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RENEWING OUR LANDSCAPE

Envisioning Mine Closure and Reclamation of the North Country Rock Pile, Diavik Diamond Mine

Technical Report
June 26-28, 2012 TK/IQ Panel Session

Presented by

The Traditional Knowledge/ Inuit Qaujimajatuqangit Panel Environmental Monitoring Advisory Board (EMAB)

Bobby Algona, Mark Taletok, Mona Hiniak & Randy Hinaniak (Kitikmeot Inuit Association)

August Enzoe, Alfred Lockhart, George Marlowe, Darnian Marlowe & Helena Marlowe (Łutsel K'e Dene First Nation)

Ed Jones, Wayne Langenhan, Nicole Enge, Jackie Strong & Susan Enge (North Slave Métis Alliance)

Pierre Beaverho and Louis Zoe (Tłı̨chǫ Nation)

Fred Sangris & Phillip Liske (Yellowknives Dene First Nation)

Michèle LeTourneau (EMAB)

Deborah Simmons and Shelagh Montgomery (SENES Consultants Ltd)

Compiled by SENES Consultants Ltd.

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This Agreement is without prejudice to the positions of the Parties respecting any:

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Contact

Environmental Monitoring Advisory Board (for the Diavik mine)
2nd Floor, 5006 Franklin Avenue, Box 2577
Yellowknife, NT, Canada, X1A 2P9
Phone 867-766-3682
http://www.emab.ca

Report Summary

The Environmental Monitoring Advisory Board (EMAB) and Diavik are working collaboratively to develop an approach to Traditional Knowledge (TK) and Inuit Qaujimajatuqangit (IQ) processes required along with scientific research as the basis for sound planning related to closure and reclamation of the mine.

The TK/IQ Panel was asked to provide input on a vision for closure and reclamation of the North Country Rock Pile, and a process for community engagement and TK/IQ studies. Accordingly, a three day TK/IQ Panel session was convened June 26-28, 2012. The session added a new workshop component, providing opportunities for learning about some of the technical aspects of rock pile closure, as well as experiences and approaches to mine closure elsewhere.

The three sections of the report are as follows:

1. **How We Did the Work.** A discussion of the Aboriginal knowledge and cross-cultural learning approaches that informed design of the session and workshop.
2. **Results: Reclaiming the North Country Rock Pile.** Key messages from the session and workshop, as well as linkages with relevant previous studies and Diavik's May and August 2009 closure planning workshops. This section provides a window into the social and natural history of the mine site and the landscape; a scoping of values and concerns; and an indication of areas where there are opportunities for TK/IQ input.
3. **Recommendations for Action.** The consensus perspective of the TK/IQ Panel on reclamation and closure planning, and the panel mandate and approach.

Recommendations for Action

Reclamation and Closure Planning

The June TK/IQ Panel session provided direction on a series of three recommended focal points for cross-cultural dialogue during upcoming sessions:

1. Baseline studies: previous TK/IQ studies and archaeological findings in the ʔek'atı area.
2. Reference condition options for the rock pile.
3. Planning for biodiversity in revegetation, wildlife habitat, and capping options for the rock pile (differences from the target reference condition)

TK/IQ Panel Mandate and Approach

The panel made progress in clarifying its role in the broader framework for planning, management and monitoring at Diavik. Discussions gave rise to recommendations regarding clarification of the panel mandate; the need for State of Knowledge reporting on TK/IQ in the Diavik area; best practices in TK/IQ research; the role of the panel in community engagement; and the need for a system to measure success in TK/IQ processes.

Conclusion

This document expands on the proceedings of the June 2012 panel session and workshop toward providing a foundation for future panel work, specifically in providing inputs on closure and reclamation planning at Diavik; and more broadly in contributing to the purpose of the Environmental Agreement "*to respect and protect air, land, water, aquatic resources, wildlife, archaeological and cultural resources, and the land-based economy that are essential to the way of life and well-being of the Aboriginal Peoples"* (S1.1[d]).

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Introduction

The Environmental Monitoring Advisory Board (EMAB) and Diavik are working collaboratively to develop an approach to Traditional Knowledge (TK) and Inuit Qaujimajatuqangit (IQ) processes required along with scientific research as the basis for sound planning related to closure and reclamation of the mine.

Diavik is preparing a revised *Interim Closure and Reclamation Plan* for submission in 2016, with a final plan due in 2020. This must be approved by the Wek'èezhìı Land and Water Board (WLWB). The revised Interim Plan would incorporate findings from TK/IQ research and community engagements, including specific tasks outlined in the "Traditional Knowledge and Community Participation" section of the current Interim Plan (Appendix VII-1 [2011]). Diavik is required to submit an annual progress report to the WLWB.

Two of the goals identified in the current Interim Plan (Version 3.2, 2011) are "land and water that allows for traditional use," and "final landscape guided by traditional knowledge." Interim Plan 3.2 notes that "Diavik accepts future traditional knowledge considerations may influence or change the final landscape, in particular wildlife movement routes, final contours and surface textures."

The "Traditional Knowledge and Community Participation" Appendix identifies the need for community inputs in a number of areas, including wildlife routes, target areas for revegetation[1], and landform shapes. A particular focus identified by Diavik for 2012 is closure of the North Country Rock Pile.

The TK/IQ Panel was asked to provide input on a vision for the rock pile, and a process for community engagement and TK/IQ studies. Accordingly, EMAB convened a three-day TK/IQ Panel session June 26-28, 2012. Through a financial partnership with Diavik, EMAB was able to include youth representatives. The session added a new workshop component, providing opportunities for learning about some of the technical aspects of rock pile closure, as well as experiences and approaches to mine closure elsewhere.

[1] Although the approved closure design concept does not include revegetation of the rock pile.

Diavik Closure Planning Process and Goals

Diavik's closure planning began in 1996-1998, before the mine opened, and the Initial Abandonment and Restoration Plan (1999) was issued in 1999. Subsequent versions were published in 2001 and 2006. The current Version 3.2 was submitted in July 2011, and identifies the following eight goals:

1. Land and water that is physically and chemically stable and safe for people, water and aquatic life.
2. Land and water that allows for traditional use.
3. Final landscape guided by traditional knowledge.
4. Final landscape guided by pre-development conditions.
5. Final landscape that is neutral to wildlife – being neither a significant attractant nor a significant deterrent relative to pre-development conditions.
6. Maximize northern business opportunities during operations and closure.
7. Develop northern capacities during operations and closure for the benefit of the north, post-closure.
8. Final site conditions that do not require a continuous presence of Mine Staff.

EMAB and the TK/IQ Panel

EMAB has established a Traditional Knowledge/ Inuit Qaujimajatuqangit (TK/IQ) Panel with a mandate to assist EMAB in facilitating appropriate and meaningful accommodation of Traditional Knowledge/Inuit Qaujimajatuqangit (TK/IQ) in the planning and review of environmental monitoring at Diavik. The TK/IQ Panel consists of knowledgeable individuals appointed by each of the five Aboriginal Parties to the Environmental Agreement.

Prior to 2012, EMAB convened several TK/IQ Panel sessions on an issue-by-issue basis. In May 2011, EMAB held a workshop to explore how best to implement its mandate regarding TK/IQ. A first of a series of TK/IQ Panel session was held on caribou monitoring at the Diavik mine site March 14-15, 2012. Following a strategic planning session on May 20, 2012, EMAB decided to continue working toward establishing the TK/IQ Panel as a standing body. The current report is based on proceedings of the second TK/IQ Panel session, which took place June 26-28, 2012 with a focus on closure and reclamation of the North Country Rock Pile. A third panel session is planned for February 2013.

Who Are We?

The TK/IQ Panel is a standing body of knowledge-holders appointed by the five Aboriginal Parties to the Environmental Agreement related to Diavik. As often as is feasible, the TK/IQ Panel works with a youth delegation, also appointed by the Aboriginal Parties.

We have learned that the diversity of our cultures and experiences needs to be accounted for in our work together. At the same time, we share common interests as peoples who have survived from the land across generations. We work with a small team of resource people to ensure that our knowledge can be applied to the new conditions presented by the existence of the mine in our shared traditional territories.

Facilitation

Deborah Simmons, SENES Consultants Ltd.

Note Taker

Shelagh Montgomery, SENES Consultants Ltd.

TK/IQ Panel Delegates

Kitikmeot Inuit Association	Bobby Algona, Mark Taletok *Youth:* Mona Hiniak, Randy Hinaniak
Łutsel K'e Dene First Nation	August Enzoe, Alfred Lockhart, George Marlowe *Youth:* Darnian Marlowe, Helena Marlowe
North Slave Métis Alliance	Ed Jones, Wayne Langenhan, Susan Enge *Youth:* Jackie Strong, Nicole Enge
Tłı̨chǫ Nation	Pierre Beaverho and Louis Zoe
Yellowknives Dene First Nation	Fred Sangris, Phillip Liske

Observers/Presenters

EMAB	Michèle LeTourneau
Diavik	Colleen English, Gordon Macdonald & Seth Bohnet
Integral Ecology Group Ltd.	Ann Garibaldi
Dialectic Research Services	Kathryn Scott

What's in this Document?

This document reflects on three days of work together in June 2012, and is supplemented by a limited review of relevant literature. The three sections of the report are as follows:

4. **How We Did the Work.** A discussion of the Aboriginal knowledge and cross-cultural learning approaches that informed design of the session and workshop.
5. **Results: Reclaiming the North Country Rock Pile.** Key messages from the session and workshop, as well as linkages with relevant previous studies and Diavik's May and August 2009 closure planning workshops. Provides a window into the social and natural history of the mine site and the landscape; a scoping of values and concerns; and an indication of areas where there are opportunities for TK/IQ input.
6. **Recommendations for Action.** The consensus perspective of the TK/IQ Panel on our mandate and lessons learned about approaches to our work and measures of success.

The report weaves together summaries with background information and key messages from the TK/IQ Panel session, along with quotes from session transcripts, shared with the knowledge and approval of the speakers following review at the panel session on October 23-25, 2012. We share the quotes because these contain more of the full meaning of what was said. In some cases, the original narratives were spoken in an Aboriginal language. Unfortunately we are not able to provide the Aboriginal languages texts here, but have to rely on the transcripts of the English language interpretations.

Figure 1: TK/IQ Panel talking circle

How We Did the Work

Aboriginal Ways of Knowing

There are very few examples of this kind of work being done by a group of Aboriginal knowledge holders in Canada, or even the world. We are trying to use our traditional ways of knowing as five different nations working together, and addressing issues that are new to us as Aboriginal peoples in Canada. This is not easy. As Aboriginal peoples have always done, we are learning as quickly as we can so that we can address our responsibilities in a way that bridges the past with the present and future. Here we describe some of the processes that we've been developing for our sessions. The session agenda can be found in Appendix A.

Prayer

Aboriginal research might be understood as a form of ceremony (Shawn White 2008). The TK/IQ Panel indicates the spiritual dimension of our work by starting and ending our meetings with a prayer.

> It's only proper that we pray. Our elders always remind us to say an opening prayer and closing prayer whenever we meet, no matter what the size of the assembly. The reason why we pray in the morning is to thank the Creator, who united us together. The only guidance we depend on to do our daily work is the Creator's. That's the reason we pray. Thank you.
>
> *– Pierre Beaverho*

Talking Circle

Because of the cross-cultural context of our mandate and activities, we take a very flexible approach to our sessions. One of the methods that we rely on is the talking circle, which puts everyone on an even playing field as knowledge holders collaboratively working to create new knowledge. In the talking circle, we are all learning from each other. This requires that we practice the Aboriginal discipline of being respectful listeners.

> I like the way the chairs are set up in a circle. In the past, years ago, this is how the old timers used to sit. This is how they used to share stories and conduct their meetings in the past. This is how they had prayed. They sat in a circle. So it's just like doing what the elders have done. As a kid, I used to see them sharing stories. So I just like the way it's set up now to have a workshop and a meeting with the chairs in a circle. I don't mind at all. – *Pierre Beaverho*

I think this word "expert" is used a little bit loosely. To start off with, this is all new. It's never been done before and we're sort of stumbling in the dark. We're trying to do a good job the best we can, but we're by no means experts because this has never been done before. What we're trying to do here is get all our heads together and come up with the best solutions possible, but that doesn't really make us experts. – *Wayne Langenhan*

Youth Delegation

Elders have said many times that youth need to be involved in TK/IQ processes. Knowledge sharing is more meaningful when knowledge holders are able to address the future leaders and stewards of the land. Young people bring to the processes their unique knowledge of the cross-cultural circumstances for interpreting and applying the knowledge of their ancestors.

Figure 2: L-R Top Randy Hinaniak, Helena Marlowe, Jackie Strong; Bottom Mona Hiniak, Damian Marlowe, Nicole Enge

Participants in the March 2012 TK/IQ Panel session made it clear that they consider youth involvement to be essential. In response to this recommendation from the panel, EMAB invited each Aboriginal Party to delegate two youth to participate in the June meeting. Youth delegates from three of the five Parties attended the session. Over time, it is hoped that full representation will be possible, and the youth delegation might achieve a life of its own.

It is a challenge to support meaningful participation by youth delegates. Aboriginal youth are familiar with educational methods introduced in schools. However, many of these are also fortunate to have grown up with traditional methods of teaching in their families and communities. This involves disciplines of learning through listening, watching, and practicing.

During this first TK/IQ Panel involving youth, a gradual approach was taken to involving the youth delegates. This was an opportunity to become comfortable sitting in the talking circle, and to listen to the discussions in order to begin to become familiar with the role of the TK/IQ Panel and the objectives of the session. When they spoke, knowledge holders often specifically referred to the youth and the importance of their learning and contributions. As the microphone travelled around the talking circle, youth had opportunities to speak. They made it clear that they were absorbing and reflecting on the knowledge that was being shared. However, as was pointed out by Susan Enge, as the TK/IQ Panel evolves it will be useful to consider a variety of different ways to involve youth, including cross-cultural methods.

The final day of this panel session coincided with a graduation ceremony in Yellowknife, and became an ideal occasion for reflecting on the potential for involving youth in the TK/IQ Panel, in EMAB, and at the mine – continuing the thread of discussion started in the March panel session. The large number of references to the role of youth (eight references by different speakers were coded in the transcripts) is an indicator of the value placed on their participation by panel members, as well as the need to be conscious of how to achieve success in engaging youth at this early, experimental stage.

> We need youth. Even the youth in Rae Lakes, when we have meetings, we're leaving them out. It's their future that we're talking about. They need to be involved, so they can know what's happening in the community, on the land. So I would like to bring the youth from our region next time I attend a meeting like this. – *Louis Zoe*

> I think about young people all the time. When we talk like that for the young people, they are the ones who are going to speak for the next 10 years. Those are the ones who have to put a lot of things in there after us. They are going to take over. I'm happy I've got my grandson with me here and also my niece. Those kinds of people like that, it's very important. For that, I'll say thank you and we're still not over yet. Thank you very much. – *George Marlowe*

I know the youth is critical and I'm really personally glad to see them here today because they are going to carry the torch. We can incorporate youth by making our meetings more interactive. – *Susan Enge*

It's a good recommendation that the panel have more youth with them all the time. As Elders, we're not going to be here forever. The youth are going to be taking over what we're doing today. We want our wording to represent our youth also. Some thoughts may be changing in the future. The youth may have better access to how they put their wording down also. Thank you. – *Bobby Algona*

Myself too, at one time I was youth. All of us were once babies. And as young people, we were learning by listening. We didn't say a lot. We're learning. Even though we didn't talk, we learned a lot. Years later when I got older, all that listening helped me to learn to speak publicly. – *Fred Sangris*

Today I think we have a lot of youth graduating in our communities, in every region. We should pay our compliments to them. The Tłı̨chǫ Nation consists of five communities including Yellowknife and Dettah, so we make up a lot of the population. The future generation is growing and healthy. I would like to see students who have graduated work closely with the EMAB office and maybe doing some studies at the mine site, monitoring the water, the environment and the plants out there on the land. The Elders can't do this anymore. As an Elder, I'd like to see that. It's always good to have youth involved with us. The youth are the ones that will have to live through closure. I sure don't want to see them getting a good education and not doing anything with it. Along with education, you need Traditional Knowledge. That's where we as Elders come in. We can all benefit from working hand-in-hand with our youth and industry into the future. I sure hope that you'll be able to encourage youth to work with you in every region. They are the ones who we will have to depend on, and who will manage our destiny into the future. Thank you. – *Pierre Beaverho*

I'd like to say thanks to everybody here, all the youth, elders, board staff. This is the first time I've been to one of these meetings. It's a fun process learning and trying to get youth's input into it as well. I've had so much fun here. I definitely am looking forward to coming back to more of these meetings. Thank you very much. – *Randy Hinaniak (youth delegate)*

Site Visit

TK/IQ Panel members felt strongly that in order to speak knowledgeably about the North Country Rock Pile, it would be necessary to see it in person. There was extensive discussion about the reasons a site visit would be important (14 references by different speakers were coded in the transcripts). This speaks to a fundamental principle in TK/IQ, that "being knowledgeable" requires that knowledge from the past be properly situated in the experiential context being discussed[2]. As Louis Zoe put it, it's not considered appropriate to "speculate or assume."

There was consensus among TK/IQ Panel members that it would be impossible to talk knowledgeably about the rock pile as a feature on a map, narrative description, photos, video, or clay model – or all of the above – as was proposed at this panel session, in large part because it was a completely new feature for TK/IQ knowledge holders. There was no clear reference point that could be drawn from people's knowledge of the natural landscape. Colleen English noted

Figure 3: Diavik Site Visit, August 20, 2012. L-R Peter Huskey, Ed Jones, Louis Zoe, Pierre Beaverho, Bobby Algona, Mark Taletok

[2] Allice Legat (2012) discusses this principle at length based on her collaborative research with Tłı̨chǫ elders over more than two decades.

that in the past, Diavik had received similar feedback in discussing closure with Aboriginal stakeholders. A closure workshop was held at the mine site in 2009.

While requesting a site visit for the TK/IQ Panel, the group understood that it would not be feasible for everyone in the communities to see the site – for this reason, it was suggested that the site visit be videotaped. Although dreams for a visit the traditional way, through an on-the-land camp, were put forward, it was understood that this would not be possible within Diavik's safety policy.

Diavik staff responded quickly to the proposal for a site visit with an invitation for a day trip followed by a debriefing meeting. This invitation was welcomed. Speakers engaged in a detailed discussion about the timing of the visit, noting that the weather would be unpredictable and potentially very unpleasant during the originally proposed date for the visit in September. August was suggested as the preferred timing.

Several speakers proposed that youth should be included in the mine site visit, so that they too would have an experiential reference point for participating in closure discussions. At the same time it was understood that a small group might be preferable.

The site visit following from this TK/IQ Panel session was sponsored by Diavik and took place on August 21, with a debriefing session at the Yellowknife Inn on August 22. The mine site tour was conducted by Colleen English. Unfortunately, due to mechanical problems with one of the planes, it was not possible for Seth Bohnet, Michèle LeTourneau or Wayne Langenhan to travel with the group. Panel members on the tour were Deborah Simmons, Ed Jones, Bobby Algona, John Ivarluk, and Pierre Beaverho, Louis Zoe, as well as Peter Husky (interpreter). George Marlowe and Mel Enge joined the group at the debrief.

Figure 4: Site Visit Debriefing session, August 21, 2012. L-R Peter Huskey, Deborah Simmons, Bobby Algona, Pierre Beaverho, Mark Taletok, Louis Zoe, George Marlowe, Mel Enge, Ed Jones, Wayne Langenhan

We've seen just a few pictures there. I don't understand. The last time I was there was ten years ago. Today it's probably changed a lot. So it would be good if we all go down there and check around the mine, walk around and look at pile and the pit that you're talking about now. We should go down and see the mine twice a year, winter and summer. Just to see how the mine is working. We all have to work together. Thank you. – *August Enzoe*

It's hard to make a recommendation without seeing with your own eyes what type of rock pile you're talking about. I, for one, would like to go back to the mine site again before I make any decisions or recommendations. I need to see where all the waste rock piles are and where all the tailings ponds are, how that's going to be treated down the road, and how those things will be reclaimed.

We need to do our traditional knowledge work properly. Traditionally that's how we did it. You have to visualize and see for yourself and know where you're going and what you're talking about. The last time I was at the Diavik mine site, it was back at the early exploration stage. There was no airstrip at the time. That's when I was there last. – *Pierre Beaverho*

A lot of our elders don't know how to read and write, but I agree with what they said in the past. In order to do a proper job, you have to go and visit the site and make your own decisions, not to speculate or assume. A lot of the elders that travelled that area in the past knew exactly what land they were crossing, where they were going, what direction the prevailing winds were, where the eskers and caribou crossings were. That's how they used to travel. They had a natural instinct for navigating in the area. Thank you. – *Louis Zoe*

It's really hard to come up with a plan or even a really informed discussion about the rock pile and how we're going to design this man-made plateau. There are some Elders here who haven't been to the mine site for a long time. There are others who haven't been there at all. There are youth who haven't visited there. They don't know the scale of these things, what kind of undertaking it would be to have the material to cover something that huge. They are just guessing. They have nothing to go on.

The people that haven't been there, they don't know what they're dealing with. So it's pretty hard to discuss things when you don't know what you're dealing with. – *Wayne Langenhan*

What that photograph doesn't tell you is the boulders there are about the size of this table. They are huge boulders all broken up on the side of the hill. You don't see that on the photograph. You can't go and make suggestions on that model and say "Do it this way, do it that way." You're likely to make a mistake. You have to go see that site. You have to go and look at that rock, the size of that rock before you make suggestions and recommendations. We can't really work with the model because we haven't seen the type of rock that's there or the size of rocks. We don't know. – *Fred Sangris*

Learning from Others

Other ways of learning and sharing knowledge were incorporated into the TK/IQ Panel session in a "workshop" format to complement and inform the talking circle process. Presentations were made by Diavik staff (Colleen English, Gordon Macdonald and Seth Bohnet) and visiting resource people (Ann Garibaldi and Kathryn Scott), who provided examples of Aboriginal inputs into closure and reclamation planning from other places. Slide presentations are in Appendix B.

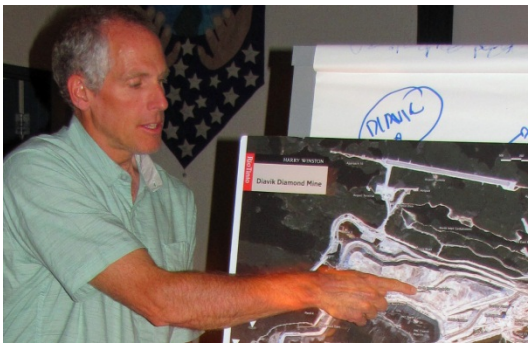

Figure 5: Clockwise from top left Gordon Macdonald, Ann Garibaldi, Colleen English

Diavik staff also offered opportunities to experience the rock pile by way of maps, short video clips, photographs at various scales, as well as a clay model. The possibility was offered of using computer modelling tools to reshape the rock pile during community consultations. In addition, Diavik staff prepared a demonstration including samples of different materials that could be used to cap the rock pile.

Workshop Presentations

- Gordon Macdonald, Colleen English and Seth Bohnet: "Diavik: Closure and Reclamation Planning"
- Ann Garibaldi: "Aboriginal Values and Reclamation"
- Kathryn Scott: "Examples of TK Integration"

Reflecting on Our Process

During the June 2012 TK/IQ Panel session, the second in the series, the session process expanded beyond the experience of the March session by including youth, as well as a workshop approach to some of the activities. Several lessons were learned in the process:

- The presence of youth significantly enhanced the proceedings; it may be possible to progressively develop mixed methods for engaging youth over future sessions.
- There needs to be coherence in the format of TK/IQ Panel sessions so that participants understand the flow of discussions as they relate to the session purpose.
- Cross-cultural learning processes can be very effective in providing knowledge holders with necessary context for providing meaningful input.
- TK/IQ holders are not comfortable speculating about situations that they have not experienced; a "reference condition" approach that refers to ecological features that resemble new scenarios may help to address this challenge.
- Site visits are invaluable as a means of educating TK/IQ Panel members about the closure process, and as a basis for developing process design for community engagement and TK/IQ studies.

Results: Reclaiming the North Country Rock Pile

The TK/IQ Panel session provided an opportunity for panel members to get an overview of Diavik's closure and reclamation plan, and to begin scoping options for closure and reclamation of the North Country Rock Pile. Presentations by Diavik staff and visiting resource people provided the context needed for the panel to understand their role and contributions in relation to larger processes underway. Panel members described their knowledge about the history of the landscape, identified concerns about the future of the rock pile, shared their values, and began to explore options.

What is Closure?

When mining activities end, the owner is required to close it down or "decommission" it through a formal process. A mine begins to close the day it opens. Closure planning needs to happen before the mine opens, since decisions made in construction and operation of the mine will affect the closure process and reclamation of the landscape. Diavik is required to regularly review and revise its Interim Closure and Reclamation Plan. Since Aboriginal people will live with the post-mine landscape in the future, it is important that they be involved in closure planning.

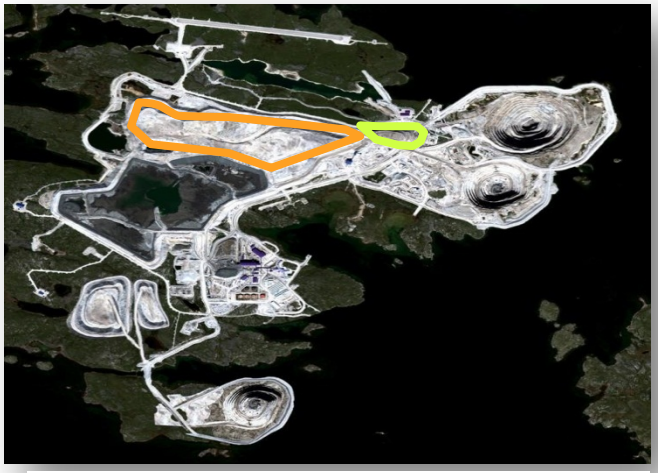

Figure 7: Diavik and the North Country Rock Pile (outlined in orange) and till stockpile (outlined in green)

Figure 7: Depiction of currently approved closure plan with flooded pits, waste rock pile and PKC pond.

What is Reclamation?

The mine has changed the land. It is not possible to restore all the land to exactly the way it was before the development. But reclamation projects attempt to establish ecosystems that serve the needs of society and the environment. People's visions for the land are the basis for planning reclamation projects.

Wildlife, People and Landscape

During the March TK/IQ Panel session, panel members were invited to introduce themselves by way of talking about where they were born and grew up. The June panel session provided an opportunity for members to share their historical knowledge of the landscape encompassing and surrounding the Diavik mine site. The richness of Aboriginal histories and knowledge of the area was remarkable. At the same time, it was mentioned a number of times that considerable documentation of traditional knowledge had already taken place through the Environmental Assessment process – and a number of the knowledge holders involved at that time are no longer with us. The panel sent a clear message about the value of past and present TK/IQ work as a baseline for understanding closure and reclamation values and goals.

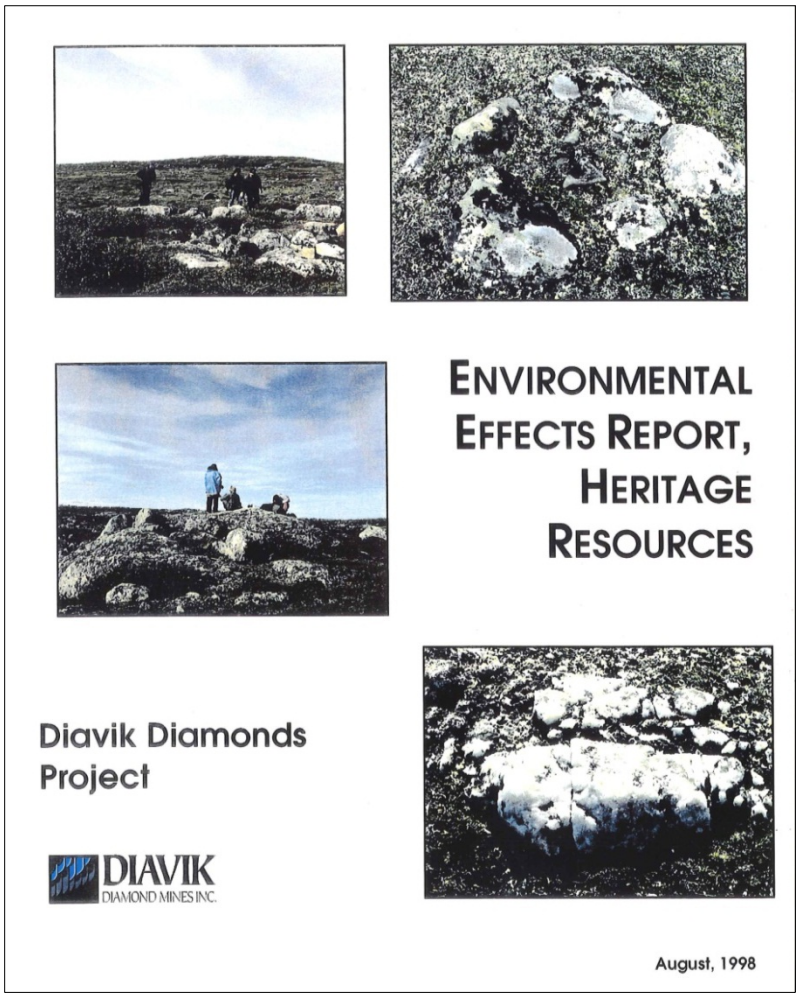

Figure 8: Cover page, Diavik Environmental Effects Report, Heritage Resources, August 1998

A History of Research

A comprehensive review of previous TK/IQ research about the landscape now occupied by Diavik is not within the scope of this report. However, it is important to highlight several processes that are especially important in collectively serving as a foundation for present and future TK/IQ research, as follows:

- Interviews conducted as part of the Committee for Original Peoples Entitlement (COPE) program established in 1970 to resolve the Inuvialuit land claim agreement.
- The Dene Nation Mapping project undertaken during 1974-1983 as part of the research for the Denendeh Dene and Métis comprehensive land claims process, including interviews with approximately 600 trappers in the Mackenzie Valley.
- TK/IQ research as part of the Environmental Assessment process prior to mine development.
- A number of projects related to the West Kitikmeot/Slave Study (WKSS) program during 1996-2001 that centred or included TK/IQ research, under the oversight of the Traditional Knowledge Steering Committee, including representatives of the five Aboriginal partners in the WKSS program.
- TK/IQ research programs and projects independently initiated by the five Aboriginal Parties since 1983.
- The State of Knowledge Report of the West Kitikmeot/Slave Study Area (SENES Consultants Ltd 2006).

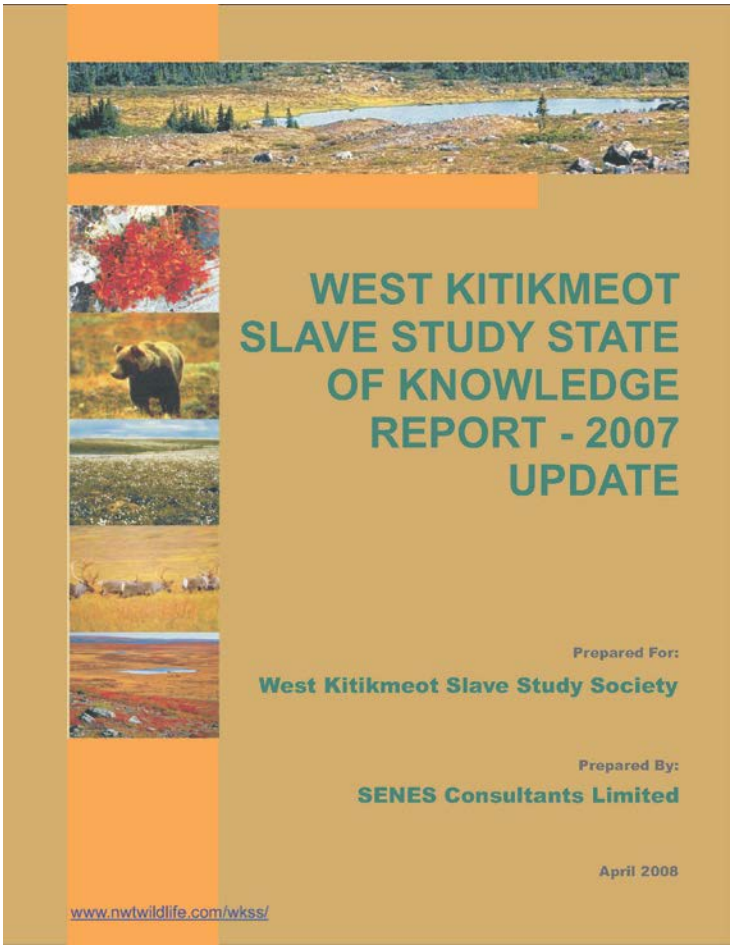

Figure 9: Cover page, West Kitikmeot Slave Study State of Knowledge Report - 2007 Update, April 2008

Back in 1996 or 1997 we visited the mine site, and at that time we did mention the caribou crossing there, and we recommended that we should do something about it. We should do this or that. We could put a fence on the side of the shore and see if it works or not. If it's not working, they could take it down. We talked about those things. At that time, there were lots of caribou on that island. It was August when we were there. Some of them were sleeping on hills. Other ones were sleeping under a TV dish. There was a whole bunch of them. It's not like that anymore.

So we did put a lot of words in there, but nothing was done. Now they are going to start to work on it after all these years. I wonder what they did with the data that they wrote down back then? I'm confused. I don't know why we didn't work on it.

I've been to the Diavik mine site how many times now? Since way back when it started opening. We put a lot of work in related to the mine and how it should be designed. I look around and realize that a lot of the people I worked with from Behchokǫ̀ and elsewhere are not with us anymore. They are all gone. It's only me sitting here now. There were books written on that, way back in the 1990s, how to deal with caribou around the island. But there doesn't seem to be anything happening. Now we are just starting over again. The same words are coming up again. Thank you. – *August Enzoe*

Figure 10: Louis Zoe

Homeland: Placenames and Cultural Landscapes

The five Aboriginal nations represented on the TK/IQ Panel each have distinct languages and histories. Each of the nations, as well as each individual, brings a distinct overlay to the cultural and historical landscape of the mine, providing their own nuance to the socio-ecological knowledge of the area. This diversity is indicated in the placenames and stories that panel members have shared – including the new Métis name for the lake suggested by Ed Jones – that demonstrated the intimacy of their relationships with that place, as well as the ecological, cultural and spiritual values accorded to it. At the same time, the panel members shared a common interest in renewing the health of the land.

We came to learn that more work will be needed to fully understand the baseline for closure and reclamation planning – the meaning of homeland.

In Yellowknives Dene language, that whole island that Diavik Diamond Mine is on [East Island] is called ʔek'adı. ʔek'atı is the name of the lake. So ʔek'adı is an island, ʔek'atı is the name of the big lake.

There are five groups here, and we all have different traditional names of that lake. Every one of us probably has different names for that lake. We all use the same area, but we have different names for the same area. Bobby Algona and his people used to trap way out at Pellet Lake north of ʔek'atı in the 1970s. I used to trap just south of ʔek'atı, but we used traditional placenames that our grandfathers have used in the past.

The land is very important to us. Back in 1865, my grandpa was born on the land at the Coppermine River called Sahdezeh. People used to travel out there to go hunting for muskox and caribou. My grandpa has a lot of stories. He lived to be about 105. His son, Morris Sangris, was with him out there on the land when he was about three years old. At that time, an epidemic came around, so they went further up to the barrenland because of the sickness.

In 1976, when I was a child, I used to go out by dog team to the barrenlands. We had to travel, so we used a dog team. At that time, they had about five dogs for each team. If you have less dogs, you can travel further because it's a lot of work to feed the dogs. So I travelled on my grandpa's trail and my dad's trail. I followed where they went and listened to the stories they were telling me about life on the barrenlands and right down to Yellowknife. There are a lot of gravesites along this route.

The most important island on ʔek'atı is ʔek'adı where Diavik Diamond Mine sits. That's where the food source is for the caribou. It's also a shelter for caribou when they get injured. It's a shelter for small calves. That country is mostly esker and muskeg, and the island is good for young caribou. After the long migration, they just swim right along the channel. It's not a long

channel, but it's a safe place for caribou where they can hole out and gain some weight with a lot of good feeding areas. South of ʔek'atı is really jagged rock country. It's a place where caribou could get injured. There's a lot of rock. On the eastern side of ʔek'atı is sandbar, muskeg and rocks, but it's a good place for caribou migration. The island itself, ʔek'adı, is well known for caribou habitat. Caribou just love this island. – *Fred Sangris*

Traditionally, when we wanted to go meet the caribou further south from where we lived because migration is a little bit slow coming slow this year, sometimes we go down and meet them even down past McKay Lake sometimes. We called the lake that Diavik Diamond Mine is on Hivogakhialok, referring to the big lake that is the southern part of our huntıng territory. – *Bobby Algona*

We used to trap in that area. In our language we would call that Łuecho Kúé or Łuezáné (Big Trout Lake). That's what we call it all the time, that's what we've always called it. We don't change what we call it. – *George Marlowe*

I have a name for that lake, François Beaulieu. He was one of the first Métis in the North. In fact, it was François Beaulieu who brought a priest to Salt River just out of Fort Smith, and he helped introduce Christianity to the natives and Métis. – *Ed Jones*

When I first went and visited the island, it was some time ago with some other elders. The elders are not living with us today, but when I first walked over to the site before the construction started, the land looked the way it's always been. Today, there's a huge rock pile over there, a waste rock pile. In the early days, Dene people used to use that island. That's where they used to hunt caribou and that's where most of the caribou used to cross the water. That's where they used to kill caribou to get some meat out of it.

I'm an old-timer. I'm over 80. The kinds of stories I want to tell you are about how our ancestors and elders survived in the past. It was a real hardship in those days. The ancestors travelled by dog team and canoe. They trapped for furs and set nets. Today we have everything that we need to survive. When I was young, I never saw white man's food. We survived on the animals of the land. We went hunting for caribou, hunting for moose.

All those things they did a woman would do, we had men doing those things too because we didn't have no women along with us. It was only the men who would go. How women worked, we had to work the same way, fixing meat and making drymeat. We would fix all the caribou hides, and we would scrape them and everything.

Those animals gave us shelter and meat. I never bought clothes from stores. We had them made through animal fur and hides. Our elders would go out and get furs – beaver, muskrat. In fall, they'd go out on the land until the spring comes. They would hunt and trap.

Then at this time of year they would gather in Behchokǫ̀. They'd make a big ceremony, a big feast. About July, during Treaty Days, they would gather again for the big event. They would come in with a boat from the outlying communities. That's when they would bring in all the furs that they caught through the winter. They would trade them for goods. They had a Hudson's Bay in Behchokǫ̀. People would all gather there. At that time, the Hudson Bay don't have money. Whatever we'd bring in, he'd give us some kind of ration and write down what the fur was worth on paper. We didn't get no money. Sometimes we traded for goods. That paper that they gave you, it was similar to getting an income from the government. He would keep the paper too.

The supplies would come in at this time of year by boat. There was only one shipment a year, so over the rest of the year there would be nothing in the store. After that, a boat comes in, a lot of stuff comes in. So when they'd give you that paper for the fur, you could get things out of it when that big shipment came in. So everyone would come in, and the store would empty out.

When people travel to the barren lands, they used to start out in August. The caribou are out there on the land during that month. The people know it, and they try to get there before the caribou migrate down. We would go there by canoe. We could see the caribou crossing and the caribou swimming. It's still warm at that time in August.

Figure 11: Pierre Beaverho

It was kind of hard at that time too. I witnessed that myself. That's why I'm telling the story. It was hard in those days. We didn't know no white people. There were no white people on our land. We didn't know no government agencies. At the time when Monfwi took the treaty, there were RCMP stationed in Behchokǫ̀, and one store, the Hudson Bay, and the priest. That's all. We survived without government and without white people. We survived without them. It wasn't until after I got

married that white people were starting come into our region.

In those days, our land was beautiful and healthy. We had fresh water, healthy animals, and good dog teams. Even the small animals were healthy. We had a beautiful landscape. When we went out on the land, we felt happy. We felt fresh. Elders love the land, they love the animals. We are protective of things. The land should be protected.

But today, since white people have come on the land, they have started doing development and they are destroying the land. We didn't do the damage, because we care for the land. The mines are getting all the licences now and opening all the mines and they are making big disturbances on the land.

The government has destroyed our land. They are giving the permits and licences to the companies. To think about it, we never did get any benefit from this. Now we are starting to negotiate, we are trying to get something. But it seems we are suffering more. We should get some kind of benefit.

If I look at it today, there's a huge waste rock pile, what benefit is it to us? Probably all we're getting is the damage that's already done and we're not too happy with it. But here, somebody has to do some work that we're doing. That's the reason why we're here.

I've got a lot of stories. I just want to share this story with you. Thank you. – *Pierre Beaverho*

For thousands of years, the Dene people lived on this land, slept on it, hunted on it, and they never damaged the land or polluted the land. Before the white man came, everything they used for tools and for food sources came from the land and water. They lived off the land well. Through the generations it was passed onto them how to live off the land through the spirits.

A long time ago, when people were surviving out on the land, they had spiritual power. They used to turn themselves into animals. If you wanted to be a caribou, you could be a caribou. If you wanted to be a wolf, you'd be a wolf. They would talk to one another at the time because they had the power to do so at that time. They say the grizzly bear have arms like a human being. A lot of them don't eat bears because of that.

The caribou and other fur-bearing animals used to have meetings. They'd gather themselves and say, "This is what I am, and this is what I'll do for my fellow human beings. They put me here for that reason."

There are a lot of stories like that. I just wanted you to be aware of it.

The First Nations people respect the land and they respect the animals, and even the fish. When we are done with the bones or the hides, we don't just throw them anyplace. We don't just throw the fish bones back into the water. We place them underneath the branches or the trees. It's Dene law to do that and respect the bones. It's a custom. In the long run, if you don't do this you'll get bad luck. If you look after and respect the animals and the fish, the animal will return and respect you and provide you with your food sources. Thank you. – *Phillip Liske*

Landscape and the North Country Rock Pile

In reflecting on the task at hand, providing guidance on closure and reclamation of the North Country Rock Pile, TK/IQ Panel members spoke about the ecology of the landscape encompassing the mine site. There was discussion of the differences and similarities between the rock pile and eskers or boulder assemblages – and the group began to consider what the options might be for reclaiming the rock pile in relation to those landscape features and the needs of people and wildlife.

I've been on the barren land a lot of times hunting in August and September. There are lots of sandflies when it's hot, and the caribou like to stand on a hill that's blowing. Think about that too. Eskers shouldn't be touched. There are lots of foxholes and dens for wolves and grizzlies, that's where they sleep. And maybe that rock pile should be left there, or put more black dirt so the plants will grow on it again. – *George Marlowe*

When we were young, in the 1940s and 1950s, we used to travel down to the barrenlands. We would see a lot of outcrops of rocks and mountains. It was good scenery. The waste rock pile itself is just like a manmade island, or some sort of a pyramid. So to us, it's kind of an eyesore. Yes, on the barrenlands we would see a lot of good soil out there that you can find on the eskers. – *Pierre Beaverho*

In the summertime, sometimes they would put graves on top of the hills. I keep travelling in the sand areas, and I've seen a lot of things out there. There are a lot of good sand areas with gravesites. So I questioned the elders a long time ago. They said that when people used to work out on the land, they couldn't bury a person because of permafrost. So it was best place to bury them was where the sands are. When I see sand, I go there and I go on top of the hill, and I know I will find a gravesite there.

I work for the Yellowknives Dene First Nation and help with their mapping projects. The elders have told us where the gravesites are, who the living relatives are. We've talked to them and questioned them. We went out there hunting in the fall-time. And the relatives to the ancestors in those gravesites came along with us because they want to visit the graves.

There are stories to them too, how far they travelled and how far they walked. There are trails they were travelling on. I hope the sand on the barrenlands is never removed We don't know the rest of the gravesites out there, so it's really important that the sand never is touched.

In 1995, BHP visited the community and they wanted to use the sand. But we as the Yellowknives Dene First Nation said no, not to touch the sand. So they're not using them.

The Yellowknives Dene First Nation have three gravesites in the ʔek'atı area. They are our relatives. We are monitoring that area so it's not disturbed.

The animals are also important. Grizzlies make a den towards the sun on a hill. When the snow is melting, they know inside the den will dry right away. The animals know where is a good place for a den, towards the sun.

The caribou love their calves. When they travel, they don't want to go on a rocky place. They go on the eskers and sandy places. Sometimes they will go on the hills. Caribou and muskox know where the good places to travel are. But the sand is really important.

A long time ago when there was a war, non-Aboriginal people killed a lot of muskox to use. Today we have a big population of muskox coming down this way. So we're monitoring those things too.

If you see sand, there would be a gravesite there, and animals would use that place. Those are kinds of things that we need to monitor. So those kinds of things should be left alone. – *Fred Sangris*

Figure 12: Fred Sangris

I consider the rock pile to be just a boulder field. It's just a big, black hill compared to the colour of the eskers, it's totally different.

On eskers, there's permafrost under the sand. When you get up on top, it's always cold. Any little pond or lake or anything that gets on there, it's super cold all the time. Very few plants grow on there. Try swimming in the little ponds on the eskers. You think most ponds are warm, but these little ponds are super cold. You don't see little bugs that can survive in there.

Eskers are cool in the summertime. Wolves, foxes and grizzly bears tend to dig in that esker and keep cool in the summer time. The grizzly bears tend to stay close to the berry patches, where the blueberries, blackberries, cranberries grow.

When we walk around an esker, we know that there's going to be a natural foundation of super cold water flowing out of the eskers. That's permafrost flowing out of these eskers. In summertime, you feel the urge to go for a few berries. Sometimes we tend to get hot, and we want to find some cold, cold water, we need a cold drink as we're walking from here to there, and we look for these natural foundations. We drink a couple of gulps, that's all we can manage, just a couple of gulps of this super cold water until your throat gets frozen.

This rock pile is going to have some super cold spots inside, just like an esker. It's going to have natural fountains building up as years go on. – *Bobby Algona*

But if you make the rock pile walkable for caribou, then they'll probably go onto it. If that's the case, then have you made observations of caribou and other eskers or hills? If so, what have you found? I don't have firsthand knowledge, but I can consult the elders to see how they interact with hills and eskers.

– Susan Enge

Figure 13: Susan Enge

Learning about the Rock Pile

The North Country Rock Pile is a major new feature on the landscape, 500 m (1/3 mile) wide, 2.24 km (1.3 miles) long, and 70 m (230 feet) wide. At the east end of the rock pile there is a pile of "till" that is 500 m (1/3 mile) in size. This is material that's being saved for use in reclamation.

Right now, the rock pile is composed of large boulders from the mine pits, and within the rock pile is a landfill site for storing other kinds of waste from the mine operations.

Surrounding the rock pile are collection ponds (similar to what Bobby Algona described as a castle "moat"). Water collected in those ponds is pumped into the treatment plant before it flows into the lake.

The rock pile will not grow any more, since Diavik has stopped open pit mining, and there is very little rock that comes from the current underground mining. So the timing is now good for Diavik to start closure and reclamation of the rock pile.

Diavik has eight goals for closure and reclamation that were listed in the introduction to this report. Related to those goals, there are three main objectives that need to guide plans for the rock pile:

1. The slopes on the sides of the rock pile need to be stable and safe for people and wildlife.
2. Rock and till pile features (shape and appearance) should match the look of the surrounding natural area as much as possible.
3. Contaminated soils and waste disposal areas must not contaminate the land and water, so must be "capped" so that they are contained.

Within these objectives, there are a number of aspects of reclamation to be considered, including the shape of the pile, the kind of material that should cover the pile, how the water should flow off the pile, the kind of vegetation that should be supported (if any), and whether wildlife and people should be encouraged to go on the pile or be kept away from it.

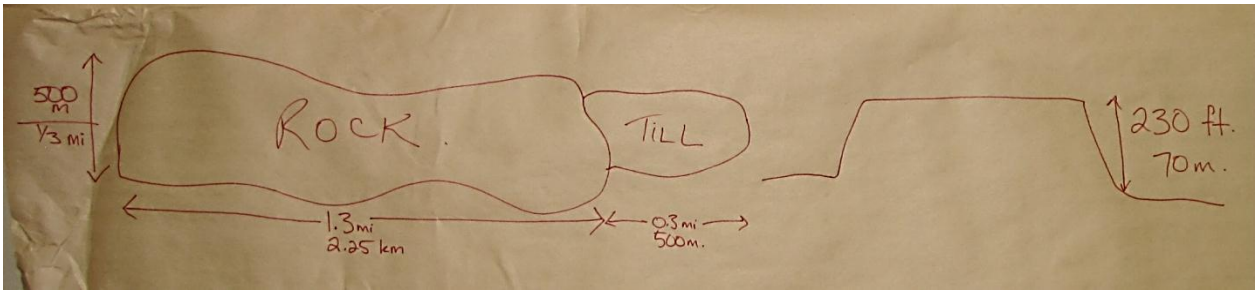

Figure 14: North Country Rock Pile shape and dimensions drawn by Colleen English, site visit debriefing session, June 21, 2012

Identifying Concerns

A variety of concerns were discussed by TK/IQ Panel members for consideration in rock pile closure and reclamation planning. Panel members recognized that some of the concerns are the result of limitations of their own knowledge of rock pile conditions, and several times there were requests for more information from scientific experts as a basis for consideration from TK/IQ perspectives. The following are the seven key areas of concern that were identified, with a series of quotes to illustrate these. There were also concerns expressed about other aspects of the mine, including in particular the dyke and plans for flooding the pits, but these are not within the scope of this report. Careful consideration of these concerns is useful in developing risk management and communication plans.

- Contamination and water flow
- Caribou health and safety
- Future land use
- Waste materials
- Invasive species
- Global warming
- Accountability and follow-up

Contamination and Water Flow

Understanding the risks of contamination caused by exposure of waste rock to air and water led TK/IQ Panel members to articulate concerns about risks that seepage from the waste rock would lead to contamination that could affect wildlife, vegetation, fish, lake water and, consequently, people.

Figure 15: Waste rock pile. Photo credit: Diavik Diamond Mine Inc.

The rock pile itself, it must have a lot of materials in there, toxins for animals and maybe it's a toxin for any plants and might affect their growth. – *Pierre Beaverho*

We don't really know too much about what's in the waste rock in terms of toxins. It would be good to know what's in the waste rock. Once we understand this, then we can help. We need to know what the harmful effects are. – *Fred Sangris*

I was thinking about not only about the vegetation, the water, the fish and the air. All the elements from the waste rock are going to wash down to the lake sooner or later, because the water is beyond our control. You get high winds, lots of slush, and sometimes it rains. From slush, they get lots of wet water coming down onto the ground and it goes into the lakes.

My concern is for caribou, fish, and water. When people do go up hunting in that area after the mine closure, are they going to get sick from it or are they going to get cancer? We've got to watch those things. – *Phillip Liske*

The people who are expert in that should talk to us about it because I'm pretty sure there's lots of metal in that waste rock. When it rains, it's going to go onto the lake. That rock pile is too high, and it's really packed now. It's been nine years, and it's really packed underneath. The bottom must be really hard. I don't think water will go right through now, but it will run off. – *George Marlowe*

We don't want to see a pool of water on top of a rock pile. Once a pool of water forms up, it gets bigger and it becomes a little lake. That's when the animals are using it. – *Pierre Beaverho*

I'm wondering whether Diavik is going to be monitoring this rock pile. At the bottom part of the rock pile there is going to be a lot of water seepage and water flowing out of there into streams and into the lake. Wouldn't it be feasible that this water be contained in the castle, I call the Rock PIle a castle, around the mine itself until everything is all clean and safe to open and let the water go through? That's been one of my big concerns.

I was thinking you see in those pictures of people with castles that have moats around them. Looking at the rock pile as a castle, maybe it would be possible to build some kind of moat or something to contain and monitor the water that's coming out of the castle. Thank you. – *Bobby Algona*

Caribou Health and Safety

Caribou safety was a core concern discussed by the TK/IQ Panel. The focus on caribou in part is related to the value of caribou for survival and spiritual and cultural well-being, and as sensitive beings that need to be treated respectfully. Caribou were also on the minds of the panel since they had just completed review of a report on their previous session on caribou monitoring. TK/IQ Panel members were most concerned to talk about risks to caribou during mine operations, and there were suggestions made about ways and means of keeping caribou away from the mine site.

All mines in the North all have an impact on wildlife as well as cultural and traditional people who make a living on the land. Years ago, we tried to come up with traditional methods of driving the caribou away from the mines. There's probably a good, old, traditional way of doing it.

Diavik Diamond Mine sits right in the middle of the great caribou migration path, right in the centre. There's no doubt about it. They don't migrate further east or further west. It migrates in the centre of it. That's why the caribou always up at Lac de Gras during the summer, sometime in early or late July. They always seem to go there. Even in late September, the caribou are still hanging around there until freeze-up. The caribou are aware of their natural surroundings and where the main herd is headed and where the other herds are scattered. They have a sense of where they are.

So I think Diavik and other companies have to understand when they put the mine there, they put the mine in the path of the migration. That's why it had such a big impact. Many Aboriginal people here spoke in defence of the caribou because we don't want the caribou to be harmed in any way.

Caribou feet are really soft, so they don't want to go through the rough country to get around the mine. For them, the safest places are the soft ground near the

mines. One time, I think it was in 1996, we tried to get the caribou to go at the crossing at Lac du Sauvage. But when we went there with the elders, we found two drowned caribou, one calf and one older caribou that had their hooves caught in the rocks in the river at the crossing, and couldn't get out.

So we told Diavik Diamond Mine that they should put some padding or something there so caribou can cross that little river. It's not a big river, probably three or four feet, but the caribou get caught there and they drown. So we have to find a method to make their crossing much safer. The calves who are just weeks old are making their way to Lac de Gras as well. Lac de Gras where Diavik is used to be a haven for young calves to catch up, feed and rest because they are tired after a long journey. Of course, the wolves are right behind them. So they have to rely on the island for security.

But we have to try to find other ways to help the herds get around the mine safely so they can get to other lakes further south. Those other lakes have islands as well. That's where you'll find some of the smaller herds and injured caribou. Injured caribou find a way to heal themselves. When a caribou is injured, he leaves the herd and goes to an island on his own. He'll stay on the island for weeks on his own until he heals. When he's ready, he'll try to find the main herd. When a caribou is injured, they don't go with the main herd. They move away from the main herd because the wolves can spot them out pretty quick.

We told Diavik many years ago to try to take some of the soft sand and cover all the jagged rocks at that crossing so the caribou can get in the water safely and come out the other side safely. That's one of the recommendations we made.

We have to make the other crossings safer before we do that before we put up traditional rocks or traditional ways of driving the caribou away from the mine. We can probably talk about finding different way for caribou to travel. Through our panel we can probably share all these ideas and try to come up with a good recommendation, a good solution, on how we can do that. The more we talk, we'll get closer to the idea. – *Fred Sangris*

We should share really good stories about the caribou that we're talking about. In the ʔek'atı area, at Diavik Mine, we know from our stories that the caribou would swim to that East Island, as long as we can remember. Our elders used to go by birch bark canoe out to the tundra. They would paddle all the way up to the East Island on ʔek'atı. That's how they used to harvest and kill caribou. Our elders used to live there. It was a good area for caribou to eat, with good lichen. They should fence that area because I know for a fact that the caribou would swim to

the island. If we fence that whole island, maybe the caribou won't go to the mine site. We can fence off that whole area on East Island. – *Pierre Beaverho*

The caribou should not be negatively impacted. I think they underestimate the importance of caribou. We're in court right now over caribou. It's important to us. So we need to do it right and we need to take the time to do it right. – *Susan Enge*

Future Land Use

The TK/IQ Panel discussions about the future of Aboriginal land use in the area of the rock pile were inconclusive. This is consistent with some Aboriginal cultures, where it is considered to be inappropriate and even bad luck to make predictions, since "nature is the boss."

There was pessimism expressed that the rock pile could in the foreseeable future be a desirable place to visit. However, Pierre Beaverho provided an alternative perspective, paralleling comments to the effect that if the rock pile were made accessible and safe, caribou would want to travel across it after closure. Historical narratives in this report and elsewhere indicate that as they always have done, the Aboriginal harvesters with roots in this territory will travel where the caribou go. Phillip Liske's comment that the land encompassing the mine site is a homeland points to the prospect that the five Aboriginal peoples will renew and maintain their relationships with that area for generations to come.

Most of the people are still using the land, all the impacted groups that are here today are reusing it. My ancestors, they used it in the past. It's not to say the future generations aren't going to use it. For sure they will be using it. We have to beautify our land as much as possible. – *Pierre Beaverho*

The Aboriginal people have the homeland. This is our land here, our land base. Some have treaty land and some don't, but it's still our homeland. – *Phillip Liske*

Waste Materials

Diavik has a regulator-approved landfill in the rock pile that is designed to be used throughout the life of the mine. Wherever feasible, items are recycled, burned or backhauled for reuse elsewhere. Input is being sought about what should and should not be dumped in the landfill. The landfill is inspected by INAC, and an update on the landfill is included in Diavik annual reports. TK/IQ Panel members directed a number of questions to Diavik staff about the landfill site, and expressed a lack of awareness about the landfill and the provisions under which it was approved. A number of concerns were expressed by reference to experiences with other abandoned mines.

I know there's lots of metal in the rock pile that's been crushed. Lots of metal. What's going to happen in the future after thirty years or forty years? The metal under the ground will be rusted. I'm pretty sure the water from under there will go into the lake. It's the time to talk about those things. – *George Marlowe*

There are lots of things that have gone wrong in the past that we couldn't do nothing about it. We couldn't even speak against it. Today, we have the opportunity to be able to communicate with the Diavik company that is hurting the land. I see that we have some abandoned mines in our area, the Beaver Lodge area. They left a big airplane, a big Bristol airplane parked right on the shore of the lake. Not only that, they just left Terra Mine as it is and all the debris is sitting there. It still requires a cleanup.

I don't know what you guys do about recycling, but I'd like to see every material possible be recycled. I don't know about just leaving it there in the land because it wasn't like that before. I don't know how the caribou and whatever will react to everything. Thank you. – *Jackie Strong*

Invasive Species

Fred Sangris pointed out that invasive plant species brought into the mine could be a real danger to the natural biodiversity of the landscape.

The other danger too is opening up new areas. If you look at the highway from here to United States all along the highways on both sides, and the highway across Canada as well, there are foxtail plants. They are not native to this area. A lot of the plants and seeds fall off the trucks that haul supplies up here to the mine site. I've seen it at Lupin Mine. I was kind of terrified because once foxtail plants start growing, they just take over. The native plants will die off. That's a danger to this area.

If Diavik wants to do some planting, they need to get rid of the foxtail plants. Once they flourish and grow, they are going to go across the mainland and go all over the land. They are one vegetation plant that we are really going to have a problem with. Once they grow, they grow quite a bit. So you must come up with a plant that can fight back and get rid of it. Otherwise we're going to have the barren lands full of foxtails growing all over the place an it's going to be really bad for caribou, lichen and everything else. That's one plant we have to try to understand and try to combat.

You can plant some real good native plants here, but the introduced plants will probably overtake them. One thing they have to do is study the non-native plants and see if they are a threat. If they are a threat, then they should somehow be removed or minimized. You need to keep pushing the native plants. They can really grow fast and cover that whole area. Nature can come back. It will take its time, but doing the right thing will probably help speed it up real quick. Thank you. – *Fred Sangris*

Global Warming

Susan Enge raised a question about the effects of global warming on the rock pile. Colleen English pointed out that the rock pile has been modelled for global warming over the next hundred years to see what might happen as annual temperatures rise. There are instruments that are in the pile that can give us the information needed.

Accountability and Follow-Up

TK/IQ Panel members want to know about the kind of follow-up that will take place to address issues raised at their sessions. It was clarified that all concerns are documented, and EMAB makes decisions with input from the TK/IQ Panel about recommendations to be forwarded to Diavik. There has been an effort since the caribou monitoring TK/IQ Panel in March to make progress on TK/IQ recommendations related to caribou monitoring. It is expected that there will be similar follow-up and reporting to the panel following the current session.

Exploring Options

Diavik staff presented three options for rock pile closure that had been identified at an on-site workshop with Aboriginal delegates in 2009. However, these options emerged from a focused discussion about caribou movements, and did not account for the full range of values and socio-ecological components to be considered.

TK/IQ Panel members were unwilling to discuss their vision for the rock pile prior to a site visit. However, in dialogue with resource people they did scope out issues related to key areas of discussion, informed in part by the presentations provided by Gordon Macdonald, Colleen English and Kathryn Scott. The site visit allowed for a more detailed discussion of issues, also reflected in this section. In order to provide greater insight on the meaning and implications of these discussions, some background on technical considerations drawing from Diavik's Interim Closure and Reclamation Plan and other sources are provided.

The key issues addressed are as follows:

- Baseline and goals: "rebooting nature?"
- Shape of the rock pile
- Capping the rock pile
- Water flows
- Plants for life
- Wildlife habitat
- Renewing homeland

Biodiversity: Values in Reclamation

One starting point for Aboriginal people to provide input into mine reclamation has been to develop an understanding of the cultural values that can shape reclamation goals and objectives. Anne Garibaldi and Kathryn Scott were invited to join this TK/IQ Panel so they could share some experiences in doing this kind of work from other places. Anne Garibaldi focused on her work with Fort McKay in the Alberta oil sands. Kathryn looked at the examples of Colomac Mine in the Northwest Territories, Faro Mine in the Yukon, Whistle Lake mine in Ontario, and a number of other examples.

Aboriginal peoples have always made it clear that reclamation needs to address environmental, cultural and spiritual components. The stories from other places inspired TK/IQ Panel members

to talk about their values. They named some key elements in the landscape, always returning to the idea that it's the whole environment together that is valued: the land, water, air and all the animals, plants and Aboriginal peoples that live in the landscape. The word that scientists use for this is "biodiversity." Article 8(j) of the United Nations Convention on Biodiversity recognizes both the cultural practices and knowledge of Indigenous peoples. The relationships between ecological values and the practices of living in homeland were well expressed by George Marlowe and Fred Sangris.

What is Biodiversity?

Biodiversity is a scientific word that brings together two words – "biological," which refers to living things, and "diversity," meaning lots of variety. The word was invented in 1968, and showed new scientific knowledge that the natural world needs many different forms of life in order to be healthy. This (biodiversity) is something Aboriginal people know a lot about because we have survived by harvesting a lot of different animals, birds, fish, plants and berries, and trees. Aboriginal harvesters are very knowledgeable about the things they harvest – it's a matter of life or death.

Usually scientists are just thinking about the land, water and animals when they talk about biodiversity. But as Aboriginal people, we consider people, culture, way of life and spirituality as part of biodiversity as well. Our traditional knowledge offers a different way of understanding what it takes to make a healthy environment. – *excerpted from Two Roads Research Team (SENES Consultants Ltd) 2011*

They say, diamonds are the best, and we've got diamonds here. Think about that. I don't know what to say sometimes. Me too, I love the land. I love the caribou. I love the fish in Lac de Gras. I still remember when I used to go there. We used to get fish there. The tourists would get fish and I'd fry them for everybody, nice golden brown. Everybody loves it. When I said before the pit, we'd fish from a little dock that was there. We'd catch three fish and brought them to the kitchen and fry them. I don't think I'd do that now.

Every time we say something it's the youth. We've got to put those youth on the right track, in the right frame of mind. My value is something like every winter, every summer, at Artillery Lake, I can portage all the way to French Lake. That's my value. That's my goal. I go to Artillery Lake. The first thing I do is watch a beaver lodge over there. I'm really happy. That's my value.

If the mine is going to start around there, we'll tell the company not to destroy our values too much. Try to help them as much as you can. If I go to Artillery Lake right now, I know where to cast right away for fish, a nice little trout. I love that. And in August, I'll go right behind a muskrat lodge. I know where there's lots of blueberries. I'll go there right away. That's my value. We have to tell the company, you can work on it but let's try to make it as clean as possible for the next 10 or 20 years. We have to tell them that all the time. – *George Marlowe*

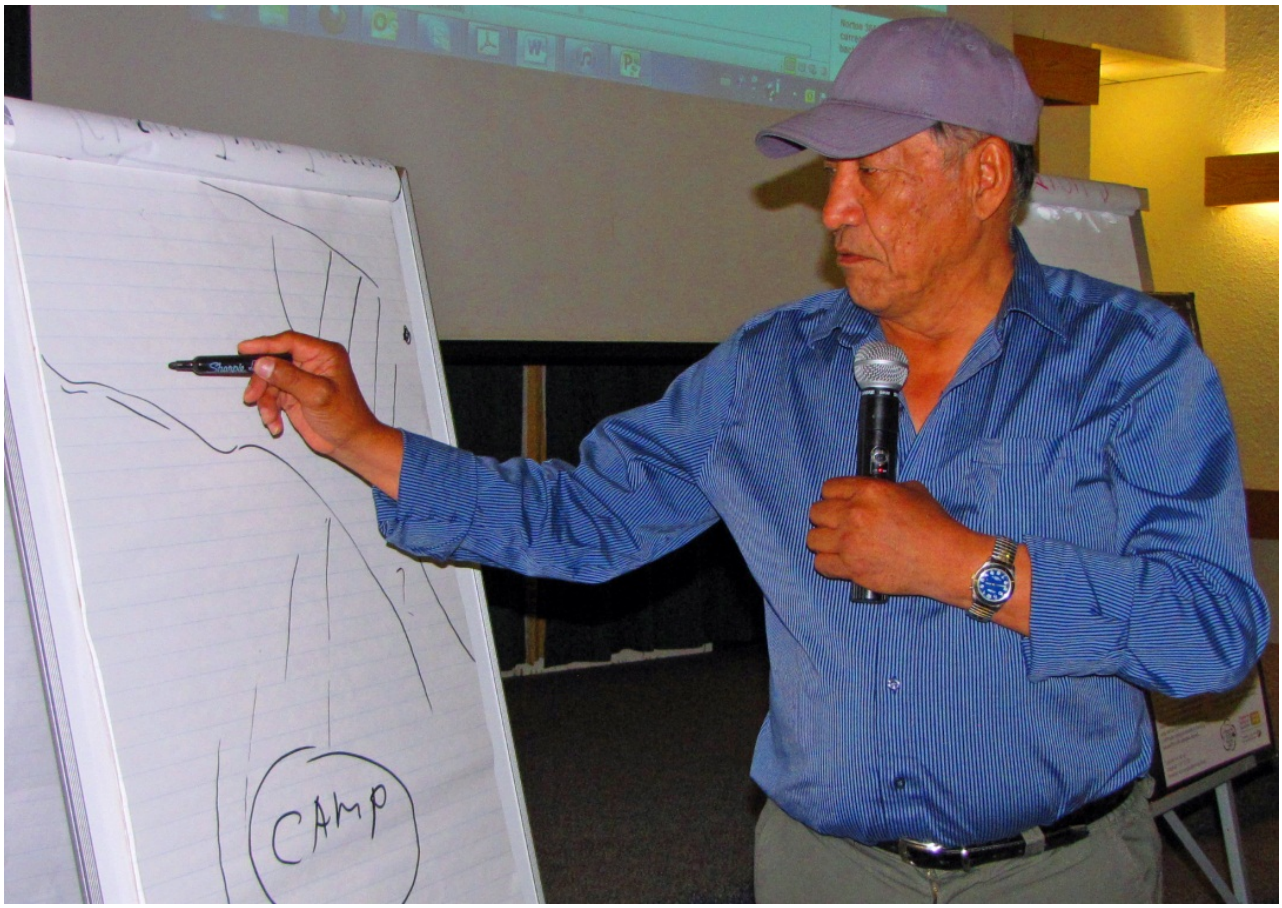

Figure 16: George Marlowe

I think the three key areas to Aboriginal people that we should pay attention to are the land, water and air. Those are the three important things. What we don't see on the land, what we cannot see in the water, it will be in the air. Those are things that we need. Like I said, we don't know what Diavik buried, so we don't know what's going to come up in the atmosphere. We have no idea what's there under their big stockpile.

So those three areas are key that we monitor. Traditional knowledge is also important in four different areas; fall, winter, spring and summer. Those are the four different areas that we should monitor. During the winter you have the caribou migration and then you have the Arctic hare, the foxes, they are all visible. They can be seen. They all have different behaviour patterns.

During the spring and caribou migration, we monitor the herds too to see how they interact with the mines. If there's a smell there or something they don't like, they'll avoid it. But if their food is there, they'll come around to their food chain.

Caribou are very important to Aboriginal people. The caribou are still here with us, and there are other wildlife too that are moving into the land. Muskox are important as well.

Then we have fish in the summer. People go to the camp every summer, fry fish any way they can to taste the fish to see if the water changed over time because of the dust fallout from the mines on windy days. It gets into the water and into the food chain with the fish. So we're monitoring the fish to see if the fish changes over time. We monitor to see if the water has changed over time. These are important. Any change will tell us that there is something going on.

Muskeg is important to us. There are a number of berries that grow in muskeg as well. Just south of it, there are cloudberries that grow. There are a number of blueberries in the surrounding areas, as well as medicinal plants. These have values for us too. In the olden days, you couldn't go to a pharmacy. There was none around, it didn't exist. So they went and got it themselves. A person in a community who would be a medicine man or a traditional doctor would find the right plants and treat people. That's how they did it in the past.

We don't eat all the berries. We share it. Baby seagulls and all those other animals also feed on berries. So it's important that those berries are monitored as well wherever they are so we know what's in it, they're not contaminated or anything.

So those are the values. For Aboriginal people, all wildlife that live on the land are important to us. All the species that live in the water are valued by us. The air is a value to us too because it blows for hundreds of miles around. Does anybody know how far the dust from this mine

blows? It goes quite a ways. Some people probably think a kilometre, maybe two kilometres, but you'd be surprised how far the dust can go, and it gets into everything.

So if there is acid rock or any toxins in the dust, it could affect the spawning areas or the growth of berries. If you consume enough berries or fish, it could be harmful. Not too harmful, but it could get into your food chain as well. So all wildlife, fish, everything else that's there, it's all of value to us.

The places of our ancestors on the barrenlands are of value to us. Many archaeologists who go on the land find arrowheads on the hills and in the sand. They think the native people were here, and they dropped this and left it behind. They don't understand the spiritualty and religion of Dene people.

Religion was a big part of Aboriginal life in the past. There are arrowheads at old campsites that were buried there for protection, for spirituality. In the olden days, there were shamans or medicine men. In my language we call them holy men because these are the people who protected us from harm. These are the people who protected us from disasters. These are the people who went looking for caribou in the spirit world and told us where the herds were so we could survive. They told us where the best fishing areas were. They were connected to the natural world.

So many of the archaeologists who walk the land have no idea. They think native people camped here and forgot their arrowheads and left a lot of their artifacts. They don't understand the spirituality component that is still practiced today by different Aboriginal peoples in the north. We were told never to bother those arrowheads when we see them. They were left there for a purpose, and they're still there. There may be places in the barrenlands that have a spiritual connection. A person that's buried as well, and all his things are buried with him.

So we have spiritual sites and religious sites on the land too that we value above everything else. Archaeologists, Diavik and BHP find arrowheads and collect them. They bag them and collect them, not realizing those locations might be a temple or prayer sites and people place them for offerings and protection. They live in a different world. They don't understand. Thank you. – *Fred Sangris*

Baseline and Goals: "Rebooting the Landscape"

In imagining a future for the rock pile, the TK/IQ Panel is considering whether this new landscape feature is a "dead zone" that just needs to be contained and isolated, or whether it should be "rebooted" to become reintegrated with its natural surroundings in some way. In looking at the options, it's useful to know a bit more about the building blocks that can be worked with in terms of land formations and materials in the surrounding ecosystems.

Aboriginal peoples have stories about how the earth in the Diavik area was formed that the TK/IQ Panel has not yet had a chance to review. There is a lot of scientific research about the historical formation of the landscape that can be a useful starting point for discussion and interpretation by the panel.

Rocks of the Diavik area are very old, relative to the age of the Earth – the most ancient part of the Canadian Shield. Geologists call this the "Slave Geological Province." They think the rock in this area was formed in the *Archean* era, before 2.5 billion years ago when the earth was a lot hotter. The earth's crust from this era is composed of *metamorphic* rock that was transformed by the earth's heat, and *igneous* rocks that were formed by the frequent volcanic activity of the era. Some of the land formations in the Slave Geological Province were formed by plates of the earth's crust pulling apart and colliding. The kimberlite pipes that are associated with diamonds tend to be only in areas that are older than 1.5 billion years and where the earth's crust is thick.

The surface of the landscape is largely shaped by the glaciers that covered the area110,000-10,000 years ago. This was an era marked by strong and periodic changes in global climate. As the glaciers melted a huge lake was formed, and sea levels rose.

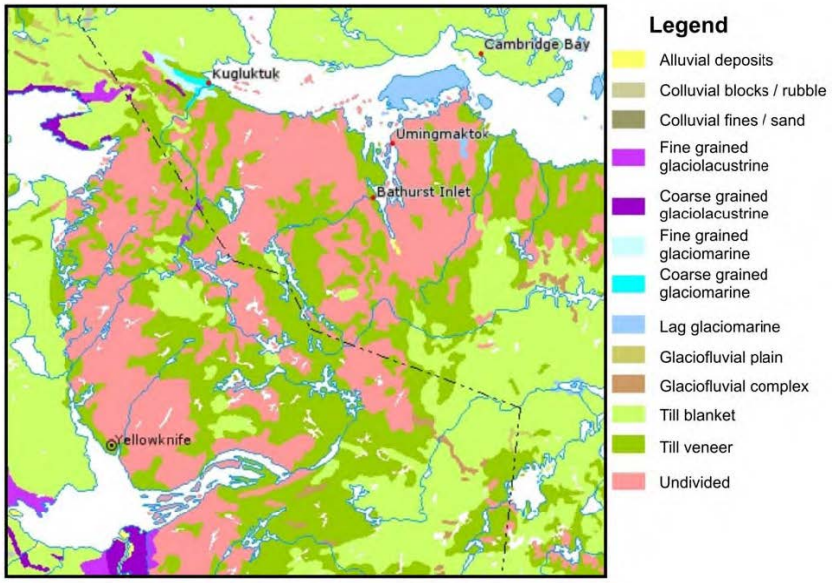

Figure 17: Glacial deposits in the West Kitikmeot Slave area. Source: Surficial Materials Map, Digital Atlas of Canada. http://atlas.nrcan.gc.ca.

What was left behind as the lake shrank and sea receded were lake sediments, raised sand and gravel beaches, and glacial grooves and deposits on the landscape. *Glacial till veneer* is an unsorted mixture of gravel, sand, silt and clay that has thin and patchy distribution across the Slave Geological Province. Till areas tend to be poorly drained. Most remarkable are the patterns of gravel and sand *eskers* and

kames formed by streams and ponds under the glaciers. These are well drained areas. *Boulder associations* are deposits of larger rock fragments from glaciers on the bedrock surface. Different kinds of plant and wildlife communities are adapted to the conditions on each kind of landform.

> The terrain on East Island is characterized by steep-sided bedrock ridges, undulating to strongly rolling slopes consisting of glacial till, ridged eskers and level to depressional glaciolacustrine [glacial sediment] and organic deposits. – Diavik Diamond Mine, Inc. 2011

Shape of the Rock Pile

It is important that the shape of the rock pile is visually pleasing, and supports objectives for wildlife, people and plants. The "baseline" discussion above provided a glimpse of the kinds of land forms that are in the larger landscape of the Lac de Gras area.

Bobby Algona noted that the rock pile currently looks like a human construction alien to the natural landscape, a "big castle" with a colouration "totally different from the landscape around." The TK/IQ Panel discussed the pros and cons of leaving the rock pile the way it is and "letting nature take its course" (Ed Jones), or finding ways and means of reshaping it.

It was agreed that in its current form with steep sides and large boulders perhaps closest resembling a glacial boulder association, the rock pile would remain a "dead zone" for a very long time, uninviting to plants, animals and people. Scientists have found that boulder associations support very little plant life, but a variety of lichens grow on the boulders (Matthews et al 2001). According to TK/IQ and scientific research conducted for the Interim Closure and Reclamation Plan, caribou tend to avoid boulder associations (Diavik 2010, Appendix VIII-1, 4.1).

The overall height and shape of the rock pile may also resemble an esker. Eskers are the opposite of boulder associations in that they are very attractive to a variety of wildlife, since they are well drained and exposed to the wind, providing a welcome escape from insects in summer. The mixed sand and gravel composition of eskers makes them good places for wolves, grizzlies and foxes to den. They are also good places for people as sites for camping and burial grounds.

Options for the shape of the rock pile were explored at a Closure Options and Criteria Workshop on May 12-13, 2009 including representatives of EMAB, the Federal and Territorial governments, the Wek'èezhìı Land and Water Board, the Kitikmeot Inuit Association and the Yellowknives Dene First Nation. Pros and cons of gradual "flat" slopes versus steep slopes were discussed. There were linkages to concerns discussed elsewhere in this report. The following table is adapted from the workshop report, linked to key TK/IQ Panel concerns. Because the positive or negative values assigned during the workshop may vary depending on objectives, the plus/minus coding is removed in the table.

Table 1: Options for side slopes on North Country Rock Pile (adapted from Closure Options and Criteria Workshop, May 12-13, 2009)

TK/IQ Panel Concerns/Values	Flat slopes	Steep slopes
Contamination and water flow	Better stability Greater water erosion Increased snow accumulation	Enhanced freezing Smaller footprint More opportunities for natural drainage patterns Larger buffer from Lac de Gras
Caribou health and safety	Safe passage for caribou Caribou access to top of pile to get away from bugs	Prohibits caribou access
Revegetation	Greater opportunity for revegetation	
Other	Could cover adjacent roads	

Maybe you should flatten the rock pile a little bit just for the animals. In the future, if anybody goes there again they can walk on that site to look around. Make it better than the way it looks now maybe. That's what I'm saying. – *George Marlowe*

Put some gravel back in the open pit, not to cover the whole pit, just to cover maybe less than half. That's what we're suggesting. The mountain will shrink that way. Then we have a passageway for the caribou to migrate onto the rock pile. That's my thought by observing what we've said here. Thank you. – *Phillip Liske*

The rock pile looks like a big castle from fifty miles away, where my place is. You see Ekati's rock pile. The rock piles are sprouting up everywhere. They truly are eyesores. It's not natural anymore when you go up on a hill and you see a big, black thing over there. The colouration is totally different from the landscape around. – *Bobby Algona*

Rock Pile Capping and Water Flows

The rock pile consists of rock that has been broken up through the mining process. When broken up and exposed to air and water, the natural metals in rock with lots of sulfur in it will undergo a chemical reaction that causes acidic water and metals to leach out. This can lead to contamination of the water and land. This is called acid rock drainage, ARD.

When a pit is blasted, the broken up rock is tested for sulfur content, and depending on the amount of sulfur present, the rock is identified as *Type I* ("clean"), *Type II* (moderate acid and metals leaching potential) or *Type III* (high acid and metals leaching potential). The three categories of rock are stored separately. Type I rock is used for roads and the airstrip. There is very little Type II rock, and it is currently stored as an outer layer on the North Country Rock pile.

In closing up the rock pile, water seepage through the rock pile needs to be contained and enclosed so that there will be no contamination. The assumption is that seepage will be limited by permafrost conditions (assuming predictions for climate change over the next 100 years). Glacial till is considered to be a good material for covering the rock pile and keeping water out of the Type III rock. The currently approved plan is for a till cap of 1.5 meters to be put on the pile. A second layer of Type I "clean" rock 3 meters thick will be added on top of the till to keep it from eroding. So the total covering of the rock pile would be 4.5 meters.

Figure 18: Seth Bohnet demonstrates Rock Pile capping

Another possible material that can be used is processed kimberlite (PK). This the rock that the diamonds are found in, and it gets crushed in order to take out the diamonds. This PK could maybe be mixed with something else to use for reclamation, but it is more likely to leach contaminants than till or Type I rock.

Diavik is now reviewing the kind of capping that should be used for the rock pile for its revised Interim Closure and Reclamation Plan. The kind and thickness of materials that should be used for the outside layer can be reconsidered depending on the goals for revegetation and wildlife access on the rock pile. It's likely not a good idea to get soil from other places, since this would just damage another part of the landscape. Other possibilities include crushing the Type I rock to a finer size, using more glacial till for topsoil, and mixing in sewage sludge as a fertilizer.

The Closure Workshop on May 12-14, 2009 reviewed three options for capping the rock pile, with a focus on the till cap. Table 2 outlines the options linked to key TK/IQ Panel concerns. As in Table 1, the plus/minus coding is removed. There was no discussion of the additional Type I rock layer included in the 2009 workshop report.

Table 2: Options for Till Cap on Country Rock Pile (adapted from Closure Options and Criteria Workshop, May 12-13, 2009)

TK/IQ Panel Concerns/Values	Option 1: Till Cap on Top and Sides	Option 2: Till Cap on Top	Option 3: No Till Cap
Contamination and water flow	Reduces oxygen into piles Reduces freezing Reduces infiltration [water] Shortage of till material Difficulty in sorting usable till	Better freezing Vegetation on surface holds snow, increases infiltration amounts	Enhanced freezing
Caribou health and safety	No discussion	No discussion	No discussion
Revegetation	Good for revegetation	Good for vegetation	

The TK/IQ Panel members asked a number of questions about the options being considered for capping the rock pile. There was a lot to learn about the rock pile, since it's very new to people and not a part of the natural homeland; the main source of information is scientific research. There was some discussion about ways of ensuring that seepage from the rock pile does not lead to contamination of the surrounding land and water. The discussion about the best capping approach was also closely linked to the topics of revegetation and wildlife, areas that more easily tapped into the knowledge base of panel members.

We asked Diavik at the hearings to pile the rocks where it is away from the water because that island is so small. One of the plans they had was to make a break to the mainland, but the community didn't support that. They wanted everything piled in the middle, so that there is no danger of any leak into the lake. Also, that centre area is probably the proper place. – *Fred Sangris*

There is going to be a lot of water seepage and water flowing out of the bottom part of the rock pile. I'm wondering whether this water could also be monitored as time goes by? This water that's coming from that rock pile is going to seep into the streams and into the lake also. Wouldn't it be feasible that this water be contained in the castle, I call it a castle, around the mine itself until it's safe and the water is all clean?

You see in those pictures of people with castles, they have moats around the castle. If you look at the rock pile as a castle, maybe build some kind of moat or something so you can contain and monitor this water that's seeping out of this rock pile. Thank you. – *Bobby Algona*

Plants for Life

According to the scientific assessment in the Interim Closure and Reclamation Plan 3.2 (Diavik Diamond Mine Inc. 2011), there are a variety of vegetation types on ʔek'adı. The main kind is called *heath tundra.* This is also the type of vegetation most affected by the mine footprint. There are also six other types of vegetation related to the different land forms on the island. The kinds that are most related to the rock pile landform are *esker complexes* and *boulder associations.*

Table 3: Vegetation Types on ʔek'adı (from Matthews et al 2001)

Vegetation Type	Plant Community
Heath tundra	Mainly herbs and shrubs in the "heath" family. Common plants include dwarf birch, Labrador tea, cranberry, crowberry, alpine milkvetch, and alpine azalea. Plants form a mat on the ground.
Boulder associations	Support very little plan growth. A variety of lichens on boulders.
Sedge associations	Sedges look like grasses or rushes. The sedges grow in tussocks (bunches), and form hummocks (humps) invaded by a variety of other plants including bog rosemary, cloudberry, Labrador tea, blueberry, and cranberry. Moss lives in the troughs between the hummocks. Dwarf birch and willow grow on the old hummocks.
Esker complexes	Vegetation on eskers varies depending on exposure to sun, wind and snow. Esker tops are windswept and dry, and as a result vegetation is sparse and in low mats, including three-toothed saxifrage, moss campion, sandwort, blueberry, crowberry, cranberry, bearberry, and alpine azalea. The areas away from the prevailing winds support dwarf birch, willow,

	shrubs and grasses. Low heath plants and some dwarf shrubs grow on windward slopes.
Bedrock associations	Dry and windswept areas. Lichens on the bedrock, and variable vegetation in protected crevasses and depressions in the rock.
Riparian tall shrub	Birch, willow, alder and occasionally black spruce. Understory includes include dwarf raspberry, dwarf marsh violet, cloudberry, grasses, sedges, club mosses and common horsetail.
Lichen veneer	Windswept and dry areas including esker tops may have a mat of different kinds of lichen. Where there's some shelter and moisture, some heath shrubs and saxifrages may grow.

The approved Interim Closure and Reclamation Plan for the rock pile does not include revegetation – but Diavik has conducted research on revegetation at the mine site that may shed light on options for rock pile closure. The May 12-13, 2009 Closure Workshop included a discussion about pros and cons of revegetating the rock pile. Vegetation will hold snow and thus increase seepage through the pile, but on the other hand it will help with dust control. Vegetation will attract wildlife, which depending on objectives may or may not be a good thing.

The August 20, 2012 mine site visit included a short tour of a revegetation plot, as well as a look at volunteer revegetation that's taken place on the "test pile" and elsewhere. A more detailed review of revegetation study results would be needed in combination with TK/IQ research to assess options. Pierre Beaverho made an interesting analogy with the community garden in Whatì that has recently been introduced. Like gardening, revegetation is not a traditional practice – but there is strong Aboriginal interest in renewing plant life on the landscape, and learning what works through experimentation.

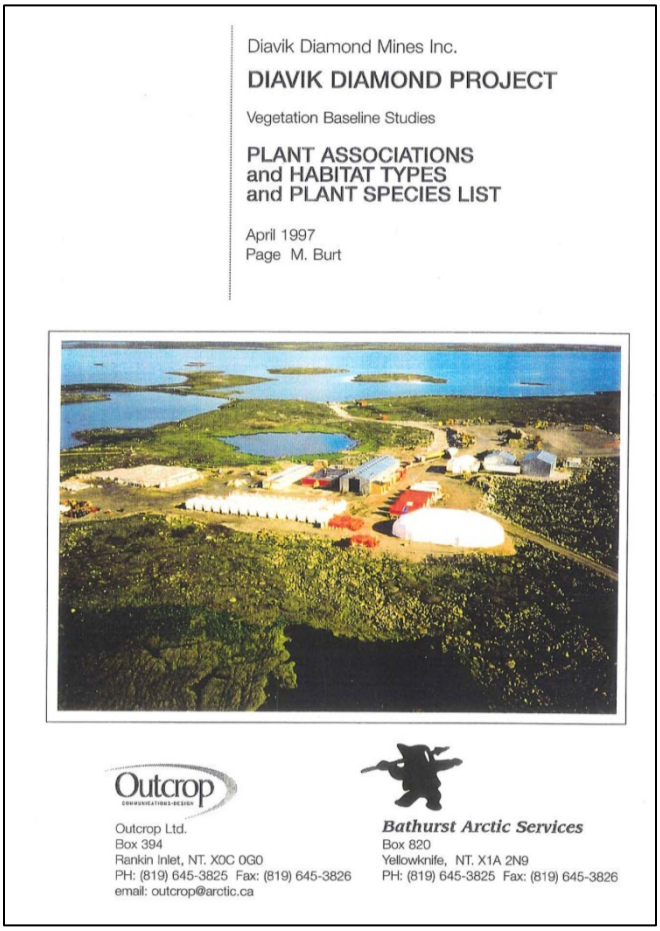

Figure 19: Report cover, Diavik Plant Associations and Habitat Types and Plant Species List, April 1997

Figure 20: Heath tundra (August 20, 2012 site visit)

Figure 21: Volunteer revegetation at Test rock pile August 20, 2012 site visit

Figure 22: Tour of a revegetation test plot August 20, 2012 site visit

That whole area needs to be studied. At one time, it used to be a beautiful island with a lot of food sources. It's not like that anymore. You are going to have to try to recreate it, but you can't bring in anything from the outside. You have to use what's there, the local plants.

I used to bring the elders to the south side and there used to be all kind of cloudberries, blueberries, everything that grows. They were telling me there were some native traditional medicine plants as well. I think plants are an important part of the whole ecosystem. It will take a very long time to bring plants back to life, but eventually it will come back. Once they come back, they'll take over.

You need to keep pushing the native plants. They can really grow fast and cover that whole area so nature can come back. It will take its time but doing the right thing will probably help speed it up. Thank you. – *Fred Sangris*

The Métis for sure would like revegetation on that rock pile. – *Susan Enge*

We see a lot of good soil out there on the eskers. I would use that to put on the rock pile so proper vegetation will grow back. The reason is we're really concerned about the Diavik island. That's a traditional area where the caribou roam, and it's a good feeding area and resting area. Even our area where I come from, Whatì, some of the community residents have a little garden and they planted some vegetables such as potato plants. People have a lot of interest in vegetation and replanting nowadays. Forty-five years back, those things weren't even thought of. We know the land. We're not farmers, but we have an idea how we can have good proper growth on the land, no matter the size. – *Pierre Beaverho*

The vegetation for caribou is the lichen. It takes a long time to grow, 80 years so that caribou can eat it. I'd like to go back to the natural vegetation as close as possible to the way it was before the mine started. If it's going to come back as natural, it's going to take 80 years and we won't be here. – *Phillip Liske*

If there is a waste rock pile that is finished now on the Diavik site, maybe we could put something on it, to grow some plants and see what happens. – *George Marlowe*

Wildlife Health and Safety

Comments made by TK/IQ Panel members made it clear that the diversity of wildlife on the landscape is valued as essential to maintaining overall biodiversity. However, the focus of discussions about terrestrial wildlife has been on caribou. A workshop with Aboriginal community delegates was held at the mine site August 17-18, 2009, with a focus on post-closure caribou movements (a second on-site workshop was held on fish palatability immediately afterward, on August 19-21). The TK/IQ Panel session on March 14-15, 2012 was focused on caribou monitoring. Further work would be required to gain a full picture of wildlife values, concerns and solutions in relation to closure and reclamation.

During the August 2009 workshop, participants toured ʔek'adı and Diavik by helicopter, including caribou trails on the island and surrounding areas, as well as the North Country rock pile. The workshop report reflected on previous research by Ann Gunn (1998) noting that caribou may use the rock pile as a vantage point for seeing predators, and for keeping away from mosquitos and flies in summer. On the other hand, if the rock pile is understood to be similar to boulder associations as described earlier, it's likely that caribou will avoid it.

When thinking about caribou, 2009 workshop participants talked about a number of variables for consideration in closing down the rock pile. These are reproduced below with links to aspects of reclamation identified during the June 2012 TK/IQ Panel session.

Table 4: Caribou and North Country Rock Pile Closure (adapted from August 17-18, 2009 Closure Workshop report)

Issue	Consideration
Shape of the rock pile and access	• Concerns regarding caribou crossing very high rock piles. • Smooth the sides of the rock pile so that wildlife can go over it if they want to. • Smooth crossing/access areas so caribou feet don't get hurt. • Contouring the waste pile so it is similar to natural topography. • Find traditional paths and plan access/crossing areas around these. • East Island is now dead due to mine development, and caribou may naturally avoid this area in the future for this reason. • Ramps have been used along the Misery Road to facilitate caribou crossing.
Contamination	• Restricting caribou access to the pile so they don't eat any vegetation growing up there. • A fence around the PKC; concerns that caribou will sink down into the PKC area.

A number of comments were made during the June 2012 TK/IQ Panel session to the effect that that caribou should be kept away from the mine during operations (see the section above on "Identifying Concerns"). It was not always clear whether the panel members felt that this should also be the case post-closure, or whether conditions should be created for safe caribou travel at

the mine site, and on the rock pile in particular. Colleen English mentioned that caribou have been observed walking on the test rock pile, which is capped with smoother material and with slopes reshaped to be less steep.

Now that Diavik has made some disturbances on that island, we have to try to bring it back as close as we can to the way it was, so that the calves and caribou maybe one day want to come back to their secure island. If there's concern, we could probably find traditional methods to get them to avoid that island somehow. Thank you. Máhsı. – *Fred Sangris*

We're not going to be here all the time. The young people are the ones who are going to take over. So today is a chance to talk to them and say, "Think like a caribou." We've got to talk about not disturbing caribou, or not wasting meat.

Caribou is a very smart animal. After the closure, sure, they could go back there again. We'll make some kind of a trail again and they'll go back to their old trail, the one they used to walk on before, twenty years from now maybe. When everything's gone, the building, the trucks, the roads are gone, guaranteed the caribou will be there on the rock pile. But right now, I don't want the caribou to go to the mine site. – *George Marlowe*

After closure, everybody's gone, the caribou will come back and swim across again and I'm pretty sure they'll go to that hill where there are no flies. I know there are lots of flies in August and September, too much. You guys know that too; everybody knows it.

Some time in the not too distant future, Diavik will be finished their job. They will be leaving. Us, our children, our children's children and their children will be here for a long time. Mahsi cho. – *George Marlowe*

The mine is right on the caribou migration route. The caribou will eventually go back to this landscape if the mine does a good job with closure. So the caribou will go back onto the same migration route. So we have to make a recommendation on caribou to make sure the closure is good so the caribou comes back. – *Phillip Liske*

Homeland or "Dead Zone"?

As discussed above, biodiversity was identified as a core value for TK/IQ Panel members. Linked to this, panel members had many stories to share about the value of the ʔek'atı area as a part of their traditional homelands – a place for living, burying their family members, and harvesting. However, the future of the mine site area was considered as an open question. More work is required to clarify whether Diavik should plan for closure as renewal of a homeland, or as a "dead zone" that needs to be closed off from wildlife, people, and the surrounding landscape.

Recommendations for Action

Recommendation for Action: Future TK/IQ Panel Work in Closure and Reclamation Planning

The TK/IQ Panel developed a series of three resolutions following from the June 2012 workshop, related to: the need for a site visit; the role of panel members in communicating with communities; and the communication of TK/IQ Panel processes to the other environmental monitoring boards, such as the Independent Environmental Monitoring Board (IEMA) and the Snap Lake Environmental Monitoring Board (SLEMA). These recommendations were approved by consensus, and are provided in full in Appendix C. Further to the formal recommendations by the panel, a number of action items can be extrapolated from the proceedings of the session, briefly described as follows:

Panel members shared much baseline knowledge about the landscape encompassing Diavik. This knowledge sharing suggested that a "reference condition" approach (including ecological and cultural landscape aspects) be used in TK/IQ studies related to closure and reclamation. This underscored the value and importance of reviewing earlier TK/IQ studies as part of the context for planned community-based TK/IQ studies.

Panel members also pointed to a number of linked technical issues related to closure and reclamation of the rock pile that would provide critical context for further development of TK/IQ inputs, including questions about which landscape form should be considered as the "reference condition," what surface capping options might best support revegetation (if revegetation is desired), and what wildlife habitat conditions might be supported (including species other than caribou). These questions point to the usefulness of a cross-cultural learning approach to TK/IQ processes in closure and reclamation planning.

The June TK/IQ Panel session provided direction on a series of three recommended focal points for cross-cultural dialogue during upcoming sessions:

1. Baseline studies: previous TK/IQ studies and archaeological findings in the ʔek'atı area.

2. Reference condition options for the rock pile.
3. Planning for biodiversity in revegetation, wildlife habitat, and capping options for the rock pile (differences from the target reference condition)

Recommendation for Action: TK/IQ Panel Mandate and Approach

The second TK/IQ Panel session in the 2012-2013 series has provided a number of general insights into the mandate of the panel, the knowledge base that can be used a starting point for TK/IQ processes, best practices in new TK/IQ research, best practices in Aboriginal engagement, and criteria for assessing successful use of TK/IQ in mine planning and monitoring, particularly as it relates to mine closure.

Revisiting Our Mandate

EMAB is currently considering a revised draft Terms of Reference for the TK/IQ Panel. At the same time, the implementation of the Panel mandate is being developed in practice. In part, the panel is learning through experience about who it is not answerable to, and what it is not mandated to do. These boundaries provide clarity about the panel's role in relation to the Parties to the Environmental Agreement.

The panel is not directly answerable to Aboriginal Parties/communities or to Diavik – rather, it was established to provide advice to EMAB. The Panel does carry out TK/IQ studies or consultation; this is Diavik's responsibility, working in partnership with the Aboriginal Parties.

As a regional body of knowledge holders, the TK/IQ Panel is well positioned to review existing and ongoing community-based TK/IQ studies and consultation processes, identify best practices and guidelines for these processes, and develop initial scoping and methods for new community-based processes around mine closure.

There is bound to be some level of TK/IQ knowledge sharing in activities of a panel of TK/IQ knowledge holders. However, such knowledge sharing should be considered as issues scoping and piloting of methods, as well as a basis for assessing and synthesizing community inputs. It is also in keeping with respecting Elders and knowledge holders as a key tenet of Aboriginal ways. The regional scale of the TK/IQ Panel limits the level of detail possible in TK/IQ research, but at the same time the cross-community level provides an opportunity for learning about method through best practices or comparative reflection, and identifying regional patterns and priorities emergent from community-based study and consultation results.

TK/IQ State of Knowledge

An update to the State of Knowledge Report for the West Kitikmeot Slave Study Region was published in 2007. The report notes that it was not within the scope of the update project to complete a full review of TK/IQ in the region, and recommends that a separate TK/IQ State of Knowledge Report be completed as a follow-up to the 2007 update. This work might be

combined with development of a secure, web-based system for accessing TK/IQ materials for use in new TK/IQ studies.

Best Practices in TK/IQ Research

The TK/IQ Panel is learning through experience that Indigenous methodologies need to be adapted to the specific conditions of addressing monitoring objectives related to mine operations, closure, and reclamation. The cross-cultural learning approach allows for productive dialogue with scientists so that TK/IQ knowledge holders fully understand the context for their work, and the specific ways in which they can meaningfully contribute to planning and monitoring. A reference condition approach allows knowledge holders to bridge their understanding of the baseline social-ecological landscape with the reality of the mine in operation and post-closure.

The TK/IQ Panel would be well situated over time to lead development of TK/IQ Research Guidelines specific to the West Kitikmeot Slave Region that can be used to establish best practices for new studies with stakeholding communities.

Aboriginal Engagement

In some cases, individual Aboriginal Parties may have established their own guidelines for consultation and engagement, as well as TK/IQ research. However, the TK/IQ Panel is a regional body that can synthesize experiences among the communities in order to crystallize best practices.

Measuring Success

Community-based TK/IQ studies and community engagement processes need to be monitored, validated, and assessed in terms of their success in having been accommodated for in planning and monitoring processes. Although the Parties are in part responsible for this, the TK/IQ Panel is in a unique position in being able to assess these processes from a standpoint of expertise in relation to Aboriginal inputs.

Figure 23: L-R Back ???, Louis Zoe, Pierre Beaverho, James Rabesca, George Marlowe, Phillip Liske, Susan Enge, Fred Sangris, August Enzoe, Wayne Langenham, Alfred Lockhart, Shelagh Montgomery, Bobby Algona, Kathryn Scott, Randy Hinaniak, Ed Jones, Ann Garibaldi; Front Jackie Strong, Nicole Enge, Helena Marlowe, Helena Marlowe, Darnian Marlowe, Mona Hiniak, Michèle LeTourneau

Conclusion

The second TK/IQ Panel session of 2012 represented significant progress in the twofold objectives of providing input on the Terms of Reference and procedures for establishing the panel as a standing body, and providing a preliminary scoping of TK/IQ processes in closure and reclamation planning, with specific reference to the North Country Rock Pile. Panel members took strong ownership of their mandate and process. They insisted on being provided with information necessary to fully understand the context for questions that they were being asked to address. The panel requested, firstly, clarification about the decision-making framework within which the TK/IQ Panel is situated. Secondly, they made it clear that it would be necessary to ground their inputs on closure and reclamation planning in direct experience of the mine site, as well as full information about the technical context for planning.

This document expands on the proceedings of the June 2012 Panel session and workshop toward providing a foundation for future panel work, specifically in providing inputs on closure and reclamation planning at Diavik; and more broadly in contributing to the purpose of the Environmental Agreement *"to respect and protect air, land, water, aquatic resources, wildlife, archaeological and cultural resources, and the land-based economy that are essential to the way of life and well-being of the Aboriginal Peoples"* (S1.1[d]).

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TK/IQ Panel Session

Environmental Monitoring Advisory Board

Technical Report 2,

2012 Series

RENEWING OUR LANDSCAPE

Envisioning Mine Closure and Reclamation of the North Country Rock Pile

Diavik Diamond Mine

VOLUME II—APPENDICES

October 2012

PRESENTED BY

The Traditional Knowledge & Inuit Qaujimajatuqangit Panel

COMPILED BY

SENES Consultants Ltd.

400084-000

List of Appendices

Appendix A

Tk/IQ Panel Session and Workshop Agenda

June 26-28, 2012

EMAB Traditional Knowledge Panel

Caribou Monitoring, and Mine Closure and Reclamation *Workshop and Session*

Northern United Place, 5403 Franklin Avenue
June 26-28, 2012

Facilitation and Recording

Deborah Simmons, SENES Consultants Ltd.
Shelagh Montgomery, SENES Consultants Ltd.

Confirmed Participants to Date

**Two youth for each delegation TBA*

Kitikmeot Inuit Association	John Ivarluk, Bobby Algona and Mark Taletok
Łutsel K'e Dene First Nation	George Marlowe, August Enzoe, Alfred Lockhart
North Slave Métis Alliance	Ed Jones, Wayne Langenham
Tłı̨chǫ Nation	Pierre Beaverho (Whati), Louis Zoe (Gameti), Jonas Lafferty (interpreter), James Rabesca (interpreter)
Yellowknives Dene First Nation	Fred Sangris

Observers/Presenters

EMAB	Michèle LeTourneau
Diavik Diamond Mine	Colleen English, Kathryn Scott
Integral Ecology Group Ltd.	Ann Garibaldi, specialist in Aboriginal Values and Reclamation

Background and Purpose

EMAB TK/IQ Panels are mandated to work with local communities and assist EMAB in facilitating appropriate and meaningful accommodation of Traditional Knowledge/Inuit Qaujimajatuqangit (TK/IQ) in the planning and review of environmental monitoring at Diavik Diamond Mine. This event is part of a series of TK/IQ Panel workshops and sessions for 2012/2013 to address key questions.

This Workshop and Session will include a review of our work and progress to date on caribou monitoring, as well as a start to activities related to mine closure planning. This gathering will include youth delegates, ensuring that they have opportunities to both learn and share their ideas for the future of the mine site.

Session: Caribou Monitoring Review

On March 14-15, the TK/IQ Panel met to review the current Standard Operating Procedure (SOP) for monitoring caribou behaviour, and lay the groundwork for developing a traditional knowledge caribou monitoring plan. In April, a Briefing Note on the approved TK/IQ Panel recommendations for the SOP was submitted to Diavik. Our half-day session on June 26 will include an update on the status of the recommendations, and review of the full report on the TK/IQ Panel session.

Workshop and Session: Closure and Reclamation Planning

Every three years, Diavik is required to revise the closure plan for the mine site, which includes the rock pile. The TK/IQ Panel now has an opportunity to provide input on the vision for the rockpile, and the approach to working with communities in the coming years. Activities will include a 1.5 day Workshop on closure planning, and a one day Session to develop recommendations, including next steps for the planning process.

What is Closure?

When mining activities end, the owner is required to close it down or "decommission" it through a formal process. A mine begins to close the day it opens. Closure planning needs to happen before the mine opens, since decisions made in construction and operation of the mine will affect the closure process and reclamation of the landscape. Diavik is required to review and revise its Closure and Reclamation Plan every three years. Since aboriginal people will live with the post-mine landscape in the future, it is important that they be involved in closure planning.

What is Reclamation?

The mine has changed the land. It is not possible to restore all the land to exactly the way it was before the development. But reclamation projects attempt to establish ecosystems that serve the needs of society and the environment. People's visions for the land are the basis for planning reclamation projects.

Talking Circle Approach

The TK/IQ Panel often shares knowledge within a Talking Circle format that ensures everyone has equal opportunities to speak. The main principle of the Talking Circle is respect. The microphone serves as the Talking Stick, and is also important because we are recording the proceedings. The person holding the Talking Stick is not interrupted – but the group gives the facilitator permission to ensure that our time constraints are respected by signalling to the speaker when it's time to wrap up. If the Talking Stick comes to you, you can choose not to speak, or you can request that what you say not be recorded.

This gathering includes a Workshop with resource people who are knowledgeable about closure and can share examples of other indigenous experiences in working on closure plans – the Workshop will include presentations and back-and-forth discussion so that people can have their questions and concerns addressed by the resource people.

The first and last parts of this gathering are a TK/IQ Panel Session, which is a forum for TK/IQ Panel members to talk among each other and make recommendations. TK/IQ Panel members can decide whether they wish to have Diavik representatives or other resource people present for their Session discussions.

It may at times be useful for elders and youth to work separately so they can develop their own perspectives and then share these with each other. The group can decide when and whether group work is a good idea – the facilitator will have suggestions!

The recording will be transcribed, and used as the basis for the report on the Workshop and Session. The report will not be shared without review and approval by the TK/IQ Panel (at the October meeting). The TK/IQ Panel can decide to approve some recommendations for immediate sharing with EMAB and Diavik, as we did with the Caribou Monitoring SOP recommendations.

AGENDA

Tuesday, June 26 – Caribou Monitoring Session Review and Closure Planning Workshop 1

Note: There will be at least one short break with refreshments during each morning and afternoon.

9:00	Opening prayer, introductions, welcoming remarks
	Review and discussion of Workshop and Session purpose, agenda, roles of TK/IQ Panel, EMAB and Diavik
	Caribou Monitoring Session Review – *TK/IQ Panel Members only* • Update on Caribou Monitoring SOP recommendations (Michèle) • Review and approval of TK/IQ Panel Session report
Noon	LUNCH PROVIDED
1:00	**Closure Planning Workshop Part 1: Background** • Introduction and background on EMAB involvement in Closure Planning (Michèle) • Presentation on the site and the closure process – what are the possibilities? (Colleen, Kathryn)
1:30	***Talking Circle:*** What does closure mean to you?
3:30	Review workshop agenda for Day 2.

Wednesday, June 27 – Closure Planning Workshop

9:00	Opening and agenda for the day
	Checking In: Key messages from Day 1
	Closure Planning Workshop Part 2: Reclaiming the Rock Pile • Introduction to the rock pile (Colleen, Kathryn) • Discussion
	Small Group Work Envisioning a future for the landscape at the rock pile site.
	Small Group reportbacks
Noon	LUNCH PROVIDED
1:00	**Closure Planning Workshop Part 3: Aboriginal Values and Reclamation** • Presentation by Ann Garibaldi • Discussion
	Talking Circle or Small Group Work • What are the most important values in reclamation planning? What would successful reclamation look like?
	Analysis of key messages or small group reportbacks
3:45	Review workshop agenda for Day 2.

Thursday, June 28 –TK/IQ Panel Session on Closure Planning

9:00	Opening and agenda for the day
	Checking In: Overview of key messages from Closure Planning Workshop
	Closure Planning Recommendations ***Talking Circle*** What are the key messages to be shared on closure planning?
	Review and approval of key messages
Noon	LUNCH PROVIDED
1:00	**Next Steps for Community Involvement in Closure Planning** ***Small Group Work or Talking Circle*** How should the TK/IQ Panel continue to be involved? How should communities be involved?
	Analysis of key messages or small group reportbacks
	Workshop and Session Reporting • Reporting and review schedule • Approval of any immediate recommendations for interim report
	Group Photo
	Concluding Talking Circle What were the highlights of this Workshop? What should be different at the October event?
3:45	Closing remarks, prayer.

Appendix B

Workshop Presentations

Presentation 1: Diavik Diamond Mines Inc,"Closure and Reclamation Planning"

Presentation 2: Integral Ecology Group, "Aboriginal Values and Reclamation Planning"

Presentation 3: Dialectic Research Services, "Examples of TK Integration"

RioTinto

Diavik Diamond Mines Inc.

Closure and Reclamation Planning

27 & 28 June 2012

Doc# ENVI-204-0512 R0

RioTinto

Diavik closure and reclamation planning

- Diavik closure concept – then and now
- Diavik closure goals
- Diavik closure process & timelines
- Diavik closure plan overview – by mine area
- Waste rock pile closure objectives
- Rock pile closure process & considerations
- Review of ideas from 2009 community consultations
- Questions to consider for the rock pile

Doc# ENVI-204-0512 R0 2

RioTinto

Closure design – then and now

3

RioTinto

Diavik closure goals

- Land and water that is physically and chemically stable and safe for people, wildlife and aquatic life
- Land and water that allows for traditional use
- Final landscape guided by Traditional Knowledge
- Final landscape guided by pre-development conditions
- Final landscape that is neutral to wildlife – being neither a significant attractant nor deterrent relative to pre-development conditions
- Maximize northern business opportunities during operations and closure
- Develop northern capacities during operations and closure for the benefit of the north, post-closure
- Final site conditions that do not require a continuous presence of mine staff

DOC# ENVI-204-0512 R0

4

RioTinto

Closure process & timing

- Interim closure & reclamation plan (ICRP), v3.2
  - Approved through WLWB review process
  - Further work to be done on closure criteria & reclamation research
  - Annual progress reports required
- 2016 – next version of ICRP due
  - 3 year window for community review & input
    - Many different aspects that each require discussion & recommendations
  - Some closure work can start soon, e.g. rock pile

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RioTinto

Overview of closure plans, by area

DOC# ENVI-204-0512 R0

6

RioTinto

Diavik waste rock pile closure objectives

- Physically stable slopes to limit risk of failure that would impact the safety of people or wildlife
- Rock and till pile features (shape and appearance) that match the look of the surrounding natural area, as much as possible
- Contaminated soils and waste disposal areas that cannot contaminate land and water

DOC# ENVI-204-0512 R0

7

RioTinto

Rock pile

- Opportunity to begin the closure process - no more rock added after open pit mining is complete later this year
- One of the most important areas for community input and TEK – landform considerations, waste disposal, wildlife movement/use
- Key focus area over the next year; began discussions with communities in 2009

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RioTinto

Wildlife movement – post-closure

- Closure design for wildlife movement is current focus
- Communities workshop at site 17-21 August 2009
- Outcome was three main options:

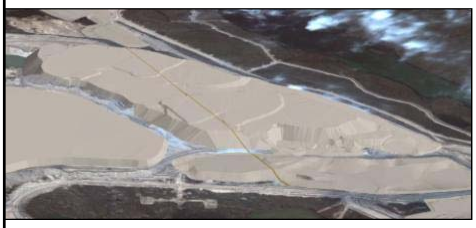
1 Leave rock pile as is – little to no access to rock piles

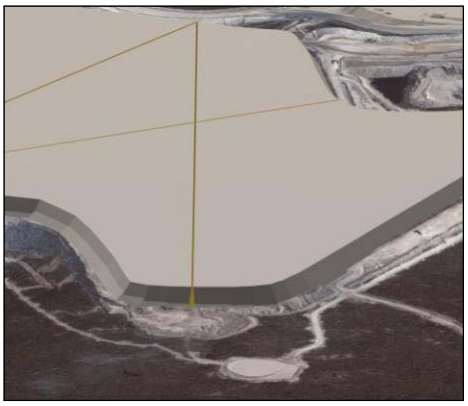
October 12 9

RioTinto

Wildlife movement – post-closure

2 Use traditional caribou trails to develop defined paths - controlled access to rock piles





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RioTinto

Wildlife movement – post-closure

3 Contour the pile - full access to rock piles

RioTinto

Rock pile technical considerations

- The rock in the pile would not go back in to the pits
- Water has to run off the pile without causing too much erosion or pooling in various areas
- The rock may release metals if it is not covered effectively
- Burying basic waste on site is a common practice and is currently done for operations – it can be the more environmentally friendly option for disposal at remote mines
- There may be an opportunity to use clean rock from A21 pit development to cover the pile

RioTinto

Rock pile

- Purpose of discussion today is to continue developing some of the ideas we've already heard from communities
- What would you recommend the rock pile look like after the mine is done?
- How would you recommend wildlife use the rock pile?
- In order to make that happen, what would you recommend the pile look like?
  - Is there vegetation?
  - Are the sides steep or more of a gradual slope?
- What can we continue to discard waste into the pile?
- How are we best to discuss these questions & get feedback from community members?
- Timeline: want to start work on closing the rock pile in early 2013

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RioTinto

Discussion

DOC# ENVI-204-0512 R0

14

Aboriginal Values and Reclamation

EMAB Traditional Knowledge Panel
June 26-28, 2012

Integral Ecology Group

Thank you!

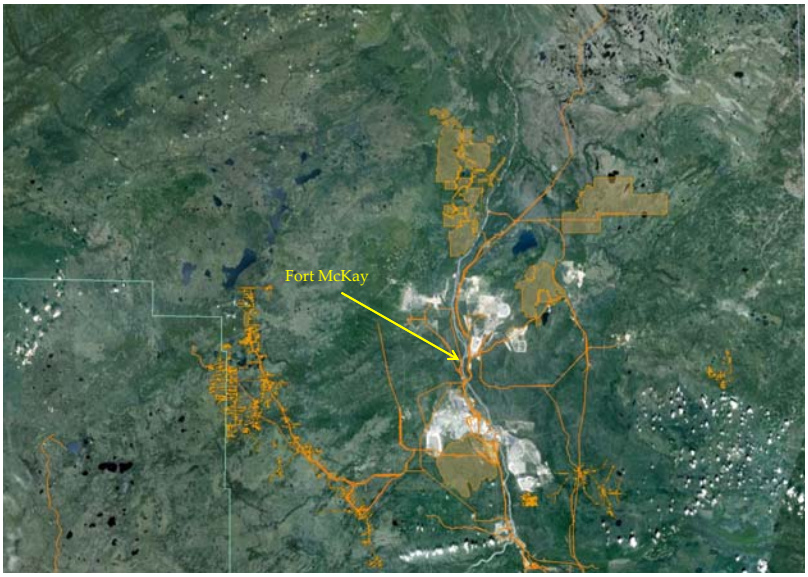
TEK Project Team
Andrew Boucher, Rena Boucher, Mary Bouchier, Gary Cooper, Flora Grandjambe, James Grandjambe, Wilfred Grandjambe, Celina Harpe, Dorothy McDonald, Fred McDonald, Victoria McDonald, Francis Orr, Walter Orr, Elsie Rolland, Elizabeth Stokes, Mary Tourangeau, Clara Wilson

The community of Fort McKay – this truly is their project

Fort McKay summer students
Brittany Cardinal, Lori Lei Mercredi, Katrina Delisle and Shawne Courtorielle


Fort McKay

Fort McKay



Initial key messages

- "Put it back the way it was as fast as possible"
- Reclamation needs to address environmental, cultural and spiritual issues
- Wanted to feel that they were a part of the process
- Need to involve multiple generations, particularly youth
- Traditional knowledge should be included in reclamation decisions
- Everything is related – you can't put back one piece at a time
- Lack of trust that reclamation would work (hadn't seen any done yet after decades of mining)

Fort McKay's Key Species

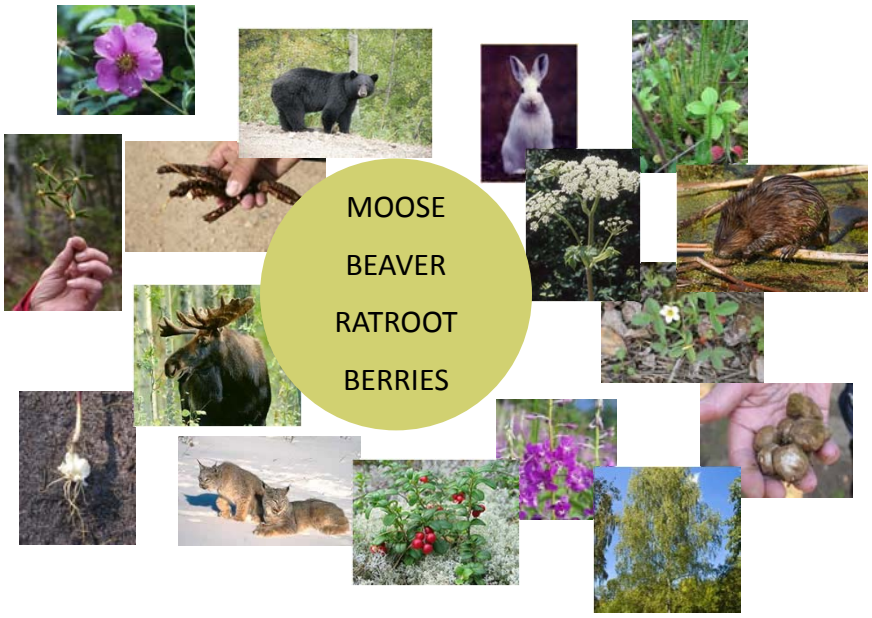
Beaver help shape and build the land.

Moose are an important source of food and provide material for moccasins, clothing, and tools.

Ratroot is a highly valued medicinal plant.

Berries are a prized seasonal food and contain medicinal properties.

Project Approach



We we did

- Established a project focus group
- Visiting sites before they were disturbed (or adjacent sites if necessary)
- Identified reclamation values (e.g., importance of muskeg)
- Youth and elder TU field camps (pre- and post-disturbance where possible)
- Reclamation site visits
- Reviewed existing information

Learnings – More time on the land

More time focusing on species relevant to *community members* has encouraged sharing of traditional knowledge with direct implications for reclamation.


REPPSCO

Learnings - Communication

When industry come I listen good, [but] the half of it I don't understand what he's talking about. And if I talk to you, and if you don't understand me…you don't understand four or five words in between, you're out. You're out of what you're listening [to].

Learnings – planning for the future

Focusing on plants and animals that are important to community members support more meaningful conversations between the current state of the developed landscape and the long-term goals for the land following reclamation

Learnings – Muskeg

My father would tell you that our body is like the earth. We need a heart to live. And he would tell you that the muskeg is your heart, and that the mountains are your brain, and the creeks and rivers are your blood vessels…Muskeg is very important to rivers and creeks and everything in them. Muskeg is connected through water to the rest of the earth. With that comes our spiritual values and how we are connected and respect the earth

(Cecelia Fitzpatrick, Fort McKay)

Learnings – Muskeg

Learnings – Spirituality

It was most challenging to find ways to support spirituality in the reclamation process. The focus group determined that people need to be on the land to sustain their spiritual connection.

If you fly them [children] to an area (rather than have them walk or sled there) that is:

"*like dropping them in a bowl. What have they learned? Nothing. They have to walk* [in order] *to learn*."

James Grandjambe
Cree Elder, Fort McKay

Current structure

- Community Advisory Groups that meet ~4 times per year (more than 16 companies)
- Advisory Group meets on their own (when possible); they have internal technical experts that participate when requested (e.g., dust concerns)
- Intense focus on one key issue per year (though all issues of concern are discussed)
- Ongoing reclamation tours
- Companies required to demonstrate reclamation of key species identified by the community
- (Potential) joint community-industry projects
- Much still needs to be done – still not much demonstrable reclamation (and people are very cautious about possibility of success)

Next Steps

- Need additional internal staffing to manage the many Community Advisory Groups
- More community involvement (even more youth participating)
- Explore alternative places to have discussions (reclamation field camps) – no powerpoint ☺
- Develop aboriginal criteria for reclamation certification
- Conduct (ethnobotanical) inventories of adjacent areas
- Establish community-based monitoring of traditional territory and reclaimed sites
- Fort McKay to establish their own reclamation company

Thank you!

- How would you like the reclaimed landscape to look?
- How would you (or animals) like to use the reclaimed and adjacent areas?

- How will you know reclamation is successful?
- What do you need to have (see/smell/test) to trust that reclamation is successful?

Animals they've got a spirit, everything. The trees. The earth. That's why we have to respect it…according to my elders, they told me, don't play with everything. Don't. Have respect for everything.

Learnings – Muskeg

So if you don't put everything [back] the same…if you don't put anything underneath, like muskeg…it is no good. 'cause a lot of spruce grows [naturally] and there's always a muskeg dip someplace close by. That's kind of a bank. That's a bank for all the trees now. And it rains, all that moss and everything holds that water. And it they have a dry spell, the trees suck all that water now from that muskeg. They survive on that.

The path forward

- Establish joint land use objectives between communities and Diavik

EXAMPLES OF TK INTEGRATION

EMAB Closure Workshop (June 26-28, 2012)

Outline

- Case Studies of TK Integration in Closure (Colomac, Faro, Whistle Lake)
- Other Examples of TK Integration
- Esker/Hill Analogy
- Suggestions from Previous Closure Workshop and TK Panel
- Questions for Discussion

Colomac Mine (NWT)

- Based on discussions with Tłı̨cho and evaluation process, the following options were explored and the preferred option selected in 2003
- **Reclamation Options:**
  - Flatten tops and partially revegetate
  - Contour tops and partially revegetate
  - Construct wildlife access ramps onto rock pile
  - Re-establish natural drainage and enhance stream fish habitat
  - Clear vegetation to create wildlife trails around waste rock piles
  - Ensure long-term care and maintenance are minimized or eliminated;
  - Identify activities required to return site to aesthetically acceptable condition
- Both Tłı̨cho and INAC chose dry cover option based on different values/input

Colomac Option Evaluation Process

- Tłı̨cho participated in evaluation of closure options for abandoned Colomac Mine with INAC
- Tłı̨cho gave scores to 6 tailings closure options based on Aboriginal values
- 6 tailings closure options:
  - Move tailings: to another tailings or to pit
  - Cover tailings: wet rock cover, dry cover, plant (no cover)

Colomac Option Evaluation Process

- Tłı̨cho selected criteria to rate how closure options would do:
  - Safety to people and wildlife
  - No dust
  - No new sites disturbed
  - Walk-away effect
  - Restores natural conditions
  - Gets rid of contaminated sites
- Tłı̨cho rated each criteria based on 3-point scale →1) low = poor job; 2) medium = acceptable job; 3) high=good job

Colomac Option Evaluation Process

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Safety	2	3	2	2	1	2
Dust	3	3	3	3	2	3
Disturbance	3	3	3	3	3	2
Walk-away	3	3	2	3	1	1
Natural Conditions	3	4	1	2	2	2
Con. Sites	1	2	1	1	1	1
Average Score	2.5	3	2	2.3	1.67	1.83

Idea for Process

- Aboriginal groups could create their own values to measure each closure option; framework for organizing and presenting what's important
- Each group, EMAB and DDMI could do their own scoring and weighting based on values most important to them
- Get together and compare results of everyone's scoring to determine which option is preferred and what is behind preference

Faro Mine (Yukon)

- Selkirk First Nation & Ross River Dena Council
- Consensus-based 15-year closure plan with Yukon Gov't
- Aboriginal groups collected TK to inform closure planning, including current/future use of Faro Mine site by groups
- Involved in selection of closure options based on TK, including:
  - Soil cover to prevent human and wildlife contact
  - Uncompacted top growing layer of soil for revegetation of cover (improve habitat for birds/wildlife)
  - Waste rock reshaped to look like natural environment
- Learning from other Aboriginal experience: Collaboration with Intertribal Nursery Council (INC) based in Albuquerque, NM to consider re-vegetation options

Whistle Lake Mine (Ontario)

- Inco and Wahnapitae signed MOU in 1999 for greater participation in closure planning
- Treated mine water released to Post Creek which went through Wahnapitae reserve
- Meet quarterly to discuss closure planning
- TK informed closure of open pit
- Capacity bldg: Contracts and training in closure processes

Other Examples of TK Integration

- **Red Dog Mine Airstrip** – TK of prevailing winds changed design of airstrip in Alaska
- Using traditional Inuit methods of corralling caribou to divert them away from mine components
- Elders involvement in problem solving: Vegetative species not thriving; suggested adding particular nutrient–rich soil to encourage vegetation growth

Esker/Hill Analogy

- Use Aboriginal esker knowledge links to closing rock pile
- Importance of direction of esker related to meltwater flow
- Important wildlife habitat (esp wolf denning)
- Travel routes for humans and caribou
- Vegetation patterns on eskers → more vegetation on sides than top due to wind
- Steep slopes → good drainage
- Top of eskers good for temporary camp due to drainage
- Visibility: Ability to see surrounding areas on top of esker

Closure Objectives from Previous Workshop

- Safe for wildlife/people
- No dust
- Stability
- No erosion
- Survivability in case of an earthquake
- Perpetual frozen core
- Promotion of vegetation (monitoring for metal uptake)
- No ARD
- Elimination of run-off/seepage
- Construct gradual slopes along the edge of the waste rock pile
- Leave the steep slope to discourage use by animals
- Noted: Could potentially be used by wolves and fox to hunt caribou trying to climb the pile

Suggestions/Input from TK Panel

- Move rock pile to pit →DDMI response: geochemical and cost reasons not feasible
- Caribou seek hills for relief from bugs (related to wind), esp in August and September
- Metis in favour of caribou access to pile with vegetated PK/soil cover

Questions for Discussion

- How have you and/or ancestors taken care of the land?
- How have you and/or your ancestors used rocks / elevated areas on land? What do eskers/hills mean in your culture?
- What have you observed or how have you taken part of reclaiming natural/traditional disturbances (e.g., caribou highways, camp clean-up, snowmobile tracks)?
- How can these practices be used in managing the land after the closure of the mine?

Questions for Discussion

- What have you observed on the land about migrating caribou when they encounter esker/hill? What do they do? Do they go around it? Do they climb over it?
- What have you observed on the land about wolves and foxes and their use of eskers/hills? How do they interact it?
- What have you observed on the land related to plants and berries growing on hills or rock piles? What makes them strong in some years? Why are they weak or die in some years? Water, nutrients, and/or weather?
- What on the land will tell you that the rock pile is done being reclaimed? Return of caribou? Taste of berries? Taste of fish in nearby water? Use by people?

Key Questions to Consider

- Caribou/wildlife on rock pile? Yes / No
- Vegetation on rock pile? Yes / No (If yes, where?)
- Sloping of rock pile? Yes / No (If yes, where?)
- Contouring of rock pile? Yes / No (If yes, where?)
- Trails for wildlife? Yes / No (If yes, where?)

Examples of Traditional Land Management

- There are many forms of Aboriginal land management, including:
  - **Active manipulation of landscape**: Burning berry patches to encourage growth of bigger and better berries.
  - **Avoidance**: Non-hunting areas where group leaves certain valleys alone to allow for wildlife breeding and/or rearing.
  - **Selective harvesting**: Using a fish weir to catch fish, but sorting out and releasing female fish back into water.
  - Focusing wildlife hunts on males rather than females to encourage the viability and sustainability of species

Appendix C

Tk/IQ Panel Recommendation:Closure and Reclamation Planning

Closure and Reclamation Planning

June-28-12

The following recommendation was approved by consensus of the TK/IQ Panel at 1:15 pm on June 28, 2012.

Background

1. The TK/IQ Panel is provided for under the Environmental Agreement as a panel of experts to *"assist in the application and consideration of traditional knowledge."*

2. The TK/IQ Panel is a standing body of knowledge holders appointed by each of the five Aboriginal Parties.

3. TK/IQ Panel members are responsible for providing expertise and recommendations to the Environmental Monitoring Advisory Board (EMAB), Diavik Diamond Mine Inc. (DDMI), the Aboriginal Parties and their respective leaderships and communities.

4. The TK/IQ Panel is assisting in developing options for closure and reclamation planning at Diavik Diamond Mine through a series of activities including the June 26-28 Panel Session and Workshop.

5. DDMI is required to educate and seek input from communities with respect to TK/IQ aspects of closure and reclamation.

6. DDMI is required through the terms of their water licence and through the Environmental Agreement to include TK/IQ in their monitoring plans and programs.

It is Therefore Recommended That

1. EMAB work with DDMI to plan a site visit by the TK/IQ Panel to learn firsthand about the North Country Rock Pile, with follow-up activities to prepare recommendations on rock pile closure and reclamation planning; the site visit should include an overnight stay at the Community-Based Monitoring Camp.

2. EMAB request funding support from DDMI for TK/IQ Panel members to play a leading role in reporting back to their respective communities, to inform the communities about the role they are playing in closure and reclamation planning, working with DDMI and EMAB as needed.

3. Due to the fact that Diavik, Ekati and Snap Lake diamond mines all share the same landscape, EMAB should facilitate sharing the TK/IQ Panel's work with the Independent EMA and the Snap Lake EMA so that our work can be used to inform closure and reclamation planning at the other diamond mines, per Section 1.1(b) of the Environmental Agreement, in order *"to respect and protect air, land, water, aquatic resources, wildlife, archaeological and cultural resources, and the land-based economy that are essential to the way of life and well- being of the Aboriginal Peoples."*

Appendix D

Site Visit Debriefing Presentation and Discussion Notes

August 21, 2012

DIAVIK DIAMOND MINE SITE VISIT – DEBRIEFING MEETING

YELLOWKNIFE INN, AUGUST 21, 2012

PARTICIPANTS

Diavik Diamond Mine Inc.	Colleen English
SENES Consultants Ltd	Deborah Simmons
North Slave Métis Alliance	Mel Enge, Wayne Langenhan, Ed Jones
Łutsel K'e Dene First Nation	George Marlowe
Kitikmeot Inuit Association	Bobby Algona, John Ivarluk
Tłı̨chǫ First Nation	Pierre Beaverho, Louis Zoe, Peter Husky (interpreter)

CLOSURE OBJECTIVES

- Physically stable slopes to limit risk of failure that would impact the safety of people or wildlife
- Rock and till pile features (shape and appearance) that match the look of the surrounding natural area, as much as possible

DIAVIK REQUIREMENTS

- Capping to contain contaminants within the pile
- Maintain the temperature of the rockpile

HOW DIAVIK WILL USE TK PANEL RECOMMENDATIONS?

- 3 year window before next submission of closure plan – 2016.
- Diavik wants community input.
- There will be conflicting views, but some of the best ideas that work with technical considerations will be used.
- Diavik will report back on what input was used.
- The rockpile is just under 200m (about 190m or 700 ft)
- The more ideas, the better.

HERITAGE (RENEWING HISTORY)

- Hunting and fishing
- Campsite
- Berries

Goal

Future generations will want to visit!

TEST ROCK PILE

SHAPING THE LANDSCAPE

- Simulate an esker
- Slope the top edges so they're rounded
- Slope the sides so less steep, like the test pile
- Remove big boulders
- Rock from piles back into the pit
- Flatten the top to that there are no berms and caribou can easily walk – there are fewer places for predators to hide.

SHAPING THE ROCKPILE

- Less than 8 miles NE of Diavik that might be good to look at as an example – it's sandy.
- In winter NE or NW (prevailing) wind will shape the snow, so that it's smoothed over and cuts straight down at the lee side – people from Kugluktuk know this. People who travel on the land with skidoo know that you have to watch this when you get to an esker.
- There are a lot of sandflies in August, so the caribou will want to go up on the slope to catch the wind, sleep, and get away from the flies. There needs to be something for them to eat up there.
- Caribou ramp? The caribou will come across from the northwest side to the east side, and swim across the lake – that's what they used to do before. And coming back, from southwest again.
- Use waste rock to slope the pile.

REVEGETATION

- Options: Use soil from tundra; cover with rock and till from pit A21
- Natural revegetation
- Plant shrubs near bottom in the soil being placed there (dwarf birch and willow)
- Visit old archaeological sites to view regrowth
- Place soil near the bottom
- On the tundra, there's black soil – if they create an esker and put that soil, there might be more regrowth. Eskers are usually just rocky and sand, so they need soil added for regrowth.

REVEGETATION ISSUES

- Soil nutrients
- Erosion from water and/or wind
- Disturbing another area by moving materials

WATER CHANNELS

- Water can be diverted onto the tundra, or go directly into the water.
- Water will find its natural channels as well.
- Channel to a pond contained geotextile, deep enough so water will seep into ponds in four different areas
- Let nature take its course

Issue

Contaminants are or are not a concern.

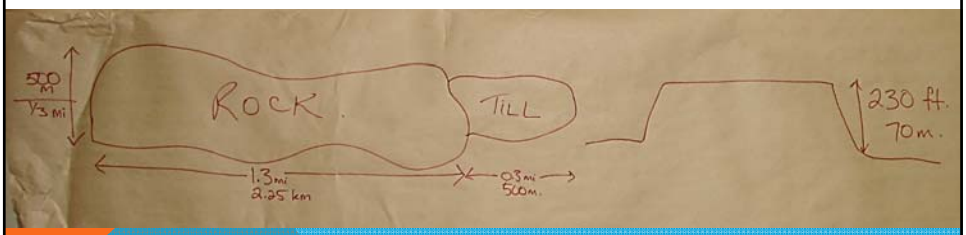
ROCKPILE DIMENSIONS

1/3 mile or 500m wide

1.3 miles or 2.24 km long

Till pile 500m or 0.3 miles

Height 230 feet or 70 metres.



SIMULATED ESKER

- Caribou will have easier access to the hill when the hill is reshaped, from all different directions.
- There's a lot of seepage from the bottom of esker.
- Esker material compared with gravel from rockpile.
- Gravel holds nutrients in the ground that makes the baby birch grow easy.
- Under the topsoil is natural till from long ago.
- A little bit of gravel from an esker or even crushed rock will hold more nutrients for plant life.

PROCESSED KIMBERLITE POND

- What we do with one part of the pile, we don't necessarily need to do with the whole pile.
- Could shape the landscape to prevent caribou from accessing a certain area like the PKC area.
- Option to cover the PKC area – the material isn't as solid, so there might be more movement, and could become unstable.
- There may need to be an open water area for catching water from the rock pile.

ISSUES IN SHAPING PILE

- Caribou travel (but caribou travel anywhere! Can be injured with steep slope; safety is a key consideration)
- Channeling water to ensure contaminants don't reach Lac de Gras
- Snow drifting

WATER/CONTAMINANTS

- Don't bury metals in the pile
- Use geotextile in drainage areas d/s of pile and revegetate these areas.
- There may be seepage from PKC pond. They drain that pond back from water plant, cleaning the water in that way?
- Use esker materials nearby as cover materials
- There is a dump for inert materials in the pile, including metals, rubber, styrofoam, machine parts (but not vehicles).
- Can metal be backhauled? But there's a short window on winter road, it's costly, and there's no storage space. Don't want to bury things on our ancestors' island. Our ancestors used to clean up after themselves when they left that island.

PKC POND

- The PKC pond will be drained but there's a mud, and water will come out of the mud as it gets compacted. There may need to be a pond for the water to escape. Any contaminants may be more concentrated after closure and draining the pond.
- What will the water quality be? It will be tested for a lot of years. Currently tested monthly.

OPTIONS FOR PKC

- Should caribou be kept away from PKC pond until it's certain that the water is safe?
- Options for keeping caribou away could be:
  - steep sides to rockpile to keep caribou away
  - Options for keeping caribou away from the other side of the pond?
- Option B could be to shape rockpile for safe caribou access all around and let nature take its course. The landscape will definitely change and won't be the same as it once was. Work with what we have.

INFRASTRUCTURE

- Current plan to reclaim airstrip; suggestion to keep airstrip as an emergency landing site (Wayne) – but this would not be maintained. Needed for long term monitoring of the site (Pierre). It won't go back to a pristine state anyway.
- Keep some small buildings for hunting/fishing parties – but someone would have to own/lease the building and the land
- Debate about whether people would want to use that place – but there are cabins elsewhere on the lake.
- If Diavik leaves materials behind, all the other mines will do the same thing.

PLANTS THAT ARE GOOD FOR REVEGETATION?

- What's a good way to speed up the revegetation process?
- Look at an esker that's lined up the same way as the rock pile to see what grows there naturally in different areas (shade, leeward, side, top).
- Take materials from the natural eskers and spread it on the rockpile to revegetate.
- We have the opportunity to have our plan ready so that the closure of the pile can start when the A21 pit is being dug.

A21

- This pit was always part of Diavik's mine plan – and was approved during the initial Environmental Assessment.
- The rock from this pit will be used to close the rockpile etc.
- If there's any left over waste rock, it will be down near the pit.

LOOKING BACK

- Comprehensive Study Report – brought together all the studies (1998-1999) – completed by the government.
- Problem that we're asking some of the same questions over and over, because different people are involved.
- Need to include youth more.

PREFERRED "LOOK" WITH CONTOURS FOR WATER FLOW

TEST PILE AT DIAVIK

Appendix E

TK/IQ Panel Update to EMAB Board

September 25, 2012

TK/IQ Panel Update

Presentation to EMAB
SENES Consultants Ltd.
September 25, 2012

Focus

Review and assess TK/IQ Panel objectives, lessons learned, and approach.

TK/IQ Panel Purpose

Established under Section 4.9 of the EA

EMAB TK/IQ Panels are mandated to work with local communities and assist EMAB in facilitating appropriate and meaningful accommodation of TK/IQ in the planning and review of environmental monitoring at Diavik Diamond Mine.

Timeline

March 2010	Report on Environmental Agreement Implementation Review
May 20, 2011	TK/IQ Panel Workshop
July 19, 2011	Literature review – TEK in the resource sector (Diavik/Golder)
March 14-15, 2012	TK/IQ Panel Session – Caribou Monitoring
June 26-28, 2012	TK/IQ Panel Workshop/Session - Closure
August 20, 2012	Diavik Site Visit and Debriefing
October 23-25, 2012	TK/IQ Panel Session - Closure

Objectives

1. Establish TK/IQ Panel as a standing body
2. Pilot partnership approach with Diavik
3. Provide input on key monitoring issues
   a) Caribou Monitoring SOP
   b) Provide input on rock pile closure
4. Develop general approach to TK/IQ Panel processes

1. Establish TK/IQ Panel as a standing body

- Relationship-building
- Educate about mandate
- Build trust and confidence

2. Partnership approach with Diavik

- Co-facilitation
- Work with Diavik timelines and objectives
- Diavik presentations
- Learn from community engagement activities
- Independent knowledge processes
- Accountability framework

3. Inputs on key monitoring issues

- Recommendations on caribou monitoring SOP
- Three preliminary recommendations on closure planning
  - Site visit
  - Communicating with communities
  - Knowledge sharing with other EMAs

4. Develop General Approach to TK/IQ Panel Processes

- Indigenous knowledge methodology
- Youth involvement
- Sessions vs. workshops
- Balance of EMAB leadership and independent knowledge creation/sharing
- Cross-cultural learning approach
- Research vs. consultation

TK Research History

1. Social science approach
2. Indigenous methodologies
3. Cross-cultural learning approach

1. Social Science Approach

Questions/objectives	Science-driven
Methods	Structured, quantitative, extractive
Accountability	"Integration" or "incorporation" into science-based processes
Benefit	Easy to interpret
Challenge	Knowledge holders lose control Quality/meaning suffers

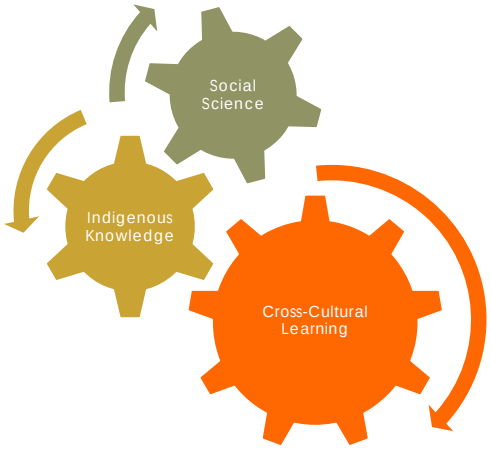
2. Indigenous Methodologies

Questions/objectives	Arise from TK/IQ holders
Methods	Indigenous knowledge creation processes – "research as ceremony," talking circles, on the land, story-based
Accountability	Embodied knowledge mobilization (community and external)
Benefit	Knowledge holder ownership, quality control
Challenge	Difficult to validate and accommodate in external decision-making

3. Cross-Cultural Learning Approach

Questions/objectives	Jointly agreed to, accounting for new scenarios
Methods	Mixed, involving two-way learning
Accountability	Dual
Benefit	Contextual; "everyday"; easier to validate and accommodate in decision-making
Challenge	Complex, new

TK/IQ Approaches




ON THE LAND
IN THE COMMUNITIES
LAWS
Seasons
Sharing
Sports
Homeland
Mines are destroying our environment


CAMP

Preferred Rock Pile "Look"