

November  
2003

# Nanisivik Closure & Reclamation News



***Ensuring  
that Arctic  
Bay is  
Informed***

## Technical Meeting held on Human Health and Ecological Risk Assessment for the Nanisivik Mine

By  
Patrick Duxbury, M.Sc.  
Mine Reclamation Coordinator, Nunavut Water Board



On September 22<sup>nd</sup> and 23<sup>rd</sup>, a technical meeting organized by the Nunavut Water Board ("NWB") was held in Ottawa for parties involved in the review of the Human Health and Ecological Risk Assessment ("HHERA") for Nanisivik Mine. Representatives from CanZinco Limited ("CanZinco"), the Government of Nunavut ("GN"), Indian and

Northern Affairs Canada ("INAC"), independent experts Dillon Consulting and the Hamlet of Arctic Bay were in attendance.

The NWB, after having reviewed the numerous submissions concerning the HHERA felt that a technical meeting between regulators would help keep the HHERA approval process on track. The NWB therefore authorized its staff to organize and participate in the technical meeting on its behalf.

The HHERA is one of several reports required of CanZinco under the terms and conditions of its water licence for the closure and reclamation of Nanisivik Mine. The basic purpose of the HHERA is to provide a "clean-up objective" for metal contaminated soil at the site. This "objective" is the concentration of metals in the soil that will not pose a health risk to humans or populations of animals living at Nanisivik.

While writing an HHERA is a complicated process that requires specialized scientific knowledge, the practical result of the HHERA is that by defining a safe concentration of metals, CanZinco will know how much soil it will be required to clean up. To

locate areas where metals exceed the safe concentration, and to determine the quantity of soil in question, CanZinco's consultants have been sampling and examining soil at Nanisivik over the two past summers. Some of this information was presented in CanZinco's Environmental Site Assessment ("ESA"), submitted earlier this year. A final version of the ESA with information from Summer 2003's soil sampling activity is expected later this year; its results will be shared with Arctic Bay residents.

The review process for the HHERA has spanned over nine months since CanZinco's submission of it in late January. The process has included two face-to-face technical meetings and three rounds of review. Participants in this process include Environment Canada, GN, INAC, Nunavut Tunngavik Incorporated, NWB, Worker's Compensation Board, independent experts and CanZinco.

Because of the multi-party participation and the significant amount of effort expended in the HHERA review process, concerned parties have become more confident that the information presented in the HHERA is scientifically sound and protects the interests of local persons and the environment.

At the closing of the Ottawa technical meeting there was a general agreement amongst the participants that common ground had been found. CanZinco stated that it would provide a final revision of the HHERA, based upon the decisions made and discussions held during the meeting. Barring any significant unforeseen changes to the report that could substantially alter its conclusions, it was felt

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that the report would be acceptable to the GN, INAC and the NWB, all of whom hold regulatory approval over the closure of the Nanisivik Mine.

The Nunavut Water Board awaits the submission of several other reports this fall prior to CanZinco's proposed December 15, 2003 submission of the Final Closure and Reclamation Plan for Nanisivik. The NWB reaffirms its commitment to sharing

information with the community of Arctic Bay about this important issue and all NWB related issues raised through submissions made under CanZinco's valid water licence.



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### *A Message from the Nunavut Water Board*

In our continuing effort to keep Nunavut's communities informed, our Board is pleased to present this third edition of our Nanisivik Closure and Reclamation News newsletter. As CanZinco Limited prepares to soon submit its final closure plan, we hope to keep working with your community, the company and other regulators towards the common goal of a properly reclaimed mine that leaves a positive and healthy legacy. The Nunavut Water Board appreciates that Nanisivik is a historically and geographically unique development which has had a significant impact on the lives of Arctic Bay residents, as well as many Nunavummiut beyond. The lessons from Nanisivik will be carried forth in our board's work as we consider the next generation of mines in our land. The Board also wishes to take this opportunity to thank out-going mayor Joanase Akumalik for his contribution and assistance to us, particularly during last year's hearings in Arctic Bay. We wish him well in his new job with NTI and we are confident that he will continue to be an asset to his people.

The Nunavut Water Board is:

*Thomas Kudloo, Chair*  
*Baker Lake*

*Robert L. Hanson, Vice Chair*  
*Iqaluit*

*Guy Kakkiarnium*  
*Kugaaruk*

*Thomas Kabloona*  
*Baker Lake*

*George Porter*  
*Gjoa Haven*

*William Lyall*  
*Cambridge Bay*

*Charlie Inuaraq*  
*Pond Inlet*

*Geoff Kusugak*  
*Rankin Inlet*

*Lootie Toomasie*  
*Qikiqtarjuaq*



# Nanisivik Closure and Reclamation Update

By  
Bill Heath, Vice-President  
CanZinco Limited

Although it may appear to some that there has been very little activity at Nanisivik of late, it should be stressed that appearances can be deceiving. While no major physical reclamation work has yet been completed at the site, CanZinco Limited has carried out progressive reclamation for several years and has completed some minor reclamation activities that were authorized by the Nunavut Water Board during the 2003 summer season. In addition, we have spent a great deal of time, effort and money on vital technical reports and studies. Those reports and studies are being carried out to ensure that the final reclamation work will be complete, thorough and will achieve the highest technical and environmental standards possible.

Of particular recent significance would be the letter received from the Nunavut Water Board acknowledging that the Environmental Site Assessment ("ESA"), which was completed by Gartner Lee Limited at the request of CanZinco, was approved with conditions. We are pleased that this signifies that the study is acceptable to the Water Board and the various regulators involved.

Another significant milestone that is soon to be achieved is the Human Health and Ecological Risk Assessment (HHERA) which was in the final stages of review by the Water Board at the end of August. In order to address the concerns of all parties, and in an effort to provide all regulators a forum to express their specific technical concerns, the Water Board convened a technical meeting in Ottawa on September 22<sup>nd</sup> and 23<sup>rd</sup>. While the task of reconciling the differences of technical opinions seemed quite daunting at the outset, with the expert assistance of Bill Tilleman as facilitator, and with the in-house technical staff of the Water Board, differences of opinion were overcome and consensus was reached within the two days set aside for the discussions. This allowed CanZinco to make

a commitment that the HHERA would be rewritten, simplified and filed in its final form by mid-October. The revised document was submitted to the Water Board for final approval on October 21, 2003. The HHERA is now in a final form that should allow for its approval and inclusion in the final closure document, due to be filed by CanZinco in mid-December 2003.



The Underground Solid Waste Disposal Plan was finalized during the summer months and has been submitted to the Water Board for their review, as well as for review by the other regulators involved. In addition, reports dealing with the site monitoring requirements, waste rock disposal, talik investigation, spillway design, landfill closure and tailings cover are all being finalized for submission to the Board. All of these documents, consistent with the Water Board's philosophy of openness and transparency, are now or will be available to the public for review.

In summary, while the major components of mine reclamation have not yet commenced, the necessary steps have been for some time, and continue to be, taken by all of the parties involved to ensure that when the final physical work commences in the summer of 2004, the work is undertaken in an orderly, professional and well thought out fashion.

# Reclamation Progress at the Polaris Mine

By

Patrick Duxbury, M.Sc.  
NWB Mine Reclamation Coordinator

Over summer and fall 2003, work crews at the Polaris Mine have been busily implementing TeckCominco Limited's closure plan. Representatives of the Nunavut Water Board ("NWB") and Indian and Northern Affairs Canada paid a visit to mine during September 8-10, 2003, to review the progress of the reclamation, offer suggestions and to make sure that measures are being taken to protect the environment.

Persons who may have visited Polaris in past years would probably be surprised with the changes at the site since the termination of mining activities in September, 2002. Significant Polaris landmarks such as the massive concentrate storage building, with its Canadian flag decoration, and the Barge Complex have been removed, cut into small sections and sent to the Little Red Dog quarry for burial.

TeckCominco Limited's contractors have been busy elsewhere on site as well. A large quantity of soil that was contaminated by metals and petroleum products during mine operation is being excavated and placed underground in the mine workings so that it will not present a future risk to the environment or human health.

Garrow Lake, the water body that was used to receive waste tailings, is having its water level reduced back to its original state. Once the original lake level is achieved, Garrow Lake will be reconnected to Garrow Bay by the partial removal of the lake's dam.

While much has been done already, there is still much work to be completed over the next year before Polaris can receive its official "Closed Mine Status". Major infrastructure such as the accommodations complex and the fuel storage facility must be removed. There will also be a considerable amount of land leveling and contouring required to make the site appear much as it did before mine development. This will include reconstruction of the shoreline and the capping of Little Red Quarry.

Following the trip to Polaris, a NWB representative visited the community of Resolute Bay to inform residents about the progress of the mine reclamation. A slideshow presentation with photos from the visit was shown. After the presentation a discussion ensued which offered an opportunity for residents to ask questions and state their concerns. Out of this discussion, it was noted that although the residents were largely happy with progress of the reclamation to date, they did, however, have concerns regarding the status of mine assets, such as furniture, that might be available to the community. Following a request made by residents at the meeting, a NWB representative contacted John Knapp, Polaris Mine Manager, to notify him of the community's concern. In response, Mr. Knapp has stated that he will contact the community in order to follow up on this issue.

The NWB will continue to conduct, as part of its work, future visits to the mine site and subsequent consultations with residents of the high arctic.

Work crews have been dismantling infrastructure at the Polaris Mine



# Acknowledging Effort on the Nanisivik Closure

By  
Levi Barnabas,  
Arctic Bay Community Liaison Coordinator



I would like to take this opportunity to thank the Hamlet Working Group members, especially our previous mayor, Joanasie Akumalik, who have contributed much in working with various regulatory agencies to

address the concerns of the residents of Arctic Bay since the closure of Nanisivik Mine in September 2002.

When the Nunavut Water Board held its public hearing in July 2002, the mayor and Hamlet Council realized that there was a need for a Hamlet Working Group to work on the issues pertaining to the closure of the Nanisivik Mine. The Hamlet Working Group members are the following:

Joanasie Akumalik	-	Chairperson
Moses Oyukuluk	-	Deputy Mayor
Mucktar Akumalik	-	Elders Committee Representative
Jean Kigutikakjuk	-	2001/02 Youth Committee Rep.
Sheena Qaunaq	-	Youth Committee Rep.
Olayuk Naqitarvik	-	Arctic Bay Housing Board of Directors Rep.
Koonoo Muckpaloo	-	2001/02 Ikajurtit HTO Rep.
Tommy Tatatuapik	-	Ikajurtit HTO Rep.
Rhoda Tunraq	-	Women Group Rep.
Frank May	-	2001/02 Hamlet Council Rep.
Pauloosie Kaujak	-	Hamlet Council Rep.
Daniel Aola	-	Arctic Bay District Education Authority Rep.

I also would like to thank the Government of Nunavut's Department of Sustainable Development for organizing the GN Working Group, with members from various departments, to assist the residents of Arctic Bay in the mine closure. The GN has also published a socio-economic study and has created a Socio-Economic Sub-Committee to address the lost of employment and income from the mine.

CanZinco Limited has produced a Human Health and Ecological Risk Assessment. This report addresses a lot of concerns from residents on the contamination issue and it will contribute to a work plan for the reclamation of the mine site. The contamination issue is a major concern for the residents of Arctic Bay due to the fact that the mine was only 30 kilometres away from our community and that many of our residents have spent a lot of time there over the last 26 years. The efforts of Bill Heath and Robert Carreau should be recognized because they have spent numerous meetings addressing the contamination concerns, as well as other issues since the mine closure.

The Nunavut Water Board and their staff have provided a route to address the water license process for the mine reclamation. I personally thank the Board and their staff for providing Patrick Duxbury, who serves as reclamation coordinator for NWB, to assist the Hamlet Working Group, Hamlet Council and residents-at-large in understanding technical and regulatory issues.

In conclusion, I would like to thank all the parties involved during my time as Community Liaison Coordinator. We have accomplished many of the tasks that were assigned to us by the regulatory agencies involved. Finally, Mishak Allurut deserves special praise for his time dedicated to interpret meetings and translate documents that were much needed in order that the communication requirements of Arctic Bay residents were dealt with.

Our Working Group's efforts will be reflected upon in the future openings and closures of new mines in Nunavut. I would like to reemphasize our previous mayor's statement from last years Water Board public hearing, "We are working today, not for our benefit, but for the benefit of our children, their children and their grandchildren, whose lives will have an effect from our work".



# Report on the Strathcona Sound Monitoring Committee Meeting

By

Patrick Duxbury, M.Sc.

Mine Reclamation Coordinator, Nunavut Water Board

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**Disclaimer:** The following article is based upon the minutes of the Strathcona Sound Monitoring Committee Meeting with further updates from Committee representatives. Nunavut Water Board members and staff did not attend the meeting, nor have they participated in the Committee's activities, and as such they have no official opinion on the matters described below. However, since the issues in this report are of direct interest to the community of Arctic Bay and have implications for the reclamation of the Nanisivik Mine, they are included in this newsletter.

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The Strathcona Sound Monitoring Committee ("Committee") met on September 5, 2003 in Iqaluit to discuss and coordinate strategies to address the social and economic impacts of the Nanisivik Mine closure. The Committee has been in existence for many years and has served as a forum for interested parties to address wide-ranging issues related to the Nanisivik Mine and its impacts. In attendance were representatives from Arctic Bay, Human Resources Development Canada ("HRDC"), Indian and Northern Affairs ("INAC"), CanZinco Limited ("CanZinco"), the Government of Nunavut ("GN") and Nunavut Tunngavik Incorporated ("NTI").

The issue of an alternate use for Nanisivik after its reclamation was among the items discussed. The GN and CanZinco have been in negotiation over the possible transfer of mine assets to the territorial government. However, the final decision for that will depend upon the viability of the alternate use options, the cost to upgrade buildings for the proposed use, as well as environmental and health concerns that may exist. Until a final decision is made concerning Nanisivik's future use, major furniture and other similar assets belonging to the mine will not be available to Arctic Bay residents as the GN will want to have control over these items should it acquire the site. For its part, CanZinco has compiled an inventory of its assets at the mine. CanZinco stated at the meeting that it was willing to show this inventory to the community of Arctic Bay.

The GN has been working with both INAC and NTI to implement a \$1.12 million program to train Inuit for reclamation work at Nanisivik. At the time of the Committee meeting it was the GN's hope to arrange an agreement between stakeholders to support, especially financially, such a training program. It was agreed that there would be less training for local persons if the proposed funding level was not reached.

The proposed training would offer three types of training: Heavy Equipment Operator; Heavy Equipment Mechanic; and Personnel and Financial Administrative Skills. Interested journeyman, skilled in heavy equipment operation, would receive training over the winter so that they could become heavy equipment operation instructors who would train others under CanZinco supervision during the Summer 2004 reclamation activity. Heavy Equipment Mechanic trainees would commence their training in February, 2004 on CanZinco equipment that will be used in the reclamation. Personnel and Financial Administrative trainees would start their training in the summer of 2004 with subsequent training occurring over the following two years.

Under the GN program, Arctic Bay residents would receive priority for training positions followed by Nunavummiut from other communities. The Arctic Bay labour market survey conducted during the summer of 2003 indicated that there is high level of unemployment in the community and there are a number of persons are willing to receive training in order to work on the Nanisivik reclamation, or to instruct those who wish to work on it.

However, to implement this training program, a sufficient amount of money is required within a very short time frame. Training will have to commence as early as mid-November, 2003 in order for it to be useful for CanZinco's reclamation plans for 2004. The Committee passed a resolution requesting that parties in attendance canvas their respective funding agencies to seek funding for the training program for at least the 2003-2004 period. The parties were requested to report back the Committee by the end of September.

## **October Update**

The Committee did not meet again at the end of September as the parties had not managed to locate

funding for the training program at that time. By mid-October NTI had located \$100,000 towards the training program. NTI representative have expressed hope that other Committee partners will be able contribute financially as well.

Despite an exhaustive search, INAC's representative on the Committee, Doug Paget, stated that as INAC no longer directly funds training programs, there is no INAC money available for the Nanisivik training proposal. INAC however is pursuing the possibility of helping to develop a larger training scheme for Inuit workers through the newly announced HRDC Aboriginal Skills and Employment Partnership program. If successful, funding accessed through

this program could train Inuit to work on various mining projects throughout the North and would involve many industrial partners, including Nanisivik Mine. However the development of such a project will require much coordination and will take longer to implement than the mid-November deadline established by the Committee for commencing the Nanisivik training program.

The GN for its part has not yet sourced funding to contribute to the Nanisivik training, although its representatives have stated that, "The GN continues to work towards developing a meaningful training program based on the reclamation activities to be carried out at the Nanisivik site."

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## Update on GN Activities Related to Nanisivik Closure

By Bernie MacIsaac  
Manager, Minerals and Petroleum Resources  
Dept. of Sustainable Development  
Government of Nunavut

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### **Socio-Economic Issues**

These issues are being implemented by a sub-committee of the GN Nanisivik Working Group. This committee is co-Chaired by DSD and CG&T. The membership includes Education, Health & Social Services, Housing Corporation, and the Hamlet of Arctic Bay.

In February of 2003, DSD was given the task of forming this sub-committee and concentrating on socio-economic issues within the community of Arctic Bay. This committee has laid the groundwork for several projects and events including:

- § A community healing and commemorative event;
- § The development of an Arctic Bay Development Corporation;
- § A carving project including a very successful summer art exhibition held in Perth Ontario;
- § The annual Marathon between Arctic Bay and Nanisivik;
- § A business development week to be held in November;
- § Several youth employment strategies including the establishment of a Youth Employment Co-ordinator;

- § Mentorship and coaching for local employees using CESO;
- § Projects related to the provision of housing; and,
- § Tourism related projects including development of a multi-use facility for tourists and the community.

The Socio-Economic Committee has met several times in Arctic Bay, Iqaluit and in Pond Inlet and is scheduled to return to Arctic Bay in November. The committee is dedicated to providing the people of Arctic Bay the support, mentorship and training required for the residents to manage and control development in their community.

### **Environmental Issues**

The GN is awaiting the final determination of the Reclamation Objectives for the site as agreed to by the various regulators at their recent technical meeting in Ottawa.

### **Reclamation Training**

The GN continues to work towards developing a meaningful training program based on the reclamation activities to be carried out at the Nanisivik site.

# Responding to Community Concerns about the Nanisivik Mine

By

Patrick Duxbury, M.Sc.

Mine Reclamation Coordinator, Nunavut Water Board  
with assistance from Bob Carreau, Manager, Environmental

Affairs, Breakwater Resources Limited

In public meetings, as well as in private conversations, a number of concerns have been posed by residents of Arctic Bay about the potential environmental and health impacts of the Nanisivik Mine closure. Those concerns were discussed during a recent technical meeting in Ottawa between CanZinco representatives and environmental regulators (Nunavut Water Board, Government of Nunavut, Indian and Northern Affairs Canada ("INAC")). It is hoped that the following information will provide some answers to the concerns of residents of Arctic Bay.

## CONCERN

*How is it that this Human Health and Ecological Risk Assessment ("HHERA") report assesses health risks from Nanisivik? I lived/worked at Nanisivik and I was not interviewed for it and my current health status was not examined.*

## RESPONSE

The Nanisivik HHERA is a component of mine closure planning. As such, it looks forward (after mine closure) to evaluate the potential exposure risks of humans and animals to known concentrations of metals in the soil at the site. The HHERA does not examine past exposure but instead tries to predict any future health risk posed to persons and animals who may reside there. The HHERA is written with the assumption that the mine will be properly closed, which includes the decommissioning of the tailings disposal areas.

A study that investigates whether there are any past and current health impacts from a mine, or other development, is called a Community Health

Assessment. This type of study is outside the realm of the Nanisivik closure planning and is usually only implemented in cases when there appears to be a clear relationship between the health of an impacted community and a development.

## CONCERN

*I know that tailings have blown around the mine site. I'm worried that the tailings might have gotten into Arctic Bay's water source (Marcil Lake) and polluted it.*

## RESPONSE

While some tailings did indeed blow away from the West Twin Disposal Area, it should be stressed that it was not a common occurrence. The company did take steps to stop this from happening, including wetting the tailings disposal area to prevent it from drying out, as well as covering it with layers of ice, snow and shale. Unfortunately strong wind events did, from time to time, result in tailings being deposited over the mine site; however this problem has been well identified and it will be addressed during the reclamation.



*The reclamation of Nanisivik's tailings disposal area will be addressed in CanZinco Limited's final closure plan*

The possibility of Marcil Lake being contaminated by wind-blown tailings is thought to be extremely remote. The dominant winds at Nanisivik blow from the south in the direction of the townsite, towards Strathcona Sound and away from Arctic Bay and Marcil Lake. In addition Marcil Lake's water has been tested by INAC inspectors for its metal content.



Recent water quality tests from 2003, 2001 & 2000 by INAC inspectors have reported that the water is very safe to drink and does not contain any unacceptable amount of heavy metals.\*

#### CONCERN

*I know about the tailings that were generated from Nanisivik, but I am concerned about the chemical that were used in the mill to process the ore. Those chemicals were sent to the tailings disposal area, what sort of effect might they have?*

In general, the process chemicals used during Nanisivik's operation have been identified in the reports submitted by CanZinco as not posing a significant environmental or health risk. While there were a number of different chemicals used in the processing of ore, the quantities used were very small compared to the amount of material processed. Most of the process chemicals were transported with the concentrates, which were shipped off site. Residual chemicals that were sent to the tailings disposal area evaporated. As the process chemicals tended to be expensive there was economic reason not to use large amounts of them.

The NWB believes that if the tailing disposal area is reclaimed in an approved manner, negative effects will be prevented. CanZinco will continue to monitor water quality at the site for years to come. The NWB and INAC will ensure that the water quality meets acceptable standards and as such, will provide protection to local persons and animals that inhabit the area.

#### CONCERN

*Arctic Bay residents regularly hunt and eat game that may live or spend time around Nanisivik. I am concerned about the chemicals I may be ingesting by eating these animals.*

#### RESPONSE

The Nanisivik Human Health and Ecological Risk Assessment takes into account the fact that Arctic Bay residents eat a substantial amount of country food, which includes game harvested from the Nanisivik region. When writing the HHERA, CanZinco's consultants conducted a survey with community members in order to know more about their food habits, particularly about harvesting near

Nanisivik. This information was then incorporated into the HHERA.

The results of the HHERA indicate that, assuming that Nanisivik is properly reclaimed as CanZinco has pledged to do, there will be no adverse health effects to local persons carrying out their regular activities at the site, including eating country foods harvested there.

It should be noted that many of the animals which compose a major component of the country food Arctic Bay residents eat, such as seal, arctic char and caribou, are less likely to be affected by elevated metals at Nanisivik because such animals spend only a small fraction of their time in and around the mine site, compared to an animal such as a ptarmigan, who could potentially spend its entire life at Nanisivik.



#### CONCERN

*I understand that Nanisivik Mine has closed for good and that the clean-up of the site will be happening over the next couple of years, but why is the company leaving all the waste (tailings) at the site? Why can't they take this material with them back south?*

#### RESPONSE

Tailings are finely ground rock which have been processed in the mill and have had the economically valuable minerals removed. Mining companies operate under the premise that they will be able to

dispose of the tailings generated during operation on site; although they also have the responsibility to ensure that the tailings disposal area does not pose a future environmental problem. It is only in extremely rare cases, where tailings pose a significant health or environmental risk (such as from uranium mining), would tailings be moved off site at an enormous cost. Unlike such worst-case situations, Nanisivik's tailings disposal area, when properly reclaimed, will not pose a risk to human health or the environment. The Nunavut Water Board and the other regulators will work with CanZinco to ensure that this occurs.

But to illustrate the massive amount of work that would be needed to remove the tailings, the following is provided: Approximately 20 million tonnes of tailings were generated during Nanisivik's operation. To carry tailings from the disposal area to the dock would require an enormous excavation effort followed by 1.3 million trips by haulage trucks (200 trips per day for 17 years). To move the material from the dock to some southern destination would require the services of more than 650 cargo ships. Of course, the relocation of tailings would depend upon identifying a place willing to accept the material in the first place.

*\* These inspection reports are available upon request*



#### **CONTACT Us:**

Do you have a concern about environmental or health impacts of Nanisivik that you want addressed? Please contact Levi Barnabas, Hamlet of Arctic Bay Community Coordinator at (867)-437-8277 or Patrick Duxbury, Nunavut Water Board Mine Reclamation Coordinator (867)-983-3029.

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