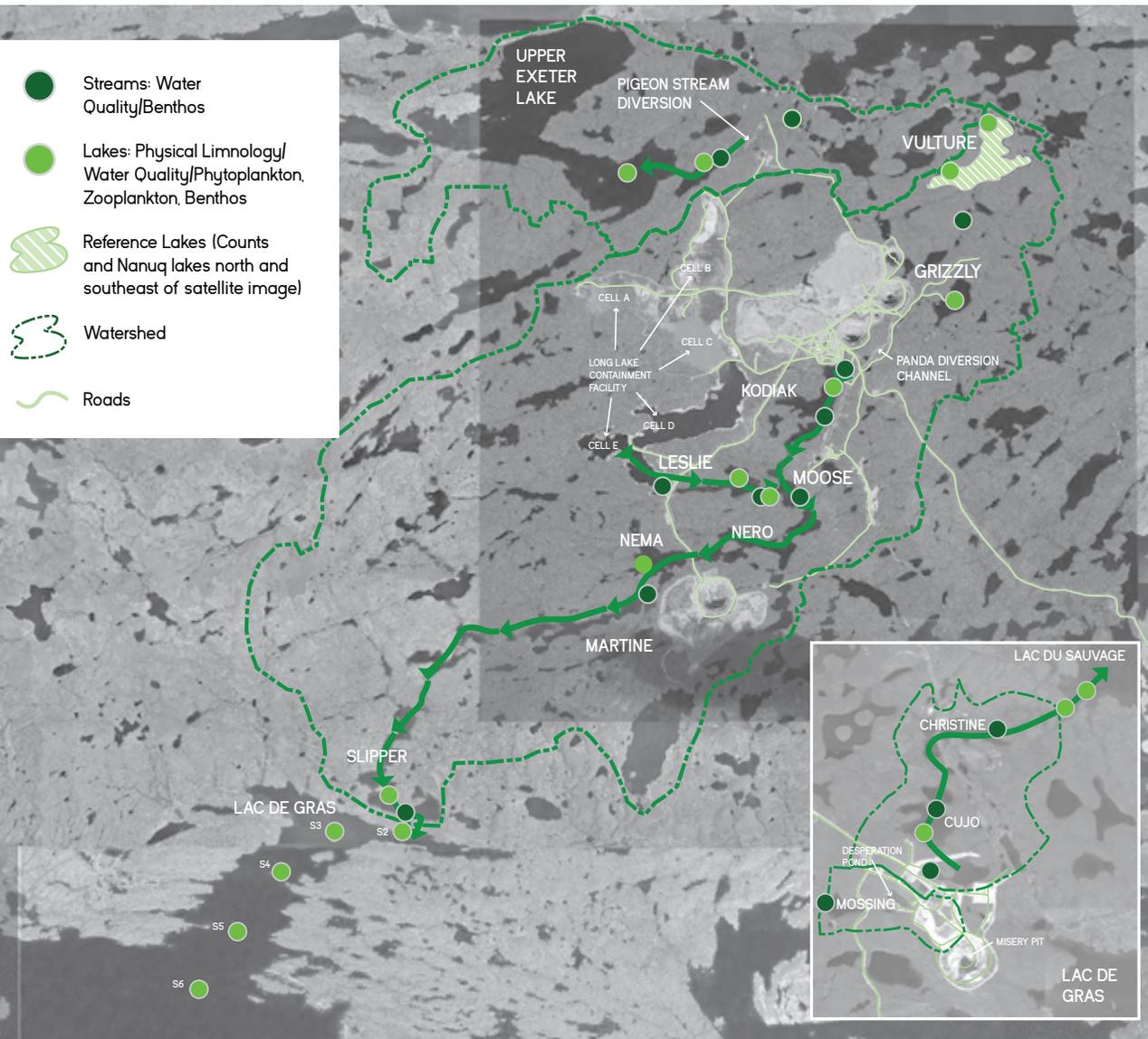
in Leslie and Moose lakes. DDEC believes this is a possible mine effect although it is unsure of the mechanism. On the other hand, the DO Response Plan attributes DO depletion in Cujo Lake to natural causes. Shallow depths (averaging 2.2 m) which contribute to oxygen depletion by biogeochemical processes in sediments, less efficient water and sediment cooling in some years, and increasing total organic carbon (TOC) decomposition combine to use up available TOC in the water column. Cujo Lake is also naturally higher in TOC than other AEMP lakes as it had higher baseline phytoplankton production.

Potassium concentrations remain elevated but under-ice means were below peak values from 2013 to 2015 in Leslie and Moose lakes.

Selenium concentrations in Leslie and Moose lakes continued their steep upward trajectory in August, a trend observed in previous years due to high inputs from the LLCF. In Cujo Lake, elevated selenium concentrations triggered a low action level in the response plan likely resulting from selenium-enriched waters from the KPSF during the open water season of 2015.

Iron concentrations spiked above CCME guidelines under ice in Kodiak Lake. Zinc spiked above CCME guidelines in one Lac de Gras station (S3 on Figure 1), which seems to be an anomaly amongst the four Lac de Gras sample stations. Fluoride, which at excessively high levels is known as a growth inhibitor in some zooplankton species and possibly in juvenile salmonid fish, rose above CCME guidelines in Cujo Lake under ice. Unfortunately, none of these three exceedances are explained by DDEC as they are measured and graphed but not statistically evaluated variables. Evaluated variables are the only ones discussed in AEMP reports.

FIGURE 1: AEMP REFERENCE LAKES AND OUTFLOW STREAMS



Metal and nutrient increases in Cujo Lake accelerated in 2016. The metals molybdenum, selenium, strontium, uranium and nutrients nitrate and nitrite spiked to a new high concentration level. Metals spiked due to increasing inputs to KPSF from Misery Pit. The nutrient spike was attributed to approximately 438,000 m³ of water pumped from the KPSF to Cujo Lake in October 2015 which contained nitrate concentrations greater than the water licence effluent quality criteria (EQC). This non-compliant water was mistakenly pumped due to an error in applying the hardness-dependant EQC formula for nitrate to the wrong water body.

Pigeon-Fay Watershed

Alkalinity, hardness, chloride, potassium, TOC, barium, boron, nickel, strontium and uranium concentrations remain at elevated levels in Fay Bay after initial increases due to the 2008 processed kimberlite (PK) spill from the LLCF. Also, in 2016 phytoplankton density in Fay Bay increased after the 2008 PK spill.

AQUATIC RESPONSE FRAMEWORK

The Aquatic Response Framework (ARF) is the early warning system that alerts DDEC and regulators when a measured variable in aquatic ecosystems downstream of the mine approaches a level requiring mitigation before it reaches a harmful level. Within the ARF, DDEC submitted new or revised response plans to address water quality variables for DO, chloride, potassium, nitrogen, phosphate-P, and selenium during 2016. A response plan for fish (tissue metal contaminants, juvenile growth rates) was submitted in April 2016 and a revised response plan for plankton and benthic community

Table 4: Variables that exceeded low action levels in 2016.

VARIABLE	WATERSHED	ACTION LEVEL EXCEEDANCE RESPONSES BY DDEC
Dissolve Oxygen	KOALA Kodiak, Leslie	Monitoring frequency increased to bi-weekly.
	KING-CUJO Cujo	Continue snow clearing from ice surface to encourage photosynthetic oxygen production.
Potassium	KOALA Leslie, Moose	Evaluate how measured 2016 and winter 2017 potassium concentrations compare with predictions in the newly updated Koala Watershed water quality model. Submit a new version of the Potassium Response Plan that will include mitigation options.
Nitrate	KING-CUJO Cujo (Under ice)	Continuation of existing nitrogen management practices: <ul style="list-style-type: none"> • nitrogen source control, blasting practices, spill control, management of emulsion plant and ammonium nitrate storage.
Nitrite	KING-CUJO Cujo (Open water)	<ul style="list-style-type: none"> • Examination of the water quality benchmark for nitrite. • Submit new version of the response plan that will include medium and high action levels.
Selenium	KING-CUJO Cujo (Under ice)	Complete a literature review on selenium toxicity. Submit new version of the Selenium Response Plan that will include medium and high action levels. The high action level will include thresholds for concentrations in fish tissue, considered to be the best predictor of selenium toxicity.
Phytoplankton - Diversity, Community composition	KOALA Kodiak, Leslie, Moose	Continued monitoring and evaluation of nitrogen and phosphate-P, which are implicated in plankton community changes downstream of LLCF.
		Develop and update Phosphate-P and Nitrogen Response Plans. Define medium and high action levels.
		Conduct an Aquatic Ecology Synthesis study to better understand the ecological significance of changes in community structure and function.
Zooplankton - Diversity, Community composition	KOALA Leslie, Moose	Define medium and high action levels. Conduct an Aquatic Ecology Synthesis study to better understand the ecological significance of changes in community structure and function.

composition was submitted in March 2017. There are now a total of eight response plans for water quality and biota.

Low action level exceedances for chloride and phosphate-P seen in 2015 did not continue into 2016. DDEC committed to continue monitoring and evaluating the variables in question, as well as the following specific action on low action exceedances (Table 4).

AEMP RE-EVALUATION

The AEMP Re-evaluation occurs every three years. Its purpose is to update AEMP sampling and statistical analysis methods and ensure the program accomplishes what it is designed to do: Identify significant change in the aquatic environment downstream of Ekati mine activities, and determine whether these changes are caused by the mine.

The WLWB had deferred the submission of the AEMP Re-evaluation Report a year to ensure the three-year fish monitoring data last collected in 2015 was incorporated. In the AEMP Re-Evaluation DDEC requested 33 changes to the AEMP and Response Plans, most of which WLWB approved. These changes included removal of four water quality variables from the list of statistically evaluated variables — total cadmium, total vanadium, total suspended solids (for Pigeon-Fay-Upper Exeter) and total copper (for King-Cujo).

To address possible cumulative effects on Lac de Gras from Ekati and Diavik Diamond Mine, methodological consistency has been identified as crucial. To address this issue, DDEC agreed to lower detection limits for most water quality variables to be consistent with those of Diavik Diamond Mine. The AEMP Re-Evaluation also

TABLE 5 : Mining effects on water quality flowing through the Koala and King-Cujo Watersheds

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

This table is adapted from the AEMP report with additions resulting from the Agency's review of the monitoring results.

addressed why plankton communities in impacted lakes are changing through completion of a special study of aquatic ecology in AEMP lakes.

Aquatic Ecology Synthesis (AES)

The AES was designed to identify what lake conditions drive changes in plankton communities downstream of the LLCF and how those changes are expressed not just by tracking taxonomic change but also through alteration of functional traits of taxonomic groups. Factors that can influence plankton communities are lake morphology (e.g., depth, shape), physical conditions (e.g., temperature, stratification), water quality, and biological competition. Of these lake features, morphology is the only one that can't be influenced by the mine.

DDEC presented the AES findings at a workshop in June 2016. The study found that nutrients, mainly nitrate, may play an important role in observed functional and taxonomic shifts in lake plankton communities. However, there also were strong indications that, after almost 20 years of mining, impacts are restricted to the bottom of the food web, and change in the functional structure of the phytoplankton community is stabilizing over time.

Analysis of functional traits of community composition revealed that, likely as a result of mining impacts, phytoplankton in impacted lakes shifted to mostly diatom species that are more edible for zooplankton, have higher physiological demand for silica, and are not mobile. In more recent years the phytoplankton communities in these same lakes appear to be shifting back to the original functional traits of baseline and early mining years (e.g., less edible, lower silica demand, more immobile species). The reasons for this are unclear.

Zooplankton communities in Moose and Nema lakes are seeing cladocerans and rotifers being gradually replaced by copepods. The cladocera decline is counter-intuitive given increases in edible phytoplankton that filter-feeding cladocera subsist on. This can be explained in part by increasing pH and calcium which have a negative effect on the dominant *Holopedium* species of cladocera.

SABLE AEMP

Developing Sable Pipe as an open pit mine involves draining Sable Lake in preparation for excavating the lake sediments and overburden, and lowering the water level of nearby Two Rock Lake to use it as a sedimentation pond for pit water. Two Rock Lake water will then be discharged into Horseshoe Lake, and via a chain of small lakes into Exeter Lake.

In April 2016, the WLWB directed DDEC to revise the proposed Sable AEMP in consideration of a number of directives as outlined in the Reasons for Decision. DDEC submitted a revised version in September 2016. Reviewers identified gaps in the baseline data as well as a lack of confidence in the statistical power of the Sable AEMP to detect meaningful changes downstream of Sable Pit. The WLWB agreed with the Agency and others that building a more robust baseline is warranted by collecting a third year of baseline data, including fish, prior to construction.

AGENCY ASSESSMENT

The Agency commends DDEC for raising the bar in monitoring aquatic biota at Ekati through the AES. This study assessed the natural and mine-influenced factors that drive change in the biota of AEMP lakes. The advancement of response plans is also a welcome development.

If fluoride, iron, or zinc continue to approach or exceed CCME guidelines in Koala or King-Cujo watersheds in 2017, the Agency recommends that these variables should become statistically evaluated variables that would then be discussed in more detail in the 2017 AEMP.

In a September 2016 letter, the Agency provided recommendations to the WLWB on ways to improve the AEMP. WLWB accepted the following recommendations:

- Change sediment sampling methodology to using K-B corers (from the currently used Ekman dredge) to better capture the most recent sediment deposition years.
- Monitor stations S5 and S6 in the northwest arm of Lac de Gras downstream of Koala watershed.
- Conduct stable isotope analysis (to incorporate fish into the analysis of plankton change impacts up the food chain) in future years if fish production is negatively affected by mining activities.
- Monitor parasite infestation in whitefish beginning in 2018.

These changes to the AEMP will more thoroughly track changes to lake benthic environment, fish health and water quality entering Lac de Gras. ■

AIR QUALITY

HIGHLIGHTS

- + Results from the 2016 dust suppressant study indicate EnviroKleen is effective at reducing dust.
- + Incinerator stack testing results were well below emissions standards.
- + Government of Northwest Territories (GNWT) began developing air regulations.

ACTIVITIES 2016-17

The Ekati Air Quality Monitoring Program (AQMP) is comprised of the following components: meteorological monitoring (daily); air emissions and greenhouse gas calculations (annually); Total Suspended Particulate (TSP) measurements through high volume air sampling (HVAS) and Partisol Samplers (every six days); continuous ambient air monitoring (NOx, SO2, TSP, and PM2.5) (24 hour); dustfall monitoring (summer months); snow chemistry sampling (every three years); and lichen tissue sampling (every three years). The AQMP results are reported on every three years in concert with the snow and lichen sampling program, scheduled for 2017. The last AQMP report was issued in April 2015 for the 2012-2014 reporting period, and was reviewed in our 2015-16 Annual Report.

Dust Suppression

The current road dust management program at Ekati mine includes the use of DL-10 and road watering as dust suppressant on the haul roads and other high traffic areas and EK-35 on the airstrip. The Agency and others have repeatedly raised concerns about the effects of fugitive and finer dust on vegetation and caribou, including possible links with the zone of influence for the mine on caribou distribution. The Mackenzie Valley Environmental Impact Review Board's (Review Board) Report of Environmental Assessment (REA) for the Jay Project also included a measure that the Jay Project "be designed and operated in a manner that reduces impacts to caribou particularly from roads and dust." As a result of these concerns, Dominion Diamond Ekati Corporation (DDEC) has undertaken trial studies of the effectiveness of different dust suppression methods.

In 2015, DDEC conducted a small scale (~1 km) pilot study along the Misery Road using an alternative dust suppressant called EnviroKleen. This study showed encouraging results and 2016 the study area was expanded to nearly 10 km of road. DDEC reported that the 2016 study showed a decrease in dust generation and deposition throughout the summer following application of the EnviroKleen compared to application of DL-10 or road watering. To quote from the report: "Visible fugitive dust returns 2-3 weeks following application; however, the use of EnviroKleen causes the fugitive dust to settle and deposit much more quickly than for an untreated road, and therefore minimizes the transport of airborne dusts onto the tundra." They also report that the effectiveness of EnviroKleen appears to improve after a second annual application.

Air Quality Emissions Monitoring and Mitigation Plan (AQEMMP)

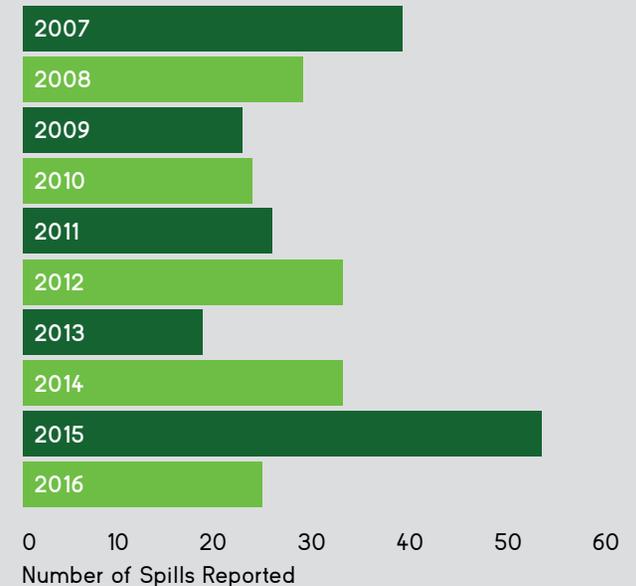
In 2016, the Agency reviewed the Air Quality Emissions Monitoring and Mitigation Plan (AQEMMP) for the Jay Project. In September 2016, we participated in the AQEMMP workshop to review changes made to the plan. DDEC will now be monitoring air quality during construction in addition to operation of the Jay Project. Passive air samplers will be placed in several locations as well as a continuous air monitoring station at the Jay Pit. The monitoring data will be downloaded and checked weekly. Thresholds and triggers for NOx, PM2.5, and TSP have been developed as part of an adaptive management framework outlining when a particular action is required. In response to an Agency comment DDEC agreed to include thresholds and action levels for the interim dustfall objectives, which the Government of the Northwest Territories (GNWT) are developing as outlined in the measure for Review Board REA

for the Jay Project, within six months of release of these objectives. DDEC has also committed to amalgamate the Ekati Air Quality Monitoring Plan with the Jay Project AQEMMP into a single site-wide plan within the next six to twelve months.

Incinerator Air Emissions

In 2016, DDEC conducted stack testing on the to establish how effectively they were operating. Stack testing is conducted and reported on every three years as required by measures in the Review Board REA for the Jay Project. The parameters tested included those covered by the

Reported Spills of Hazardous Materials



Canadian Council of Ministers of the Environment (CCME) Canada-wide Standards for waste incineration including dioxins, furans, and mercury. DDEC reports that the 2016 results were well below these standards. The Agency is looking forward to reviewing the summary report of the results.

The Review Board REA contains a suggestion that DDEC, in consultation with the GNWT and Environment and Climate Change Canada, assess the feasibility and utility of additional inline continuous emission monitoring of incinerator emissions and provide a report of the findings within one year of Ministerial approval of the REA. The Agency looks forward to receiving the results of this assessment in the near future.

Air Regulations

As part of the Jay Project environmental assessment review the Agency recommended that the GNWT develop an appropriate and enforceable regulatory framework and system for air quality management in the Northwest Territories (NWT). We are pleased to report that in June 2016 the GNWT they will develop new air regulations under the NWT EPA. Air emissions from mines in the NWT are currently unregulated and this initiative will bring the NWT in line with the other jurisdictions across Canada.

The Agency was invited to review the proposed Air Regulatory Framework and participated in an information session, which gave an overview of the framework, the implications to emitters, inspections and enforcement, and the proposed changes to the EPA. The Agency provided comments supporting the overarching components of the framework.

However, the Agency provided the following recommendations to the GNWT, that they:

- Re-examine the removal of s.2(2) of the EPA to ensure operations authorized to discharge contaminants into the environment under other acts and regulations, permits and licences (e.g., water licences) do not violate s.5(1) of the EPA:
- Re-consider the internal process being proposed for air permits and provide a public review mechanism to ensure public confidence through an open and transparent process:
- Commit to examining the feasibility of integrating air management into the existing land and water co-management regimes:
- Include a requirement for the development of mitigation and monitoring plans as part of the regulatory or permitting process:
- Develop guidelines on how to develop an AQEMMP: and
- Propose an amendment to the NWT EPA establishing a special purpose fund into which air permit application fees, emission fees, and monetary fines levied under the Summary Convictions Procedures Regulations (as they relate to the air quality regulations) would be paid. The assets of the fund may then be used to offset direct program costs and conduct necessary research related to air quality management.

AGENCY ASSESSMENT

The Agency has had a long-standing interest in air quality and dust suppression at Ekati mine and has pressed DDEC for a number of years to conduct research on alternative dust suppression products, methods, and best management practices. The Agency is pleased to learn that the 2016 dust suppressant study showed that EnviroKleen is more effective than DL-10 or road watering as a dust suppressant and is encouraged that DDEC plans to increase the use of EnviroKleen on the Misery Haul Road. We look forward to reviewing the full study report and encourage the company to produce a dust management best practices document that provides clear guidelines and protocols for the application of suppressants on all haul and high traffic roads.

Agency recognizes that DDEC has made significant improvements in air quality monitoring and management at Ekati in recent years and in engaging parties to improve the AQEMMP. DDEC has committed to incorporate adaptive management thresholds for NO₂, PM_{2.5}, and TSP into the current program. However, there has been no progress on developing threshold triggers or response actions for dust mitigation or for parameters being measured in snow and lichen (longer-term trends).

The Agency commends the GNWT for initiating development of new regulations under the NWT EPA to address air emissions and air quality management. The devolution of land and water management from the Government of Canada in 2014 has provided an opportunity for the GNWT to fill this long-standing regulatory gap in northern environmental protection. By initiating the current consultative process, the GNWT has

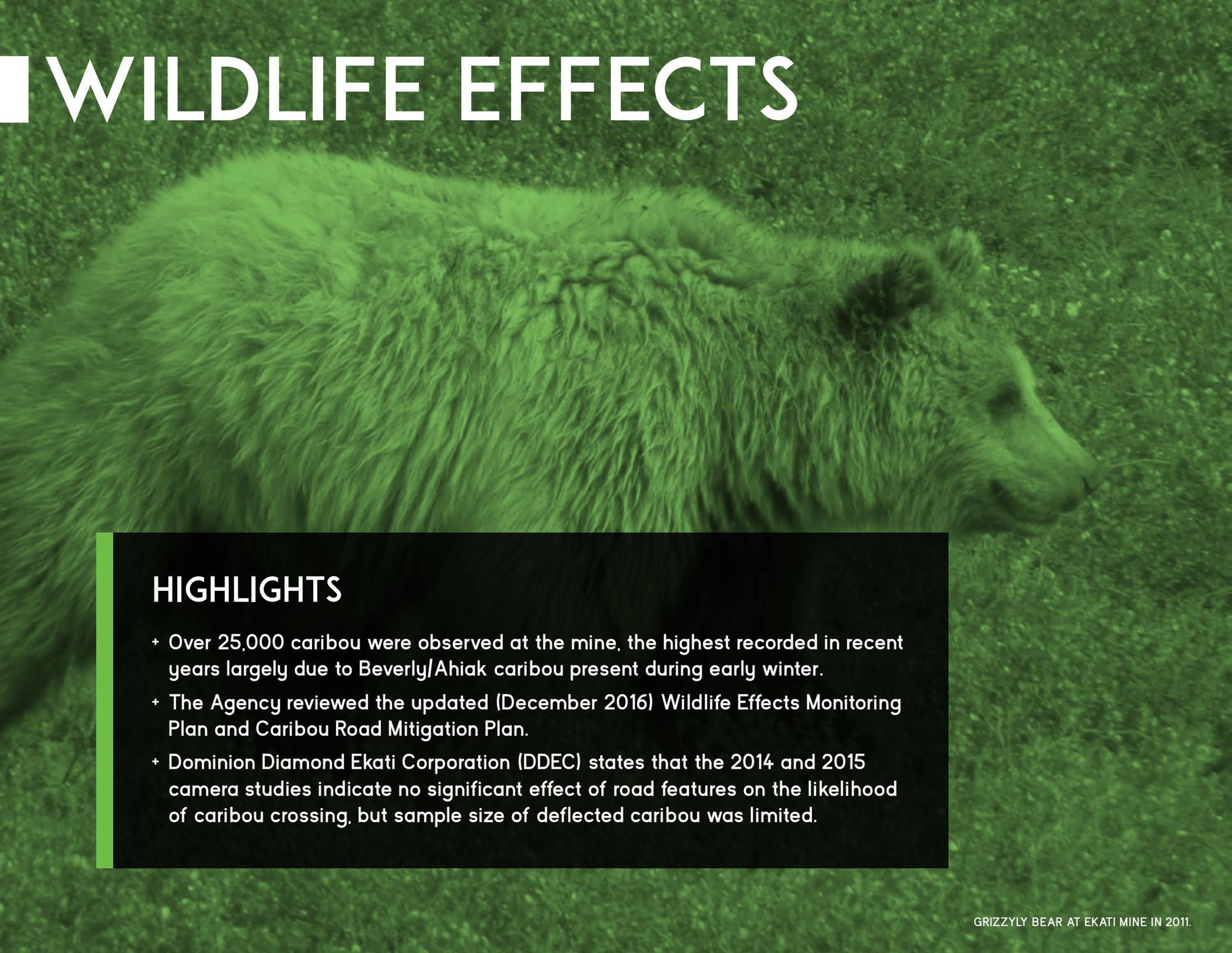
begun to move towards providing much needed regulatory certainty to municipalities, industry and other emitters of air contaminants, and to provide much needed protection and management of this natural resource. The Agency looks forward to fully participating in this process and to consultations on an interim dustfall objective as outlined in the measure for Review Board REA for the Jay Project. ■

Spills of hazardous materials that exceed quantities set out in the territorial Spill Regulations must be reported to the NWT 24-Hour Spill Report Line. Over the past 10 years, 294 spills have been reported at Ekati including 24 spills in 2016. The most common materials spilled are diesel fuel, hydraulic oil, transmission fluid, antifreeze, sewage, fine kimberlite tailings and coarse kimberlite rejects.



INCINERATOR BUILDING.

WILDLIFE EFFECTS



HIGHLIGHTS

- + Over 25,000 caribou were observed at the mine, the highest recorded in recent years largely due to Beverly/Ahiak caribou present during early winter.
- + The Agency reviewed the updated (December 2016) Wildlife Effects Monitoring Plan and Caribou Road Mitigation Plan.
- + Dominion Diamond Ekati Corporation (DDEC) states that the 2014 and 2015 camera studies indicate no significant effect of road features on the likelihood of caribou crossing, but sample size of deflected caribou was limited.

NOTE: TO AVOID CONFUSION BETWEEN THE ANNUAL WILDLIFE EFFECTS MONITORING PROGRAM (WEMP) AND THE RECENTLY REVISED WILDLIFE EFFECTS MONITORING PLAN (ALSO WEMP IF AN ACRONYM WERE USED), WE HAVE WRITTEN OUT THE PLAN TITLE IN FULL.

ACTIVITIES 2016-17

Dominion Diamond Ekati Corporation's (DDEC) Wildlife Effects Monitoring Program (WEMP) documents wildlife effects resulting from mining activities, and assesses the effectiveness of wildlife mitigation and management efforts at Ekati Diamond Mine. The 2016 WEMP is the 19th annual report, and focuses on wildlife habitat and species of greatest interest including caribou, grizzly bear, wolves, wolverine, foxes, raptors and breeding birds. Monitoring techniques included compilation of incident reports and visual observations, ground based surveys, behaviour surveys and remote camera monitoring. Wildlife monitors conducted wildlife surveys along the 69 kV Misery Road power line, which became fully operational in mid-September 2016.

Ekati Mine Footprint

An additional 126 ha of surface area of habitat were disturbed at Ekati due to mine development and operations during the 2016 reporting period, including the expansion of Lynx and Pigeon pits, construction of the Sable Road, and the Jay Crusher Pad expansion. The total amount of direct habitat loss caused by the project footprint since 1997 is now 3,525 ha (35 km²), including 136 km of road.

Waste Management

DDEC continues its efforts to improve waste management practices and reduce attractants at landfills, to reduce wildlife incidents, and to deter

wildlife from areas of danger (e.g., airstrip, high traffic areas). Although DDEC has two dedicated waste management Team Leaders and a full-time waste management consultant, adherence by employees to effective waste management disposal practices at the mine site has been a significant challenge. However, in 2016 DDEC appeared to be making progress. Overall occurrence of wildlife attractants or misdirected wastes (e.g., food, food packaging, and oil-related waste) declined in 2016 compared to the previous four years. Unfortunately, wildlife sightings at the landfill, generally correlated with the amount of misdirected wastes and attractants, remained similar to previous years.

Wildlife Incidents and Mortalities

Wildlife incidents involve direct interaction between wildlife and humans or wildlife and infrastructure. There were 19 wildlife incidents with humans or mine infrastructure reported at Ekati, including grizzly bear (nine), fox (six), and birds (two). The number of incidents in 2016 is higher than numbers reported from 2011 to 2015 (6-15 annually).

Eleven vehicle-related wildlife mortalities were reported during the 2016 reporting period, none of which involved valued ecosystem components (VEC) species. Two waterfowl and a loon were killed during fisheries projects for fish salvage at Sable and Two Rock lakes. No caribou mortalities as a result of mine activities have occurred in recent years.

Misery Power Line Interactions Monitoring

In 2016 wildlife monitors conducted wildlife surveys nearly daily during construction and operation of the power line. More than 900 caribou in nearly 40 groups were recorded, mostly observed within the eastern (Misery) end of the

power line. There were no incidents of caribou or other wildlife exhibiting negative wildlife-power line interactions due to construction or operation, and no modifications of local road and construction activities or temporary suspensions of local road access were warranted. No caribou deflection from the power line was detected.

Caribou Monitoring

The draft Caribou Road Mitigation Plan (CRMP), initially developed for the Jay Project, was instituted for all roads within Ekati mine during 2016. The CRMP is a hierarchical approach to management, monitoring, and mitigation of caribou interactions with roads. There were 24 reports of caribou near the Misery or Sable roads that resulted in speed reductions or halting of mine traffic. DDEC estimated a loss of 200-300 man-hours during Sable Road construction as result of caribou within 100 m of the road.

Caribou monitoring activities for 2016 included an analysis of abundance and distribution from satellite collared cows collected by Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR), incidental caribou observations, behaviour surveys, Long Lake Containment Facility (LLCF) monitoring and wildlife camera monitoring. Incidental observations of caribou have generally declined since 2009 but in 2016, ground-based incidental observations recorded 25,225 caribou, by far the highest number since recording of incidental observations began in 2006. Only 10 caribou were detected during spring migration, usually a period when more caribou pass through the mine site. Approximately 4,750 caribou were observed during summer and 1,500 during fall migration, which according to collar data were all Bathurst caribou. Most unusual was the approximately 19,000 caribou, primarily from the Beverly/Ahiak herd (according to GNWT-ENR collar data)

observed between mid-November and the end of December, including one group of 2,000 individuals. Caribou observations were relatively evenly distributed across the entire mine site.

Behavioural surveys were conducted on 32 individual adult caribou within 1 km of mine infrastructure in 2016 to obtain information on the proportion of time an animal is engaged in different behaviours (e.g., bedding, feeding, running). The caribou spent less than 10% of their time in alert behaviour, similar to compiled results of surveys conducted in 2010-2013 at Ekati. These caribou responded to 52 potential stressor events at distances up to 550 m, and showed no (77% of events) or minor (23%) overt responses. In addition, 30 behavioural scan surveys were

obtained from groups at similar distances from infrastructure to determine average activity budget at the group level. These groups were exposed to 59 potential stressor events, which on 8% of occasion elicited a running response. Comparison with distant (>23 km from mine infrastructure) scan sampling conducted by Diavik Diamond Mines was not possible because only two scan surveys were conducted.

The LLCF wildlife monitoring program documents wildlife activity in the LLCF to address concerns related to potential injury and ingestion of processed kimberlite. Only one group of 10 caribou was observed in the vicinity of the LLCF in 2016. A total of 684 caribou have been observed within the LLCF between 1999 and

2016, and no caribou injuries or deaths have been directly attributed to the LLCF.

The Wildlife Camera Monitoring Study initiated by DDEC in 2011 uses motion-triggered cameras to better understand how caribou respond to mine infrastructure and in particular to roads. Eighty-nine infrared motion-triggered cameras were deployed in 2016 around Ekati mine along Misery and Sable roads, as well as at the Narrows between Lac du Sauvage and Lac de Gras and along the proposed access road for the Jay Project. Due to the time required to process the photographs no results were presented from 2016, but a memorandum on camera results from 2014 and 2015 was released in August 2016. This report focused on road features that affected crossing

WILDLIFE EFFECTS MONITORING PLAN AND THE CARIBOU ROAD MITIGATION PLAN

The Agency reviewed DDEC's December 2016 revision of the Wildlife Effects Monitoring Plan and the CRMP and recommended that the GNWT-ENR not approve either plan as submitted. DDEC did not make changes for 75% of the nearly 100 recommendations on previous versions of the Wildlife Effects Monitoring Plan and CRMP made by the Agency and other parties (mainly ENR). Few substantive changes were made by DDEC to further minimize the impact of the existing Ekati mine and the forthcoming Sable and Jay expansions on wildlife in general and Bathurst and Beverly/Ahiak caribou in particular. Monitoring and mitigation of sensory disturbance are poorly addressed, especially as they relate to verifying the extent and magnitude of the caribou zone of influence and verifying the effectiveness of mitigation measures, including enhanced traffic management and dust suppression. Monitoring and mitigation of potential impacts to caribou are poorly integrated into adaptive management. There are no methods presented to test the effectiveness of caribou crossings, nor how the proportion of failed crossing attempts will be determined. As of this writing, updated (March 2017) versions of both plans have been developed by DDEC, but ENR has requested changes prior to approval.



ESKER LOCATED NEAR THE EKATI MINE.

or deflection of caribou that approached the road verges, and found no significant relationship between deflection events and the road features examined (e.g., slope, height, distance of the roadside slope, and rock grain size). However, the number of deflections recorded was low. Most successful crossings occurred where there was a berm slope between 18–27° (32–51%), height between 1.18–1.75 metres, and distance of the roadside slope between 4.3–6.1 metres using 0.1–0.3 metre sized rock. The camera study did not address the sensory disturbance (e.g., trucks) that likely contributes a significant proportion of the disturbance quota.

Grizzly Bear Monitoring

Grizzly bears were monitored at Ekati through incidental observations and remote wildlife cameras. There were 240 individuals sighted on 147 occasions, including 54 observations of family groups (any group of two or more bears). The number of sightings and family groups are the highest since incidental record keeping began in 2001. The highest density of observations occurred between the main mine complex and 5 km north along the Sable Road, and within 5 km west of the Misery complex along the Misery Road. Eighty-seven management activities resulted in site-wide notifications in response to grizzly bear observations, or temporary work stoppages or relocating of work crews from the area to allow grizzly bears to forage or move through an area undisturbed. In nine instances the use of a helicopter, bear bangers or rubber bullet deterrents was required.

Other Wildlife

There was no monitoring of known wolf denning activity in the Ekati study area in 2016, and no pups were observed. In 2016, 136 wolves were sighted on 95 occasions, including 32 family

groups (any group of two or more wolves). These are the highest numbers recorded since 2001. Wolf observations were distributed relatively evenly throughout the mine site.

The Ekati DNA-based wolverine population assessment was conducted in April 2015, with 180 lure stations deployed and nearly 500 hair samples collected and submitted for DNA analysis. No results or discussion of this program was included in the 2016 WEMP report. The number of incidental sightings of wolverines in 2016 (39) is the highest recorded since 2008. Wolverines were observed to be distributed relatively evenly throughout the mine site. The high numbers of wolf and wolverine sightings in 2016 are likely correlated with the high number of caribou present.

While Arctic fox and red fox were not identified as VECs during the environmental assessment review process, fox occurrence at Ekati mine is an ongoing concern because of potential attraction to human activity and the risk of transmission of rabies. In 2016, there were 276 foxes sighted on 255 occasions, the highest numbers since monitoring began in 2007. Fox sightings were disproportionately clustered around the main camp and related facilities. Less than 5% of observations were of Arctic fox. There were no suspected cases of rabies in 2016.

There were five incidental sightings of six moose in 2016, following the trend of increasing observations of moose since 2013.

Raptor nesting activity occurred in several of the pits in 2016. Nesting was actively and successfully deterred from the Misery and Pigeon pits to minimize conflict with mining activities. Four of seven occupied sites produced nestlings (peregrine falcon, rough-legged hawk, and raven).

No gyrfalcon nesting attempts were recorded, the continuation of a decline since 1995.

The North American Breeding Bird Survey was conducted for the 14th year with the number of species observed (21) and the number of individual birds recorded (310) in 2016 the second lowest recorded, likely due to cool and windy weather during the survey.

"In the past, only the Bathurst caribou herd has interacted with Ekati mine, limiting any potential disturbance to a single herd, but changes in caribou herd abundance and distribution may be changing this paradigm."

AGENCY ASSESSMENT

The 2016 WEMP contained a number of inconsistencies and contradictions which suggest that it was in places hastily prepared and proofed. For example, different numbers and interpretation of trends were presented in results and discussions, and current references to population surveys were not presented (e.g., the results of the 2015 Bathurst caribou survey). DDEC should also have provided an update on the April 2015 wolverine DNA inventory.

DDEC provided a good background review on the Bathurst herd within the 2016 WEMP, but largely ignored the Beverly/Ahiak herd, which interacted with Ekati mine in large numbers during November and December 2016. Acknowledging that all caribou are treated equally during monitoring and mitigation, a review of the recent population size and movement patterns of this latter herd was warranted, given the importance of caribou in wildlife mitigation at Ekati. Similarly, little discussion was provided on the unusual occurrence of large numbers of Beverly/Ahiak

caribou at the mine site in early winter. In the past, only the Bathurst caribou herd has interacted with Ekati mine, limiting any potential disturbance to a single herd, but changes in caribou herd abundance and distribution may be changing this paradigm. Finally, it is also not clear why the collar data from 14 Bathurst bull caribou collared in 2015 were not shown nor discussed. While most past collaring has focused on cows, better understanding of bull caribou movements would enhance implementation of mitigation efforts on caribou in general.

DDEC has worked hard to make the physical structure of roads on the mine site more accessible to caribou, by using data gathered from recommendations of community members and from camera studies. These include installing caribou crossings at locations identified by Elders and other community members during the Community Caribou Engagement Program, using smaller rocks, and ensuring the road is smooth and as close to the level of the tundra as possible. ■



GRIZZLY BEAR SIGHTING AT EKATI MINE JUNE 2016.

JAY AND SABLE EXPANSION PROJECTS

HIGHLIGHTS

- + Public hearings on the Jay Project water licence application were completed.
- + A final decision on issuance of the Jay Project water licence is expected in summer 2017.
- + DDEC has initiated development on the Sable Project.

JAY PROJECT

The Jay Project consists of mining and processing ore from the Jay Pit located 30 km southeast of the existing Ekati processing facilities. The Jay Pit will be accessed by constructing a horseshoe-shaped dike in Lac du Sauvage. The mine plan includes pumping water from the diked area to Lac du Sauvage and the Misery Pit to expose the underlying kimberlite. Trucks will transport ore from Jay Pit along seven km of new roads to the existing Misery Haul Road and then to Ekati's main site for processing. The new Jay Haul Road will intersect the Lac du Sauvage esker.

With the exception of new roads needed to access the pit, diversion channels to manage surface water and the horseshoe-shaped dike, most of the needed milling and power infrastructure already exists at the Ekati main site and Misery location. A new waste rock storage pile will be constructed on the shore of Lac du Sauvage for overburden and rock excavated from the pit during construction and operation. Groundwater, which is expected to be the largest source of water during operation, as well as surface runoff will be pumped to the Misery Pit for storage and eventual management.

The Jay Project is expected to extend the current end of mine life at Ekati mine by more than 10 years.

The Minister of Lands approved the Report of Environmental Assessment for the Jay Project in May 2016. The Agency was fully engaged in the review process and reported on our participation, along with the Mackenzie Valley Environmental Impact Review Board's recommended measures, in our 2015-16 Annual Report.

Land Use Permitting

Dominion Diamond Ekati Corporation (DDEC) submitted a land use permit (LUP) application to the Wek'èezhii Land and Water Board (WLWB) in May 2016 for construction of the Jay road and other early works activities. DDEC argued that the LUP was needed to enable the transport and storage of materials near the pit in preparation for dike construction. DDEC was concerned that a project-wide LUP could not be obtained until 2017 because of the statutory period allowed under the Mackenzie Valley Resource Management Act.

The WLWB approved the early works LUP in July 2016. The permit enabled immediate construction of the main Jay haul road, Jay North road and Jay Pipeline road, a pipeline bench, caribou crossings, and laydown areas: excavation through the Lac du Sauvage esker: use of explosives: establishment of buildings to support construction activities: and installation of a communications tower.

A project-wide LUP application for the Jay Project was submitted to the WLWB in June 2016 with a decision on its issuance expected in the summer of 2017.

Water Licensing

DDEC submitted an updated Type A Water Licence application for the Jay Project in June 2016. Accompanying the application was a request to extend the Ekati water licence term by an additional 13 years to cover the life of the Jay Project by processing the amendment in the same proceeding and time frame as the Jay Project application. DDEC withdrew the request after the Agency, the Tłı̨ch̨ Government and several other parties expressed strong concern over the request.

The WLWB distributed the water licence application and supporting documents for review in June 2016. Ten parties, including the Agency, federal and territorial governments, First Nations, Métis and Inuit governments and organizations, and Diavik Diamond Mines, requested formal intervenor status and later submitted comments to DDEC and the WLWB.

Technical sessions were held in October in Behchok̨. The sessions were intended to help clarify issues raised during review of the



A HAUL TRUCK ON THE SABLE ROAD DURING THE ROAD CONSTRUCTION.

“Preservation of water quality and quantity in Lac du Sauvage and Lac de Gras is critical if the lakes are to remain ecologically stable and suitable for traditional use following closure of the mine.”

application and reconcile outstanding issues that would otherwise need to be addressed during the public hearing. During the sessions, participants made 47 additional requests for specific information to DDEC, GNWT-ENR and other parties.

A formal public hearing on the application was held in December in Yellowknife. It was held as part of the process to tie together and focus all the information gathered to date. The hearing also enabled DDEC, formal interveners and other interested parties to present their views and recommendations directly to WLWB members.

The Agency focused on four major areas of concern throughout the water licensing process:

- Mine water adaptive management:
- Waste rock storage area seepage management:
- Lac du Sauvage water quality during and after dike construction: and
- Closure and reclamation planning and research.

The water licensing process is expected to culminate during the summer of 2017 with a decision by the Minister of Environment and Natural Resources.

MINE WATER ADAPTIVE MANAGEMENT

The mine plan calls for water captured within the completed diked area to initially be pumped back into Lac du Sauvage. As the water level inside the diked area decreases, sediment levels are expected to increase until the total suspended solids (TSS) effluent quality criteria (EQC) set out

under the water licence is reached. The remaining lake water will then be pumped to Misery Pit to be stored and managed, along with groundwater and surface runoff collected during operations.

DDEC expects meromictic conditions, or stratification of the water column, to eventually form within Misery Pit isolating water with high total dissolved solid (TDS) levels and sediments in the deep part of the pit. As the pit fills, surface water that meets the EQCs would then be pumped to Lac du Sauvage to make room for additional groundwater and surface runoff from the Jay Pit. Discharge of water from the Misery Pit is not anticipated for the initial 5-7 years of Jay operations.

Preservation of water quality and quantity in Lac du Sauvage and Lac de Gras is critical if the lakes are to remain ecologically stable and suitable for traditional use following closure of the mine. Throughout the water licensing process, the Agency expressed the need for DDEC to develop contingencies (e.g., action levels, triggers, and designs) in the event meromictic conditions fail to become established. We suggested that DDEC submit an updated Wastewater and Processed Kimberlite Management Plan (WPKMP) detailing these contingencies when water levels in the Misery Pit reach 25% of its capacity. DDEC argued that providing an updated WPKMP when the pit reaches 40% capacity would provide a better opportunity to incorporate operational monitoring data into the plan, while still providing sufficient time to implement any contingencies that may be required. The final decision rests with the WLWB and the Minister of Environment and Natural Resources

WASTE ROCK STORAGE AREA SEEPAGE MANAGEMENT

Potentially acid generating (PAG) metasediment and non-PAG lake sediment, diabase and granite materials will be removed from inside the diked area and placed in the adjacent Jay waste rock storage area (WRSA). DDEC has stated that the potential for hazardous long-term seepage from the WRSA will be minimized by capping the storage area with five metres of granite and that the co-placement, or mixing, of materials within the WRSA will counterbalance the acid generating potential of the metasediment.

The Agency believes that relying solely on assumed placement of waste rock without stringent monitoring and controls could potentially lead to pockets of PAG metasediment within the WRSA large enough for long-term acid rock drainage and seepage issues to develop. In response, DDEC proposed additional waste rock sample collection and field programs to help ensure the necessary mixing occurs. The maximum amount of PAG metasediment that can be placed in the WRSA before non-PAG rock is co-placed has not been clarified. The matter of what mitigative actions will be implemented should co-placement not prevent the discharge of acid-generated seepage has yet to be addressed to the Agency's satisfaction.

LAC DU SAUVAGE WATER QUALITY DURING AND AFTER DIKE CONSTRUCTION

Construction of the Jay dike has the potential to elevate TSS levels in Lac de Sauvage, particularly in areas adjacent to construction zones. DDEC has proposed a Suspended Sediment Monitoring and Management Plan (SSMMP) which, in conjunction with the water licence Surveillance Network Program (SNP) and two turbidity barriers, are intended to protect the lake from high TSS levels during construction.

During the technical sessions and public hearing, the Agency suggested that following construction and after the SSMMP is discontinued and turbidity barriers are removed, the proposed three permanent SNP locations along the 4.5 km length of the dike do not provide sufficient coverage to ensure compliance with the water licence EQCs. The Agency also suggested that the proposed TSS limits during dike construction are not adequate to protect water quality and aquatic life, the same level of near-dyke sediment quality monitoring should take place during operations as during construction, and turbidity monitoring should be extended to two nearby fish spawning shoals in the event SSMMP TSS levels are exceeded.

CLOSURE AND RECLAMATION PLANNING AND RESEARCH

As reported in the chapter of this annual report entitled Closure and Reclamation, delays in updating the 2011 Interim Closure and Reclamation Plan (ICRP) and slippage in reclamation research remains a serious concern for the Agency. While there have been a number of modifications to components of the ICRP over the years, the ICRP is now effectively spread over a number of documents making it increasingly difficult to track progress, rationale, and implications of any changes.

DDEC has acknowledged the need to update the ICRP and during the public hearing suggested a timeframe of 18 months following issuance of the Jay water licence to submit an updated ICRP. DDEC argued that this timeframe is required to adequately engage communities and other parties. Because the Agency has made similar requests for an updated ICRP in the past (refer to Recommendation #1 in the Agency's 2015-16 Annual Report), the Agency suggested that 12 months following issuance of the Jay Project water licence was a more reasonable timeframe

for DDEC to submit an updated ICRP. The final decision on a suitable timeframe rests with the WLWB and the Minister of Environment and Natural Resources.

SABLE PROJECT

DDEC announced its intention to develop the Sable Project in September 2015, 12 years after being initially permitted. The Sable Project would enable Ekati to continue operating until ore from the Jay Project becomes available for processing.

Sable Pit is located approximately 27 km north of the Ekati main camp. The mine plan involves dewatering of Sable Lake, development of Sable Pit as an open pit, and use of nearby Two Rock Lake as a sedimentation pond. Kimberlite ore will be hauled to the main processing plant while overburden and waste rock will be deposited in two waste rock storage areas located adjacent to the pit. Sable Pit water will be discharged from Two Rock Sedimentation Pond directly into Horseshoe Lake.

Construction of the Sable all-weather road was completed in 2016. The road runs for a distance of approximately 19 km between the north end of the Long Lake Containment Facility and Sable Pit. It bypasses Exeter and Ursula eskers before reaching the Sable area.

As one of the initial steps in development of the Sable Project, a fish salvage of Sable and Two Rock lakes was completed. Community members from Kugluktuk, Behchokò, Łutsel K'e, Dettah, N'dilo, Gameti, Fort Resolution, and Yellowknife salvaged 468 kg of fish. The salvaged fish were gutted, frozen and distributed to the communities.

Other notable activities include submission of the Sable Aquatic Effects Monitoring Program Design Plan and amendment of the Ekati water licence



TUNDRA LANDSCAPE NEAR EKATI MINE.

AGENCY RECOMMENDATIONS FOR THE JAY PROJECT WATER LICENCE

MINE WATER ADAPTIVE MANAGEMENT STRATEGIES

DDEC (a) submit to the WLWB for approval 90 days prior to commencement of de-watering the Jay diked area an updated MWMP that includes a review of potential adaptive management strategies for operational water management; and (b) submit for approval prior to Misery Pit being filled to 25% of its storage capacity an updated MWMP that includes objectives, criteria, preliminary designs, triggers and action levels for potential operational water adaptive management strategies.

PLACEMENT OF POTENTIALLY ACID GENERATING (PAG) ROCK

The Waste Rock and Ore Storage Management Plan (WROMP) be updated to include greater detail on how the WRSA will be managed in order to maintain the desired Neutralizing Potential/Acid Potential ratio. The WROMP should also clarify how much PAG rock will be deposited before mitigative actions are triggered.

SEEPAGE QUALITY AND ADAPTIVE MANAGEMENT

The WROMP be updated to address potential WRSA seepage issues, thresholds and action triggers, and the Plan be submitted to the WLWB for approval 90 days prior to material being placed in the WRSA.

TOTAL SUSPENDED SOLIDS COMPLIANCE POINTS DURING CONSTRUCTION #1

Additional Surveillance Network Program (SNP) monitoring stations be established close to the active construction area to provide better compliance coverage during dike construction.

TOTAL SUSPENDED SOLIDS COMPLIANCE POINTS DURING CONSTRUCTION #2

The SSMMMP be revised such that, in the event of an exceedance of the SSMMMP limits during dike construction, turbidity measurements will be taken daily in Lac du Sauvage at shoals S4 and S8 until it is confirmed that Total Suspended Solid (TSS) levels are not impacting fish habitat.

TOTAL SUSPENDED SOLIDS LIMITS DURING DIKE CONSTRUCTION #3

The Water Licence establish a TSS limit of 25 milligrams per liter 7-day rolling average at all dyke construction SNP locations and SSMMMP monitoring stations.

NEAR-DIKE SEDIMENT QUALITY MONITORING

The Aquatic Effects Monitoring Program (AEMP) retain the same level of near-dike sediment quality monitoring during operations as during construction so that any potential leaching of metals and other contaminants from the completed dike into Lac du Sauvage can be identified.

LARGE-BODIED FISH SAMPLING

Non-lethal sampling (biopsies) of lake trout be undertaken every three years as part of the AEMP.

CLOSURE AND RECLAMATION PLANNING AND RESEARCH

A single integrated Interim Closure and Reclamation Plan be submitted to the WLWB for approval within 12 months of the issuance of the Jay Project Water licence.

to increase the annual amount of freshwater that can be withdrawn from Two Rock and Sable lakes.

Financial security for the Sable Project has been set at \$8.8 million under the water licence and \$860,000 under the land use permit. In March 2016, DDEC submitted a request for the WLWB to phase the posting of security between 2016 and 2021. The Agency supported DDEC's request but recommended the payment schedule be finalized and security provided prior to the start of construction.

AGENCY'S ASSESSMENT

The February 2016 Report of Environmental Assessment on the Jay Project included a requirement that DDEC and regulators provide the Mackenzie Valley Environmental Impact Review Board (Review Board) prior to July 1 of each year with a report on actions they have taken to implement the various environmental assessment measures. The Agency welcomed the Review Board attempt to ensure parties are held accountable for the measures and looks forward to receiving the first report.

It is the Agency's opinion that the WLWB conducted a thorough and efficient review of the Jay Project water licence application. Throughout most of the process DDEC displayed a responsive and cooperative approach to the hundreds of inquiries, comments and suggestions provided by the Agency and other interveners. However, during the technical sessions and public hearing, DDEC's responses began to take on a more elusive and entrenched nature. This resulted in several significant issues (e.g., mine water adaptive management, timeframe for revision of the ICRP) having to be referred to the WLWB for final arbitration and decision.

DDEC's request to amend the term of the Ekati water licence in the same proceeding and time frame as the Jay Project application resulted in significant concerns being expressed by several interveners, and in particular the Tłı̨chǫ Government. The Tłı̨chǫ strongly questioned the procedural fairness, reasonable notice, and possibility of meaningful consultation associated with the request. In the Agency's opinion, this request was made without due consideration to its consequences and would have resulted in significant delays if DDEC hadn't subsequently withdrawn the request.

The Jay Project is located 7 km northeast of Misery Camp while Sable is 19 km north of the Long Lake Containment Facility. Both projects are in areas of the mine lease that have previously only been lightly impacted by mining operations. The Agency notes that the projects will extend the area of potential disturbance to wildlife, fish and habitat into new and opposite directions. New roads to service the pits will act as additional semi-permeable barriers to wildlife movements and intersect or bypass several important eskers. The main Jay haul road will cut through the Lac du Sauvage esker running north from the narrows between Lac du Sauvage and Lac de Gras, an area of known caribou movement. The Sable road will enable new mining activities in areas that are among the most highly used by caribou in the Ekati area, as indicated by various observation methods (including collar, aerial survey, camera data and incidental sightings). In addition, for the first time an area of Lac de Sauvage will be diked, drained and mined. As a result, the Agency strongly encourages DDEC to continue making efforts to ensure impacts to these previously lightly-impacted areas are minimized.

As noted above, the Agency supported DDEC's request to phase the posting of security for the Sable Project. On a practical level, it is reasonable that DDEC not be unduly over-secured for liabilities that do not yet exist. However, on an operational level the regulatory system should not be unduly burdened by the constant need to adjust security. The Agency recommends that the GNWT, in cooperation with the WLWB, develop a written policy, guideline or directive to standardize the process associated with the application, consideration and approval of staged closure and reclamation securities. This will provide the WLWB, DDEC and reviewers with a consistent and predictable approach to future requests. ■

"On a practical level, it is reasonable that DDEC not be unduly over-secured for liabilities that do not yet exist. However, on an operational level the regulatory system should not be unduly burdened by the constant need to adjust security."

REGIONAL MONITORING & CUMULATIVE EFFECTS

HIGHLIGHTS

- + Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) released a Bathurst Caribou Range Plan discussion document for public review.
- + The caribou zone of influence task group established by GNWT-ENR achieved little progress during 2016-17.
- + Diavik Diamond Mine is concerned that it will be negatively impacted by increased phosphorous levels in Lac de Gras from the Jay Project.

ACTIVITIES 2016-17

In this section, the Agency reviews progress on regional monitoring and cumulative effects. Regional monitoring can be a useful tool for cumulative effects monitoring and management.

Wildlife

The Bathurst Caribou Range Plan project led by the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) continued during 2016-17. The working group's mandate is to develop recommendations to manage cumulative human and natural disturbance across Bathurst caribou habitat. In February 2017, ENR released a discussion document for public review. It is apparent that the working group has put a lot of time and thought into the development of this range plan and associated documents. The Agency provided comments, largely related to clarifying how changes in seasonal range distribution are captured in the range plan, how thresholds for disturbance are calculated, whether and how the location of developments in relation to highly sensitive range within each assessment area affects the threshold levels, and how Mobile Caribou Conservation Measures would work in practise. ENR has committed to considering comments received, developing a draft range plan that will include proposed range management actions, and conducting a second phase of community and public engagement and review.

For several years, ENR has been leading a task group established to study and develop guidance on zone of influence monitoring of caribou avoidance around diamond mines. This work

could provide useful data for regional monitoring and cumulative effects assessment and management. A draft background document was released in March 2015. Unfortunately, progress on this initiative appears to have stalled. We hope that work on this important topic will continue in 2017-18.

Water Quality and Aquatic Effects

The GNWT Cumulative Impacts Monitoring Program (CIMP) completed a Cumulative Impacts Study on Lac de Gras. The study looked at existing data from Diavik Diamond Mine's and Ekati's Aquatic Effects Monitoring Programs to identify whether cumulative effects from the mines are impacting Lac de Gras. The study concluded that there are two areas of the lake being impacted by mine effluents - one in the northwest arm of Lac de Gras downstream of the Koala watershed flowing from Ekati mine and another in the eastern portion of the lake near Diavik Diamond mine.

Once the Jay Project is operational, increased effluent inputs will flow from Lac du Sauvage into the eastern portion of Lac de Gras. This has the potential to not only impact the water quality of Lac de Gras but also potentially impact the water quality downstream of Lac de Gras. During the Jay Project Environmental Assessment and permitting process, Diavik Diamond Mine Inc. (DDMI), argued that it will be negatively impacted by increased phosphorous levels in Lac de Gras from the Jay Project. The *NWT Waters Act* states that the WLWB cannot issue a water licence if impacts are expected to existing downstream users or alternatively, compensation is provided. DDMI is asking that the onus to prove impacts

and any necessary compensation be the responsibility of DDEC.

In order to harmonize the water quality measurement methodology between the two mines for future comparisons of cumulative impacts, DDEC agreed to lower detection limits for most water quality variables to be consistent with those of Diavik Diamond Mine. ■



ESKER SYSTEM.

TRADITIONAL KNOWLEDGE & COMMUNITY ENGAGEMENT

HIGHLIGHTS

- + The Traditional Knowledge Elders Group established by the Jay Project environmental assessment held its first meeting.
- + WLWB approved a new version of the Ekati Mine Engagement Plan.

ACTIVITIES 2016-17

Dominion Diamond Ekati Corporation (DDEC) has sponsored several Traditional Knowledge (TK) projects based in NWT communities potentially impacted by mine operations and at Ekati mine. Following is a description of these TK projects.

Community-Based Traditional Knowledge Projects

Cultural Teaching Programs: Programs in Kugluktuk, Whati, Gameti and Łutsel K'e, provided elder-driven cultural teachings for youth.

Yellowknives Dene First Nation (YKDFN) Goyatiko Dene Language Conference: Focused on Dene language preservation by teaching youth Dene language and writing systems.

Web-Based Atlas for the Naonaiyaotit Traditional Knowledge Project (NTKP): This is an ongoing project since 2015 which involves the creation of a user-friendly, web-based, interactive atlas of Inuit land use and TK for the Kitikmeot region. The atlas will use information from the NTKP, this outreach tool is expected to be used as an educational tool for schools in the Kitikmeot region of Nunavut and in cultural programs.

Tli,cho, Boots on the Ground Caribou Monitoring: Elders and caribou hunters use traditional methods to assess current conditions of the Bathurst caribou herd and its habitat to determine cumulative impacts from natural and man-made stressors.

Łutsel K'e Dene First Nations (LKDFN) Traditional Knowledge and Livelihoods Project: There are two components to this 1 year project completed with a final report submitted to DDEC in November 2016:

- *TK Digital Archives:* This project includes collecting, digitizing, cataloguing, and sharing TK, such as traditional place names, hunting and trapping trails, and stories pertaining to

their traditional land use and traditional practices on it passed down by Elders.

- *Caribou Monitoring: Traditional Livelihoods Project:* DDEC and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) funded LKDFN to monitor the health of caribou and ensure that hunters act responsibly when hunting caribou.

Ekati-Based Community Engagement Programs

Monitoring Programs and Studies: DDEC continues to provide opportunities for Aboriginal community members to become familiar with the Ekati Diamond Mine environmental monitoring programs and studies and share TK with them.

Misery Pit Raptor Surveillance: The Misery Pit Raptor Surveillance Team undertook surveillance of raptors attempting to establish nests close to the Misery Pit expansion project, and from March to October wildlife monitors observed the installation of the Misery powerline poles along the length of the Misery Road.

Site Visits: During this past year DDEC hosted a number of groups to site including:

- *Student Tour:* Students from the Tliqch communities of Gameti, Whati, and Wekweëti visited the Ekati mine and job-shadowed with the Environment, Emergency Response Team, Mine Planning, Process Plant, and Security Departments.
- *YKDFN Site Tour:* Representatives from the YKDFN toured the Pigeon and Sable pit sites and the Sable road.
- *The Diavik and Ekati Diamond Mines Tibbett-to-Contwoyto YKDFN Ice Road Tour:* Representatives of YKDFN were

invited to meet with the Ekati Leadership team to discuss project updates at Ekati mine. It is not clear to the Agency if the ice road itself was discussed or if the road simply provided the venue for discussions of Ekati mine projects while driving along it.

- *Kitikmeot Inuit Association (KIA) Jay Project and Sable Road Site Tour:* Representatives from Kugluktuk were updated on the Jay Project and Sable Road.

DDEC, LKDFN, and GNWT Agreement on Caribou: The parties agreed to jointly investigate approaches to monitoring and managing the Bathurst caribou herd in relation to the Jay Project.

Use of TK in Operations

Cultural Camp: In summer 2016, DDEC set up a cultural camp for Aboriginal communities to use during the Sable and Two Rock lakes fish-out. The camp was removed in fall/winter 2016 with plans, as advised by the TK Elders Group, to relocate it to the Jay Project area in summer 2017.

Sable and Two-Rock Lakes Fish-Out: During the summer of 2016, fishers from Kugluktuk, Behchokq, Łutsel K'e, Dettah, Ndilo, Yellowknife, Gameti, and Fort Resolution assisted, with fishing out of these lakes in preparation for mining of Sable. The fish out of Sable Lake took place over 8 weeks, while the Two Rock fish-out took 11 weeks. The fish were weighed, measured and aged, then gutted and frozen for storage. The communities of Dettah, N'dilo, Yellowknife (NSMA), Wekweëti, Whati, Gameti, Behchokq, Łutsel K'e, Fort Resolution, and Kugluktuk received a total of 320 kg of fish for consumption.

Lynx Lake Fish Offsetting Project: As part of the fisheries authorization to offset the loss of fish

habitat from the development of Lynx Pit, DDEC has developed a community-based fish offset project at Jackfish Creek near Łutsel K'e where improvements to the creek will be made to allow pike from Great Slave Lake to get to their spawning area.

Jay Fish Offsetting Plan Project: As part of the fisheries authorization for Jay Project, DDEC consulted with TK holders to identify options for a fish enhancement project to offset fish production that will be lost due to mining of Jay Pit. The proposed project will reintroduce Inconnu (coney) that had disappeared from the Yellowknife River decades ago. DDEC has committed to work with Aboriginal communities to investigate other options for fisheries offsetting that could include local fisheries enhancement projects.

Use of TK in Sable and Jay Mine Planning

Traditional Knowledge Elders Group (TKEG): In the Report of Environmental Assessment for the Jay Project, to help mitigate impacts to caribou, land, water and fish it was recommended that DDEC establish a Traditional Knowledge Elders Group.

Although the REA focuses on the Jay Project, the knowledge gathered can be applied to the entire mine site. The first meeting was in Dettah June 2016 and set up the TKEG Terms of Reference which gives direction on intellectual property rights for any TK used by DDEC, and prohibits the use of all TK for purposes beyond the project for which it is intended. At two other TKEG meetings held in October 2016 and January 2017, participants reviewed information in the Jay Fisheries and Fish-out Program: Jay road construction and design including the esker and caribou crossings; and the recommendations on the use and location of the cultural camp. In addition, they approved the TK Framework and the Terms of Reference.

Tłjchq What'aa Eskers TK Project: An ongoing TK study since 2014, Tłjchq elders were brought to Ekati mine to observe the landscape and properties of an undisturbed rocky esker near existing minesite facilities and the proposed Jay Project. They provided advice on designing and building waste rock piles and the Jay esker road crossings to make them caribou-friendly. The project also aims to generate reclamation ideas for these two mine components.

Community Caribou Engagement Program: Participants from Kugluktuk, NSMA, and the Tłjchq participated in the 2015 program and were invited back to tour the newly built Sable Road in 2016 to provide further advice on the placement of caribou crossings, traffic concerns, and learn about existing mitigation methods and how new mitigation may be incorporated to reduce the risk of impacts to caribou and other wildlife.

Community Caribou Engagement Report: The 2014-15 Ekati Diamond Mine Community Caribou Engagement report was translated into Aboriginal languages - Inuinnaqtun, Denesoline, Tłjchq, and Weledeh. The report outlines how DDEC has applied recommendations from community members in the design and installation of caribou crossings on Ekati haul roads.

Ekati Mine Engagement Plan (Version 3.0)

An updated version of the Ekati Mine Engagement Plan was approved by the Wek'èezhii Land and Water Board in October 2016. This plan guides DDEC in its communication with Aboriginal communities and development of community-based projects.

AGENCY ASSESSMENT

The Agency has seen an improvement by DDEC this year in solicitation and reporting of TK. However, it remains unclear how TK is incorporated into monitoring programs and closure and reclamation planning. It is also unclear how DDEC handles TK information that may contradict results of its science-based monitoring. The Agency is hopeful that the TKEG, created through measures in the Jay Project REA, will help improve the incorporation of TK in operations, management, monitoring, and reclamation planning at Ekati mine.

The updated Ekati Mine Engagement Plan is an improvement from the previous version. The Agency is pleased to see DDEC is open to adjusting and extending its engagement plan methods to accommodate community requests. Flexibility in how DDEC engages communities is important in adapting to community schedules and meeting protocols rather than communities being expected to conform to DDEC's schedule.

The Mackenzie Valley Land and Water Board's Engagement and Consultation Policy, which the WLWB uses as a guideline, requires that proponents explain how they manage disputes and grievances. Unfortunately, there is no clear dispute resolution process in DDEC's Engagement Plan as the WLWB had required in its May 13, 2014 directive. DDEC's Engagement Plan states that an unresolved dispute gets registered in an engagement log but offers no detail on follow-up once the dispute is registered. The Agency believes this deficiency should be re-examined when the Engagement Plan is updated. ■

REGULATOR ASSESSMENT

HIGHLIGHTS

- + Fisheries and Oceans Canada and Environment and Climate Change Canada general level of involvement in the environmental regulation of Ekati mine was disappointing.
- + Government of the Northwest Territories (GNWT) Environment and Natural Resources (ENR)'s intervention and public hearing participation in the Jay Project regulatory process provided robust and focused technical participation.
- + Wek'èezhii Land and Water Board ran comprehensive process for the Jay Project water licence and land use permit applications.

THE REGULATORS AND OUR MANDATE

As the public watchdog for environmental management at Ekati mine, the Agency monitors the performance of the operator as well as agencies that regulate the mine. The following are our comments regarding the regulators' performance in 2016-17.

AGENCY'S OVERALL ASSESSMENT

As in previous years, the regulators remain effective in ensuring that DDEC operates the mine in an environmentally sound manner. 2016-17 was a busy year with the majority of the regulators' time and expertise being focused on completion of the Jay Project water licence and land use permit processes, Environmental Impact Report (EIR), and the Aquatic Effect Monitoring Program (AEMP) Re-evaluation. Over the course of the year, the Agency identified some instances where we felt that government agencies and regulators performed well and some instances where their involvement could have been improved.

Indigenous and Northern Affairs Canada

Following devolution of its land and water management responsibilities to the Government of the Northwest Territories (GNWT), Indigenous and Northern Affairs Canada (INAC) has a much-diminished role in environmental regulatory processes including involvement with the Environmental Agreement. In a joint letter, the GNWT and INAC provided notification of their intention to amend the Environmental Agreement to acknowledge the changes in responsibilities. In response to concerns raised by the Agency and Aboriginal Society Members with the initial

proposal to remove INAC from the Environmental Agreement, INAC has now agreed to remain as a signatory. The Agency is pleased with INAC's decision and is encouraged by their continued participation in Environmental Agreement and regulatory processes.

Fisheries and Oceans Canada

The Agency provides Fisheries and Oceans Canada (DFO) with documents for review during EA and regulatory processes. However, in the last few years, the Agency has noticed that DFO is providing limited input. This could be attributed to a narrowing of scope and fewer resources, likely as a result of the changes to the Fisheries Act and DFO's mandate. As part of the Jay Project water licence regulatory process, DFO attended the technical session, submitted an intervention and took part in the public hearing. Although they did participate, they did not appear receptive to answering questions or engaging in discussion. In addition, the Agency was disappointed by their lack of involvement in the review of AEMP Re-evaluation and design, and Aquatic

Response Plans (water chemistry and biota). The AEMP re-evaluation is a critical aquatic effects document that analyzes the effects of Ekati mine on the aquatic environment and proposes refinements to the program. These processes would have benefited from the in-house technical expertise and informed contributions of federal regulators. Overall, we were disappointed in DFO's involvement in the regulatory process in 2016-17.

The Agency is also frustrated by the lack of clarity over which federal department has a mandate for which aspects of aquatic environment. This appears to further complicate both Environment and Climate Change Canada's (ECCC) and DFO's involvement in the regulatory process as it is not always clear who has the mandate to comment.

Looking forward, the Agency is encouraged to learn that DFO is reviewing the *Fisheries Act*. We are hopeful that these changes will lead to an increase in DFO's involvement in future regulatory processes.



THE AGENCY PRESENTING TO THE WLWB AT THE JAY PROJECT WATER LICENCE HEARING, DECEMBER IN YELLOWKNIFE.

Environment and Climate Change Canada

In general, ECCC involvement in the regulatory processes for Ekati mine in 2016-17 was inconsistent. ECCC provided a useful technical intervention and recommendations to the Wek'èezhii Land and Water Board (WLWB) in the Jay Project water licence proceedings. The Agency feels that given their considerable expertise in water quality that they could have been more involved in the review of reports and studies submitted by DDEC. In particular, the Agency was disappointed to see the lack of involvement of ECCC in review of the AEMP Re-evaluation and design and the Aquatic Response Plans (water chemistry). This is a critical aquatic effects document that analyzes the effects of Ekati mine on the aquatic environment and proposes refinements to the program. Review and refinement of aquatic monitoring at Ekati mine always benefits from the in-house technical expertise and informed contributions of federal regulators.

ECCC has circulated draft changes to the federal Metal Mining Effluent Regulations. The draft regulations, if approved, would now include diamond mining. The Agency participated in initial discussions in March 2017 and further discussions are planned for summer of 2017.

Government of the Northwest Territories

Department of Lands: The Agency is pleased that a regular inspections routine was maintained (10 water licence and 10 land use permit inspections) in 2016-17. The GNWT inspector for Ekati continues to be thorough and effective.

Department of Environment and Natural Resources (ENR): ENR continues to provide detailed reviews of documents within their mandate (wildlife, air, water, closure and reclamation). The regulatory process has also benefited from their subject expertise and diligent use of consultants. ENR's involvement in the Jay Project water licence proceedings, especially the technical session and public hearing, was detailed and thorough. In regards to wildlife, the Agency is encouraged by progress made on the Regional Bathurst Caribou Range Plan and the review process for the Wildlife Effects Monitoring and Caribou Roads Mitigation plans. ENR also presented a draft Air Quality Regulatory Framework and associated changes to the Environmental Protection Act. The Agency sees these new regulations as a positive measure towards filling the current air quality management regulatory gap.

The Agency is pleased to note that ENR has been able to move forward with changes to the Environmental Agreement with INAC's continued

participation as noted above. ENR and INAC recently circulated proposed changes to the Environmental Agreement and the Agency looks forward to discussing these changes in upcoming meetings.

Wek'èezhii Land and Water Board

Generally, the Agency is pleased with the WLWB handling of the Jay Project water licence and land use permit process and to see many of the Agency's and other reviewers' concerns included in the draft water licence that was circulated for comment.

A workshop was held for the Waste Rock Storage Area Closure Ecological Risk Assessment in January 2017. This workshop was well received and attended by Society Members. All parties were able to benefit from productive discussion of issues as several groups brought consultants to the workshop.

The Agency recommended a similar workshop for the AEMP Re-evaluation. This request was articulated in a letter dated June 2016, as well as in AEP Re-evaluation written comments. Unfortunately, the Agency's request for a workshop was rejected by the WLWB. In our opinion the issues raised warranted a face to face meeting with all interested parties to openly discuss the issues. ■

"This is a critical aquatic effects document that analyses the effects of Ekati mine on the aquatic environment and proposes refinements to the program. Review and refinement of aquatic monitoring at Ekati mine always benefits from the in-house technical expertise and informed contributions of federal regulators."

DDEC ASSESSMENT

HIGHLIGHTS

- + DDEC was generally responsive to written comments on the Jay Project but reluctant to discuss concerns in a meaningful way during public meetings.
- + DDEC rejected the majority of the recommendations on drafts of the Wildlife Effects Monitoring Plan (WEMP) and the Caribou Road Mitigation Plan (CRMP).
- + Traditional Knowledge Elders Group (TKEG) was established and a cultural camp set up close to the mine.

As noted in past annual reports, Dominion Diamond Ekati Project continues to operate Ekati Diamond Mine in an environmentally sound manner.

DDEC was generally responsive to written comments and concerns raised throughout the Jay Project water licence and land use permit processes. Staff responded to all comments in a timely and efficient manner. While the written responses were generally thorough and detailed, we were disappointed with DDEC's lack of interaction and openness during meetings. During the technical session, and in particular the public hearing, DDEC was reluctant to directly address intervenors' concerns. This was frustrating as it limited open dialogue that could have taken advantage of the expertise present to resolve some of the concerns raised in the interventions.

While DDEC generally meets their submission deadlines there were a few instances where items were submitted late resulting in a rush approval or a lack of time to appropriately review an item. In particular, the Agency was concerned with the request and approval process for the Waste Rock

Ore Management Plan version 6.2 (Misery Raise). DDEC requested a 15 m raise for the Misery waste rock pile to allow it to accommodate additional schist rock, explaining that they are quickly running out of capacity to store the rock. DDEC should have been able to predict the capacity shortfall well in advance.

In November 2016, DDEC completed stack testing of their waste incinerator. The results show dioxin, furan, and mercury emissions were well below the Canada-wide Standards. The Agency looks forward to receiving a summary report of the test results, as required under the Mackenzie Valley Environmental Impact Review Board's Report of Environmental Assessment (REA).

In January 2016 the Agency provide a letter in support of DDEC's submission for the Towards Sustainable Mining Environment Excellence Awards for work on its waste management program. At the time of writing this report the Agency has learnt that DDEC was chosen for the award and would like to congratulate them. An example of DDEC's impressive waste management system is that they composted 50% of their organic waste

on site, resulting in a greatly reduced amount of waste going to the incinerator. DDEC is also investigating whether compost material can be used as a soil amendment during closure activities.

The WEMP and the CRMP were reviewed during 2016-17 during workshops and written submissions. It is disappointing that DDEC made no changes in response to 75% of the nearly 100 recommendations on previous versions of these plans made by reviewers.

Despite modest improvements the Agency has seen regarding DDEC's handling of Traditional Knowledge (TK) activities, it is not always clear how the gathered TK is being incorporated within DDEC's monitoring and mitigation programs, reclamation research and closure planning. The Agency encourages DDEC to clarify the linkage between TK gathering and implementation at Ekati mine. The Agency is hopeful that the TKEG and the cultural camp, created through measures in the REA, will help improve the incorporation of TK in operations, management and monitoring at Ekati mine. ■

"The Wildlife Effects Monitoring Plan and the Caribou Road Mitigation Plan were reviewed during 2016-17 during workshops and written submissions. It is disappointing that DDEC made no changes in response to 75% of the nearly 100 recommendations on previous versions of these plans made by reviewers."

RESPONSIBILITY STATEMENT

The management of Independent Environmental Monitoring Agency is responsible for preparing the financial statements, the notes to the financial statements and other financial information contained in this report.

Management prepares the financial statements in accordance with Canadian accounting standards for not-for-profit organizations. The financial statements are considered by management to present fairly the management's financial position and results of operations.

The organization, in fulfilling its responsibilities, has developed and maintains a system of internal accounting controls designed to provide reasonable assurance that management assets are safeguarded from loss or unauthorized use, and that the records are reliable for preparing the financial statements.

The financial statements have been reported on by Crowe MacKay LLP, Chartered Professional Accountants, the Agency's auditors. Their report outlines the scope of their examination and their opinion on the financial statements. ■



Kim Poole, Secretary Treasurer

July 26, 2017

INDEPENDENT AUDITORS' REPORT

TO THE MEMBERS OF INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

We have audited the accompanying financial statements of Independent Environmental Monitoring Agency, which comprise the statement of financial position as at March 31, 2017, and the statements of operations, changes in net assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the Agency's preparation and fair presentation of the financial statements in order to design audit procedures

that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Agency's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Independent Environmental Monitoring Agency as at March 31, 2017, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Crowe Mackay LLP

Chartered Accountants
Yellowknife, Canada
June 24, 2016

STATEMENT OF OPERATIONS

For the year ended March 31
See accompanying notes.

	2017	2016
REVENUES		
Core fund - Dominion Diamond Ekati Corporation	\$635,075	\$627,805
Interest income	\$1,641	\$1,341
Seperate fund - Dominion Diamond Ekati Corporation	\$40,000	\$40,000
	\$676,716	\$669,146
EXPENDITURES		
Advertising and promotion	\$18,903	\$2,278
Amortization	\$3,817	\$3,001
Auditing and bookkeeping fees	\$19,681	\$19,644
Board support		
- honoraria	\$151,482	\$114,135
- travel, meals and accomodations	\$32,500	\$29,467
Community consultation		
- annual general meeting	\$12,855	\$ 5,626
- annual report	\$ 25,216	\$ 52,360
- community visits	\$ 18,196	\$ 6,138
Consultants	\$19,208	\$4,124
Equipment	\$3,248	\$5,250
Insurance	\$6,522	\$5,028
Office supplies	\$13,793	\$14,273
Postage and courier	\$1,241	\$ 910
Professional development	\$ 1,637	\$ 1,269
Rent- facility rental	\$ 1,560	\$ 945
Rent- office and maintenance	\$ 31,500	\$ 31,500
Separate fund		
- honoraria	\$ 45,623	\$ 81,764
- travel and administration	\$ 3,095	\$ 21,052
Staff recruitment	\$ -	\$2,821
Staff travel	\$2,335	\$ 1,289
Telephone and fax	\$ 8,303	\$ 5,814
Travel	\$ 6,520	\$ -
Wages and benefits	\$223,601	\$227,453
	\$650,836	\$636,141
EXCESS OF REVENUES OVER EXPENDITURES BEFORE OTHER ITEMS	\$25,880	\$33,005
OTHER ITEMS		
Aquisition of tangible capital assets	\$2,339	\$5,250
Unspent funding - core	(\$28,219)	(\$38,255)
	(\$25,880)	(\$33,005)
EXCESS OF REVENUES OVER EXPENDITURES	\$ -	\$ -

STATEMENT OF CHANGES IN NET ASSETS

For the year ended March 31
 See accompanying notes.

	2017			2016		
	Total	Unrestricted Funds	Tangible Capital Asset Fund	Total	Unrestricted Funds	Tangible Capital Asset Fund
BALANCE, BEGINNING OF YEAR	\$12,086	\$5,461	\$6,625	\$12,086	\$7,710	\$6,625
Excess of revenues over expenditures	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Acquisition of tangible capital assets	\$ -	(\$2,339)	\$2,339	\$ -	(\$5,250)	\$2,339
Amortization	\$ -	\$3,817	(\$3,817)	\$ -	\$3,001	(\$3,817)
BALANCE, END OF YEAR	\$12,086	\$6,939	\$5,147	\$12,086	\$5,461	\$6,625

STATEMENT OF FINANCIAL POSITION

For the year ended March 31
 See accompanying notes.

	2017	2016
ASSETS		
CURRENT		
Cash	\$50,982	\$112,207
Term Deposits (note 3)	\$15,586	\$15,419
Restricted cash (note 4)	\$371,576	\$375,777
Accounts receivable (note 5)	\$ -	\$247
Prepaid expenses	\$4,052	\$3,835
	\$442,196	\$507,485
TANGIBLE CAPITAL ASSEST (NOTE6)	\$5,147	\$6,625
	\$447,343	\$514,110
LIABILITIES		
CURRENT		
Accounts payable and accrued liabilities (note 7)	\$63,681	\$126,247
Deferred revenue (note 8)	\$343,357	\$337,522
Contributions repayable (note 9)	\$28,219	\$38,255
	\$435,257	\$502,024
FUND BALANCES		
UNRESTRICTED FUND	\$6,939	\$5,461
TANGIBLE CAPITAL FUND	\$5,147	\$6,625
	\$12,086	\$12,086
	\$447,343	\$514,110

Commitments (note 10)

Approved on behalf of the board:



Jaida Ohokannoak, Chairperson



Kim Poole, Secretary-Treasurer

STATEMENT OF CASH FLOWS

For the year ended March 31
 See accompanying notes.

	2017	2016
ASSETS		
CASH PROVIDED BY (USED FOR)		
OPERATING ACTIVITIES		
Excess of revenues over expenditures	\$ -	\$ -
Item not affecting cash		
Amortization	\$3,817	\$3,001
	\$3,817	\$3,001
Change in non-cash working capital items		
Accounts receivable	\$247	(\$247)
Prepaid expenses	(\$217)	\$362
Accounts payable and accrued liabilities	(\$62,566)	\$25,673
Deferred revenue	\$5,835	\$3,619
Contributions repayable	(\$10,036)	\$37,134
CAPITAL ACTIVITY		
Purchase of tangible capital assets	(\$2,339)	(\$5,250)
	(\$2,339)	(\$5,250)
INCREASE (DECREASE) IN CASH	(\$65,259)	\$64,292
CASH, BEGINNING OF YEAR	\$503,403	\$439,111
CASH, END OF YEAR	\$438,144	\$503,403
CASH CONSISTS OF		
Cash	\$50,982	\$112,207
Term deposits	\$15,586	\$15,419
Restricted cash	\$371,576	\$375,777
	\$438,144	\$503,403

NOTES TO THE FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

1. Nature of operations

Independent Environmental Monitoring Agency (the "Agency") is a not-for-profit organization incorporated under the Societies Act of the Northwest Territories. It is exempt from income tax under Section 149(1) of the Income Tax Act.

The mission of the Agency is to oversee environmental management at the Ekati Diamond mine site in the Northwest Territories.

2. Significant accounting policies

These financial statements are prepared in accordance with Canadian accounting standards for not-for-profit organizations. The significant policies are detailed as follows

(A) CASH EQUIVALENTS

The Agency considers all highly liquid investments with a maturity of three months or less at the time of purchase to be cash equivalents. These cash equivalents consist primarily of term deposits and certificates of deposit.

(B) TANGIBLE CAPITAL ASSETS

Tangible capital assets are recorded at cost. The Agency provides for amortization using the declining balance method at rates designed to amortize the cost of the assets over their estimated useful lives, as set out in note 6.

When tangible capital assets are sold or retired, the related cost and accumulated amortization are removed from the accounts and any gain or loss is charged against earnings in the period.

Tangible capital assets acquired or constructed during the year are not amortized until they are put into use.

One half of the year's amortization is recorded in the year of acquisition. No amortization is recorded in the year of disposal.

(C) DEFERRED REVENUE

Contributions received in advance are deferred. The amounts will be taken into income as services and goods are acquired.

(D) FUND ACCOUNTING

The Unrestricted Fund reports revenues from and expenditures of unrestricted contributions to be used for general operations.

The Tangible Capital Asset Fund reports the balances, activities, and transactions relating to tangible capital assets of the Agency.

(E) REVENUE RECOGNITION

The Agency follows the deferral method of accounting for contributions. Restricted contributions are

NOTES TO THE FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Interest income is recognized when earned.

(F) FINANCIAL INSTRUMENTS

Financial assets originated or acquired or financial liabilities issued or assumed in an arm's length transaction are initially measured at their fair value. In the case of a financial asset or financial liability not subsequently measured at its fair value, the initial fair value is adjusted for financing fees and transaction costs that are directly attributable to its origination, acquisition, issuance or assumption. Such fees and costs in respect of financial assets and liabilities subsequently measured at fair value are expensed.

The Agency subsequently measures the following financial assets and financial liabilities at amortized cost:

Financial assets measured at amortized cost include cash, term deposits and accounts receivable.

Financial liabilities measured at amortized cost include accounts payable and accrued liabilities and contributions repayable.

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

(G) USE OF ESTIMATES

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. These estimates are reviewed periodically, and, as adjustments become necessary, they are reported in operations in the period in which they become known.

3. Term deposits

Short-term investments consist of guaranteed investment certificates maturing on May 2, 2017 and earning interest at 1.30% per year. The certificates are transferable on demand to the Agency's bank account.

NOTES TO THE FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

4. Restricted cash

Restricted cash represents cash received from Dominion Diamond Ekati Corporation that is intended for a specific purpose or represents the amount to repay.

	2017	2016
Cash received in advance for the 2017/2018 fiscal year	\$343,357	\$ -
Cash repayable from 2016/2017 surplus	\$28,219	\$ -
Cash received in advance for the 2016/2017 fiscal year	\$ -	\$337,522
Cash repayable from 2015/2016 surplus	\$ -	\$38,255
	\$371,576	\$375,777

5. Accounts receivable

As at March 31, 2017 because there is \$NIL accounts receivable, there are no allowance for doubtful accounts (2016 - \$Nil).

6. Tangible capital assets

				2017	2016
	Rate	Cost	Accumulated amortization	Net book value	Net book value
Equipment	20%	\$13,065	\$ 10,960	\$2,105	\$178
Computer equipment	30-55%	\$ 8,521	\$6,991	\$1,530	\$4,287
Website	30%	\$15,120	\$13,608	\$1,512	\$2,160
		\$36,706	\$31,559	\$5,147	\$6,625

7. Accounts payable and accrued liabilities

	2017	2016
Accounts payable and accrued liabilities	\$33,334	\$102,252
Government remittances	\$16,404	\$16,243
Salaries and benefits payable	\$13,943	\$7,752
	\$63,681	\$126,247

NOTES TO THE FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

8. Deferred revenue

Deferred revenue consists of payments received in advance and is intended for the upcoming fiscal year expenditures.

	2017	2016
Received from Dominion Diamond Ekati Corporation	\$343,357	\$337,522

9. Contributions repayable

	2017	2016
Dominion Diamond Ekati Corporation		
Core funding repayable	\$28,219	\$38,255

Contributions repayable arising from one fiscal year are normally deducted from contributions provided by Dominion Diamond Ekati Corporation in the following fiscal year. In the year, the Agency had excess contributions of \$28,219, which is to be deducted from 2017/2018 contributions.

10. Commitments

As at March 31st, 2017 the Agency has an operating lease (month-to-month) for office space: there are no immediate plans for changes in rental agreements nor location. The payment for the next year is based on the existing month-to-month contract is \$31,500 (2016 - \$31,500).

11. Economic dependence

The Agency receives 100% (2016 - 100%) of its revenue from Dominion Diamond Ekati Corporation. Management is of the opinion that operations would be significantly affected if the funding was substantially curtailed or ceased. The funding arrangement with the owners of the mine is governed by legislation.

12. Comparative figures

The financial statements have been reclassified, where applicable, to conform to the presentation used in the current year.

NOTES TO THE FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

13. Financial instruments

Transactions in financial instruments may result in an entity assuming or transferring to another party one or more of the financial risks described below. The required disclosures provide information that assists users of financial statements in assessing the extent of risk related to financial instruments.

(A) CREDIT RISK

Credit risk is the risk that one party to a transaction will fail to discharge an obligation and cause the other party to incur a financial loss. The Agency does have credit risk in cash and term deposits of \$422,558 (2016 - \$487,984) as a result of having funds with one chartered bank in excess of the insurable limit. Furthermore, the Agency has a concentration of credit risk as full balance of cash is held at one financial institution. This risk has not changed from the prior year.

(B) LIQUIDITY RISK

The Agency does have a liquidity risk in the accounts payable and accrued liabilities and contributions repayable of \$91,900 (2016 - \$164,502). Liquidity risk is the risk that the Agency cannot repay its obligations when they become due to its creditors. The risk has not changed from the prior year.

SUMMARY 2016-17 & 2017-18

SUMMARY WORK PLAN AND CORE BUDGET 2017-18 AND 2018-19

The work plan for 2017-18 is based on the direction and feedback received from our Society Members at our annual general meeting (AGM) and the Agency's own initiatives.

For the second year of the work plan (2018-19), the Agency will refine and modify the plan as needed during next year's AGM and also taking into consideration any changes or modifications to activities at Ekati mine.

Dominion Diamond Ekati Corporation (DDEC), as the owner of Ekati mine, is solely responsible for funding the Agency in accordance with the 2006 Resolution Agreement. The Agency's budget for 2017-18 is approximately \$686,000 while the budget for 2018-19 is projected to be \$694,000, which reflects an assumed increase in Canada's Annual Consumer Price Index (CPI) of 1.0%.

Major Activities

BOARD MEETINGS AND CONFERENCE CALLS

Board meetings are held approximately 4 times per year. They provide an opportunity for Directors to discuss, review, and make recommendations on recent, ongoing and anticipated initiatives. Guests are invited to meetings to provide updates and receive input on their specific activities. DDEC, WLWB, and GNWT inspectors are regular guests.

Proposed Activities: Four board meetings annually.

Table 6: Core Budgets 2016-17 and 2017-18

ACTIVITY	FORECASTED 2016-17	PROPOSED 2017-18	PROPOSED 2018-19
Board Meetings	\$54,576	\$68,840	\$69,528
Review of Documents	\$68,344	\$74,960	\$74,174
Separate Fund	\$57,484	\$40,000	\$40,000
Communications	\$131,527	\$165,310	\$167,973
Outside Contracts	\$17,988	\$13,000	\$10,000
Mgmt and Admin	\$326,380	\$324,380	\$327,620
Special projects	\$0	\$0	\$0
Total	\$656,299	\$686,490	\$689,295
<i>(approved)</i>	<i>\$675,045</i>	<i>\$686,714</i>	<i>\$693,581</i>

REVIEW OF REPORTS, PLANS AND PROGRAMS, AND IMPLEMENTATION OF THE ENVIRONMENTAL AGREEMENT

Directors review and make recommendations on the major reports, programs, studies and plans required under the Environmental Agreement, water licences, and other regulatory approvals.

Proposed Activities: The Agency expects to review the following reports in 2017-18:

- The regular environmental monitoring reports for 2017 under the Environmental Agreement and water licence:
- Aquatic Response Framework - Response Plans:
- Seepage 3 year Report:
- Bathurst Caribou Range Plan Technical Workshop

- Interim Closure and Reclamation Plan Annual Progress Report:
- Dust Suppression Pilot Project Interim Report: and
- Various management plans and updates including the Caribou Road Management Plan: Wildlife Management Plan: Air Quality and Emissions Monitoring and Mitigation Plan and the Waste Rock and Processed Kimberlite Management Plan.

There are also two meetings planned with DDEC, GNWT, Indigenous and Northern Affairs Canada, and the Agency which focus on implementation of the Environmental Agreement.

A similar workload is expected in 2018-19.

SEPARATE FUND ACTIVITIES

The Resolution Agreement establishes a Separate Fund of up to \$40,000 per year for Agency expenses where a public hearing is reasonably assured as indicated in approved work plans or budgets, or as confirmed by a regulatory body.

Proposed Activities: For 2017-18, the Agency expects to deal with the following:

- Review the final water licence and Reasons for Decision sent to the Minister: and,
- Any unforeseen water licence amendment applications.

There is no expected public hearing process for 2018-19.

CONSULTATION AND COMMUNICATION

Consultation and communications with our Society Members and the general public is an important part of the Agency's mandate.

Proposed Activities: The Agency will maintain its visits to communities. This year the Agency held its annual report writing session and had an open house in Kugluktuk in May 2017. The Agency will continue to produce technical and plain language annual reports, a pamphlet summarizing the annual reports for distribution to all households, and attend workshops and meetings relevant to our mandate. The Agency will continue to maintain its website, the Ekati Timeline and public registry. The Agency will also be implementing other parts of our Communications Plan including printed material and finalizing an Agency video which will ultimately be translated into Aboriginal languages.

Similar activities are anticipated in 2018-19.

OUTSIDE CONTRACTS

On occasion, the Agency turns to other experts to help review reports, studies, and plans.

Proposed Activities: It is difficult to predict what, if any, outside expertise the Agency may commission, but aspects of Seepage 3 year Report may require some outside expertise.

MANAGEMENT AND ADMINISTRATION

The Agency provides the majority of its management and administrative services through its Yellowknife office and staff of an Executive Director and a Communications and Environmental Specialist. The Agency manages its own office space and equipment.

Proposed Activities: Maintain current staff and benefit levels.

The same activities are anticipated in 2018-19. ■



MAIN CAMP WITH KOALA PIT AND AIRSTRIP IN THE BACKGROUND.

ACRONYMS & GLOSSARY

AEMP – Aquatic Effects Monitoring Program
AQMP – Air Quality Monitoring Program
AQEMMP – Air Quality and Emissions Monitoring and Management Plan
AES – Aquatic Ecology Synthesis
ARD – Acid Rock Drainage
ARF – Aquatic Response Framework
CAM – Continuous Air Monitoring
CCME – Canadian Council of Ministers of the Environment
CIMP – Cumulative Impact Monitoring Program
CPI – Consumer Price Index
CRMP – Caribou Road Mitigation Plan
CPKSA – Coarse Processed Kimberlite Storage Area
DDEC – Dominion Diamond Ekati Corporation (the company)
DFO – Fisheries and Oceans Canada
DO – Dissolved Oxygen
DNA – deoxyribonucleic acid
EQC – Effluent Quality Criteria
ECCC – Environment and Climate Change Canada
EIR – Environmental Impact Report
EMAB – Environmental Monitoring Advisory Board
ENR – Department of Environment and Natural Resources (GNWT)
EPA – NWT Environmental Protection Act
GNWT – Government of the Northwest Territories
GTC – Ground Temperature Cable
HVAS – High volume Air Samplers
IACT – Inter-Agency Coordinating Team
ICRP – Interim Closure and Reclamation Plan
INAC – Indigenous and Northern Affairs Canada
KIA – Kitikmeot Inuit Association
KPSF – King Pond Settling Facility
LKDFN – Lutselk'e Dene First Nation
LLCF – Long Lake Containment Facility
LUP – Land Use Permit
MVEIRB – Mackenzie Valley Environmental Impact Review Board
NSMA – North Slave Métis Alliance

NWT – Northwest Territories
PAG – Potential Acid Generating
PDC – Panda Diversion Channel
PK – Processed Kimberlite
PSD – Pigeon Stream Diversion
QA/QC – Quality Assurance/Quality Control
REA – Report of Environmental Assessment
Review Board – Mackenzie Valley Environmental Impact Review Board
SLEMA – Snap Lake Environmental Monitoring Agency
SNP – Surveillance Network Program
SSMMP – Suspended Sediment Monitoring and Management Plan
TK – Traditional Knowledge
TKEG – Traditional Knowledge Elders Group
TOC – total Organic Carbon
TDS – Total Dissolved Solids
TSP – Total Suspended Particulate
TSS – Total Suspended Solids
WEMP – Wildlife Effects Monitoring Program
WEMPlan – Wildlife Effects Monitoring Plan
WLWB – Wek'èzhii Land and Water Board
WPKMP – Wastewater and Processed Kimberlite Management Plan
WPOMP – Wastewater and Processed Kimberlite Management Plan
WRSA – Waste Rock Storage Area
YKDFN – Yellowknives Dene First Nation
VEC – Valued Ecosystem Component
ZOI – Zone of Influence
Action Levels – A predetermined change, to a monitored variable or other qualitative or quantitative measure that requires the Licensee to take appropriate actions that may include, but that are not limited to: further investigations, changes to operations, or enhanced mitigation measures.
Adaptive Management – A management system with continual monitoring so that if initial mitigation measures are ineffective, additional or alternative mitigation is applied to keep the impact within acceptable levels.

Benthos – The sediments and mud at the bottom of rivers, lakes and ponds that can contain living organisms. Benthic invertebrates such as mosquito larvae are an important food source for small fish.

Chloride – Salt resulting from the combination of the gas chlorine with a metal. Fish and aquatic communities cannot survive in water with high levels of chlorides.

Cladocera – An order of small crustaceans (i.e., zooplankton) that live in water (commonly called water fleas).

Consultation – (i) The provision, to the party to be consulted, of notice of a matter to be decided in sufficient form and detail to allow that party to prepare its views on the matter:

(ii) The provision of a reasonable period of time in which the party to be consulted may prepare its views on the matter, and provision of an opportunity to present such views to the party obliged to consult; and

(iii) Full and fair consideration by the party obliged to consult of any views presented.

Environmental Agreement – Created as a legally binding instrument to provide monitoring and input into management practices not covered by other authorizations. Parties include BHPB and the federal and territorial governments. Akaitcho Treaty 8 First Nations (LKDFN and YKDFN), Kitikmeot Inuit Association, North Slave Métis Alliance and Tłı̨chǫ Government were involved in the negotiations.

Hydrocarbons – Organic compounds which contain only hydrogen and carbon. This includes fossil fuels (i.e., coal, petroleum and natural gas) as well as their derivatives, such as plastics, solvents and oils.

Kimberlite – A rare, potentially diamond bearing iron and magnesium rich rock from deep in the earth's mantle. Kimberlites are generally found as vertical pipe-like structures.

Molybdenum – A metal that can affect trout just after they hatch.

Nitrate – A nutrient, like a fertilizer, derived from nitrogen. Nitrate can affect the growth of baby fish if it gets too high.

Phytoplankton – Microscopic plants (e.g., algae) found in freshwater and ocean environments. They are an important food source for zooplankton.

Processed Kimberlite – The waste material and water mixture that is left over after the mill removes the diamonds from the ore. Also referred to as 'tailings'.

Progressive Reclamation – Reclamation that can be carried out during the construction and operation phases of a mine prior to final closure (e.g., rock waste dumps).

Reclamation – The recovery to viable ecosystems of areas of land and water bodies that have been disturbed during mining.

Schist – A large group of coarse-grained metamorphic rocks which readily split into thin plates or slabs as a result of alignment of lamellar or prismatic minerals.

Slave Geological Province – Area between the City of Yellowknife and the Arctic coast.

Tailings – See 'Processed Kimberlite'.

Total Suspended Particulates – The fraction of airborne particulates that will remain airborne after their release in the atmosphere.

Valued Ecosystem Component – Environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.

Waste Rock – Rock containing diamonds but too low in grade to be mined or processed economically. Also other rock that must be removed to access kimberlite pipes.

Waste Rock Seepage – Water that drains through the waste rock piles. This water may pick up contaminants as it touches the waste rock and may enter the receiving environment.

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

Zone of Influence – Area of reduced caribou occupancy.

Zooplankton – The small, mostly microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on phytoplankton and small particles in the water. They are an important food source for small fish.

2016-17 ANNUAL REPORT

TECHNICAL

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OFFICE HOURS
Monday to Friday
9:00 a.m.—12:00 p.m.
1:00 p.m.—5:00 p.m.

