DDMI Traditional Knowledge Panel Session #8

FOCUS ON REEFS AND MONITORING WATER

Yellowknife, NT
December 2–4, 2015

Thorpe Consulting Services

Diavik Diamond Mines (2012) Inc.
Traditional Knowledge Panel Report

Session #8: *Focus on Reefs and Monitoring Water*

Yellowknife, NT
December 2-4, 2015

Facilitation

Joanne Barnaby, Joanne Barnaby Consulting
Natasha Thorpe, Thorpe Consulting Services (TCS)

Participants

Kitikmeot Inuit Association	Bobby Algona, Nancy Kadlun, Ethan Kadlun (youth)
Łutsel K'e Dene First Nation	August Enzoe, Bertha Catholique, Lucas Enzoe (youth)
North Slave Métis Alliance	Ed Jones, Kathy Arden
Tłı̨chǫ Government	Dora Migwi, Louie Zoe, Janelle Nitsiza (youth), James Rabesca (interpreter)
Yellowknives Dene First Nation	Mike Francis, Fred Sangris, Mary Louise Black (youth), Berna Martin (interpreter)

Observers/Presenters/Visitors

Fisheries and Oceans Canada	Julie Marentette and Georgina Williston (presenters)
Environmental Monitoring Advisory Board	John McCullum
North Slave Métis Alliance	Chloe Dragon Smith
Tłı̨chǫ Government Lands Department	Phoebe Rabesca
Diavik Diamond Mines Inc.	Gord Macdonald
C&E Consulting	Colleen English
Thorpe Consulting Services	Janet Murray (transcriber)

Interpreting equipment provided by Pido Productions.

Background

The TK Panel is mandated to assist Diavik Diamond Mines (2012) Inc. (Diavik) and work with local communities in facilitating appropriate and meaningful accommodation of Traditional Knowledge (TK). The TK Panel provides guidance in environmental management and monitoring as well as in closure planning at the Diavik Diamond Mine. From 2011 through early 2013, TK Panels were assembled by the Environmental Monitoring Advisory Board (EMAB) to discuss select concerns related to the Diavik Diamond Mine. The most recent session was held in Yellowknife, NT from December 2–4, 2015 and was the fourth in a series of TK Panel sessions now administered under Diavik rather than EMAB, but the eighth in the series of TK Panel sessions.

Session Purpose

This eighth session focused on Diavik's closure plans in relation to water monitoring and the dike, including reef construction and shoreline design options. Both small scale and landscape level considerations for the immediate mine site (e.g., East Island) and broader Lac de Gras area were discussed (Figure 1).

The TK Panel drew upon their knowledge of fish and water, as well as observations made during previous site visits and the 2015 AEMP TK Camp, ultimately elaborating further on concepts, values, understandings, and complexities offered in earlier TK Panel sessions (e.g., advising that undisturbed areas within the dike should not be disturbed when the reefs are constructed). The TK Panel developed recommendations and commented on future sessions for review and consideration by Diavik.

Session Goals and Activities

The TK Panel reviews closure plans for various areas of the mine, shares their knowledge in relation to each topic and presents recommendations to Diavik at the end of each session. In this way, they are continually increasing their understanding of the mine site and its closure challenges, while also directly influencing Diavik's closure plans. The goals for Session 8 were to:

1. Provide an opportunity for TK Panel members to determine priorities and methods for managing and monitoring water post-closure.
2. Review the results of the 2015 AEMP TK Study.
3. Consider fisheries habitat upon closure, specifically the proposed reefs within the dikes.
4. Learn how recommendations provided to Diavik in the past session are being considered presently.

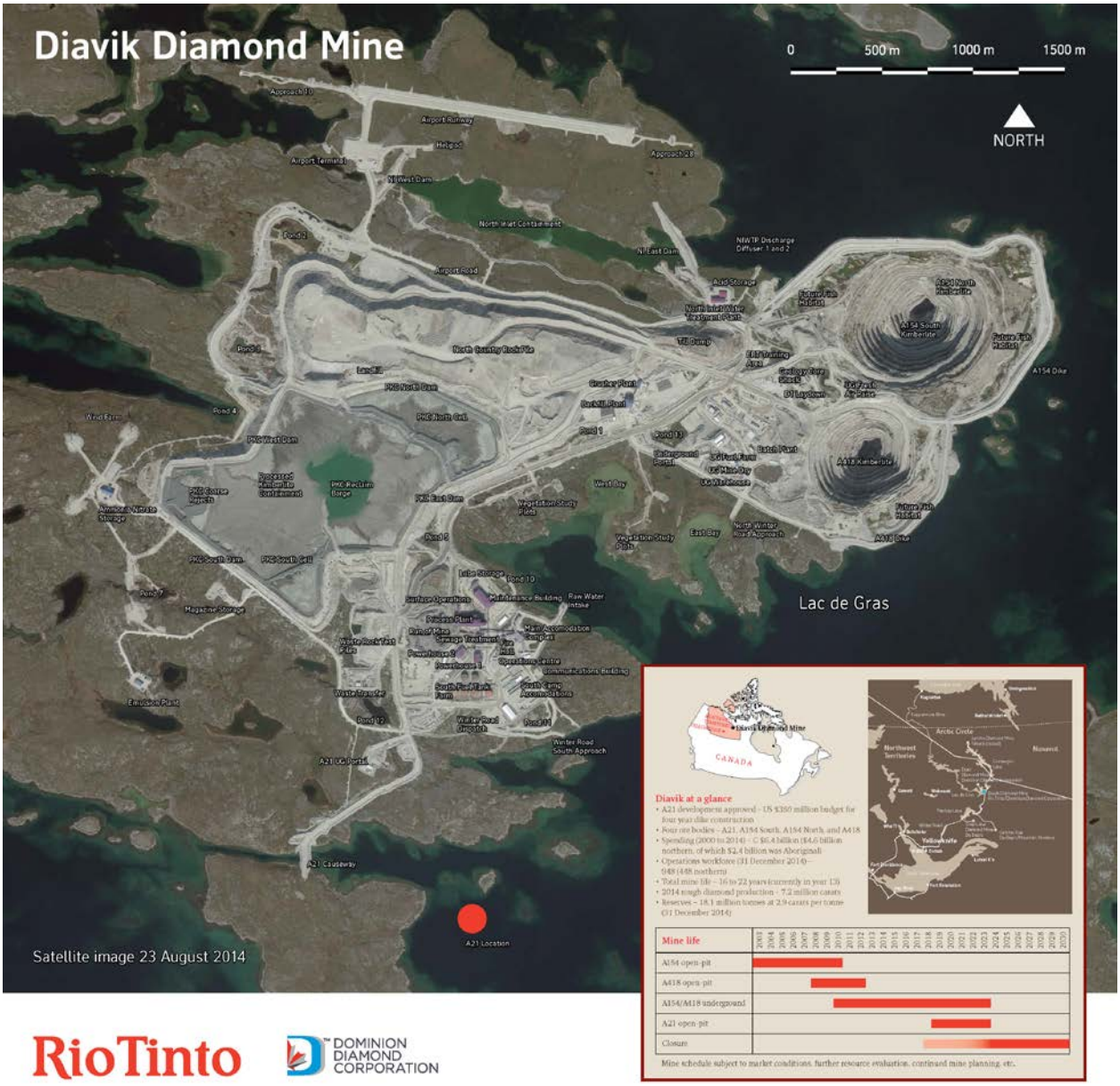


Figure 1 Diavik Diamond Mine 2015

This three day TK Panel Session was held in Yellowknife and structured according to these key goals. At the outset of the session, the group reviewed the proposed format, scheduling and agenda. An evaluation process held at the end of the session helps to improve future sessions.

> We are talking about the importance of the water. This is our land. That our land won't be so disturbed that we'll have it forever and we are not talking for ourselves we are talking for our future, that we would always have the water clean. – Louie Zoe, December 2, 2015

Report Overview

This report first outlines key themes around water and fish related to closure planning that were discussed during the session and closes with recommendations made by the TK Panel. Appendix A includes some photos from the session. Appendix B includes the session agenda while Appendix C contains a blank copy of the informed consent form that was signed by participants new to the TK Panel. Since it was not possible for the participants to review the session transcripts, these are included in draft form only in Appendix D.

Bobby Algona and August Enzoe gave a detailed update of the AEMP TK Study (see Appendix D [Day One] and Appendix E) highlighting the summer camp, recent verification session, review the related draft video-documentary [https://vimeo.com/artlesscollective/wefishtodayforfishtomorrow] and report conclusion [available through Diavik public registry: http://www.mvlwb.ca/Boards/WLWB/SitePages/registry.aspx after March 2016]. Diavik provided an update of the closure plan (Appendix F) and reported back on TK Panel Session 7 recommendations on vegetation (Appendix G). Diavik also reported on water quality (Appendix H) and presented an informative / educational presentation on fisheries habitat, with a focus on reefs (Appendix I). The Department of Fisheries and Oceans Canada gave a presentation on reefs/ shoals (Appendix J).

On the morning of the last day, the youth collaboratively presented the work of the TK Panel to Gord Macdonald through a presentation outlining key observations and comments as well as recommendations on reefs and monitoring water (Appendix K). A short presentation delivered on the next steps is included (Appendix L), followed by a summary of participant evaluations (Appendix M).

Proceedings: Key Themes

The key themes discussed throughout the session included:

1. It is important to continually monitor water quality and quantity after closure using both TK and western science.
2. With slight modifications, the current Aquatic Effects Monitoring Program (AEMP) TK Study is strongly supported and should continue at the current location until at least 2018.
3. Fish need to be respected and have different habitat considerations for different life-stages.
4. Youth need to be involved, both now and in the future.
5. Diavik and the TK Panel is a model for collaboration between western science and TK.
6. The future is uncertain and efforts to increase energy efficiency and monitor for climate change are important.

1. Continually Monitor Water Quality and Quantity after Closure

The TK Panel was unwavering in advising that water and fish continue to be monitored long after closure, both at the present site (e.g., East Island) within the dike and in surrounding waterbodies (e.g., Lac de Gras, the Narrows, Lac du Sauvage, outflow to Coppermine River). Discussions started with the current AEMP and included how a monitoring program should continue in the near future and post-closure. As part of these discussions, issues around water levels, flow and monitoring capacity of communities were frequently mentioned.

> It's got to be monitored even after Diavik is gone. It's got to be Aboriginal people because it's our land. We don't want anything to happen, we don't want just anybody to walk away and leave it. So it's got to be monitored for the next generations, the next generations that are coming. It's got to be ongoing. Because it's water, it's the only thing that gives life. – Bertha Catholique, December 2, 2015

> We do need to monitor an ongoing program for after the mine is closed, we've already heard that. Until we are satisfied - that is a strong phrase there - until we are satisfied. I think that speaks for itself, after the mine life is done. – Bobby Algona, December 2, 2015

Throughout the three days of discussions, the TK Panel considered which areas they would like to sample and why; how, where and whether to interweave TK and western science in water monitoring and specific features of the land that might clean or heal water.

The TK Panel expressed that Diavik has an ongoing responsibility to make sure that "all is well" and "people's minds are at ease" but that community members want to help and ultimately take the lead today, tomorrow and long into the future.

2. Aquatic Effects Monitoring Program

The TK Panel voted to keep the current location of the AEMP camp until at least 2018. After closure, participants asked that Diavik consider options to donate camp facilities to people traveling to Lac de Gras and, if it is not possible to keep the current camp intact, that at least the tent frames remain.

The financial, logistical and capacity challenges of community members to continue AEMP activities (both the scientific and traditional knowledge elements) were raised multiple times. The Panel recognized that monitoring is costly and advised that Aboriginal groups should start working with governments and industry today to plan for closure tomorrow. A monitoring program similar to the AEMP could be administered through the Environmental Monitoring Advisory Board or another independent agency that could pull together the five Aboriginal groups and governments.

One suggestion was to use the bond posted by Diavik as a possible funding source to support monitoring post-closure. However, Diavik clarified that the bond is considered a "safety net" which is not meant to be used unless something extreme were to happen (e.g., company bailouts, bankruptcies).

Discussions of monitoring post-closure helped the TK Panel realize that current community capacity is not at a level where Aboriginal communities could take-over monitoring in the same way as is done presently. The importance of supporting monitoring training today thus becomes even more critical. Further, participants strongly advised that people start monitoring training now so that youth today can carry through to monitoring post-closure, equipped with *personal knowledge and experience* (i.e., the foundations of TK) of decisions and activities today. One suggestion was to build a school in the north specifically for monitoring; however, the TK Panel recognized that there are several existing monitoring programs to help build monitoring capacity:

- *LKDFN Watchers of the Land* (www.landoftheancestors.ca/team/ni-hatni-dene-program.html)
- Aurora College Environmental Monitor Training Program (www.auroracollege.nt.ca/_live/pages/wpPages/ProgramInfoDisplay.aspx?id=64&tp=PRG) or Environment and Natural Resources Technology Program (www.auroracollege.nt.ca/_live/pages/wppages/ProgramInfoDisplay.aspx?id=117&tp=PRG)
- BEAHR Environmental Monitoring Coordinator, etc. (http://www.eco.ca/beahr/program-options/)
- Programs such as CIMP that are supported by the territorial and federal governments

Aboriginal groups must continue to monitor fish and water long after closure in a coordinated and well-funded program that integrates TK and western science.

During the update of the 2015 AEMP TK Study, Bobby Algona and August Enzoe mentioned that a few changes to the methods were suggested for next time, including tasting water in its pure form rather than as tea. The TK Panel discussed and supported this suggestion.

Figure 2 shows sampling locations for the scientific components of the AEMP that were developed with community input and are still supported by both 2015 AEMP TK Study camp participants and members of the TK Panel. However, given the importance of the Narrows to wildlife, fish and people, the TK Panel members advised that both fish and water should be sampled from this area henceforth for the TK component of the AEMP.

Water Quality Monitoring [Lac de Gras]

During this session, many indicators of good water quality from the TK perspective were shared. One example was that "bugs" within the lake have long been an indicator of good water for drinking.

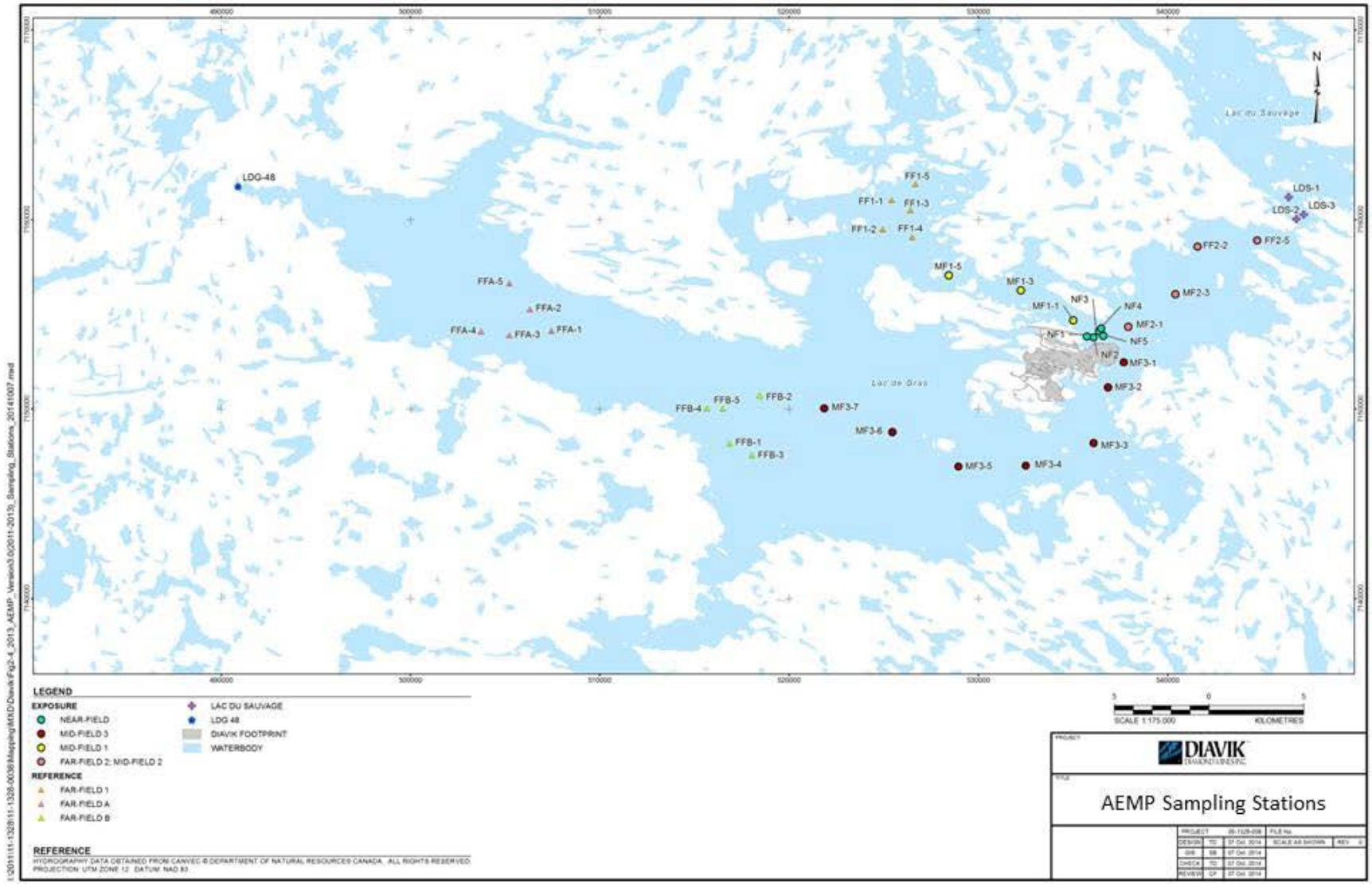


Figure 2 AEMP Sampling Stations

> Even without water or tea testing, which I saw this summer when we did water sampling from underneath the lake. When the lake bottom comes up, we saw all kinds of little bugs and that makes me happy because I know the water is healthy because all those little bugs wouldn't be living if it was contaminated. They are so tiny and there were lots of kinds I was happy to see that. They are so tiny they couldn't live with the contamination. – Nancy Kadlun, December 2, 2015

Another example was that animals could be monitored to see if they drink from particular water sources. If they hesitate to drink or come near a water source, this might mean that the water quality is compromised.

TK Panel members spoke to the importance of continuing to taste lake water to evaluate quality. Lessons from TK suggest that the best drinking water comes from deeper areas, below the surface. One must look for scum on the surface of the water as well since this can be an indicator of poor or altered water quality.

> When the water changes, there is a scum around the cup, – Fred Sangris, December 2, 2015

Fish tasting is also an important indicator of water quality. The TK Panel explained that when the water quality changes, the fish can taste different.

Water Quality Monitoring [Water flow in/around site]

In addition to the AEMP sampling locations, the TK Panel discussed in detail how water should be monitored in and around the current site, within the dike on the East Island and within the context of the current surveillance network program (SNP) as shown in Figure 3. After much consideration, dialogue with Diavik and review of current maps showing pit location, undisturbed areas and landscape, the TK Panel decided that when the pits are refilled and the dikes breached, the natural lands between the pits and dikes should be left alone to facilitate natural regrowth, and reefs of various heights and composition should be constructed away from existing vegetative growth and lake bottom sediments.

Participants emphasized that the land can heal itself and that vegetation and mosses are known to filter water. Placing mosses or encouraging certain types of vegetation to grow in key aquatic areas such as channels and shorelines should be considered as part of the closure plan and included in post-closure monitoring.

Given concerns about possible water contamination in the areas within the dikes, TK Panel members suggested that water quality monitoring on East Island post-closure should be done through scientific analysis and visual inspection led by the communities (i.e., not by tasting). However, tasting water in Lac de Gras and other areas farther from the immediate mine site would continue as part of any monitoring program such as the AEMP TK Study.

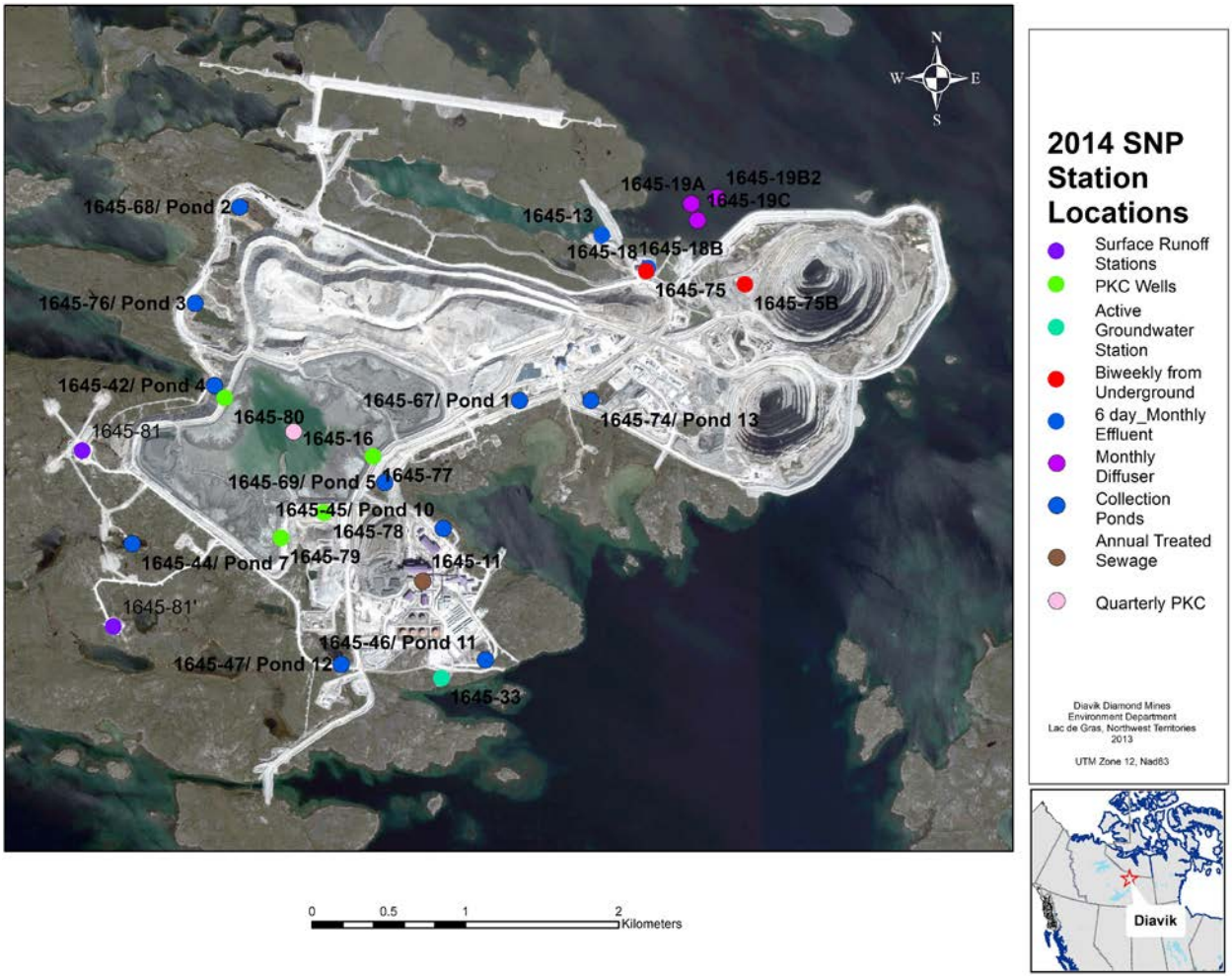


Figure 3 2014 Surveillance Network Program Station Locations

I know that the Elders don't want to drink the water there because there is still residue from the dynamite on the walls of the open pits, ammonia and so on, so I wouldn't want to drink it anyways but I think the idea of getting samples or continued study on that would probably be good. The pits themselves have to be studied, get the water, get it studied to check that the water is still the same or if there are any changes happening to it we need to know. But I think a lot of us here are not going to continue to be involved; most of us will probably move on but I think it's important to bring our youth, get them involved, educate them, they need to continue to be involved so that the monitoring can continue and the reports can come out and they can understand the reports so that 2030 maybe continue into the future, we don't know when is the end. – Fred Sangris, December 2, 2015

TK Panel members expressed concern about groundwater and how tunnels extending under the pits may lead to contamination. Diavik explained that they plan to remove any items from the pits and underground tunnels that would lead to water contamination. Given that water is saltier deeper under the earth's surface, water will be monitored within the pits as they are refilled. Extensive testing and monitoring of water is required before, during and after the dikes are breached.

3. Fish Need to be Respected and have Different Habitat Considerations for Different Life-stages

The third key theme that emerged from the session is that fish need to be respected and that they have different habitat considerations for different life-stages. Fish need special considerations: they can hear and feel what you are doing on the ice, they need shorelines that provide sources of oxygen, and pressure ridges or open water are well known areas that attract fish because of the oxygen. Presence of too much algal growth on shorelines can be an indicator that there is less oxygen for fish, so this should be monitored.

In future AEMP TK studies, the TK Panel advised that nets be set on both sides of East Island and that both fish and water be monitored.

The TK Panel discussed at length how artificial reefs, shorelines, and pits should be handled post-closure to maximize fish habitat. Participants outlined what makes habitat "good" for spawning, nursing, rearing, and resting with a focus on water movement, substrates and slopes. They considered potential reef shapes and sizes, the type and size of rock to use, and how deep underneath the surface of the water they should be. The TK Panel also considered the shorelines around the dike and pits, thinking about how they should be best modified for fish, wildlife and vegetation.

Reefs

After both Diavik and DFO gave presentations on how reefs are constructed to maximize fish habitat, TK Panel members advised that the current approach sounds reasonable and that efforts should be made not to interfere with undisturbed areas on East Island, within the dike and when constructing reefs. It was agreed that the areas within the dikes should not be constructed to encourage spawning, but focus more on rearing and resting.

> They like to lay their eggs in a very sandy area, maybe not sandy but gravel, and it has to have a slope. The current can't be really strong but it has to be moving. . . . When the fish are born, they like that shallow area with a little bit of gravel. They don't like the sand, and most areas in the east where there is a lot of fine sand you always find dead minnows floating around. They have no protection to hide from the waves so the waves just wash them up and that's why we find

> lots of minnows on those sandy beaches. After they are born they want to go into the shallow areas, so through the islands you will find lots of minnows. But they are not going to go in the pits. – Fred Sangris, December 3, 2015

Participants also clarified that a variety of shapes and sizes should be considered for reefs, but that they should not pose a safety hazard for travelers. Specifically, it was advised that the reefs remain low enough under the water that the ice still freezes solid. Reefs can affect currents and lead to open water if they are too close to the surface. If the reefs extend out of the water (i.e., become islands), snow and ice can accumulate such that the ice is not as thick in the middle of the lake due to insulation effects. Bobby Algona cautioned:

> I have come across a lot of shoals . . . where I grew up and lived all my life and there are many, many shoals on this lake and I have to be really, really careful around those areas. . . . That was my big concern, for safety. Am I going to be safe coming to this place when there is a shoal there that I didn't know about, and it's keeping the ice thin. – Bobby Algona, December 3, 2015

Participants advised that in addition to substrate, currents are a determining factor in spawning site selection and successful spawning. Fish are known to lay eggs in shallow areas where there is current. After much discussion, it was suggested that there was good spawning habitat elsewhere in Lac de Gras and that this needn't be a focus for the reefs, shorelines, dikes or pits.

Shorelines and Pits

The TK Panel reviewed satellite photos of the current mine site (Figure 1) and drew from their experiences "seeing with their own eyes" while onsite to conclude that the shorelines on the dikes can be left largely as-is. The group agreed that upon closure, the roads leading down into the pits could be left as-is, but the approximately 1 km cliff along the shoreline of Pit A418 should be modified such that caribou and other animals can have easy and safe passage. Session participants thought that the caribou might fall or be chased off the cliff in Pit A418.

> Yes I understand there is a drop about 10 feet which is dangerous for the caribou and the wolves and the foxes. So before the water is pumped back in there, I suggest maybe you put some sort of a slope. – Louie Zoe, December 3, 2015

Further discussion clarified what modifications might work:

> What if you left pieces of it as a cliff but add pieces of gradual slope for the caribou? – Gord Macdonald
>
> Yes, that would work. – Bobby Algona, December 4, 2015

Participants agreed that the shoreline around Pit A154 can stay as-is and didn't pose any hazards. Given the challenges of providing guidance without seeing the pits and shorelines at the site, the TK Panel members asked that they be given the chance to visit these areas to see for themselves and provide specific in-the-field guidance on the shoreline to Diavik at a later date.

During closure and when building reefs or making modifications to shorelines, the stages in the moon cycles should be considered as they are well known to affect water flow and currents.

> You can use a fish line as an indicator of current and watch how it changes; it is important to understand currents in Lac de Gras and Lac du Sauvage when thinking about reefs, shorelines and pits. – Bobby Algona, December 3, 2015

Pits

As in previous sessions, members of the TK Panel shared their concerns that the pits were not going to be re-filled with rock and that the pits would be too deep for fish habitat. People also discussed concerns about water quality in the pits once they are filled with water, as discussed above. Diavik reviewed the current closure plan and explained how the pits would be filled with water and tested for approximately five years before the dikes were breached. From that point, it was suggested that it would take "just a few short years" before the fish would return to the area.

4. Youth Must be Engaged

Although current efforts were recognized, better ways to engage youth by community members need to be explored. Accordingly, two youth from each Aboriginal group should be attending camps and meetings. It was recognized that elder panel members could help ensure that Aboriginal governments select appropriate youth in a timely manner. Both the importance of, and challenges with youth engagement have been discussed at every TK Panel session.

5. Diavik and the TK Panel Demonstrate a Collaborative Model

Collaboration between different groups, disciplines, and generations strengthens the nature and quality of the work that is carried out by TK Panel members as well as the resulting actions taken by Diavik (for example, see responses to recommendations from Session 7 in Appendix C). While the membership of the TK Panel has shifted slightly to become more gender balanced, many members have been participating since the TK Panel began in 2011. Such commitment levels are indicators of the success of the TK Panel and enable the members to move through a series of related topics with each session, building on their knowledge from one year to the next.

As Bobby Algona summarized:

> I think there is a whole lot more things that we can learn from this as well and certainly as TK holders we have come to appreciate what scientists have brought as well. I think we need to work much more closely with the scientists as well so that scientists can learn from us as well as to how we came to learn these things. – Bobby Algona, December 2, 2015

Early in the session, one participant asked Diavik how they could help advise Diavik regarding planning fish habitat when the pits were reconnected, given that TK Panel members had never seen this "problem" before. Yet the very point of the TK Panel is to facilitate interweaving TK expertise that simply may not have been applied in the same setting before, but nonetheless, is integral to a fulsome understanding by DDMI, scientists, TK holders, regulators, and northerners alike. Indeed, it is the commitment of TK Panel members and Diavik staff alike to respect one another's perspectives and to see value in learning from each way of knowing that is at the core of this successful collaborative model.

> . . . give a little insight about what the dangers might be and to get them to think a little bit about what your future might be with what the mining industry is doing and how the mining industry as well can help the youth with a program or what they might be doing in the future. That's a most wonderful thing that we can do as Elders. We can have these that we can bring home and it makes it a whole lot easier to explain to the young generation with these tools. – Bobby Algona, December 2, 2015

> One thing that we can probably use is, we all come from different communities, maybe there is something we can bring back to the community to show them what we are doing and they can see the progress we have made. So our community people have an idea, you were involved, we are helping with the recommendations, this is how closure is going to work and this is how we are going to be monitoring. We need to show something to the community so they know the mines are not being abandoned and you are not walking away. So there is progress and there are people thinking about the future. And safe guards are there. – Fred Sangris, December 3, 2015

Given the success of this collaborative model, the TK Panel members emphasized that materials that reflect this collaboration in monitoring and planning should be shared publicly and widely. Educational "tools" such as videos (DVDs), books, photos, should be given to TK Panel members as well as more widely distributed. Reports and video-documentaries developed for the AEMP TK Studies of 2012 and 2015 are examples of such materials.

6. Increase Energy Efficiency and Monitor Climate Change

This particular TK Panel Session took place the week after the *COP 21: UN Climate Change Conference* such that environmental issues, in general, and climate change impacts, in particular, were on people's minds. Throughout the session and during the breaks, TK Panel members spoke of the importance of this global conference. It was as if the conference provided a certain level of urgency and responsibility as well as empowerment to the work of the TK Panel. Such discussions provided opportunity for Elders and youth to come together to talk about the mining industry, climate change and the accompanying responsibilities held by Indigenous peoples in monitoring their lands.

> I notice everything around us here, when I look at things, how many ounces to make this one tool that we use. How many ounces to make this one microphone that we use as a tool? . . . Looking at all that, we need to think a whole lot more about the mining industry itself. We can't get away from the mining itself, I see very far into the future the mines are going to be ongoing all the time now, we cannot get away from it. I think even though I have a lot of qualms about the mining industry itself, then I start to look at a lot of other good tools that they make alright but I always think of something that we should be doing. – Bobby Algona, December 2, 2015

> I like that Bobby touched base on the environment. I think what Diavik and all these mines really need to take into consideration is doing things more energy efficient now, not in the future, not when we are closing but now. Work on the little things, it's the little things that count; they make big things one day. So any little thing that we can do to help the environment because climate change is here, it's in our face, we need to deal with it now otherwise none of us will be here and its really serious. – Janelle Nitsiza, December 2, 2015

Youth Lucas Enzoe asked the group: "Are we going to find an alternative way to make better tools for a greener place to help out the earth, or keep destroying the earth?"

Concerns about lower water levels across the North were also shared along with the concept that water is life-giving and precious:

> Okay well I want to make a point, too. Water across the world is very precious. I think it's more precious than the diamonds that we are digging up because are you going to drink diamonds when the world runs out of fresh water? I don't think so. – Janelle Nitsiza, December 3, 2015

The TK Panel spoke to the importance of planning for climate change through closure and post-closure:

> My concern is the volume of water that we have right now. We know lakes are becoming very low now. Global warming has an effect on this, too. Are we going to have rain coming down in the future? Looking at it in the future we are not getting much rain right now that's what I have been really worried about. Are the natural levels going to come back to Lac de Gras due to climate change as well? And having that volume going back into the pit was my concern; taking that little bit along with global warming and not much precipitation over the last few years, that is my concern. – Bobby Algona, December 3, 2015

Outcomes: Recommendations

The TK Panel collectively developed 33 unanimous recommendations related to reefs and monitoring water at closure (Appendix K). These recommendations flowed from a common vision expressed during previous TK Panel sessions that the mine site be returned to the most natural state humanly possible and that monitoring efforts continue, in part, to support fish and wildlife.

Following observations and comments about fish, water, the AEMP, reefs (shoals), shorelines, and other general issues, the recommendations are divided by the following themes:

- AEMP TK Study
- On-Island
- Reefs
- Shoreline
- General

Recommendations are numbered to reflect the TK Panel session identification (i.e., Session 8) and to subsequently identify each specific recommendation (i.e., 8.1–8.33).

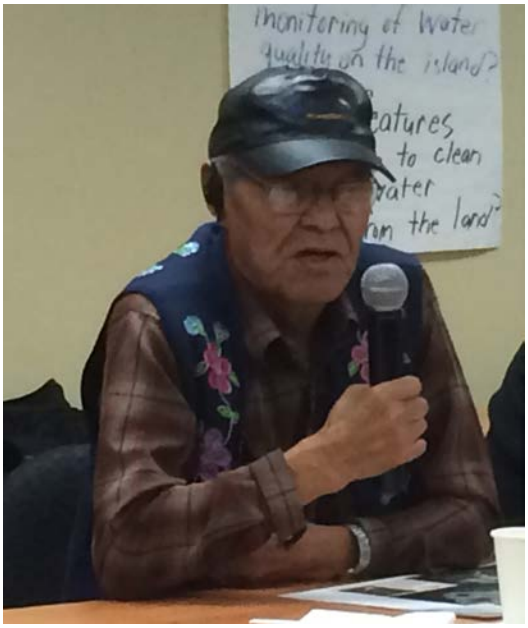
TK Panel Next Steps

Following from planning carried out at previous sessions, Diavik gave an overview of the next TK Panel topics and schedule suggestions (Appendix L). The TK Panel supported the following suggestions: TK Panel Session #9 will focus on post-closure wildlife monitoring and be held on-site at Diavik in either May/June of 2016; and TK Panel Session #10 will focus on a closure plan update and landscape overview and similarly be held on-site. The TK Panel reiterated that they would like to visit the North Country Rock Pile to view the current height, the pit shorelines, areas planned for reef construction within the dikes, as well as the sewage treatment plant.

Appendix A

TK Panel #8 Session Photos

Dora Migwi

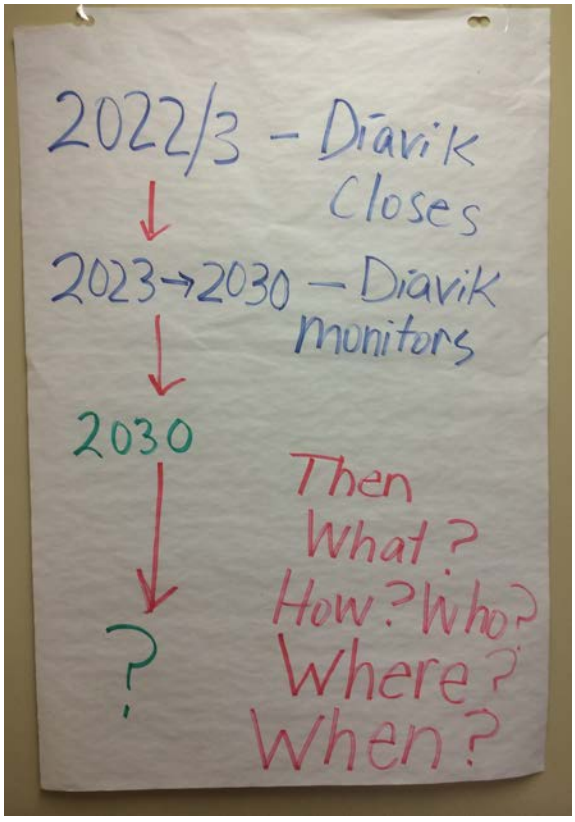


Mike Francis

Janelle Nitsiza shares a laugh with Elder Louie Zoe. Janelle recommends humour as a way of connecting and bridging language differences with Elders.

Ed Jones and Kathy Arden participate in discussion (foreground); Chloe Dragon Smith and August Enzoe remember the AEMP TK Camp of 2015 together.

The Panel puts forth ideas for water quality monitoring [Nancy Kadlun; Bobby Algona; Ed Jones; Kathy Arden; Joanne Barnaby (L-R)].



The TK Panel provided guidance on post-closure monitoring, using flip charts, sticky notes and session recordings to capture their ideas.

Gord Macdonald of Diavik provides a diagram of the dike for discussion purposes.

Elder August Enzoe and Lucas Enzoe (foreground); Janet Murray and Mary Louise Black (background).

Fred Sangris reflects on his experience with the AEMP TK Camp to provide guidance on how water and fish should be monitored in the future.

Appendix B

TK Panel #8 Session Agenda

Agenda

Diavik Diamond Mines Inc.
Traditional Knowledge Panel
Session #8: Aquatic Systems
Yellowknife, NT
December 2 - 4, 2015

Wednesday, December 2

8:30 am	Opening Prayer
	Welcome, Round Table Introductions, Review Draft Agenda, Workshop Purpose Overview
	DDMI Closure Overview & Session Focus
	Break
10:30 am	Aquatic Effects Monitoring Program 2015 TK Study Update
	Group Discussion: *Monitoring fish health and lake water in the future*
12:00 pm	Provided Lunch [Play AEMP Video from 2015]
1:00 pm	Group Discussion: Cont'd
	Break
3:30 pm	Recommendations Table Update Review
	Group Discussion: Recommendations
5:00 pm	Close

Thursday, December 3

8:30 am	Overview of Day 1
	Diavik Presentation: Water Quality Monitoring [water flow on/around site]

	Break
	Group Discussion: *Monitoring water quality on East Island after closure*
12:00 pm	Provided Lunch
1:00 pm	Shorelines & Fish Habitat in Lac de Gras after closure (Presentations by Diavik & DFO)
	Group Discussion: *Shoreline and fish habitat design in Lac de Gras*
4:00 pm	Review of Days Key Messages / Recommendations / Notes
5:00 pm	Close

Friday, December 4

8:30 am	Compile and Review TK Panel Recommendations for DDMI
	Group Discussion
	Break
	Group Discussion
Noon	Lunch
1:00 pm	Present TK Panel Recommendations to DDMI
2:00 pm	DDMI Preliminary Response to Panel Recommendations
	Next Steps – plan for 2016 meetings
	Break
3:30 pm	Round-table
5:00 pm	Closing Prayer

Appendix C

Informed Consent Form

Diavik Diamond Mines Inc. Traditional Knowledge Panel

Informed Consent Form

I (name) _____ _____on _____, 2015 give permission for Diavik Diamond Mines Inc. and its contractors to take notes, photographs and / or audio and video recordings related to my participation in meetings, workshops and events related to the Traditional Knowledge Panel established for the Diavik Diamond Mine. I understand that my participation includes meetings and workshops held throughout each year either in communities in the NWT or NU or at the Diavik Diamond Mine.

Through my signature below, I understand that:

1. I consent to have my words, activities and responses regarding and related to my knowledge recorded on maps, in notes and photographs, and using audio- and video-recording equipment (collectively referred to as Traditional Knowledge Data);
2. I am free to choose not to respond to any questions asked or participate in any discussions without prejudice or penalty;
3. I can choose to be anonymous in my participation without penalty;
4. My representative Aboriginal Organization, DDMI and / or its contractors may use the information collected to contribute to operations and closure planning at the Diavik Diamond Mine;
5. DDMI and its contractors may share my information which I have verified and given permission to share in either reports and/or photographs and provide such information to my Aboriginal organization and other regulators:
6. I agree that my contributions may also be used for future educational, cultural, heritage, and environmental purposes that are outside the scope of the TK Panel and that my representative Aboriginal organization, DDMI and/or its contractors will make all reasonable efforts to consult me, or my descendants, before using my information for purposes not indicated above;

7. I will receive financial compensation for my participation in accordance with DDMI policy;
8. I am free to request that any information I share is removed, erased or deleted and that I will have the opportunity to verify draft video-documentaries, reports and maps to make edits before I sign them off and that final copies will be provided to me;
9. I also understand that DDMI cannot ensure the protection of the Traditional Knowledge from public release once the reports are released (e.g., via youtube.com, Facebook, other social media, or Aboriginal group websites);
10. The Traditional Knowledge Data will be summarized and integrated with scientific data into a report, which will be publicly available.

Signed this_____ day of_____ 2015, in _____ Northwest Territories,

Signatures:

_____ _____

Participant Aboriginal Organization

_____ _____

Diavik Diamond Mines Inc. DDMI Contractor

Appendix D

Draft Session Notes

Appendix D

Diavik Diamond Mines TK Panel Session #8 – Water Monitoring & Fish Habitat

Wednesday, December 2nd, 2015

Joanne Barnaby: Mike Francis will offer the opening prayer.

Mike Francis: Opening prayer

Natasha Thorpe: Welcome everybody it's good to see familiar faces around the table. I am hoping everybody has an agenda. I am going to take a moment to walk us through the next few days, planning for mine closure. Bobby and August are going to give you an update on the AEMP, the fish and water testing camp, that was held out at Lac de Gras this past summer.

We've got a video to show you at lunch time.

Before lunch we are going to talk a little bit about monitoring fish heath and lake water into the future.

At the end of the day Colleen will be presenting the response that came back from Diavik to the last set of recommendations that you made in Session 7 regarding re-vegetation.

Looking forward to having a discussion about what the AEMP TK study might look like after closure. 2022-2023.

Lunch is provided. DFO is coming in to talk about reefs and planning construction for after closure and talking about how Diavik might do this and what they can do today to plan that into the future.

So at the end of session we will review what we have talked about so far. Give any specific feedback or recommendations. And then Gord from Diavik will be here to listen to those and provide an initial response. And we will discuss plans for 2016.

Questions, comments??

We have a few new faces at the table so I am just going to pass the mic around so you can introduce yourself, your community and maybe tell us how long you have been involved with the TK Panel for Diavik.

Gord Macdonald: I have worked for Diavik for almost 20 years now and always in the environment department and currently my focus in on closure planning but while it is currently my focus it was also my focus back in 1996 when we were designing the mine and so a lot of those ideas that we had then and we got from

the communities then are in the closure plan. And now we are coming back to it after 20 years verifying where it is and working on the details of that, that I will present to you later this morning. I have been involved with the TK Panel from the beginning and some of its precursors and again I am looking forward to working with you and hearing recommendations from you on Friday.

Lucas Enzoe: Hi my name is Lucas Enzoe and I am new for this TK Panel and I am from Łutsel K'e.

August Enzoe: My name is August Enzoe and I sit on the wildlife management board for Łutsel K'e.

Bertha Catholique: I am Bertha Catholique. Originally I am interpreter/translator and I have been involved since before the Diavik mine had started and now they put me as participant and I don't feel right sitting here at the table. I am supposed to be back there (points to interpreter booth).

Janet Murray: Transcriptionist and I have been with the TK Panel for 2 years.

Colleen English: I worked for Diavik for about 10 years and I now do some consulting back to them. I have been involved with the TK Panel since the start and environment is also my back ground, similar to Gord, so I am here to sort of help with the Panel and do a lot of the behind the scenes work.

Mike Francis: Mike Francis from N'dilo.

Louie Zoe: My name is Louie Zoe, I have been with the TK Panel for quite a while so I am just trying to catch up and be able to have a good closure plan. And talk to what the elders are looking for into the future.

Janelle Nitsiza: Janelle Nitsiza. I am from Whatì was with the Panel in 2013 when we went to visit the site.

Dora Migwi: Hi my name is Dora Migwi and I am an elder from Behchokǫ̀. I have been participating as an elder regarding the closure plan and the TK Panel. And although I was scheduled to go to the fish study this past summer, there was a problem with the community so I stayed behind but I am happy to be back.

Phoebe Rabesca: I work for the Tłı̨chǫ government, and I am just new on the Lands department. I was in finance for 10 years it is my first time here.

Nancy Kadlun: My name is Nancy Kadlun, I work with the visitor's heritage center and I am so happy I made it to Lac de Gras this summer.

Ethan Kadlun: My name is Ethan Kadlun from Kugluktuk and I am new to this TK Panel.

Bobby Algona: My name is Bobby Algona. I am from Kugluktuk and I have been with Diavik ever since they started up right from the beginning doing environmental work and then from there I've done a lot of group sessions like this right from the beginning. Closure programs, ongoing programs, I do a lot of those and hoping that this will be a more communicative part that we have always been working together and trying to come up with ways of helping Diavik with their ongoing programs and closure programs. Thank you.

Ed Jones: My name is Ed Jones. I am a North Slave Métis Alliance elder I have been involved with this since the beginning but missed one or two meetings that were held on site.

Kathy Arden: Hello my name is Kathy Arden I am with the North Slave Métis Alliance and I am new to the TK panel although over the years when Diavik first started I was sort of on the other side of the table taking the notes and so it's going to be nice to see how far the TK Panel has gone and hopefully I can put in some input with you guys too.

Joanne Barnaby: I am one of the facilitators, I have been involved with Diavik in different ways. First of all helping communities prepare for the meetings and the hearings in the early days and I did some cross-cultural training work for them. I have been with the Panel about 4 or 5 years now.

Natasha Thorpe: I am Natasha Thorpe and like Joanne I have been involved with the TK Panel since it started. It was first run through EMAB then through Diavik, and my personal goal is trying to bridge western science and Traditional Knowledge.

House keeping issues, bathrooms are down the hall, keys are on the table.

Colleen English: Just if we did hear a fire alarm just go up the stairs and meet at the back parking lot.

Natasha Thorpe: Gord will talk first.

Presentation – DDMI Closure Overview (Appendix F)

Gord Macdonald: So what I wanted to do is to give a presentation at the beginning of every TK Panel. How many people have not seen the site? And how many people have not seen the closure plan?

As we go through the next few days I am not going to be here the whole time but I am across the street so I can come back.

PKC is where the waste kimberlite goes and we spent a lot of time talking about the North Country Rock Pile where the big boulders go. We talked about re-vegetation, you made some helpful maps and the women won. That was the best example the TK Panel has done so far because it's something we can use now.

Back to the focus of what we want to look at today. We have heard the water is equally important and we need to have a landscape where the water is in a condition that doesn't affect the fish and wildlife. We have been monitoring and in the future when the operations have stopped, we need to figure out how that may change. And how we would monitor into the future so from a time perspective, 2015 is almost over and I keep thinking that 2024 is a long time away but it comes so quickly. So that's when commercial production would stop. Then it would be 2025 when we would really want to start monitoring how this closed system would affect the wildlife and fish.

Presentation on screen

How we got here. What it looks like right now. I have been involved with Diavik 20 years this is the slide we took to the communities back then. Then a slide that shows what it looks like now. They are largely the same. One of the main reasons it didn't change is because it is on an island. But again just the main pieces of it, the pits, then the rock pile. In the very middle of these (pits) is where the kimberlite is. North inlet used to be part of the lake but is now part of the island and is where all the water is stored before it is treated.

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's neutral to wildlife-being neither a significant attractant nor deterrent relative to pre-development conditions

-maximize northern business opportunities during the 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

Overview of closure plan by area

-North Country Rock Pile

-PKC - consistency of toothpaste, wanted to know the chemistry of that material, has been sent to a company in Saskatchewan and I will update later on this week.

-North inlet- built a dam across so we could use the pond as part of our treatment plant. Material has settled on the bottom of the north inlet.

-Buildings need to go somewhere – off site or into landfill, Wind towers?? Will they still have value in 10 years?

-The pits and the underground – the road around it is actually a dam, the brown part used to be the bottom of the lake, want to fill the pit with water for shut down. The deep portion is not usable as it is too deep for freshwater fish but the edges are usable.

Kathy Arden: What was the discussion about possibly partially filling that hole so it wasn't so deep??

Gord Macdonald: You mean filling it with rock?

Kathy Arden: Yes from the North Country Rock Pile.

Gord Macdonald: We have had that discussion many times and the answers are it's not something we could do practically. It would be prohibited expensive to do and it was discussed from the very beginning that, that isn't an option for us. The only way it might have worked, and it wouldn't work at this site, is if the sequence of mining is that you're finished in one before you dig the next one

and you can directly fill it that way. But all of our pits are still working because we've got underground mining underneath them so you can't fill them back in while you've got all of the mining going on underneath it, so it doesn't work at this site.

Kathy Arden: So now your North Country rock pile there, are you going to reform that to the land? Is that what the plan was?

Gord Macdonald: Yes we are going to soften the slopes so that caribou can get up them and people can get up them but mostly so that it's chemically safe, so that any water that lands on it will stay in it and not come out.

Kathy Arden: So it will be a big hill. Okay, because you were talking about melting the ice and all that because right now we have a lot of this environmental warming things going on and is that a factor that you have in your formula?

Gord Macdonald: Yes it is, good questions. So the pits will be filled back in with lake water.

Natasha Thorpe: The water will sit in there 5 years.

Gord Macdonald: We will fill it but the dikes will still be fully in place so we can do all the testing before we reconnect it to the lake. Build fish reefs but no fish could go there until everyone is comfortable.

So that is just an overview for you.

Ed Jones: Gordy I am just wondering at this point, well your plans look pretty good and what I want to say is, how can the TK Panel help you because we have never had this problem before?

Gord Macdonald: Yes that is true but you also don't know what information that you do have that you can share with us that will help us. Honestly take what a good fish habitat is like. That's something you know you have, you've just never applied it to this kind of a problem before. Same thing when you evaluate water and say it is good or bad, how do you do that? How do you evaluate something in a natural landscape, and can you use that to do this?

Colleen English: With water quality as well - with water on the island and also the water in the lake - you can help in terms of where you would sample and why, and what you are looking at based on what you would normally see.

Gord Macdonald: Also I am very happy to have the Panel say that you want science information on something like water chemistry and that's the information you need. Then we will make sure that we provide and explain that.

Nancy Kadlun: Just wondering about if you have to fill it with water and it's going to be very contaminated from the man-made dike and all the birds get in there and have that water that would be bad. Or can we just leave it the way it is?

Gord Macdonald: All of the information we have is that it won't be bad water. It will actually be very good water. But that is the question that everybody has and we will talk a bit more about the studies we have done to test what the water is going to look like. That's why we want to fill it before we connect it. If we just left it, it will fill up with water, but it will just take a long time for it to fill, and it also won't be as good of water. It will be from deep in the ground, not like the water in Lac de Gras, so we would like to fill it up quickly with good water.

Louie Zoe: I'm concerned about not only the open pit that we see right there. I can see that the company has gone underground and how they got there and then the water is going to connect to all the tunnels under there. So what type of materials have been left behind like air pressures, connecting to the underground steel pipe and all that stuff that might be left behind that might be causing some contaminations. And so these are things we've thought of before.

Gord Macdonald: Under both of the pits there is substantial underground workings that would get filled and we would be leaving materials behind exactly like you said - pipelines, ventilation - which we don't think would be a problem for contamination. What we do need to remove is all of the motors or anything with hydraulics, fuels, or lubricants that could get into the water. What we would be removing is anything that could contribute to contamination. Once we have approval, again maybe we need to have you come walk through the tunnels and see that what we have left behind is okay to leave. Then we would fill it up with water.

Phoebe Rabesca: If it's not filled with water then you say bad water is going to come up. I just want to know where is the bad water coming from and where is the contamination from and what kind of contamination is going to be in it and from where?

Gord Macdonald: The deeper you go into the ground, the saltier the water gets. Its natural but not what we see regularly, more like ocean water. We are a fair ways down in the ground now and we measure water down there and that is much saltier

then what Lac de Gras is. So if we leave the pits they will fill up with that saltier water, that's the bad water.

Natasha Thorpe: Any other questions?

Bertha Catholique: When was the whole discussion on the open pit because I remember when it was first started when you guys were going to go underwater and make a dike and make an open pit. Then a lot of people in Łutsel K'e didn't want that because what they are saying is that you guys are digging a hole in the ground making it like a big scab on your arm and then you are going to fill it up with water and the concern was to fill it back up, leave it the way it was. Is it too expensive to do that or is it expensive to take the rocks out and leave it like that? So that is my main question: is there any discussion around how we can heal that sore that you guys made?

Gord Macdonald: The discussion about putting the rock back into the pit comes up every time we have a discussion about closure. Yes, the answer is it is too expensive and we said that right from the beginning, back in 1996, 1998 that we couldn't heal that hole once we did this.

Joanne Barnaby: If there are no other questions.

Fred Sangris: I just walked in. I wasn't here early in the morning but I heard about this reclamation and heard about the water being filled in years ago but the water quality on that lake is very good, Bobby and I drank water from that lake, we ate fish from that lake. But the surface of the ground is all natural but once the grinded rock and materials is disturbed this is also a chance for salt and acid runoff. So I just want to know if that's filled in with water and the fish come around to spawn, is that going to affect the spawning area or is that going to affect the fish? What kind of contaminates is on that rock because I am sure it has some sort of effect.

Gord Macdonald: Our biggest worries are the pit walls themselves, the chemical reactions that have been happening on the rock walls being exposed that will get washed into the water when we fill it up. So we did a washing experiment, washed the walls then tested the water, is that water still good for the fish. There is lots of good water coming in, and not a lot of chemicals are going in it. What we found from our water studies is that it will still be very good water because there is so much Lac de Gras water going in with so little material coming off of the wall. It was also raised about hydrocarbons what happens? The last thing

I want to do is fill this up then find out its bad water so we don't want to do that either.

August Enzoe: We have been working on this closing part from the start and we did have a lot of input in there on how it should be done and that's really good. The sample of water there and rain goes in and out you didn't mention that, rain and snow water.

Gord Macdonald: We measure the amount of rain water and how much snow falls; we measure snow chemistry but not rain water chemistry.

August Enzoe: The snow and rain once it's in the water I mean.

Gord Macdonald: Yes, we do test that.

Bobby Algona: I am hearing again how these pits are going to be reclamated, living downstream from all of this mine fall out that we are experiencing. Hearing the chemicals that are going to be staying under that water for many many years and I am wondering if you are thinking about leaving that dike for several years and studying that water quality. And you're telling me that what if this water when it's filled up very soon, it might become a problem, that would become a problem for us, too, downstream and you are telling me that it is very expensive to process it to clean that how you want it. That might be expensive for you but what if that water gets all contaminated and runs downstream into Kugluktuk - isn't that going to be more expensive then what the mine is proposing to do?

Gord Macdonald: That's exactly why when we fill it up with water we won't be putting holes in the dike until we know that that water is good. So you can take Kugluktuk as the best example; we don't want to release that water into Lac de Gras until we are confident that it is good. What if we are wrong what if we fill it all up with water and the water isn't good, and then we have to run it through a treatment plant and replace it with clean water until we can get it to that point? So I think Kugluktuk should feel safe. Bobby you are going to be the guy that we are going to be asking, "can we put a hole in it?'

Bobby Algona: In the mean time when you fill these pits with water and it comes to the top that the level is what you want or the level that is stable what about those animals that want to go though the dike and like caribou or wolves that want to drink that water. Are people going to be monitoring on a full time basis until its good water?

Gord Macdonald: That sounds like a very good recommendation. Absolutely during that period particularly if the water is poor for some reason and if it's bad enough that it would be a problem for wildlife we would definitely have to have that.

Nancy Kadlun: I am just wondering when you said if it just fills up over time and just leave will it over flow? And if you can't do anything about it then who will clean the lake?

Gord Macdonald: It won't over flow, the water will only come up to the same level the lake is at now so it won't over flow. And who's responsible for cleaning up the water in the pit? We are.

Break 10 mins

Joanne Barnaby: For the past two days some of us have been meeting, those that went to the fish camp have been meeting. We have also been reviewing the report that we've been writing up and we also have been reviewing the video that is still a work in progress that you will see later on today.

Bobby and August have agreed to present.

Presentation – 2015 AEMP TK Camp Overview (Appendix E)

Bobby Algona: We have been going to the TK Camp for the last few years and it's good to have the ongoing program with TK. I am pretty sure we are coming up with something new and doing some things that we are learning as TK holders. As TK holders we can only do so much as to say that all our traditional knowledge that we have come to know out on the land is being kept alive and well. And all of what Gord has been explaining over the last few years, especially the water seepage and air quality, and what the mine has been doing to keep our minds at ease as TK Holders over the years. This is one of the good things we have been doing the last few years, is testing the water, the quality of the water, testing the water, testing the fish and doing a lot of traditional knowledge stuff as well. Some of us have been doing a little bit of plant life as well. Madeline and the ladies have been doing berry picking and its really good to see and a lot of the things we have come to appreciate what Diavik has been doing for us keeping the TK camp going. Over last couple of months we have been doing the same thing we did in 2012.

In June we had a pre-program session about what we were going to be doing at camp and all the different ways we would be testing at Lac de Gras and from that we had a good insight on how we wanted to keep this camp going and

what changes we might do in August. Come August we have been doing a lot of things we wanted to look at in June. Comparing it to 2012, there was not much different [in 2012] from what we saw this summer. But it's a good program, we need to do this water testing and look at the fish and the fish habitat and what the water is doing to the fish habitat. From that we look at the mine as when we come into the camp, we look at the dust from this camp and a lot of that dust goes into the lake because Diavik is on an island and most of that dust is falling into the lake. And we have been listening to all the scientific work that Diavik has been doing and we have all evaluated that as TK Holders and everything seems to be very well and the fish that we tasted was really no different from the last session in 2012 so that was really good and the water quality was no different from 2012. So that was good to see not many changes due to the activity from the mine and a lot of these programs that we have been doing is almost the same parameters from 2012 looking at fish and all the different ways that we have been preserving and putting our minds at ease with the scientific program. I think it's really good to work right alongside the scientific people as well. As TK Holders we've been out on the land and we learned a lot from our elders to keep the waters as clean as possible for today and tomorrow for our youth. And these discussions over the last few days like last time I think all this dedicating these programs to the youth and making the film and a copy of what we have been doing and dedicating all the hard work we have been doing over the last few years to the young people of today for tomorrow.

That is a really good thing that Diavik has been doing for us as traditional knowledge holders even though I have lived out on the land a lot we still forget to mention some things. A few new things can be learned through this program. I think there is a whole lot more things that we can learn from this as well and certainly as TK holders we have come to appreciated what scientists have brought as well. I think we need to work much more closely with the scientists as well so that scientists can learn from us as well as to how we came to learn these things. As TK holders we've come to appreciate all the helpful insights that our elders have been giving us for many thousands of years and to this day I think that in the future, hopefully in the future and all this water and the air and plant life and everything around the camp can be kept as clean as possible for all of us to share. As a TK Holder, I have come to appreciate a lot of people that I have come to know and come to work alongside with over the years and there is still a whole lot of things that we need to do as well, not only with the water but there are something's that we could really be looking at as well. I mentioned earlier that the ladies have been doing their part picking berries and

looking at the plant life as well and maybe in the future or through these sessions we have been working on I think there are some ways that we can truly think about, maybe there are some things that we need to look at more closely. And that's what we have been doing over the last few years and if August wants to say a few more words.

August Enzoe: I don't know what I can add in, you almost said everything. This was my first year this year; I wasn't there 3 years ago. But I was there this year and they did pretty good. From my side [for a similar program in Łutsel K'e] in the spring time we asked for 2 youth and to me it didn't happen. I asked for 2 youth, 1 girl, 1 boy and that didn't happen because of money. [At the Diavik camp] I had lots of fish. One whole week of it - lots of fish, boil it, fry it, cook on the fire, fish eggs we all had that for samples. It tasted good and the water we made tea and coffee and that tastes the same to me. You should taste just the water because if you have tea and coffee you can't taste it the same. Like Bobby said there's lots of dust going into the lake. I went up the hill and I touched the rock and my hand was just white from all the dust from the mine. So how far is it about 500 feet across or more I don't know.

We made a movie and the movie is really good [*We Fish Today, For Fish Tomorrow* available at: https://vimeo.com/artlesscollective/wefishtodayforfishtomorrow]

When we were fixing the fish that's a problem we all had because I couldn't hear what I was saying to the reporter. For the camp it's a good camp, I really enjoyed myself eating fish every day plus a good meal at night and breakfast. For the next time I did mention yesterday when we were in the other meeting we should try for one night to have nets on both sides of that island, just for one night, just for a sample of the fish that are closer to the mine.

Joanne Barnaby: Thank you August. I was just looking around the room to see who else was at the camp.

Ed Jones: I wasn't allowed to go because I have macular degeneration; I am slowly going blind so they didn't want me on the property.

Joanne Barnaby: Yes I guess they were worried about your safety.

Nancy Kadlun: I couldn't wait to go to Lac de Gras after hearing about it so many years, especially when the mine was there for so long. I tried the water it was

so good, pure water but again when the river goes down to Kugluktuk from all that mud, it's kind of thickened back at home you know from all the mud going down. But in that lake when you have water from the lake, the middle of the lake from the top, that's very yummy water. I like when camps like this happen because lots of our youth they don't know, they are not experienced, so when we have more youth that come to stuff like this they will learn more and they will want to do more.

Joanne Barnaby: It was really unfortunate that we didn't have as many youth as we wanted then but I am really glad we have more youth here today.

Any questions or comments regarding the 2015 camp? Fred did you have any questions or comments?

Fred Sangris: Last time I ate fish there I am still full from it, that's how good it is. I think over time in that area we have water quality that is coming down from Contwoyto right through to Lac du Sauvage and right onto this lake [Lac de Gras] and it drains on through to Coppermine River. We were there at one time and we wanted to try everything out including water quality to make sure the water didn't change at the time of the operation of the mines and we wanted to see if there were any changes in the fish as well. Because when water quality changes in lakes, the taste of the fish changes to. We know that because of our own experience here in Yellowknife Bay. There are lots of rubber boots in the bay here, they don't taste that good. When the water quality is good, its good and we don't want to make changes to it because there's life in the water. The aquatic life, the fish, and there is little critters that the fish depend on, it's underwater too. Those are the food for the fish and it's very important. If the food is not there then the fish aren't going to be there. So I think when you are studying fish and you are eating fish and you are looking at the texture and the quality of fish you also want to make sure the food source of the fish is not in any way affected or impacted from the mines. We want to make sure that the fish continue long after the mines are gone and we want to make sure the water quality doesn't change. And that's why we are involved; to make sure that it happens. But like any other mines in this country, mines can have some impact and affect to water and land and we are concerned with the reclamation with all the rock pile, the acid run off and it could be as well from the blasting and the ammonia I forgot to mention that on the walls of the open pit. We need to do more studying on it to decide if the ammonia and the dynamite blast is still staying on the walls so we need to know that so it doesn't have an effect on future spawning. Because long after the mines leave the fish are going to

continue to live there and continue to spawn and if the spawning areas is not impacted the fish will be there long after we are gone and that's what we want, the quality of life for the fish that was there when the mines first came in. After the mines leave we want to make sure those things are still the same, not changes to it. So I think for us and the scientists and the mines that we are working together to make sure that we understand that not too many changes are taking place. That is what we want and I think that is what we did in 2012 we tasted a lot of different fish, all different sizes, we tried cooking it different and we tried to get the taste of the fish and made some tea.

When the water changes there is a scum around the cup, you know when you go camping and you go to little ponds and you have to make tea and you see the scum after drinking then you know there is something there, there are changes in the water and that's what we try to watch for at Lac de Gras when we make tea. But we didn't see a lot of that so to me it means that even though the mines are operating across, there hasn't been too many changes but it's always important to continue to monitor and keep doing this kind of work so that when the mines close down and the reclamation happens you want to make sure you leave that place in a good way so that you know you walk away from something that didn't have too much impact. You want to make sure the continuation of life and wildlife quality is going to be there forever. We are on a mission looking for truth, that's what we are trying to find out, we are probably in the middle of it probably beyond it, because there is going to be an end life to that mine and we are working with it to make sure that these things are studied and that we understand it.

Joanne Barnaby: Thank you Fred, that is actually a really good lead in because we are looking at what kind of monitoring should take place once the mine closes and we have this program that runs every three years that we should look at how that might continue after the mine is closed. We need to look at issues like where should a camp be set up, how would we maintain that camp, how would we pay for going out there to do this fish and water tasting and testing. Should it continue to be both TK and science and these are the longer term issues that we need to figure out we should look at where there should be sampling sites, we can look at where they are now and where they should be after the mine closes and there are some questions in the air about the future and how do we continue and what is it that our own organizations from home want to do and all the different Aboriginal peoples and how do we maintain the collaboration. These are the issues we want to focus on this week. The closure and post

closure and how to make sure that someone is keeping an eye on the fish and the water.

Ed Jones: After the mine closure I believe that the monitoring of the water quality should be done by the government who are independent of Diavik; they can periodically check the water quality and report back to the public. I don't think they should allow Diavik to do this, because I really don't trust mining companies, to be truthful, I don't.

August Enzoe: I was at the table way back since the mine was started, 1997 or 1998. Albert was still with me, Eddie Jones is still with me. All those words we've been saying towards the mine, the Elders, how it should be done for the record. Way back me and Eddie found out that the mine at Diavik wasn't doing what it said it would in those days. The Elders that were with us from Rae and Yellowknife and Łutsel K'e and not one of them is with us now, well Eddie is with us. We put a lot of work into the mine about how it should be done in the future. Like right now the round table is all new ones, newcomers for me and they don't know too much about what we said way back. That's how it sounds for me. That is what I would like to mention that to you people.

Colleen English: I just want to respond to Ed's comment. Mostly Diavik staff - employees, some from the communities and some from Yellowknife - they do the actual samples. We bring up guys like Bobby sometimes to help us out with different programs and they take the samples and then we give that information to independent consultants who then make that into a document that basically says to the people like the Land and Water Board, and that is given back to communities as well, this is what the water quality is like. At the same time, the government does come up to the mine. Inspectors come to the mine site and they take their own independent samples as well. I get your concern, but there is definitely overlap.

Natasha Thorpe: I would add that the community based monitoring that you will continue to do is a big part about how Diavik decides to do things. One suggestion from here, from Ed, is that we should be monitoring in the future, so do you mean Aboriginal governments? If so, how do we move forward once Diavik is gone?

Ed Jones: I did not fully explain myself, what I wanted to say is that the government holds a bond for the cleanup and Diavik shouldn't have to monitor after the closure because the government holds a bond and does have the money to do that.

Joanne Barnaby: Perhaps Colleen in answering that question you can also outline Diavik's commitments in terms of monitoring after closure.

Colleen English: The bond is actually for instances like Giant Mine where the company walks away. The bond, ideally, Diavik does not want to cash in on that bond. They don't want to hand over that money and have the government do everything. Diavik wants to be doing that work until the mine is done and closed. So the bond is there as a safety net and it's only really a safety net. It's not meant to be used unless something dire happens with the company and you get bailouts and bankruptcies and that sort of thing. With Diavik's mine plan right now, the mine closes around 2023 and the current plans have monitoring that extends another 5-7 years beyond that to make sure that everything is functioning properly before the company is completely done. And then the reality that we don't really know yet, I think, is what happens beyond those 7 years. No one knows what the obligations would be, do you come back a couple times a year? Do you come back yearly? The governments here haven't had a mine close properly so it's a tough question. What is the point where we can say, 'yes, we are all happy and we are done?' These discussions help with defining that.

Mike Francis: The water in that hole, samples and everything, I just want to know if they are going to change the water later or stay there forever.

Colleen English: Do you mean once they put the water back in the pit, are they reconnecting??

Mike Francis: Are they going to change the water if it's contaminated.

Colleen English: The way that Diavik is planning to do it now is to bring the lake water in to fill up the pits. They'd keep it in there for about 5 years and it should be good. They wouldn't need to change that water again. What Gord was talking about is if they saw something that they didn't expect, something that was not good, then they would need to look at taking that water out, treating it, then putting it back. So that's why they want to fill the pit and leave it to see how it goes for a few years, and monitor to see how it's responding. Because you can plan all you want, but things can happen, so you want to have protection and a buffer before anything goes back into the lake.

Natasha Thorpe: Tomorrow our discussions are supposed to focus on really getting down to it in terms of exactly how and where Diavik should be monitoring water quality around East Island post closure, once things are covered up and things

are reclaimed. Then in the afternoon I am going to get down into the details around when the waters are reconnected; what should the shoals look like.

Who, what, where, when, how 2022/23 Diaviks closes, 2023→2030 Diavik monitors 2030→ Then, what, how, who, where, when????

Some have said they don't want to taste the water after they are reconnected, they would rather the scientists monitor the water.

Nancy Kadlun: It would really help to let people still go because who do we trust?

Natasha Thorpe: Your organization, yourselves.

Nancy Kadlun: They still have the same things that we did so continue camps like that so people and the youth would really understand if our water is still good or is it not good anymore.

Natasha Thorpe: If you still want to do that camp and Diavik wasn't doing it anymore, how would your organizations work together? Any suggestions to make that happen?

Louie Zoe: We are talking about the importance of the water, this is our land. That our land won't be so disturbed that we'll have it forever and we are not talking for ourselves we are talking for our future, that we would always have the water clean. And the company and the development and how they use the water, we don't know, and once the water gets into the open pit and it gets over flowed and all the water gets into the big lake again and then water will be traveling into our lakes and ponds. When there is rain and snow that goes all over the place once the water gets contaminated it would be hard to get fresh water again. We know from the examples from other mines that I have been traveling with other people and this one mine there are some people and other places they said that once you contaminate that water it's not going to get clean and fresh again. That is what we are being told by other people from other areas.

Fred Sangris: It's true what we say about the open pit how it can be monitored. For a number of years we have been working on this project and we go to the site. Our concern has been that in the beginning of the mines is that there will be less impact and we want to be involved and that is what we are doing, we are involved. Once the reclamation, the mine closes and the reclamation begins, then the mines will be gone. So we have to find a way where we can continue working on this project long after they are gone. But there should be some dollars so that our communities can continue that work. Coordination would be

kind of difficult but if someone was to send us a letter saying get some elders and youth up there, then we will make that trip. I think it's possible because we need to still be involved long after the mine closes, we need to continue to make sure that the water quality and all the plans is doing what it is suppose to be doing. I know that the Elders don't want to drink the water there because there is still residue from the dynamite on the walls of the open pits, ammonia and so on, so I wouldn't want to drink it anyways but I think the idea of getting samples or continued study on that would probably be good. The pits themselves have to be studied, get the water, get it studied to check that the water is still the same or if there are any changes happening to it we need to know. But I think a lot of us here are not going to continue to be involved; most of us will probably move on but I think it's important to bring our youth, get them involved, educate them, they need to continue to be involved so that the monitoring can continue and the reports can come out and they can understand the reports so that 2030 maybe continue into the future, we don't know when is the end.

We have Mary here who is a youth with the Yellowknives Dene and I think people like her are very important. Every organization should have an Elder and maybe two youth so that you know when we kind of disappear and fade out, they'll be the people to continue and ensure that water monitoring and quality is there. The plans are doing what it is supposed to be doing. If we don't get the young generations involved then they'll have no idea of the diamond mines that have had an effect on the past. What we are trying to do is work with the industry to make sure what they leave behind is going to be good in the future, and it's not going to have so much impact. But it's the generations that have to be involved to make sure that those things are done properly. For how long, I don't know, but I think maybe 2030 could be a target date, maybe 8 years after the mine closes. Continue that work but Mr Jones said that the Federal government's got the bond so my question would be whose going to pay for it after. Who will bring up the dollars to continue to pay for this kind of work?

Joanne Barnaby: Thank you Fred. We have the Environment Monitoring Advisory Board that is set up through Diavik and this Panel worked under for a few years until it started working under Diavik. EMAB or an organization like EMAB might be the tool that we need to continue past closure. I know everyone has their own experience with EMAB but the whole idea of an organization like that - that does represent or has representation from the communities and that has the mandate to monitor and that brings all of the different cultural groups together -

that might be the kind of tool that we could use into the future. The question is who would fund this. Currently all its funding comes from Diavik, so we'd have to look at that and we would have to look at whether Diavik is prepared to make longer term finding commitments to an organization like that, or whether it needs to shift to a partners funding model where a mix of public governments or Aboriginal governments and perhaps Diavik, in a smaller way, contributes to the work.

Bertha Catholique: The concern I have is who is going to monitor after the mine is all gone. So what I would recommend is we should start training our youth today to be the monitors and the keepers of our land. That's the only way that we could teach them how to look after the land so it can be a continuing thing and we could sort of build a big school or something in the north here where we could teach all this monitoring. Because they are monitoring stuff and they are analyzing it, like the fish, they have to take it out to wherever they are looking at the fish for contamination. Maybe they should have a building like that here in the North where it won't be so expensive and then our youth and our communities will all be under one roof so we won't get stuck. Like where the money is going to come from if something is contaminated and everybody walks away. Like right now what they are cleaning up after the first mine that came to the North. They made all these messes now they are cleaning it up. We don't want that to happen. So we need to come up with ways to teach our youth right now or even in schools, make curriculum. But they have to see, the Elders are always saying when you are teaching someone on paper if you don't really know how to read and write you can't understand it and you are shy. I was one of them. Because I was always told don't ask too many questions. So I was that person and then I became an interpreter so I would talk all I want but it's not coming from me. I think a big school would be good.

Natasha Thorpe: I think any of us who has worked with youth gets that feeling of the responsibility of making sure that they are inspired and have a passion for something, whether it's interpreting or fish analysis, because that's what keeps the future moving forward. You'll see in the video that we play that one youth in particular talks about making this realization or connection of how interested he is after spending a few days out on the land. It's very true that's how we are going to make people, youth, inspired to monitor long into the future.

Dora Migwi: I've been attending a few meetings like this. I have heard clearly what you guys said that we love our land and to protect our land and our environment, animals, that everything will be safe. We all come from each region in the

community and something is contaminated and the water - what about the animal, it will affect the animal. Today we have all kinds of scientists and these doctors and they work along with the TK people. Into the future the young people sitting here today, and there are not much Elders in the community, there are only young people today in the community. That's all it is in my community, there's times that if there is a meeting going on we have two youth coming to the meeting so they can learn from the meeting. I am very thankful. I have a lot of grandkids so I couldn't go but I feel really comfortable and a lot of information is coming from the communities and we care for our land and water. I can't sit back and say nothing.

Janelle Nitsiza: I am really thankful for what Dora just said. The bond between Elders and youth is really important. I know from experience because I was raised by my mom but I was also raised by my grandparents and I just lost my grandma last week. So you really need to love your grandparents because they are a textbook of knowledge for us. Any questions that I ever had for my grandma she always knew the answer. I am grateful for what she taught me. And I am grateful that these Elders really want to incorporate youth because, as a youth, I really want to be involved and I really want to learn more. I am not the greatest with landscape or navigation but I am only 21 so I have lots of time to learn. I am just collecting stories from these Elders; I have collected so many stories from my grandma. I have traveled the Tłı̨chǫ region for work so I was fortunate enough to gather lots of stories. Even though there is a language barrier I always find a connection to them and the recommendation for youth is laughter; laughing with elders and making them happy, because when you laugh you build that connection and that's how I built my connection with my grandma was by laughing and telling stories.

Bobby Algona: It's really wonderful that some of our youth can really speak up. That's what we are here to do and when we are coming to meetings just ourselves as Elders it gives us ideas on what we want to do in our communities to help our children and our children's future as well. When I come to these meetings I often think of ways . . . we're not going to get away from the mining industry in the near future. I am always coming up with ways of teaching our younger generation back home and these are the things that we need to teach our young generation. It's really wonderful that we have come up with water quality monitoring programs and have CD's and books that we come up with. Sometimes, just on my own, I go to the school and talk to young students. And sometimes I get asked to go to the school or get asked to come to a meeting in the community and I give a little insight about what the mining industry is

doing and how our organizations and the Elders that we work alongside with, with the mining industry itself, we give a little insight to our young students. In the future having these CDs would be a really good tool. I have these tools now, these CDs, that I can work with to show a classroom what we are doing for our children when we come to the mining discussions groups/workshops in our communities. And give a little insight about what the dangers might be and to get them to think a little bit about what your future might be with what the mining industry is doing and how the mining industry as well can help the youth with a program or what they might be doing in the future. That's a most wonderful thing that we can do as Elders. We can have these tools that we can bring home and it makes it a whole lot easier to explain to the young generation with these tools. And I myself have my own CD I put together myself of an outpost camp. I have an outpost camp that my family go to every year. Even though our family portraits are just family portraits I tend to use these as tools now that I bring to these workshops. Sometimes I get to show it a little bit to the group sessions that we have here, what the land means to me and my family. I use this as a tool to present to the mining personnel as well. I've been working with the mining personnel for a very long time; sometimes it's hard to tell them how I do things out on the land. My pictures start to come in handy when I start to try and explain things that I do with my family, what I need to do, what I need to teach my family out on the land. But I've come to use these tools that I came up with, these family portraits, to show the mining personnel about what I do and what I do out on the land and what the land means to me.

Natasha Thorpe: Thank you Bobby. So maybe when you are thinking about monitoring fish and water down the road it may be important to have those tools.

Joanne Barnaby: I've been involved in some work in the Dehcho region so that they could be involved in the monitoring. They have actually set up a program and its building slowly because they need to raise money and they need equipment and they need support to carry out the work they want to do. Łutsel K'e is involved in something similar - Keepers of the Land - and they came to the Dehcho and presented information on their program and shared their approach, which is something similar. The work is coordinated by the First Nation and the Elders committee and the Lands and Resources Committee that August sits on and they over see that and they train their young people with scientific techniques as well as TK. The young people go out by boat in Łutsel K'e and they are reminding people to be respectful. If they are noticing problems, they are reporting the problems to their community or to ENR if needed. And I was

thinking that because we are all from different regions, an organization like EMAB that coordinates can maybe run that program.

August Enzoe: I was just thinking we are starting to get kids with us, the youth, and we should continue for their future. If we are gone they'll be saying behind us Grandpa was here once and they'll remember for their future. Because we won't be sitting along with them, we don't know how many years yet so I am really happy that we got the youth. Diavik could put more money, put a million dollars, towards the kids.

Colleen English: Just further to what Joanne was talking about, there are some really great programs that already exist in the North, and that Aurora College has organized as well. They had a BEAHR program where they would go out on the land, its environmental monitoring for youth that includes TK and also the scientific side of it. And it's amazing. We had gone and helped them out when I used to work for Diavik. I would go and do sessions with the kids and teach them about water quality sampling and then they would have Elders there. Also something that is very unique to the North is that you can get a certification as an environmental monitor based on hours working, even if you didn't go to school but you start working at one of the mines as an environmental technician or whatever. There's a program you can do through the college, you get a work book, you have to log your hours; you do all that and you become a certified monitor. That's pretty cool, and you can't really get that anywhere else in Canada that I know of.

Natasha Thorpe: I think August has spoken and let's take a break to eat.

Lunch Break.

Video of AEMP TK Camp (25 minutes)

Joanne Barnaby: As we explained earlier, the video is not quite final. There is more editing to do and the title, which hasn't been determined yet, hasn't been selected. We were brainstorming some ideas for the title for the video and for the written report from the camp this year. We have lots of ideas but no consensus yet. So we are working on that. Some ideas also for distributing the video as well. Perhaps offering it to APTN, asking North Beat to do a story on it and of course getting it into our communities as well, hopefully to inspire young people to turn out for the next camp.

Natasha Thorpe: You are the first official non-participant screening group here, so we are really interested if you have any comments or thoughts about the film that you just saw. Anybody want to say anything? Any suggestions for future activities?

Dora Migwi: Look at the lake itself, the Lac de Gras area. My dad used to trap around that area for white fox. My dad had travelled by dog team on the barren lands and my dad had lived with the Inuit people, people from back then what used to be Coppermine. While my dad was out trapping white fox before Christmas on the barren land, my mom and us were living in a tent on the tree line and we were young at the time. My mom was expecting a child and apparently it died there and he is buried out there on the tree line somewhere. So that's what happened while my dad was out on the land hunting. I am not saying my dad was the only one but there were a lot of people who were harvesting the white fox back then. I guess how those people trap the white fox is they use the caribou meat as bait, and back then, before my dad's time, I guess the people used to harvest the caribou hides for clothing and even to make tents out of it. So that's how they were raised and then they were using the firewood, they were using the small willows and small birch willows and that I guess throws a lot of heat and you cut them in bundles. So the days when my dad used to harvest a lot of caribou, all the families would use the hides to make mitts, mukluks and caribou meat. But nowadays things have changed and a lot of hunters that used to live on the barren land, especially the Dogrib tribe, they used to go out in July to the barren land to harvest dry meat and specifically to get the caribou calves when the hair is really thin enough to make a caribou hide parka. So remembering all that I guess brought back a lot of memories and the places my dad has traveled. I was too young to remember when my younger sibling died on the barren land.

Joanne Barnaby: Thanks so much Dora. Any other comments from people who haven't been out there, any suggestions for how we might do future camps?

Bertha Catholique: I was just thinking about us having one youth from each community and it was kind of hard for that youth to speak because they don't have another person from the same community. And to make friends it's kind of, they are kind of shy. So I would suggest that we bring 2 youth and 2 elders so they aren't so shy. I would suggest that.

Joanne Barnaby: In the planning meeting that we had in June before we went out, we talked about different things that the Elders could teach the youth but also things the youth could teach the Elders. So if you could think about that, too,

that would be great. Over the last couple of days we talked about the people that went out, we talked about any changes that they might want to make and I think that there was a consensus that instead of boiling the water for tea and coffee, instead they want to taste it as pure water straight from the lake. So that is one change. Any other questions, comments? How did you feel about the video?

Bobby Algona: Once in a while, if not every other day now, I can't help but look at the TV and I look at all the things that are happening around the world and just last week or so we have come to learn that other companies are working on a climate change conference in Paris. And I am just hoping that they get things right now and start to realize that the industry itself sometimes really contributes to natural climate change itself. And when you look at things around us, I notice everything around us here, when I look at things, how many ounces to make this one tool that we use. How many ounces to make this one microphone that we use as a tool? And when you look at mining ounces per tonne. That's what I look at. How many ounces does it take to destroy tonnes of other ground and the natural ground that they are looking at. And when you look at Diavik and all the other mines, you look at all of that waste rock, how many ounces or carats do they get out of that rock. You look at how much rock is being moved and how much water is being used. I look at all that myself. I am just learning in my residential school days sometimes we get into a little discussion ourselves and in those days you look at all of the things you have all around us not just in this room alone. How many tonnes of rock or waste rock is being used to make this one tool or all the tools that we are using here to work with as tools we have. And there's another thing we've got going. Going to Toronto a couple of years ago I looked at the city, how many ounces, how many tonnes of waste rock to make that city. And how many cities are in the world right now? You look at that and you see what climate change is doing now maybe it is from the industry itself, we have to look at those things. I look at all of those things. Learning just from the TV that I have at home. I look at what is being done all over the world; people are destroying each other for the industry or what they do to make their country a little bit better for themselves. I look at the TV a lot. I learn from the TV by seeing what everyone is doing to each other in the world and I try to teach my children. Looking at all that, we need to think a whole lot more about the mining industry itself. We can't get away from the mining itself, I see very far into the future the mines are going to be ongoing all the time now, we cannot get away from it. I think even though I have a lot of qualms about the mining industry itself, then I start to look at a lot of other good tools that they make alright but I always think of something that

we should be doing. And just from that TV at home alone or just from the school that I've come to work with in my residential school days, how many ounces does it take to make this tool and how much land has to be destroyed just to make this one little piece of tool that we use. Those are the things that I look at most every other day now.

Joanne Barnaby: Do the youth have any suggestions or would a program like this interest you in the future?

Lucas Enzoe: I think the things that he said is true - that we destroy the world for all the technology we use and take for granted and it's still happening to this day. How many times will we destroy this earth just to get the tools that we want? Are we going to find an alternative way to make better tools for a greener place to help out the earth, or keep destroying the earth?

Joanne Barnaby: Thank you Lucas. Pretty big questions. Ethan did you want to say anything? Janelle?

Janelle Nitsiza: I like that Bobby touched base on the environment. I think what Diavik and all these mines really need to take into consideration is doing things more energy efficient now, not in the future, not when we are closing but now. Work on the little things, it's the little things that count; they make big things one day. So any little thing that we can do to help the environment because climate change is here, it's in our face, we need to deal with it now otherwise none of us will be here and its really serious. It's that serious that we could be the last generation to live on this earth and we need to take that into consideration. Even Justin Trudeau brought up that the world needs to learn from Indigenous people because we are still reliant on the land. We may be strong like two people, we live in both worlds, we live in the traditional world and we live in the modern world, but we need to come back and live more in the traditional world then we do in the modern world. I mean, I have said it before, I think post secondary education is very important but I think you need a PhD on the land before you go on and do that. Because when all else fails, the world fails you, what's this document going to prove to the world, nothing really. But if I can start a fire on my own, if I can cut up dry fish on my own, if I can live on my own that's real survival for me. That is a better education. So 4 years ago I went off to post secondary, I quit, I quit the first year because I realized there were still things I needed to learn back home. So I went back home and I learned from my grandma. She passed away last week and she was still teaching me. She was sewing right up until the day she passed away and she was working with hides, and she was putting together gloves. My aunty and my

mom didn't know how to put together gloves so she spent that week teaching them how to put together gloves. That's a real skill I think right there. I would rather take a course on how to put together gloves then to take a course on native studies. I would rather hear the stories while I am learning a new skill.

Charlie Apple, I know Charlie Apple, and he is a really, really kind Elder. I got a chance to work with him and he is right [in the video]: I am kind of embarrassed as a young person, I went to Marion Lake with Louie and he could work way harder than me and he could do things that I couldn't do. What am I going to do if this old man can survive and I can barely survive? He kept me going and he was very encouraging but when Charlie said young people are too distracted by material things, he is right. When Charlie was young it was all about survival and it's like that now but we're lost. We don't know where the caribou are, most young people don't know how to set a net, they don't know how to do a lot of these things. And I'm not saying I am top, that I am number one, but I've taken it upon myself to learn from whoever will teach me. So I have made lots of friends with Elders and I am grateful for that because that's the kind of knowledge I want to grab before they all disappear. We are losing our Elders every day. Like last week there were two elderly women that passed away, my grandma and another lady. That's a lot of knowledge, that's a lot of grandchildren who don't have somebody to turn to. My grandma's message to me before she passed away, she gave me raw sinew before we took off to Edmonton for radiation, and she said put this in your room and keep it good because one day you are going to need it, one day you are going to teach all your babies. I was the only grandchild that took the time to learn from her. Every day of my life, I am so grateful for that.

Joanne Barnaby: Just one last check with Mary, we would love to hear about the program you mentioned just after we broke for lunch. It's very relevant.

Mary Louise Black: I recently took an environmental monitoring course in Fort Smith. Which was a six week course. It's a really short course that you can get hours, when you get up to 100 hours you are a certified monitor. I took another workshop last month where ENR and the Government of Canada sat together to try and pull youth together from all the different communities so they can have their own monitors in our own areas that you were speaking about earlier. So they are working on that and I think they are going to take in 13 youth per summer from each community - which is a lot - and they will teach you until you are able to do it up to Terex standards and then you will be eligible monitors. So that's there, so eventually we'll have more youth being about to

go out and sample our own waters and soils or whatever the community has concerns about. We can get together and go out there and try to answer some of these questions for Elders and people who don't understand just reading the data and all the stuff that comes back.

Joanne Barnaby: Thank you very much. I just had a vision of our youth coming out with the Elders and the youth doing the science portion of the program and with the Elders doing the traditional part of the program. So it will be all Aboriginal people doing the monitoring in the future and that would be wonderful. Especially when those youth are so committed to learning traditional knowledge as well.

Natasha Thorpe: I was just going to follow up with what you were saying about monitoring. We wanted to check with the TK Panel here today about whether the idea of changing the water sampling process that we have been doing up at Lac de Gras makes sense. Just to give you a little more background, the program that we just watched has several different parts to it. One is going out setting nets, collecting the fish, opening then, examining them, and looking at their color, smell, feel, according to science and TK. There are the fisheries biologists as well as the TK holders. And then there is tasting the fish to make sure the fish still tastes right, as it should, as you are used to tasting. Second part is testing the water and the scientists go out and collect water samples, the locations that they select are determined in part by science but also by community members. In August there was a recommendation from participants that next time we should sample on both sides of the island. You know what kind of recommendation is really helpful for planning for the future. Once the water samples are collected they come back to camp and we make tea and people taste the tea to make sure again it's what they expect good tea to taste like and the water is okay. This program was suggested by Elders - by your ancestors - back over 10 years ago and Diavik has generally followed that model. But this year there were questions on whether it made sense to drink tea from the water or whether it just made more sense to drink water by itself without the tea. So we had the discussion yesterday with the Aquatic Effects Monitoring Program participants and asked what they think and…Nancy is going to interject here.

Nancy Kadlun: Even without water or tea testing, which I saw this summer when we did water sampling from underneath the lake. When the lake bottom comes up, we saw all kinds of little bugs and that makes me happy because I know the water is healthy because all those little bugs wouldn't be living if it was

contaminated. They are so tiny and there were lots of kinds I was happy to see that. They are so tiny they couldn't live with the contamination.

Natasha Thorpe: So Nancy that's a wonderful example of how you tell whether the water is good to drink, whether the water is still healthy. The scientists might take that same water and send it to a laboratory and test it for various contaminants, but that's an excellent example of water quality based on Inuit Qaujimajatuqangit (IQ).

Ed Jones: I know you are going to laugh at this but I would test the water not through making tea because I will tell you, the brand of tea will change the taste.

Natasha Thorpe: Ed, you are exactly right and we had this big discussion - do we have Red Rose, do we have herbal, do we have Tetley. So that you know, that's exactly the discussion we had out on the tundra. So I want to bring this up to this group of Elders and experts, when thinking about 3 years from now when we run the program again and three years after that, and we are wondering what you think, should we continue to test the water by tasting it in tea or is there a better way?

Kathy Arden: I think just tasting it as water would be the best thing. I think it was Fred Sangris that said this morning sometimes you can make tea with water and it will leave a scum. So obviously you know that something is wrong with that water. If you drank it, it might even taste a bit off. So water is water whether it's grey, clear, got bugs in it, no bugs in it you'll know when you taste it if it's good water or not. And so I would say do that water test but then after drink your tea, have a cup of tea and use your Tetley tea bag or green tea but I think that's the best way to do the water test.

Natasha Thorpe: What do other people think?

August Enzoe: Tea comes from water. I noticed the lake water and the tap water is different. I make tea from the tap water. It's not like the lake water you make tea. It's a different color, it shows on the cup, it's darker. That's how it is right now. We drink more water, or either tea doesn't matter, coffee because coffee is always black so we don't know.

There is just one thing I would like to say about the movie. It looks good right now but it will be better later next time you see it. Like us, the way we clean the fish, how we did it, you are going to hear us speaking when we are cleaning the fish.

Natasha Thorpe: Thank you August. You reminded me to tell the TK Panel that yesterday we spent the whole morning, stopping and starting the video so that people could make their recommendations on how to change it. Whether they wanted it expanded or altered or changed in anyway. That was a good suggestion of yours August. So I am hearing at least two voices that seem to be okay with changing the way we do things out there to taste just plain water, cold water, as well as boiling it to look for the scum or the slime. Does anybody else have anything, any opinion or thought? We would like your input whether that's something we should change for next time.

Louie Zoe: We were talking about the water before in Rae area, Point Lake. We used to travel there when there was no caribou and we would get water from all the little streams and ponds, we didn't know if the water wasn't good. Now that we are using choppers and prospectors and Elder prospectors and mine people they use the monitoring and all these kinds of equipment there that we know how the water is. They are doing fish tasting and sampling and we had travel quite a ways from Rae. Even I used to travel with my dad with the dog team, use the water, the snow to make tea. The water was good and the snow was good to eat but nowadays all the chemicals people are using and all the fumes and so today there's a lot of variable things that goes on there.

Natasha Thorpe: Thank you for sharing.

Kathy Arden: There was something mentioned earlier about dust coming from the rock pile and of course it's going to land in the lake and I don't know if they test the water. Or if there is a prevalent wind that blows in a certain direction and that dust lands on that part of the lake, if you took a water sample from that portion of the lake that receives more dust and then took that water and either let it sit on the side when you first go there and see if there's any settling of dust on the bottom of the pail or a clean beaker or something like that, or if you boil it is there a difference in the color or the clarity of the water. I don't know if anyone has done any testing like that but I think if my memory serves me that had been mentioned many years ago about the dust in the water. Not just Diavik mine but the other mines, too that are surrounded by small creeks and ponds and other lakes. Probably something like Snap Lake because they are right next to a waterbody there so that's a suggestion that I am thinking of.

Joanne Barnaby: Are there suggestions for – again, as we look into the future, and past the operating phase of Diavik, and once they are closed - are there ideas for what should be monitored and how that can be done after Diavik is gone? Are

people going to be satisfied with Diavik demonstrating that everything's okay or are you going to want to go back and check on it after they are gone?

Bertha Catholique: What I think is that it's got to be monitored even after Diavik is gone. It's got to be Aboriginal people because it's our land. We don't want anything to happen, we don't want just anybody to walk away and leave it. So it's got to be monitored for the next generations, the next generations that are coming. It's got to be ongoing. Because its water it's the only thing that gives life. If we don't have any water we're not going to be here. And already parts of the world, on the other side, the waters all contaminated and this is the last little cup of water that we have that's pristine and how do we watch that doesn't get contaminated. And now with the climate changing, it's warmer. So now if we are going to have to survive I think we are going to be the last Aboriginal people that would survive and it's really scaring me to think like that. So I think its Aboriginal people have to make these strong recommendations. I always remember what Pierre Catholique said, an Elder, when they first made him chief and then they wanted that park to go ahead. At that time they were just picking people, the chiefs and leaders. They'd say, we are going to put a park there and yeah, yeah, yeah…and the parks just went up like that. Then when it came to Łutsel K'e, he said "No" you guys never planned to have a park on my land, it was never planned and all this time you took me and my wife to Ottawa to sign, to get a park going, no he said. I got to wait, us Dene people we don't just jump into something and take it, we think about it, we really analyze it first, so it's like monitoring. So for me that monitoring has to go on forever. That's my strongest recommendation, it's got to go on forever as long as we're the last Aboriginal people in this world.

Natasha Thorpe: Thank you Bertha those are all really important points and I appreciate you emphasizing and raising them.

Another really important question that came up yesterday and also at the camp was once Diavik is closed and into post closure and the water is connected again and not behind a dike, are people going to want to taste the water then? Is that still going to be part of the study? Right now we taste it: you collect water from Lac de Gras and taste it. Are you going to want to continue to do that after Diavik closes? Are you going to want to continue to taste the fish or would you rather just science be the storyteller of how the fish are doing in their tissues and how the water quality is?

Nancy Kadlun: Yeah, it would be good because I don't think Diavik will be the last mine. I am pretty sure that somebody's going to jump in right after Diavik

goes. This is not going to be the last mine in that area. There will be some people jumping right away as soon as they know nobody is there, so we would like to still go there and monitor the area.

Bobby Algona: You read my mind Nancy. I have often said it before who is going to monitor the water and the animals after the mine. I am hearing they will be monitoring it for a period of time until everybody is satisfied that the water and the area is clean for all animals to use again after the mine is closed. I think we need to do a whole lot more and let's think a whole lot more about the things we need to do. These are some really good recommendations, sessions that we go to. We do need to monitor an ongoing program for after the mine is closed, we've already heard that. Until we are satisfied - that is a strong phrase there - until we are satisfied. I think that speaks for itself, after the mine life is done for that mine.

Colleen English: I think those are two really good points. I just have a couple of questions around that. One that I hear you saying is that to be comfortable with the fish quality or the water quality, you would still want to be tasting them. So one of the questions I had was that back in 2009, I remember I was at the camp with a few people - I don't think that anyone here was there then - but one of the Elders who was there, before we got there we'd had a couple of meetings and he was like, "I am not eating this fish. I am not eating it, it's on a lake that has a mine on it and I am not eating it." And so we had said that was okay, and that they could still come to the camp, can still hang out and do whatever you want to do, and we understand it's everybody's choice and you don't have to eat the fish when you come there. So we got there and we did some fishing and we pulled the fish in and we started cutting up the fish and then he saw the fish. And then he tried the fish, because he was comfortable with what he saw, with the discussions that everybody was having and the talks that they had. And I thought that was a really great example of some of the things that you talked about earlier, Bobby, about being a little bit uncomfortable with that lake being reconnected to the pits. Does this program then become that the number one thing that we do is we look at the fish. It's a visual inspection that we are doing before we eat anything. We have the intention of tasting, that option is always there, and we will always have the science people there, but do we make it a multistep process where we want to look, we want to see, we want to be comfortable with what we see, and then we taste if we are comfortable with what we see. So I think that's one of the questions that I would have in terms of that comfort level with everyone, once everything is reconnected again.

The other thing that Nancy brought up in a roundabout way that I think is an important question, too, is right now, for example, we have the Ekati mine that is very close to Diavik and they're going through permitting for Jay Pipe at the moment. That is upstream of Lac de Gras, in Lac du Sauvage. It's not far, it's a few kilometers, so do we start saying that we want to test fish from Lac de Sauvage? August mentioned expanding the area within Lac de Gras a little bit. Does the Narrows become a more important site to get fish from every time we go to that camp? So do we add that to the list of the places we want to go, and the fish that we want to test and taste? I think those are two really important questions that you guys touched on in your comments.

Joanne Barnaby: I just wanted to mention that in fact at this last camp we failed to follow through and understand Madeline when she would look at the fish and discard a fish. She would say, 'no, I don't want to work with that one' and what we didn't do, and should have done, was question her as to why she rejected a fish. So I think that's something that we definitely need to pay attention to and address if it happens again.

So are people comfortable with identifying areas that you want to sample water from and to take fish from?

August Enzoe: Yeah I mentioned down there, there is one place there, they call it the gap [the Narrows], it's a caribou route right across there. We should sample fish there. We didn't go this year because of the weather. Take samples of the water because the reason I am saying this is there's another big mine going way up there, Jay Pipe you call it, and they are going to build a big dam around it, bigger than the other ones you see. They are going to start work in probably another 5 years. Before that we have to watch that lake, the gap there; they should have a station there.

Natasha Thorpe: August do you mean the narrows between Las de Sauvage and Lac de Gras. [nodding yes] Colleen, do you want to speak to the current monitoring?

Colleen English: We will go over this a bit tomorrow too but this is a good map to try to explain some of those concerns. [Figure 2 and 3]. We have a water quality site at the base of the Narrows and then we basically sweep our way across the lake. This is the outflow that heads to Kugluktuk so there is a sample point that's at the outflow of Lac de Gras as well. Once you get past there it gets complicated, as Diavik is not the only one out there. There are other exploration groups, there's other mines and so you start having a river system with a lot of different natural and human inputs and it becomes very difficult to

distinguish what might be Diavik's and what might be somebody else's. So that's the reason for this sample location. And, right now, Ekati actually has some outflow up here, too, but that last point of control is the main reason for that sample location. So that's where Diavik can last check, at the outflow from Lac de Gras, that Lac de Gras water is okay before it goes into the Coppermine River. And it's not just water that they sample. Nancy, Bobby and Berna you guys came out with us. There were a few people at the camp this summer who came water quality sampling with us and saw everything Diavik does when they go out there. Its taking sediments, its taking the bugs off the bottom of the lake, it's the water itself, it's the bugs that float in the water, it's the fish, it's a very extensive program for testing all different kinds of things that could be happening in the lake.

Natasha Thorpe: In the future I am wondering where you might consider testing water. Same places or different places?

Bobby Algona: Water sampling the very first time, we all said as a group we all agreed on a place that we wanted to test each and every time we went. And it didn't happen this time for some of the places that we wanted to sample because of weather. We couldn't get around to the other side of the island itself. In my mind I think it would be a good idea to sample every time we go out there. We had to change our sampling place. We sampled a place a few years ago, we wanted to keep sampling from that same spot, and in my mind the water is always moving especially in the big lakes. In my mind it doesn't really matter where we sample from, the water is moving all around the lake. I think it would be a good idea if we sample and we agree in this workshop let's do it in that one spot we didn't do this time. Because the water is always moving and the pressure itself is, the tides and the moon do a lot to move water.

Colleen English: I wanted to follow up with everybody and show everybody where the samples that they took at the camp site were. In 2012, of the two samples they were taking, one was taken at the discharge line and the second was over in the bay where Diavik takes in drinking water for the camp. This year we had some weather issues and so we took them where the fish nets were set.

Joanne Barnaby: So we have been talking about whether or not there are changes we want to make to the program and a lot of people have said they are okay with sampling water, boiling it without making tea or coffee out of it. So I just wanted to check in.

August Enzoe: Testing water we could still boil it, but don't make tea. Let it sit over night then taste it.

Joanne Barnaby: Would you want to taste some before its boiled and then taste it after its boiled?

August Enzoe: You would still have to taste it before its boiled but also boil it and check it the next day.

Joanne Barnaby: How do other people feel about that approach? Good? I think we have a consensus on doing that next time. Show your hands please.

Phoebe Rabesca: I don't know, I am new at this and so I am not sure if this was done before, but have they ever tested the water before its boiled? Do they do sampling of water before its boiled and after it's boiled? And what's the result of that?

Natasha Thorpe: Do you mean to taste or scientific testing?

Phoebe Rabesca: Scientific testing.

Colleen English: We don't do science samples on boiled water; it's only just the cold water out of the lake. There's a way that you can analyze water to look at the dissolved chemicals in it, which is kind of the same idea as if you were to use boiled water and get rid of some of the total particulates and stuff in there. They do that through an extraction method in the lab. Its called 'digesting' and they put it through a microwave digester and then it removes the floating, suspended 'total' particles and just gives you the dissolved fraction. So it's kind of a similar method as boiling to break out those two types of metals that you would be concerned about, the totals and dissolved. That's the closest thing they can do to boiling.

Natasha Thorpe: Boiling water would kill some of the things they were looking for, like the bugs which Nancy said is an indicator of healthy water.

Phoebe Rabesca: The chemicals in the water and I'm not sure, I'm not a scientist, my mind is going, when you take a sample of water and they do testing on it, do you know what kind of chemicals is in it and all that? Let's say in one spot you take water and you take two samples: one just regular water to see what kind of chemicals are in there, and then what if after you boil the water from the same spot to see before and after, is there any difference, regarding chemicals or anything?

Colleen English: Boiling water does change water. Diavik wouldn't have any samples from the mine on boiled water, because they don't boil their samples, but they do a very thorough analysis, in a different way, that get at the same questions, like what I was talking about before.

Phoebe Rabesca: So what you are saying is the water is not boiled but it would show more stuff in that when you look at it.

Colleen English: Yes, it's just looking at it in a different way.

Natasha Thorpe: Alright I can see that we are ready for a break. We have fresh coffee and hot water and snacks there.

Break

Colleen English: So we had one last question in relation to this fish and water camp and it comes down to more logistics. This is about where the camp currently is and what the future plans for the camp may be. The current location of the camp is separate from Diavik so it's on the other side of the lake, the south side of Lac de Gras. It's on a land use permit area, so Diavik has a completely separate land use permit for the camp. That land use permit is going to expire within the next year or two, so there needs to be a decision made as to whether Diavik should re-apply for a land use permit, which would give us another 5 years at that current site, or we can talk about changing the location of the camp. It's not wide open. If any changes were made, it would be to scale back, as opposed to a change a location. Diavik doesn't want to go and make a new foot print for a camp somewhere, they would rather just move it onto the mine site. So it would be on East Island as opposed to being out on the land. Those are basically the two options: do we keep the camp where it's at, even if it's just for a few more years (up to about 5), or do we move to the mine site? I would say, this is just my gut instinct as I don't think anyone at Diavik has ever confirmed this, but that we would have a maximum of 5 years at the current location and then that would kind of be it, because they would be starting to close and shrink their overall foot print by that time. They wouldn't want to be holding on to another land use permit for a place where they would need to go clean up and remove everything.

Joanne Barnaby: If the renewal is scheduled for next year, would we have use of the current camp two more times?

Colleen English: No, it would be one more time and then they'd be near the end of the permit.

One of the things that I thought of in terms of the future, in my view, I think 2018 is realistic. I would probably want to keep the camp where it is for the next time, 2018. After that, the mine site is going to get a lot quieter so the mine won't be as busy. You aren't going to have all of the people that are there now and all of the equipment; it's going to be a lot quieter in 2021 as they approach closure. I think that there's been a lot of discussion we have had in this Panel around healing the land at the mine site and I think that there could be some pretty cool opportunities to do that if we used the mine site as a base and maybe had a tent, a gathering tent set up somewhere sort of onsite, but in a nice quiet area where there is some natural tundra that's a little away from the buildings. So you can still go out and you can still fish and you can still go take water samples and stay at the mine and then use this tent as the meeting place, gathering place, where you would cut your fish, where you would do all of that. But you can also be on the land at the mine site to get a better feel for how things are changing, because they will be changing a lot at that point in time. And we have had a lot of feedback saying that people at the camp also want to see the mine site. The camp can change, the camp can evolve. It can move location, but it's really a choice between where it is now or being based on site.

Joanne Barnaby: Thoughts on the location and whether we should recommend staying at the current camp for the next time or moving before then?

Ed Jones: Colleen mentioned there are quiet areas on that island, I don't believe that. First of all why move? That's my question.

Joanne Barnaby: As Colleen explained, they won't have a land use permit for where the camp is currently. After a certain amount of time, it will expire. If they don't have a land use permit, yes they have to move. Yes they can renew but, as she explained, if they did renew next year, it gives them 5 more years. But after that Colleen doesn't think that Diavik will be interested in renewing again because they will be focused on closure and taking things away. Are you suggesting that you want them to renew again after the next renewal, so for another 10 years, they would have that camp? If that's the case are you also asking them to leave all of the buildings and tent frames and such? If they don't have a land use permit that stuff has to be moved. Any other thoughts on this.

Bobby Algona: The land use permit for that camp expires and if you do get to where you have to move equipment, these tents and stoves and stuff that you have

there, I think if we could. Each group here would like to say a few things maybe. I myself as a hunter and trapper I have often come to Lac de Gras and if there's a way that the communities can say we would like to keep those tent frames there at least. They aren't going to go rotten, they can leave those tent frames there, they are still fairly new and can be use by the different communities for another 20 years from now. I think it would be a good recommendation to Diavik.

Joanne Barnaby: So the option of selling the tents to the communities at say $1 each. What would that mean in terms of land use permits because community people don't need land use permits to set up on the land camps.

Colleen English: Yeah and I think one of the challenges is that Diavik does need a permit and to get out of the land use permit we need to clean it up. So it would either have to be something that we explore outside of the box with the government where it's a sign off, the communities would rather keep it here as oppose to it being cleaned up and then someone coming back in to re-establish in the same area. So that would have to be flagged pretty early on for a discussion with them. The other option is to dismantle the camp where it is and give all of those materials to everybody and you can set up wherever you want after that. Then Diavik gets that close off piece with the land use permit and liability, and you guys get the gear and equipment and can set up a camp wherever you want to be.

Bobby Algona: As an elder and as a hunter trapper all my life, I think I would like to use the camp in the future. Maybe if my health were to come back I would like to go up there again and I think that's something. If you are going to lose that land use permit anyway I think handing it off to a community or maybe an organization or maybe to all the communities around the table we could use those in the future. I have no qualms about leaving such good lumber there. I could always use that as camp, instead of having to move it away.

Colleen English: Yeah I know for the government it always comes back to how long is that going to sit there, are people just going to leave it and forget about it and walk away. That's the big concern and if it's got the Diavik name on it, you can bet that they are concerned about it may come back to them later. Something would need to be signed off somehow.

Natasha Thorpe: Do you know how the original camp location was selected?

Colleen English: It was done back in 2002 with support of the communities but I don't know the exact process. I know everybody sat down with a map and picked a spot and it had to be close enough that Diavik could support it but quiet enough to have some space away from the mine and have a camp feel.

Natasha Thorpe: I think that's important to know that there was community input in the beginning in selecting the location.

So for 2018 what would the TK Panel like to recommend? Staying where the camp is, or move to the island.

Bertha Catholique: I don't want to move away because there are a lot of cloud berries there.

Natasha Thorpe: We were lucky this year to see a bear and a wolf. Lots of ground squirrels. Is there agreement to keep it where it is or do we want to think about moving?

Keep it where it is: Yes, majority.

We are going to switch channels here to talk about the recommendations that you as the Panel delivered to Diavik at our last session when we were at camp.

Presentation – DDMI Response to Session 7 Recommendations (Appendix G)

Colleen English: Very early on we got a lot of feedback that you wanted to hear back on your recommendations. So that is what this is. One of the commitments that we made very early on was to respond to every recommendation that the Panel brings forward to Diavik. Usually, at the end of every session, you guys will present to Diavik, and Diavik will give an initial response, a best guess of their initial take on things. But then they also take it away and have some time to think about it and figure out what works and what doesn't in relation to the closure plan, or whatever topic we are discussing. Then, someone presents the official responses from the last session at the beginning of the next session. So that's what we want to do today. Last time we talked about plants and re-vegetation, re-planting at the mine site and trying to rejuvenate the land after the mine is done. So today I am going to walk through some of those recommendations and give you the response from Diavik. If there are any questions I can't answer we will park those and make sure that Gord answers those when he comes back tomorrow.

1. Those [recommendations] that are supported (16 recommendations)

Kathy Arden: Before Diavik started mining on the island did they have a group of environmentalists that went on there and took pictures and samples of the vegetation? And then do sort of a mapping of it? Because on there you said studying the vegetation on the north and east side of the island. And I am sure the vegetation in those areas would run throughout the island. But if I remember correctly, many years ago, like in 1998 when all the mines were starting up, they had asked the mines to start taking samples of the vegetation right away. So they have done that?

Colleen English: Yes, and there are two sides to that question, from a TK perspective and from a science perspective. From a science perspective we've got all that. We have the vegetation based maps that show us exactly what types of vegetation are present all around the area. And Diavik has done studies since day 1 about what types of vegetation have been seen, is it growing faster, are species changing? Those are all questions from the science perspective that have been looked at. And also dust on vegetation, particularly lichen in relation to caribou. That's been another study that has been done in relation to plants. On the TK side of things, Natasha and Joanne probably want to speak to that from your literature review. I don't know which one of you wants to speak.

Joanne Barnaby: Let me just say that what struck me about that work was how well our TK holders in our communities knew that area. You know the full variety of plants that they identified, in some cases they identified how they were used for food or medicine or for fire. And what they knew was critical vegetation for animals and in particular the caribou and what they knew about how long it takes that vegetation to grow once it's disturbed. So it was very rich information and its there, it's available to us.

Kathy Arden: With that in mind, you have a length of time that this vegetation would take to come back on that mine site. So it might be 10 years before the lichen would come back. Because I was just thinking that we (the TK Panel) and Diavik are going to make the paths back for the caribou to roam through but the mine is going to be done and gone but not much of the vegetation is going to be there yet to eat. So I guess what you are thinking of is that they will probably pass through and go to areas where they can feed because I don't know how long it would take them to go through the site.

Colleen English: Yeah it doesn't take any time, it's a pretty small site. But one of the things that a couple people raised that I found really interesting, Joanne and I were talking about it after our site visit last time, is we have vegetation plots, a research plot that was 10 years old when we were there last. It has big, tall grasses on it. But its grasses, so a lot of people were like, 'well that's different, that doesn't look like the tundra that is all around'. It was really important for people to see that, because it's a staged approach.

Even when you plant and you encourage growth for different species, the first type of plant that can take to anywhere is either fireweed, as August observed, or grasses. Then those grasses die and you start getting some nutrients in the soil and that's when you start to see your willows and your berries and those types of things coming up. So those will be even longer before you are going to see that type of change to similar to a truly natural landscape. So you may see swaying grasses on the tundra for a little bit before you are going to start to see what looks natural to your eyes, for those who are used to being on that land.

Nancy Kadlun: I was wondering what are you going to do with all those huge buildings?

Colleen English: The buildings will come down. What happens to them will depend on the state of the building, if it's in good condition. We have done some studies but will probably have to re-evaluate this as we get closer to closure in terms of which ones have value to keep using or sell or donate. Those that don't will be buried in the on-site landfill.

2. Those that Diavik wants to modify (5 recommendations)

Joanne Barnaby: One of the things that we found in the literature review was you could really see the specialized knowledge of the women, and it was quite different from the knowledge that men had. So that's why we wanted the specific women's session, so that we didn't miss the deeper knowledge that women have about plants. And I haven't given up pushing for that one for the vegetation, because we don't want to miss out on their knowledge.

Joanne Barnaby: So you are saying the Panel could meet three times a year?

Colleen English: It could be 1, 2, 3 times a year, but based on the information that can be shared and what is relevant at the time. Especially when a large part of the Panel's focus is on closure and there's aspects to the closure plan that Diavik doesn't even have all the right information yet. They are still doing research in order to know what that closure plan piece is going to look like. So to have a discussion before they know that is sort of futile. They can't share enough information with you so it puts the Panel in a tough position to be able to make useful recommendations back to them as well. So we just want to make sure that it's relevant.

Natasha Thorpe: So I just want to check in with the TK Panel to summarize that the slide that Colleen showed you before, these are all the recommendations that came from you last time that have been supported. Then there are these ones that they would like to modify. They are not saying no but they would like something slightly different. So

based on what Colleen has just shared, I want to check in with the Panel to see if there is a response or comment on these 4 that they are wanting to revise.

Kathy Arden: Earlier when we were talking about the PKC pit, I haven't seen it but I have a picture in my head that it's something very eerie and scary and green and stuff like that. And like you were showing us on the map that sort of natural barrier between the rock pile and the slope that goes down into PKC. What is preventing the caribou, if they decided to migrate lower and come across, is there something blocking it all the way around that PKC pit or are you just more concerned that they are going to actually cross over this nice little walk way we are going to make them. I mean caribou change their mind and have gone different directions over the years for various reasons of course, but what about the bottom end.

Colleen English: Yes that's a good question. There is a very big dam, very tall, that goes all the way around the PKC.

Kathy Arden: So now I can see why your concerned and your concentration is on that rock pile and the barrier there, because it's not as high.

Colleen English: Right so it's easier for them to get down.

Natasha Thorpe: I want to add that it's really tough to come in to the TK Panel because we have been going a few years and you also weren't at the last session. Not just you, but we have some members that are not here all the time and we are so excited that there are new members, especially more female representation, which is what you recommended as a panel before. If anybody is interested in reviewing, taking home with them previous Panel reports, these recommendations, I think it will all make a little bit more sense and I am thinking Phoebe for you, too. Because it's really tough to be parachuted into a process so thank you all.

The other thing I wanted to mention is that Colleen is presenting and it's a lot of words and thank you for being patient. This is just what you came up with last time so just to give you an idea, this is how hard you are working and how many recommendations came out. There were 22 or 23 recommendations from last time and we will probably add the same number around that on Friday after we figure out all the comments you have made today, tomorrow. So this is the 8th session of the TK Panel so we have 8 sessions times 10, 20, 30 recommendations and they are all in a huge table. It shows here is the recommendation, here is how Diavik is responding and here's the action. This was something that I got involved in when I started working for this TK Panel. I advised Diavik, I said people need to know exactly where their recommendations are leading to action. You make these recommendations and then sometimes in other

situations you don't hear back and it's frustrating. So this is an example of you hearing back how Diavik is responding to your recommendations. You have made over 100 recommendations at this point.

This is you hearing back from Diavik about your recommendations.

3. Those that are unsupported (2 recommendations)

Ed Jones: I just want to remind you that human waste is used as a fertilizer in China and they have been using it for years and I believe that is what keeps them slim.

Nancy Kadlun: I don't think that we will need seeds because it will do it itself.

Colleen English: There has been a lot of discussion around people thinking that the land will do it itself. August was saying that he really noticed when we went through the mine site to camp this summer. He noticed that there was fireweed everywhere, growing on the sides of the rock piles, growing beside the roads. Mary Rose Sundburg said it best, that nature will heal itself but it is a big scar that has been put on to the land. So for nature to heal itself, it would take a lot more effort than it normally would. So if we can help and we can try to encourage that growth then that may be a good thing in this case.

Joanne Barnaby: I just want to make a suggestion that we visit the treated sewage area next time so that maybe you all know better what it is and maybe you will feel better about it. You know our people used nature in the past always without even treating sewer and a lot of times that sewer that we produced, human waste that we produced, went into the water ways and nature healed it and kept out waters clean and we do have experience with that.

Bobby Algona: I would like to remind you again, I have said this one time before, when we want to reclaim and replenish the mine site and get the prospective on how to do that we should go and see old camp sites nearby. There was a lot of human activity in those camp sites and they haven't been used in many years because people long ago found one spot that they could use which had a lot of human activity because of a lot of animals around and plant life and the animals around the area. And just a couple of years ago Ekati went up to my camp on their caribou surveys and they landed on my campsite and they told me and showed me pictures of my camp and all the grass and everything is all over my camp now. I think if we are going to reclaim and replenish I think we need to go visit my camp to get a perspective on how we can reclaim the mine site. As a TK holder I see this all the time. I find old camp sites on my travels. I don't know who's ones they are and if its' my people, the Dene people and it looks

like the explorers from the past. And those grasses and shrubs have really grown fast in those areas.

Natasha Thorpe: I have added that as a recommendation. I don't want to put you on the spot Lucas but we do have someone around the table with quite a bit of experience with vegetation. Lucas has worked on a mine site before in a vegetation program. Are there any words of wisdom you have for us?

Lucas Enzoe: I did work at Ekati Diamond Mine replenishing and seeding, and testing the Canadian geese, that go up there and feed on the grass and test if it's okay to eat. We test the soil. It does have chemicals in there but it's not too much, so it's not harmful. But it's actually growing.

Natasha Thorpe: So do you think moving these tundra mats might work?

Lucas Enzoe: You don't need the tundra mats you just need to give it time and it does work.

Natasha Thorpe: Thank you Lucas. Any other questions and comments?

Louie Zoe: You're talking about things that will be important that the country rock that is up really high. I don't think the animals can climb up high, they can lower it down so animals can go up other rocks and further down this side. They are going to be making another rock pile in the process of making the new dike. We once told Diavik the rocks piled up like that is too high for the animal.

Natasha Thorpe: So we will put that down again as a concern. Can I put that down as something we can talk about with Gord when he comes back? So thank you very much. I know that everybody is tired, so let's call it a day. If we can meet here, we would like to get started about 8:30 a.m., if that works for you guys? And tomorrow we've got Diavik going through a presentation about monitoring water quality right on East Island. So before you go home or to the hotel we are going to be talking tomorrow about monitoring water quality on site, and putting together some recommendations. And in the afternoon, that's when we will be hearing from both Diavik and DFO and focusing on shorelines and fish habitat, and making recommendations.

Louie Zoe: I had mentioned in the past that the sewage is being treated and with the PKC are the putting that back into the lake? This is an additional question.

Natasha Thorpe: He was asking earlier and suggesting that the height of the Rock Pile is too high for animals.

Gord Macdonald: I can't answer the question if it's too high for caribou or not - you would probably know a lot more about that than me. So it is as high as it is. It's not going to be any bigger, but it also is not going to be any smaller. It will be capped. So when A21 rock comes out, that rock is going to go somewhere in here [southwest side of Island, on Figure 1]. I haven't decided exactly how or where yet, and it is something that I think we talked about at the last Panel session. Do we make it large and flat or smaller and higher? Those are the options that we have, so those are decisions you can help us with. Because once we put it out there, whichever way we build it is the way it will be forever. Other than what we will used to cover the north country rock pile, all the rock [from A21] is going down here.

I think you asked a question about whether the sewage is treated.

Colleen English: Does the PKC go to the lake and is the sewage treated?

Gord Macdonald: The liquid sewage is treated and it goes into here [PKC], and if there is too much water in here [PKC] we send it to the north inlet to be treated before it goes back into the lake.

Colleen English: That's the sewage water, then there are the solids too.

Gord Macdonald: Then the solids come out and right now a lot of them are being placed up on this till pile. We saw that when we were doing the re-vegetation session. We've got options, but we would like to be able to use it as part of the re-vegetation process. I know there were some concerns from this group about using that for re-vegetation. Any other questions?

Joanne Barnaby: I think everybody is tired, we have absorbed a lot today. If you can think about what Diavik said and if you have any other comments bring them in the morning.

Louie Zoe: Closing prayer

Appendix D

Diavik Diamond Mines TK Panel Session #8 - Water Monitoring & Fish Habitat

Thursday December 3rd, 2015

Nancy Kadlun: Opening prayer

Joanne Barnaby: So when we finished off yesterday we were focused on Diavik's response to your recommendations from the last session on plants and re-vegetation. Everyone was tired and we agreed to come back to it this morning and give you a chance to comment on it, especially if you had any questions to Diavik about any of the recommendations that they don't support. So just to remind you, I believe there are 2. This first one was in relation to the use of tundra mats to re-vegetate certain areas. Colleen explained that the timing was really challenging to do this and they don't see that it can be done. They have tried and it didn't work.

The second one was the use of treated human sewage as fertilizer. If you remember, some Panel members were uncomfortable with using human waste as fertilizer and Diavik feels that it's a very effective fertilizer and it's there, its treated and its safe for use.

In terms of recommendations they would modify, there were 4. The one recommendation related to using the small crushed rock similar to what's on the air strip. Diavik explained that a very specific crusher was brought in specifically to construct the air strip to produce that really fine rock and it would not be feasible to bring that back. They feel that it's not necessary, that the test slope that we saw seemed to be satisfactory to the Panel and it would be at that level of crush.

The idea of creating a barrier between the rock pile and the PKC slime area, there's still a need to explore options there on how to do that.

And the idea of having a special women's session on vegetation, their preference is to incorporate women into all the meetings and not have a special session.

Also in terms of meetings per year they are basically saying they would rather approach it on an as needed basis so that's if there's something that needs to be addressed in terms of planning for closure that needs some direction they would rather approach it that way.

Any comments on the recommendations that they suggest either modifying or rejecting?

Janelle Nitsiza: Good morning. The third modification incorporating women in the vegetation. I think it's actually more important if we do have our own women's sessions. I mean I don't have to be incorporated but I would love the opportunity

because we could use that time for Elderly women to teach about traditional vegetation, like how to collect moss and what's good for this and what's good for that. I know my grandma taught me lots just from around our area and it would be interesting to see what's growing in the Lac de Gras area. I know a long time ago when they had meetings the men went, it was mostly men who were incorporated and they got to see the caribou stuff and all the things that affect the caribou. But women use the land and we need to see it ourselves and we need to learn because not many Elderly women are around now, so I would be very grateful just to see what the vegetation is like there and just to see what we can do to help, from both sides, the scientific side and the traditional side.

Joanne Barnaby: Any other comments?

Bobby Algona: When we look at the fine crush rock I agree that we don't really need that really fine crushed rock. When we go to the mine you see lots of crushed rock all over the camp site itself, you see them under the culverts or the pipeline, the water line. You see growth underneath the buildings as well and near the water pipelines especially. There was this one person that we were working with, he was wondering, we did not put any additives to any crush rock. I told him when you crush rock there are ingredients in that rock sometimes, it's not always acidic or anything that can really deter plant life. Sometimes you see that on the water pipelines. There are natural ingredients in that crushed rock as well. It all comes from the rock, you see all the plant life on the tundra, that all comes from the rock.

Joanne Barnaby: Any questions or comments about any of the responses from Diavik?

Natasha Thorpe: I am just going to speak to the Women's session on vegetation. During the Aquatic Effects Monitoring Traditional Knowledge program when we are out at the camp there was some work that we did with the vegetation, particularly with the women. But we also had some of the men comment that they would rather more fish related lessons be taught at the camp than vegetation related. So I think the idea with this if I am remembering is that it was sort of something that would happen once, not on a regular basis, but that it would capture the specific knowledge of women.

Ed Jones: I just want to say that I don't know why they keep harping on this re-vegetation thing because I have said many times that you can allow nature to take its course, they don't need to do that. You take the risk of introducing something that shouldn't be there. You can allow nature to take its course and there is no danger in that. If you are introducing new plants they could be harmful. I think it's a

waste of time talking about this, should we or should we not re-vegetate, but it doesn't seem to get through that you can allow nature to take its course and there is no danger in that.

Joanne Barnaby: Just to be clear Ed, everyone is in agreement that no new plants will be introduced. It would only be local plants.

Kathy Arden: I think I had asked yesterday and I fail to remember what the answer was, has someone from Diavik already done a collection of seeds in that area or are they waiting until closure?

Colleen English: They do have the University of Alberta that is on site and doing re-vegetation research. As part of that work they are also collecting seeds and shrubs. Diavik has also tried to source northern seed supplies, one example is Aurora Resource Institute. Two summers ago they did a NWT wide seed collection program and we've sourced seed from them. There's also a supplier in the Yukon that have NWT species, so we also source from them. Between those three that's where we get all of our seed from for the programs that we are doing.

Joanne Barnaby: No other questions or comments?

Bobby Algona: That fourth one that the TK Panel meet two times per year? Why was that not accepted? Is it for once per year or three times per year?

Gord Macdonald: Its not that it wasn't accepted. We said we shouldn't fix the number of sessions, it should be based on what is needed to be done.

Joanne Barnaby: Okay, last chance for comments or questions.

Kathy Arden: Forgive me for harping on the seed thing but going to the women's session on vegetation and the identity of the plants in the Diavik mine site area. It's been commented that women have used plants for medicine to treat their families and even consume so I think that a women's session on vegetation using the identity of plants in that area would good because then they, those people that are knowledgeable in the consumption or use of those plants for medicine, would be good. Then we could ensure that those plants manage to re-grow in that area so that in the future our youth who will learn the use of these plants would be able to go there and use them and consume them and know what they are for. So perhaps a women's session with lady Elders that know of these plants would be a good thing because then it would be ensured that these plants have come back in that area. I know Eddie has mentioned that we are always talking about re-vegetation

and let nature takes its course and I am sure it will, but identifying those plants and making sure they come back would be good.

Joanne Barnaby: Any other comments or questions?

Louie Zoe: Yesterday talking about plants and vegetation is a very important question and the plan and the gravel that we talked about. I am concerned about the height of the waste rock pile and then the big boulders and think maybe we would try to reduce the size of it and then eventually, but it's hard to know how long, for the vegetation to come back. It's going to take years for sure, none the less if you had some fine dirt scattered all over on top maybe that way the wind would take over and nature would take its course.

Dora Migwi: Taking the vegetation back and the re-growth is very important because it's seasonal and every spring I guess when all the plants that come back to life and all the shrubs are all out there. I agree that we should just leave it up to nature to take its course. The animals really depending on it and we don't have to put new species of plants in there that maybe the animals that are using the land might change their diet. It will change the whole landscape. It looks grey brown because everything is dried up and leave it up to nature to run its course.

Joanne Barnaby: Any other questions or comments?

August Enzoe: Good morning this program we are working on I have been working on this for 3 years now. We work on it for three years what should be done and what should not be done. And I was looking at it and it looks pretty good. The rock pile we want them to make it level so the caribou could come back and be able to go on top of it. And for other things we did a lot of talk about what should be done but now the mine is going to be going another 5 or 6 years again so what we are doing now is for the future of the mine. Mother Nature will do her part with the flowers and stuff.

Short story. Rush River way back in the 1920's there was a lot of people living there, a school everything, church, Hudson Bay. 1960 it closed and everyone moved out. And I was there after 10 years and all the houses were gone and the land was really growing again. I used to travel around there and it was really growing back, everything is growing even where the houses were.

What's going on with the Jello, or slimes?

Gord Macdonald: We call it slimes but I think we should change it to jello, it would be a good idea. Since the last time we talked, we said we would get back to you and

we will do that tomorrow about them. Pails of the stuff went to the University to have toxicity testing done on it. Nothing has changed in terms of what we are going to do with it.

Joanne Barnaby: Ed you wanted to say something.

Ed Jones: I just want to mention that we do a lot of talking about what the mines are doing, environmental damage, but you know this is not the time for me to say it but I am going to. The biggest threat to our environment is the Tar Sands at Fort MacMurray. I don't hear our government representatives talking about it or even the average Yellowknifer. They tend to ignore that, why I don't really understand. Fort Chipewyan and Fort Mackay have shut their mouths, they don't criticize the Tar Sands anymore, I suspect because they have been paid under the table and I am wondering if our government is also being paid under the table to keep their mouth shut. I know this is not the time or place, but I just want to remind people the biggest threat is not the diamond mines, but the tar sands.

Joanne Barnaby: Thank you Ed. No more questions then we should move on. I believe Gord has a presentation.

Presentation - Post-Closure Water Management and Water Quality Monitoring (Appendix H)

Questions from Diavik

1. What areas would you want to sample and why? (eg. Migration routes, caribou crossings, ponds, etc.)
2. Would you want to do any type of TK monitoring of water quality on the island?
3. Are there features that would help clean/heal water draining from the land?

Fred Sangris: I know when they operate the mines the rocks are stockpiles and the most harmful rocks are normally stockpiled somewhere else. Can you tell us where the harmful country rocks are? And what's in the surrounding area?

Gord Macdonald: The more harmful type rocks, they are what we call type 3 rocks, and they are located in the middle, the core, of the North Country Rock Pile. So we put it in the middle of the North Country Rock Pile and it is sitting over top of the old quarry that was initially dug to build the dikes. So it's in the heart of this pile and the plan we have for that is to put a cap on the top of it that is made up of a layer of till, some gravel and a layer of rock. The idea is that it's going to make a cap over top of it to keep the core of the pile frozen so that, as much as possible, we

can keep that type 3 rock away from any snow melt or rain fall. So the design is to have everything run off of it, not in to it.

Mike Francis: The big pile of waste rock. Once the closure of the mine are they going to put it somewhere else? Or put in the open pit? I am concerned for the waste rock once the closure of the mine and that water.

Gord Macdonald: I think that there was a question about whether the rock is going to stay here and the answer is it is going to stay here. It's not going anywhere. We are using the good rock for on-going construction, type 1 rock. The Type 3 rock, the bad rock, is in the place it is intended to be.

Bobby Algona: As you I know we are in the heart of global warming and everything is melting all around us and hunters are finding these sink holes out on the tundra and especially around these esker areas and where there's a lot of permafrost, its melting. When you talk about that harmful rock and you want to put a cap on it and you think it's going to stay frozen. I am thinking how is that going to happen when everything is melting. It's eventually going to melt if global warming doesn't stop what it's doing now. It's not going to stay frozen with all the global warming going on.

Gord Macdonald: That's a very good question Bobby and that is exactly why we are doing this the way we are.

This is a picture of the rock pile and all of this would be frozen, but every year in the summer and you get a depth of thaw, about 1.5 meters of annual thaw in the ground. The thaw back on the rock pile is 15-20 meters every year. Global warming would likely increase that, if we left it the way it is today.

Natasha Thorpe: The math geniuses would play around with a few different cases, like if climate change went really crazy. What if it was small, what if it was somewhere in the middle, where would that thaw go?

Gord Macdonald: There are a range of scenarios looking at the paper these days about what's going on in Paris. There's a whole range of views that people have about what the world is but just like in any other engineering communities, the regulatory communities come up with reasonable scenarios and they ask every development, particularly developments in the North, to evaluate your designs against those global warming scenarios. So that is exactly what we have done is to evaluate all of our engineering, even back when we were doing the mine design, all of the engineering was done with global warming scenarios. The scenarios have changed plus or minus but when the average temperature at site is still like -

11C, you'd have to go 11 degrees of average temperature before you'd end up in a thawed environment. But regardless, global warming is not working in our favor for the mine site. So we want to make the rock pile act like the ground with regards to the annual thaw back. And the difference between what happens on the ground and what happens in the pile is that this [pile] is all big rocks with big air spaces in between, so the thaw can move faster down the column. What happens in here [ground] is its more compacted, it's more solid, so the annual thaw back is less. So the way we are doing this is to add 1 meter of the till [lake bottom material] out of the new pit and put it on to the rock pile. Then we top that with a 3 meter thick layer of rock, which will protect the till from thawing. So even with the annual thaw back, it [type 3 rock] still stays in the frozen zone.

This isn't something that we are going to do in 2023 or 2025. This is something that we actually have to start next year; we have to start re-sloping this pile because 2018 is when we will start mining A21 and we want to bring that material straight out of A21 and put it straight onto this pile so that we can start this process of developing this cap.

And I say all that because, in order to do this, next year we come back to the Panel with what we have been working on for the shape and the slope and caribou access on the North Country Rock Pile. It is because we have to make these decisions about what that final slope is going to look like next year, so that we can have it set and we can start building on top of it. Because what we don't want to do is build this cap on top of it and then, you know, have the Panel come back and say, you know, we would really like a caribou ramp over here. That gets a lot harder then.

Natasha Thorpe: Are there any more questions for Gord?

Fred Sangris: Here in Yellowknife, about the last 30 years, over the last many years we don't get a lot of rain. Have you been monitoring the rain season? Has the rainy season been diminishing or have you been getting more rain?

Gord Macdonald: It seems to come in more storms. So we have been getting the same amount, more or less, every year. We have had a couple of dry years but the storms seem to be bigger. The global warming prediction for the North is more rain, which we haven't seen yet, but that's what all our scenarios are designed for.

Fred Sangris: Is the rain going to help or is it going to be a problem?

Gord Macdonald: It's harder not so much for this, but for the PKC where it's a pond and so we have to design to those higher volumes. We can design to it properly but the

bigger problem is if we didn't see rain. Then those slimes on the bottom end up getting exposed. Dry would be good for the North Country Rock Pile, not so good for the PKC.

Natasha Thorpe: Thank you Gord I think that gives us a good start to our discussions. We have three questions to think about.

1. What areas would you want to sample and why? (eg. Migration routes, caribou crossings, ponds, etc.)
2. Would you want to do any type of TK monitoring of WQ on the island?
3. Are there features that would help clean/heal water draining from the land?

Louie Zoe: Definitely I think the mining company wanted to work with the Elders and now that we have that component in there I would like to help the best possible way. The Elders are concerned mostly about the land, the wildlife. Another concern is the way the company is looking at putting the waste rock back in the pit. As far as the filling it back up with water, I think the open pit will be cleaned out with the water any given day the water would be so deep that the fish might not want to use it. There's the dike itself at the water front do you see any vegetation that might be growing back in that area and if we could make the landscape more pleasant.

Fred Sangris: I feel the same was as the Elder from Gameti. We have learned from the past the mining companies just walked away so we want to see the best closure possible.

Natasha Thorpe: You are giving early guidance to Diavik so they can meaningfully and respectfully bring in TK into how they are planning closure. And when I hear that closure is planned for 2022-2023, its exciting that you have the chance now to guide them according to your experience and your wisdom.

Break

Natasha Thorpe: I am going to put up the map of East Island at closure. Our focus is to look at East Island. This island. What areas on east island would you want to sample and why? The blue lines are where Diavik thinks there will be water flow, that's where there will be cuts in the dike, that's what they are planning for. Are there places on the land, in some of these water bodies, maybe where the two pits are? We are free to take a marker and mark the map as well if you have ideas as to where you want monitoring to happen after closure. We could also break up into small groups. Colleen is getting you smaller maps. Let's look at the second question until the maps get here.

Would you want to do any type of TK monitoring of water quality on the island after closure? Right now you are monitoring by tasting it, tea test, boiling it, looking for scum.

Fred Sangris: I know in the past before the mine was developed that whole island was a spawning area for fish. It's a very important area. The water drainage I am a little concerned about for the fish. I am concerned about the water quality on the one area of the bay (south west of the two pipes or east of the PKC) we seem to have a lot of breaks of water coming into that one little bay. That area seems shallow and would probably be a spawning area? So maybe we can talk about that part maybe we can make it a cell with slow drainage or we can take a look at the flow of water, how much water is going in. And that might be an area that sampling would take place for a very long time.

Natasha Thorpe: Fred that is great suggestions, I wonder how would you suggest to monitor science or TK?

Fred Sangris: TK alone can't tell you, science alone can't tell you but I think, combined, I think you could get the best information for long term, and that could be an area where we want to go. But along with that the mine is going to close in 2023 and also there was a mention of bond, the dollars that's there but long after Diavik leaves the property I'm not sure if the bond money is going to be there for a very long time or who is going to use it or are we going to use it as part of this committee. This kind of committee needs to continue the work long after the mine leaves because we need to continue working and monitoring this place here, providing the best TK recommendations as possible but along with that I think there has to be dollars put aside for this committee so that other people involved and sampling and the information and reporting is done. I think the money might be an issue, if the money is not available then we can't go any further.

Natasha Thorpe: That sounds to me like a recommendation. That money be set aside to continue and whether that's from the bond, whether that's from the government it may involve asking or having the TK Panel put together a letter or formal recommendation to the government.

Fred Sangris: I agree, I'm not sure of the amount. But I think for the long term monitoring, there might be a long term impact we don't know, but I think it would need to be a substantial amount of money set aside so that monitoring continues with this. At the end we all want to see a beautiful thriving island again. The little critters that were on the island before maybe they could be returned.

Natasha Thorpe: I am wondering if anyone has ideas if you imagined the youth or Elders going back out to monitor East Island using TK, what would that look like?

Fred Sangris: I think it's important to because many Aboriginal people have TK since this is the very first of the mines that are working this way, it could be a model that could be built for the future for the other mines. I think for many of us we could pass on the traditional knowledge and then the youth need to continue that roll. I think it's important for the young people to learn about the TK and how it works and we are going to be partners with mine industry in the future, there is no way we are going to walk away from it because we all need the jobs, we need the economy we need, the young people are looking for a future. But I think we can work with that but also passing on our information and passing on our TK so that these things are taken care of long after the mines are gone and the healing process continues, so that there is no big impact. We want the herds of caribou to come back and some people may not agree with me but I hunt caribou a lot and I know the caribou will come back to this island. This island was an important caribou habitat at one time and we have to make that island, design it so that the animals will come back, the caribou will come back to it and other animals as well and use the island again.

We also have youth that are trained in the environmental fields they could be scientists. A partnership should be struck with the First Nations community and the governments. This could be a model the way we design this.

Bobby Algona: Looking at the water currents around the lake I've had a little discussion earlier on the panel even over the summer. I have asked this question and I didn't really get the full answer, of all the monitoring of water currents around the lake, I am wondering have the currents been monitored around the little bays? I was really wondering if there was any monitoring in those areas and as a hunter and trapper trying to find fish and coming to know these little bays. Fish need water currents to move around on the lake and coming to know these little bays no matter how small they are, I see the water currents when I am fishing you set your fish line down in the water, you see the curve on the line all the time, that's the water currents in those areas. And if you put it down later it's going in a different direction. As you know the moon has something to do with this water currents even out on the ocean you see these water currents moving back and forth all along the ocean. I was wondering if there was any water currents in these areas? When you look at that fish and land you know there are currents in these lakes and no matter how small the lake is there is still the current, its still there. I always find no matter how small the bay is there is a current. Those would be the places to monitor because of the . . . (stops).

I recommend that those dikes not be open for many years after the mine closes, same as those blue lines. Until we can monitor the seepage spots that the mine has. If they are not drastically changing then when we are all comfortable and we can monitor these as well. Don't break any dikes or channels for a number of years after the mine is closed.

Natasha Thorpe: I wonder two things Bobby, one when you say monitor the seepage so that you are satisfied how exactly would you monitor it by tasting, by looking.

Bobby Algona: We can be working along with the scientists as well. We don't really want to be tasting it or do anything with it. I think we will be working closely with the scientists after closure. I think science can help us a lot in those ways too.

Natasha Thorpe: So I am hearing you wouldn't want to taste the water on East Island? Is that a general feeling? Right, we taste it at the camp from the big lake, but right now we are talking specifically on East Island.

Everybody agrees? (Yes.) Okay.

Phoebe Rabesca: I do agree with Bobby not to open up the dikes. If you look at the map right now you see the big two giant holes and once the water's covering it, it's there forever. 200 years, 300 hundred years. And also with the North Country where there is contamination in the rock, chemicals. That is there forever. Then if you look at the PK that to, there's slime inside and that too is contaminated and this land is not reversible 100% because, and I'm sure Diavik doesn't want to be accountable after they leave, they want to make sure everything is done. That's the reason why they created the TK Panel to get the Elders perspective, to get the peoples perspective and for me this Panel right now, this day and age, while we are making the decisions if we make one or two mistakes and we didn't do nothing right, 150 years from now they are going to say the TK Panel didn't do it right. Diavik can say the TK Panel didn't do it right because they created this committee because they don't want to be accountable and then with the bond, Fred is talking about the bond because he wants money there, its true. Diavik came into our traditional area, a hunting area and they did all that, they got the money they want, they got the diamonds they want and now, if you think about it, they don't want to be accountable for it. And now they say well let's ask the government for money. You can't just look at the government, Diavik has to be accountable. I know that Diavik and Rio Tinto don't want to be accountable. It's not like Giant Mine. And if we think about it the water is going to be there. It's flowing through Kugluktuk, 50 years from now what is it going to be like when you are not there. 50 years ago by this time it use to be -50 out on the trap line,

now it's -12, we are 40 degrees above normal if we think about it. My mom when she was growing up in the bush it was -60 in the month of December. Global warming is not going to be reversible for a very long time. Tar sands is flowing this way, ray rock is flowing this way, the j-pipe is eventually going to flow into your area.

Natasha Thorpe: Thank you very much for those thoughtful comments. It's not easy for anyone to plan for these types of events. One thing you mentioned about the bond to clarify, the bond is not government money, the bond is Diavik's money that they have to put aside. I understand they put aside 4 million dollars a year. The government requires that Diavik has 150 million dollar bond set aside and to have that available. Its not government money that funds the bond.

I wonder about different times in the moon cycle or the different moons over the 12 moons of the year. Are there ways that your knowledge of moon phases and how they affect water quality or water quantity? I am wondering if that expertise that TK holders have about the moon might affect how you monitor the water based on the moon.

August Enzoe: Can you please repeat what you said about the moon?

Natasha Thorpe: I was listening to Bobby talk about the moon and about how it affects water currents and it made me wonder if that TK that you have about how the moon affects water - quality, quantity, how it tastes, how it moves, how deep or shallow it is - whether there is anything that could be applied to how you want to monitor water in the future on the island?

August Enzoe: The moon you are talking about what it does to the land, to the world the way the creator made it, it's no different there is nothing changed for me same as the sun. Now we are talking about the mine and that island and are there any small mice and ground squirrels around? Because I have been in there a lot of times and when I get there it's just like I am in jail. They don't let me out to walk around (laughing) they all know it so are there any small creatures like mice and ground squirrels? Yes okay, well that creature and rabbit they will do their part we know there will be wolves and caribou.

Mike Francis: Airstrip what is going to happen with that?

Colleen English: We have had some feedback from the panel on that in the past in that the preference is to leave it for an emergency airstrip. The thing that Diavik would need to look into with that, that we have talked about before too, is that it is a liability. So if that airstrip is left and it's not signed off as an uncontrolled airstrip

that's there 'just in case', its too much of a liability for Diavik. Because the reality is that airstrip is going to deteriorate over time, when Diavik's not maintaining it. So it wouldn't be that nice smooth perfect airstrip, and a plane could come in and try to land and then end up crashing because it is bumpy and it has had some permafrost heaving. If it were to be left intact, again coming back to the closure scenario and working with the governments, we would need to get that as an agreement from everyone. Everyone would need to sign it off that it is okay to be left as is and only as an emergency landing strip, including government.

Natasha Thorpe: The 3rd question we have is what features or types of landscape that would help to heal the water draining from the land? What I have heard from you in the past is that you often get drinking water from where a muskeg or wet land filters the water and you get it from the other side, because you know from your expertise that the wet land helps to clean the water so I am wondering if there is any features or types of landscape or plants that would help to clean or heal the water that drains from the land after closure?

Nancy Kadlun; I am worried about the pits, they are really, really big and if the water sits there for a long time and its going to be very contaminated to go back to the lake.

Natasha Thorpe: So how would you like to monitor that water, how would you know its ok? Bobby always says ease in your mind and ease in your heart, that water is healthy.

Nancy Kadlun: Maybe do samples again in about 30-40 years from after it sits there for a while because it's not going to be the same as soon as they close it. They might think it's clean but in about 40-50 years time that water is going to be very bad.

August Enzoe: You are talking about sampling water after its all closed. I know they are going to do it but after its closed they should take samples around the island that year, and a year later do it again to be on the safe side. Saying 30 years is too long for them.

Natasha Thorpe: Did you mean every year for 30 years?

Nancy Kadlun: I was saying if the water sits in that area for a long time it's going to be contaminated in the big pit and how would that get cleaned.

Natasha Thorpe: I think what I heard from Gord yesterday is that the contaminant is that the water is saltier the deeper you go. So Diavik's concern is that salty water that comes out of the deeper part of the ground would mix with the water in the pit.

But as I understand there is not a concern for a chemical contamination. Colleen did you want to speak, did I get that right? Yes.

Ed Jones: Water lies in various layers and salt water is heavy and it will sink to the bottom. I don't think we should be too concerned about salt. It's the ammonium nitrate that they use for blasting, but it is also a fertilizer so my only worry is that the ammonium nitrate is a fertilizer and you are maybe going to get a lot of algae and plants because of that but the salt itself, that type of salt I wouldn't be concerned about.

Natasha Thorpe: Thanks for clarifying that Ed.

Phoebe Rabesca: For the open pit, what if they just do a slow seepage and see what is coming out of there.

Colleen English: Phoebe, do you mean when you are filling the pits a slow seepage? Or what do you mean.

Phoebe Rabesca: No after both pits are filled doing slow seepage from it. Then monitor what is coming from it.

Colleen English: The question is how are you going to fill it? It is the reverse to how we emptied it. We will have a pipe from the lake to fill the pits. The ground water in the bottom of the pits will also be seeping in. So the idea is that you fill it quickly, so you reduce the amount of salt water and it stays at the bottom.

So when we talked about filling the pits, they will be full and sitting with that water mixture, so there will be the ground water in there and they will have probably that 5 year period to make sure that water is okay. When the breaches are put into the dyke the only thing it is doing is re-connecting the pit water. By then they will know it's good to connect with the lake, which is just more good water. So there wouldn't be a big change.

Phoebe Rabesca: I was listening to Nancy about not opening, you know, to leave it as it is. But then I thought about it that if we just leave it as it is, what if there is contamination in there that's what they are talking about. But if they just open it slowly. So for 5 years you will be monitoring it before they open it up, that's what you are saying?

Colleen English: Diavik is estimating at least 5 years. The way Diavik sees it is that if they can't connect the pits to the lake then Diavik has failed. If that water is not good enough to reconnect then they have failed.

Kathy Arden: I believe Gord said too, before they fill the pits they will wash the pits down first and then pump that water out and test it. And then over the period of 5 years they will be testing it.

Colleen English: Mostly correct. The pit wall washing has already been tested and have that in the presentation this afternoon. At this point, washing the walls doesn't make a significant change to the water quality so I don't think that they are planning on washing at the end.

August Enzoe: Are they going to fill up the pit before or after the mine closes?

Colleen English: It would be after. The reason we can't fill the pits with the rock or water is because there are people working under those pits.

Natasha Thorpe: We have smaller versions of these maps and I am wondering if you feel ready to break into smaller groups and talk about perhaps where monitoring could take place, how monitoring could take place. What sort of features Diavik might consider constructing or creating that would help protect water quality.

Working with the maps

Fred Sangris: We still got time until noon. What we are doing is trying to educate each other. The pit that we are talking about right now, those pits are dead pits, there is no life in that pit. I think what might help in the future would be to make those pits lively. The beavers on land they work very good and they make life. I think the pit needs some critters to bring life back to the pit. The little critters will bring life back to the pits. I think for this one here [A154] you just need to put something in there. Put some live things in there, bugs. Sometimes I take my caribou hide and put it in the lake and then a week later I go back and it's cleaned; the bugs cleaned the hide.

The beaver can do a lot of wonderful work, but you can't put the beaver there because there's no trees there. What you can do to drain and filter the water, you want to filter it using moss and such but there are different ways to make things live. And by the time it reaches the lake its filtered. And maybe that's how we do it; find those beaches and it will filter it and in a few years it will have a filter system of its own.

Natasha Thorpe: Fred I just changed the slide up there to show you that I think, from your TK and the science, that you are both agreeing. Remember how Gord said this was the preferred route [for water flow from the PKC]? My understanding is that

its because it allows for that longer route and that filtering through here [long drainage channel from PKC pond to LDG].

Kathy Arden: With regards to question 1 after the closure, maybe I missed something, is it referring to after those dikes are breached? Because I know that Diavik is going to monitor the water for 5 years within those dikes, so the question of what areas would you sample and why, is that after the breach?

Joanne Barnaby: Before and after.

Louie Zoe: Concerned about the water seepage and the water drainage from the rock pile and the drainage that goes through the ditches - somehow they should be monitored. Just one area that I am concerned about is if the dike is too deep and water might not move and so maybe contamination will develop in the future.

Joanne Barnaby: I believe that Louie was just stating his agreement with regards to continuous monitoring after the dikes have been breached and beyond the 5-7 year period?

Phoebe Rabesca: I think what Louie is trying to say is about once the pits are filled with the water. When a river is flowing, it is always replacing the water, but in the dike there will not be continuous change in the water. So he wants to know about that. There is going to be no river flowing through it, so no fresh water circulating in there.

Joanne Barnaby: The concern is that you are not going to create a continuous flow of water because the dikes will still be in the way. There were natural currents before the dikes were built and he is concerned we will not get those back.

Colleen English: The cuts in the dikes are where they are because Transport Canada regulates water ways and dictates where the cuts go because of line of sight. So if you came across this and you went into them you could see a way out from where you are.

Back to Louie's question, it will be different here then it use to be. This is going to be very sheltered and protected, there won't be as much wind and wave and current action as there was when this was a completely open lake.

Joanne Barnaby: Almost like creating a new bay.

Natasha Thorpe: The blue lines [on site map], why are they there?

Colleen English: The blue lines are where we have existing collections ponds or where we have broken off where natural flow has been in the past and we would be

reconnecting that natural flow after we are not trying to contain all of that water that comes off the mine site anymore. When I look at the SNP Program that Gord was talking about, and I look at some of these points, I think about things that the communities have said that I have heard over the years. You've said within the Panel that you want to know where water is going, you want to know what that water looks like. And I think that the SNP program that exists right now very much aligns with that concern. It's looking at all of those points where you can lose water off of the mine site into the natural environment and making sure that, that water is contained from a management perspective or sampled from a monitoring perspective. I think that's where you want to get to with closure is identifying those places of concern where water is going to come back into the environment and making sure that those are being watched.

And if there are ideas about how to help that water along the way, with moss or plants or whatever it is, then making sure that's incorporated into the design. So I think those are the two biggest things that you can probably contribute with this piece.

Joanne Barnaby: So the blue lines that are up there now, do they reflect where the natural flow was before the mine?

Colleen English: Yes, most if not all of them are natural drainage spots that were blocked for mining purposes.

Joanne Barnaby: Any other questions, concerns, ideas.

Phoebe Rabesca: She was talking about drainage and they are going to do it again. Does Diavik have anything in place about what is going to be done say in 20 years if contaminants are found?

Joanne Barnaby: Can you address what commitments would Diavik have 20 years after closure.

Colleen English: I talked a little bit yesterday about the process for closure, with governments and the mine and we talked about the security deposit, the bond. There are a lot of unknowns about that final tick in the box for the mine and what the governments will want and what we end up doing with security deposits and that sort of thing. So it would be a best guess, just my best guess, that it's likely the government is going to come back at the end - when we they are wrapping up and the mine is clean and they have given Diavik the okay to walk away - it's probably likely that they are still going to ask for a little pot of money that's available for things like that. And when I say little, it's probably still millions of

dollars. So that would be their back pocket protection in the case that something unexpected came up in the future. So that is a likely scenario, in my opinion, but we don't know that for sure. We don't know what that's going to look like in terms of that final agreement between all of the parties that are interested in this. It's something to keep on the radar, it's something to think about for the future and start having those conversations.

Joanne Barnaby: Any further questions, comments or recommendations? Do you want to spend some time on the maps to start identifying locations for either monitoring or action to ensure that some kind of natural filtering system is supported or developed?

Spend 15 minutes looking at the maps and writing on them, then come back and explain what you are proposing.

Lunch Break until 1PM

Joanne Barnaby: So what we would like to have everybody do is present their ideas that they came up with when they were reviewing their maps and any recommendations that you have.

Kathy Arden: So we came up with what areas would you sample and why. Lac du Sauvage entry and exit because of the j-pipe, and even though it's not Diaivk's responsibility to find out what happens there, there still could be contaminants coming through so we would like to see that one continue to be sampled.

Going on the other side of the lake, is the exit to Coppermine river as well all around the shore line of the [East] island to check for any new algae growth. Even though we can somewhat predict the drainage, there may still be drainage places that may change after they are done their reclamation work. Check all the breached drainage areas too. We would like to see this happen in May and June when the spring runoff happens, this will give a better indication of what is coming off the island.

Bobby had mentioned the North Inlet containment which has a lot of heavy metals in it and, even though Diavik would be cleaning that out and ensuring that the water is going to be cleaned before they breach that dam to have it flow back in with Lac de Gras, we would like it monitored for contaminants continuously to make sure the metals are cleaned up.

How wide and deep is the pit breaches going to be??

Appendix D

Diavik Diamond Mines TK Panel Session #8 - Water Monitoring & Fish Habitat

Colleen English: Each breach is going to be about 30 meters (90 feet) wide and the depth would be variable, ~10 meters [note: later corrected to 2-3 m below low water depth, as per ICRP]

Phoebe Rabesca: Diavik should provide a list of chemicals in the type 3 rock and in the slime so the TK Panel know what they are dealing with.

Diavik should provide bonds for future use for studying, monitoring and testing.

Diavik should reseed the land and use dirt and human waste so the land can grow faster. And they should provide a report of the water and the fish sampling every year after the mine closes to see what's going on and to see what's in it.

Janelle Nitsiza: Where the PKC is, so the bodies of the water around it, there should be lots of sampling in that area because we don't know what that slime is, you can't define the slimes to the Elders. So I agree with Phoebe that we need to know what these chemicals are and we need proper translations of chemicals so they [Elders] can understand.

Fred Sangris: What we did with the two open pits, we were talking about putting little insects in there and the red surrounding it is moss. So if the water flow is going back and forth, then anything bad will be caught in the moss.

PKC area there are two streams coming out and what we did is the red area is just for when the water starts to flow. We want to put a filtering system and/or moss; we talked about possibly two different systems, one industrial one and then the Traditional method of moss. Line them up along the stream that goes on to the lake and work hard at the lake so it is clean water at the lake.

Mary Louise Black: North Country Rock pile and the PKC should be monitored and sampled due to chemicals, all run offs from the mine should also be sampled.

Monitor and sample the north inlet containment and its run off continuously.

Continuing to use TK and scientists together.

Lucas Enzoe: The dust on the North Country rock pile, does it have any chemicals that can affect the air quality and lake?

Joanne Barnaby: We will return to the discussion around recommendations for monitoring and fish habitat or action that can be taken to rebuild fish habitat on the shoreline and with shoals later on today.

Right now we are going to hear from Diavik

Presentation – Open Pit Closure: Fish Habitat and Shoreline Construction (Appendix I)

*****This was not recorded. Sound system did not turn back on until DFO was talking.*****

Colleen English: Water depth in shoal area would be approximately 15 feet.

The plan is not to wash the pit walls because Lac de Gras water 'wins' in that the amount and quality of good water beats out the amount of chemical.

Fish use some reefs more why is that? Is it because it is shallower, closer to the bay, more moss or more plants? What is your experience?

What should the finished reef look like? How big should the boulders be? What is going to encourage the fish to use it most?

Should the first part of the roads [that currently go into the pits] get left for easy passage for animals in and out of the water? And the shoreline, what should it look like?

Questions?

Bobby Algona: This is concerning the breach. I am thinking you are going to be breaching the channels to the same levels as the original lake bottom?

Colleen English: The width is 30 meters. I think the depth is based on the bottom so it would vary. [note: later corrected to 2-3 m below low water depth, as per ICRP]

Bobby Algona: Because it's a pit that is very, very deep already. When you open that or breach it I think there will be more water going in and out because of the depth of the pit itself. There are some islands that have shoals and you can see the water going in some directions because of the shoals. Right in the middle of the lake its always moving, the water is always moving under the ice so the ice is thinner there. There is going to be movement there too. So it's something to think about too.

Colleen English: Are there any other questions or do we want to get DFO's information first?

Presentation - Artificial Reefs as Offsetting in the North (DFO, Julie Marentette) (Appendix J)

*****Recording started again*****

Fred Sangris: As fisherman when we are ready to set a net we know what to look for, we are looking for the right place where fish are going to be. We know where there are going to be spawning areas, we don't want to fish in spawning areas because the

fish have a different texture and taste different. The last picture where you see a lot of boulders and you said the current is strong, that's where I would set a net to catch a big fish, 6lb to 10 lb. The fish will go back and forth. They like that deep area and they go right through and they are not going to lay their eggs there. It's too cold and too deep. And the waves play a big role in it. They like to lay their eggs in a very sandy area, maybe not sandy but gravel, and it has to have a slope. The current can't be really strong but it has to be moving.

Where they built the dike, I was fishing there and the gravel was beautiful there and it looked like a beautiful area for spawning fish. So I threw a couple of hooks in and I caught some fish there and I noticed that the water was moving slowing. When the fish are born they like that shallow area with a little bit of gravel. They don't like the sand, and most areas in the east where there is a lot of fine sand you always find dead minnows floating around. They have no protection to hide from the waves so the waves just wash them up and that's why we find lots of minnows on those sandy beaches. After they are born they want to go into the shallow areas, so through the islands you will find lots of minnows. But they are not going to go in the pits.

I have a camp just outside the city here. Every spring I have graylings coming in, it's a small little bay and maybe from here to the stairs and 6-8 feet where the water comes in it's a little bay. And the graylings come in every June and they are only there for about a week. Shallow, big boulders and if there are other big fish that come around they can't get into the shallow areas where the minnows are. The current is the important part.

Joanne Barnaby: Are there other comments, observations, questions?

Bobby Algona: Fred was talking about the fish. I agree I find a lot of these fish beds when you are out fishing. There is another concern I want to talk about. Sometimes we come across a lake we don't know about the shoals and we don't know how thick the ice is because of the movement of the lake. And depending on how deep the shoal is from the top, it's going to be moving all the time from side to side whichever way the water is moving. Traveling in Lac de Gras I have come to know where all these shoals are in the winter and they can be really shallow and the ice can be really thin in those areas. I am wondering how deep are the artificial shoals going to be that Diavik is going to be putting in? I have come to know these in my travels and I agree these fish tend to come to the shoals, because of these shoals the water movement is more pronounced in these areas; you need the water movement for the spawning. But I have come across a lot of shoals especially around my lake on Pellet Lake where I grew up and lived all my

life and there are many, many shoals on this lake and I have to be really, really careful around those areas.

And living right next to the river, the river doesn't freeze at 40 below. The river does not freeze year round, depending on how the moon is moving, one way now and then a few hours later it's moving a different direction. I have come to know a lot of these types of water.

So I want to know about the shoals so I can be safe when coming back to this lake.

Gord Macdonald: That is a good thing for you to tell us: how deep they should be so you don't fall through? Just picking up with what you said about currents, and what Fred said, it fits with this story as to why there may not be eggs there. I wanted to bring you back to the reefs that we are talking about are on the inside of the dikes.

We are not setting this up to be a high current or spawning area, but to be more of a nursing or rearing habitat.

We need to look at what we are targeting.

Colleen English: Further to answer your question, like Gord said, some of the feedback we are looking for is what should those shoals look like, how big or how small should they be? This [referring to diagram] is what is in the closure plan right now:

Water will be 15-30 feet deep and the shoals will be 6-9 feet high.

The cuts in the dike will be 9 feet below the low water level. I was wrong earlier when I said they would be variable based on bottom depth, so my apologies for that.

Bobby Algona: When mining companies say they want it to look as pristine and as natural as it was before. Why do we want to do this? The mine wants to put everything back to as natural as it was before it started, why do we want to put these natural fish shoals there?

I am having a hard time with this because it's not as natural and pristine as it was before the mine started. Artificial reefs do bring fish alright but I am having a hard time agreeing to this because it's not as natural and pristine as it was before the mine started in the first place. That's what I am having a hard time with, thinking about it myself. The mines said they want to bring it back as natural as we can after the mine closure has been set in place.

Julie (DFO): When the Fisheries Act authorization was issued for this project, this type of rehabilitation project was built into that authorization to try and bring it back to a more natural state. So that's why we are talking about this now, is that it was built into the authorization that Diavik received about 20 years ago. There is also the pit that's still lost habitat, so we are trying to add a little bit more then what was permanently lost.

Natasha Thorpe: Bobby what is your concern about them creating shoals?

Bobby Algona: My concern is that, depending on how thick the ice is and how deep the shoal is going to be from the top, towards the end of the year I noticed some places as the ice starts to get thicker and closer to the bottom of the lake you see in those shoals the water currents being more pronounced. That was my big concern, for safety. Am I going to be safe coming to this place when there is a shoal there that I didn't know about, and it's keeping the ice thin.

Joanne Barnaby: Is there any plans to mark these areas somehow?

Colleen English: Not as of yet but the dike will still largely be there so that should be a bit of a marker.

Bobby Algona: I am thinking about some people that didn't come to this group and maybe there are going to be people traveling in this area. And they may travel into that dike. I think it's really something to think about that they didn't know that these shoals would be there.

Gord Macdonald: We should definitely design the shoals to be safe. So if the shoals should only be 3 meters under, then we need to know that.

Natasha Thorpe: So maybe there is an approximate water depth that should be above the shoal in order for your minds to be at ease for traveling?

Ed Jones: I think the answer is to build the shoals high enough to be viewed above the water level.

Natasha Thorpe: Its one option.

Gord Macdonald: So that is more like an island then a shoal, which is fine, it is just different. But then this could work.

Fred Sangris: I agree it might be good to create piles of sands almost similar to the way it was in the beginning and the water runs through it with a bit of current, in some areas its deep and in some areas its shallow. There are some areas that we avoid, we go out to the middle where it is deeper. And that way is better if it is underwater it will

freeze over, the ice will be really thick if you use sand and rocks it will be good because that's the way it was in the beginning and the fish will come back.

Outside the dike is where it will be perfect for bigger fish and other fish to swim along, but not good for spawning. It might be good to create some areas for fish to come up back and forth. Graylings love shallow water.

Natasha Thorpe: So what I am understanding, Colleen was saying right over here [shoal area inside dike], that's one area that Diavik is proposing to put those finger shoals. You are saying throw some sand or throw some gravel on these areas, but don't throw so much that those areas would become islands?

Fred Sangris: You need a little bit of sand and gravel so the eggs can float around.

Gord Macdonald: It sounds like we are kind of talking about the same thing. We would have these fingers of rock, but the fingers of rock are just to break up the sand beds that are in between. If you just piled the sand there with nothing to break it up, they would probably all just flatten out, so the idea was to separate them with fingers of rock. The key thing was making it shallow, something like 8 meters deep.

Fred Sangris: You should try all different levels. I will tell you how I found gold. Just north of Gordon Lake on the south side my dad asked me to go down to the get some water. I see all these yellow things so I ran back and told my dad I found gold and I brought him back to the water. But it wasn't gold, it was fish eggs.

Gord Macdonald: But other than islands, we were thinking everything else needed to be at least 6 feet or deeper so that the ice wouldn't freeze right to it, and for it to be more useful fish habitat in this lake.

Fred Sangris: I think that would help, having some deeper and some shallower. We are trying to get bigger fisher so we will go on the outside where it's deep.

Gord Macdonald: You might not want to go fishing in here, but the fish that you are catching on the outside may have come from inside, so they may have been raised there or go to feed there certain times a year. But that's not where you are going to go to catch them, you would stay out where there was more current.

Natasha Thorpe: Any questions for DFO??

August Enzoe: Look way out over there, it's a big lake. It [map] shows how big the lake is and its only part of it. You guys are working to put a reef in a little spot there for spawning. It doesn't make sense. Because with that big lake, all the fish will go back there, but there is a different spot for spawning. It's like a city for fish.

Julie (DFO): I like the idea of it being a city for fish. I think if at least some of the fish in the lake are happy there, that will make us happy too.

Fred Sangris: I know we are trying to create something and trying to bring something back. A good example is the Giant Mine and the Yellowknife Bay. There was a lot of underground blasting shock and it drove a lot of fish out into the lake. It's been over seventy years, but now they are returning. We have been monitoring the fish and we have been telling DFO they are coming back, but the only person that listened to us was a guy named [Paul] Vecsei. So we brought him out there and said there are exciting things happening, they are coming home. So now we are waiting for the conies to run the river now after many, many years. But the same example might happen here because there has been a lot of blasting here and dynamite, so the fish might avoid this area for a while, As soon as the area is silent they will start making their way back slowly.

There was a federal election not too long ago, is there any DFO legislation changed now that Harper is out?

Julie (DFO): I don't think there has been enough time or if there are going to be any changes. I don't know, we will have to wait and see.

Natasha Thorpe: How long might it take for the fish to come home?

Fred Sangris: I think it won't take long, just a short few years. There are no jet boats, I'm not there to bug them, so once it's quiet they will come back.

Natasha Thorpe: We have some youth here who have been out monitoring; do you have any questions or comments?

Gord Macdonald: Julie, one thing we never thought about when we were first doing this design was the amount of terrestrial vegetation that would grow in dike in the interim. It's just so visible now in these pictures, but now we are wondering what should we do with it before we flood it? I kind of think it's a good thing to have that much organics left there when you flood it, that it might make a decent substrate. But I don't know that we thought about flooding something that's vegetated versus trying to cut it out before. What do we do with it before we flood it? Do we just leave it?

Julie (DFO): That's a good question. I am definitely not a plant expert and it has not occurred to me. I haven't heard of any other files that have had to think about this issue so we will have to look into it.

Natasha Thorpe: I wonder if any of the TK holders have any ideas on that.

Fred Sangris: I am trying to help so I can fish there one day. Those two pits are dead pits. You can start putting vegetation on the side as the water is coming back. If you just fill it, it will stay dead for a long time but if you add the bugs and put little critters and plants, it will come back much faster. Bring the critters back. I was just showing Colleen about this one bug that the fish don't try to eat, those are the bugs that you want to bring in there with the plants and the mud and the sediment.

Break

Natasha Thorpe: Thank you for such a productive discussion on the shoals. This won't be the only time that the TK Panel will have a chance to discuss this.

We spent most of our time talking about reefs before the break and we still have the discussion around shore lines. Same three questions for the shoreline.

Gord can you clarify that we are talking about around East Island?

Colleen English: No not really. Most of the shore around East Island is actually intact so a lot of it, if you look [at the satellite image] you can see a lot of the areas of the mine don't extend right to the shore. So primarily we are talking about these areas in here [open pit access areas], because this will become a shoreline again, as well as over at A21.

Gord Macdonald: This is almost original shoreline. But this has a distinct shape because that is the edge of the pit. So is that okay if it's going to be a sheer rock wall? There are roads into each of the pits, is it okay to leave them?

Joanne Barnaby: So are we talking about the outside of the dikes, too?

Gord Macdonald: We aren't because, just like the discussions this morning, it's pretty useful habitat the way it is. It's a steep, rocky shoal.

Bobby Algona: Leaving the outside of the dike the way it is, is fine. Even the inside would be something to look at. We are going to be looking at it for a number of years and if something should come up that we are not happy with, we can bring it up then. I think just looking at it maybe we leave it for a year or so.

Joanne Barnaby: I think we need to keep in mind that Diavik is updating their closure plan this coming year and so deciding to wait and see what happens and then trying to introduce some action for perhaps changing the shoreline at a later point might be more difficult if we don't try to start planning for that now. So there are two very different scenarios. One pit is very steep with a big cliff, the other is not, it is more gradual. Is there any problem that anyone sees with either of these?

Fred Sangris: How steep is the wall?

Gord Macdonald: About 45 feet from the top to the bottom, but the water level would be part way along it. So let's say around 30 feet deep in the water and about 10 feet out of the water. It's not a huge cliff.

Joanne Barnaby: Thoughts, concerns, ideas?

Fred Sangris: I am not sure what the high ground is there. I am just wondering if the wall is too high for caribou or is it going to go to the water level? I ask because I see caribou falling onto the ice.

Gord Macdonald: If the water level was the floor the land would be the ceiling. So if a caribou walked off that into the water it wouldn't be able to get back up. It would have to go sideways until it found somewhere to get out.

August Enzoe: I was just looking at the wall and you are going to make a shore and we don't know how it looks so I was just wondering if a few of us goes down to look at it then we would have more ideas.

Joanne Barnaby: If we looked at it now, we wouldn't be seeing what it would look like after the water is brought back in. That's the problem with trying to see it now; you still have to picture that water there.

August Enzoe: When we get there the working guy would tell us where the water would be and then we would look at it and then look at the cliff.

Natasha Thorpe: It sounds like it's more of a caribou problem than fish habitat concern and I know that we have a session on caribou coming up.

Fred Sangris: August is right it's really hard to tell without being there. It is a concern for caribou but it is also a fish habitat too. If he says 45 feet then we need to know how far from the wall to the other edge. So if we were to advise that you fill it in with gravel or materials then we need to know how far it's going to go. So it's really difficult to say without looking at it. You could create a good fish habitat around the edge but you need to see because as the pit goes it's like stairs so you need to see what's there.

Gord Macdonald: We're asking about shoreline here but we are not talking about building any reefs or anything on these shores. That's mostly why we are putting it out in these bigger benches because we know we have that area to work with. Because you are right, these stairs are pretty narrow, really, going down into the pit. The whole distance of the cliff is about 1 km.

Fred Sangris: Sometimes when the migration is happening the lead caribou could lead. But sometimes they go on the run and at night time they are not going to see what's in front of them. I have seen caribou go over cliffs in the past chased by wolves. But anyways let's think about it.

Kathy Arden: How long would it take the fish to discover the opening in the dike?

Natasha Thorpe: Any ideas?

Louie Zoe: Yes I understand there is a drop about 10 feet which is dangerous for the caribou and the wolves and the foxes. So before the water is pumped back in there, I suggest maybe you put some sort of a slope. Or if you want to leave it as it is, I suggest you put some sort of skirting on it or fence of some sort.

Natasha Thorpe: A while ago I remember when Ekati mine had a fish diversion channel which was a cliff area that the community members were worried about, and they build *inuksuk* / *inuksuit* along the side. Is that what you mean?

Louie Zoe: Even though sometimes there's a wolf pack that chases the caribou around and we just want to make it easier for the animals to get on top of the land not so much steep down around. Once the animal falls over the cliff it's not going to come out again.

Natasha Thorpe: Colleen also mentioned the road that is presently the pit road that would be a gradual slope going into the pit. Does anyone have any thoughts on that in terms of shoreline?

Gord Macdonald: There is a ramp in both pits; it's just like a boat ramp in each pit.

August Enzoe: Which pit is that one?

Gord Macdonald: The small one. In the other one its more natural shoreline.

Natasha Thorpe: So the ramp would be a gradual ramp in. Should there be changes or can it stay as is?

August Enzoe: I don't mind the way it is, the ramp. I am just wondering about the cliff. I would like to walk there before they put water there.

Joanne Barnaby: Okay so leaving that road in might act as a ramp that would allow caribou to get out if they get into that pit.

Bobby Algona: We have talked a lot about the North Country Rock Pile and slopes there so that caribou have an easier access to it to get away from bugs. I think if we

were to look at it like that we all want them to have easier access to land. I think that at the cliff we should have a gradual slope where they might make it look like the NCR pile and they can get in or out. And if caribou did get in then we want them to be able to get out.

Gord Macdonald: What if you left pieces of it as a cliff but add pieces of gradual slope for the caribou?

Bobby Algona: Yes, that would work.

Joanne Barnaby: Any other comments? Are there other ideas for addressing the shoreline, for address fish and fish habitat?

Natasha Thorpe: What kind of shoreline are fish attracted to?

Bobby Algona: Fish tend to look for spots where oxygen is coming in to the water. I have come to know a lot of lakes along my travels and there are some places that there are fish but no oxygen. Fish can also hear and feel the ice chisel and they come there because they need the oxygen. There were some places where I have fished and you don't jig because when the oxygen starts going down that hole the fish come wanting the oxygen, and sometimes there are so many fish that you just put your hook in and pull it out and you have a fish, and if you keep doing it you will have a fish every time.

They need oxygen year round.

Joanne Barnaby: Other comments, other suggestions?

Nancy Kadlun: These pits are really huge and they are going to be filled to the top and this lake wow a lot of the water from the lake and then our river will be slow because these pits will take most of the water.

Joanne Barnaby: Does Diavik have an idea about what the difference in the lake depth would be once the pits are filled?

Gord Macdonald: I can't remember the numbers but it would be centimeters (cm) in difference in the lake; it is hard to measure exactly. You won't be able to see the difference and we would have a tough time measuring the difference. It looks like a lot of water going into those pits but the lake is very big.

It was looked at in the environmental assessment and it's continually asked. In particular it's asked about when we're filling up the pit if Ekati and the J project or any other pits will be filling at the same time. We have them all scheduled so it doesn't happen at the same time. The real worry would be if you were trying to

fill all the pits up at the same time, that's when you would have an effect on the lake level.

Joanne Barnaby: Do you have an idea on how long it would take to fill up one pit and would you be doing the two together or separately?

Gord Macdonald: The A154 and A418 are actually linked. They are joined underground, so if you start filling one you will fill up the other one. So both of those would be filled up at the same time, but A21 is separate and it would be filled up at a separate time. We are still talking about which ones to do first. There was originally a plan to do A21 first, it's a little smaller, learn from it, then apply it to the big pits. Lots of the decision is going to be about which one is available when.

With respect to how quickly or how slowly, it's a matter of how many pipes we want to put in. We want to fill it up quickly, and I mean in the order of 6 months to fill it up, with the idea that the quicker we get the good Lac de Gras water in there, the better the quality of the water. We can be slower about it but it would not be as good of water quality in there. So it's just how many pipes and how big.

Kathy Arden: I would assume also that the water level would come back up because it is being fed from other places and the spring runoff. I don't think it's going to be affected that much, it'll just sort of come back on its own, right?

Gord Macdonald: That's exactly right. It will go down for that period of time but it will refresh by the spring.

Ed Jones: I don't think that you will see much of a drop because the water is coming in to the lake all the time.

Louie Zoe: So I think that the huge hole in the ground here, the depth of the area is too deep and I am concerned. So I would like to try one pit at a time, rather than two at a time, because we might sacrifice something else for what are we going to do for both pits. I know there are schedules that you have to do this in because there is a very short summer season.

Joanne Barnaby: Thank you. Any other comments, recommendations, suggestions, concerns?

Bobby Algona: My other concern is you take out all this rock from these pits and you look at the original bottom of the lake. With all that water going back in to the pits, how is it going to affect the big lake itself when you fill the pits after removing all that rock and piling it up on the hill. My biggest concern is how much water is going to be put in these pits because of how much ore has come out. And the

water is going to be used a lot for these pits with how far down the mine is. Including BHP [Ekati mine] and all the mines around the area itself because I live in Kugluktuk and our river is becoming really, really low and the water level is becoming really, really low and we have a brand new shoreline in Kugluktuk. All that water that goes to Kugluktuk is having an effect on the river itself. We are having to divert the channels around the river because of the water level in this river.

Joanne Barnaby: The calculations that Gord described about how much impact it would have on the water levels is that the difference would be in centimeters, very small.

Gord Macdonald: It would go down when you did it but then it would come back up. You wouldn't see any difference in Kugluktuk other than when we were filling. I challenge you to be able measure the difference when we are filling.

Joanne Barnaby: Questions, suggestions?

Dora Migwi: I listen to everything, everyone's comments that everyone shared. We are doing things for into the future. I would like to thank everyone one that is sitting here. The water that's going to be put down into the pit, I don't think there is going to be any difference. My father had said when the water goes down it won't come back up again. But once you guys put the water in that open pit and maybe in time you can keep putting water inside that pit and make it safe for wild animals again.

Phoebe Rabesca: Before they put water in the open pit, what if they measure the river first. Then, when they put the water in, re-measure it. Yeah, measure it before and after.

Joanne Barnaby: I know there is a general concern about water levels in the north going down so this would probably add to those overall concerns.

Ed Jones: The low water levels is right across the territories and its probably due to climate change, not to mining. Filling a small pit like that would not make much difference like he said. 10 cm is only 4 inches; we shouldn't be concerned about that.

Janelle Nitsiza: No offence to Ed but I think it is a big deal. 10 cm of water over the whole lake is a big deal.

Ed Jones: As I was saying that will be replaced, every lake has an inlet, Lac du Sauvage and Lac de Gras has water coming in from other lakes.

Gord Macdonald: Its not 10 cm, it's actually 1-2 cm. If that makes a difference to you.

Ed Jones: No, it doesn't, I just wanted to make a point.

Janelle Nitsiza: Okay well I want to make a point, too. Water across the world is very precious. I think it's more precious than the diamonds that we are digging up because are you going to drink diamonds when the world runs out of fresh water? I don't think so.

Ed Jones: Yes, I do, but there is nothing I can do at this point. Not many people listen to me, you are the only one.

Joanne Barnaby: I think that is an important message that we all need to hear. There is an issue with water levels across the north and across the world.

Natasha Thorpe: These are issues that are very close to our hearts so I am very grateful for the passion that I am feeling in the room right now. All of our voices are equal and we will carry that message into tomorrow as well.

I know you are all anxious to get out of here but Joanne has the job of trying to pull together everything that you have shared the last few days into some recommendations that you can then present to Diavik tomorrow.

Louie Zoe: Just a short speech that the water is going to go in to the open pit and it's not going to be in time that the water is going raise up to the top of the pit and its going to rain and snow and everything is going to go on. So in time there will be water back in the open pit.

Joanne Barnaby: And hopefully it comes back up to normal levels, but the idea of monitoring that and measuring that, as Phoebe suggested the pre-filling levels of Lac de Gras and then the measurements after the pits are filled, would be good to have.

Mike Francis: I just wonder if we put water back into the open pit, maybe half fill it for now maybe.

Gord Macdonald: Half first then half later? Why?

Mike Francis: Too much water going in at once.

Gord Macdonald: You are saying do it that way so that there is less of an effect on the water level?

Mike Francis: Yes.

Gord Macdonald: Yes, if that was a big enough concern from everyone then yes, it could be done like that.

Joanne Barnaby: There was also the concern about leaving it because the groundwater coming up would be saltier, so that if you only fill it half with water from Lac de Gras you might not get the pressure that you need to keep the salt water at the bottom.

Kathy Arden: Just to touch on what Phoebe was saying about measuring before and after, it would be kind of neat to know the 6 months or maybe the following spring to measure that again, just see if it went back up to normal.

Fred Sangris: Ed says only Janelle listens, I am listening, too. I'll listen to you. I think Lac de Gras is a huge lake and there is a large volume of water coming in from Lac du Sauvage and if you used the amount coming in then it wouldn't affect the lake at all. If you use too much water then it might have an effect on the spawning up river, so if you use the volume of what comes in.

Gord Macdonald: Limit the rate to equal the same rate that is coming through the narrows?

Fred Sangris: Yes.

Bobby Algona: My concern is the volume of water that we have right now. We know lakes are becoming very low now. Global warming has an effect on this, too. Are we going to have rain coming down in the future. Looking at it in the future we are not getting much rain right now that's what I have been really worried about. Are the natural levels going to come back to Lac de Gras due to climate change as well? And having that volume going back into the pit was my concern; taking that little bit along with global warming and not much precipitation over the last few years, that is my concern.

Gord Macdonald: It is interesting that everyone has commented on the low water levels but Lac de Gras water levels aren't low this year, or last year. They do go up and down but they've remained quite constant. But you definitely see it elsewhere in the NWT.

Joanne Barnaby: All right, are people getting near the end of their rope? One more question.

Fred Sangris: In order for us to make a good decision on the water for the pits, we should try to find out how much water is going into Lac de Gras. If we have a better idea of all the streams coming in, we will have a better idea on how it will affect it.

August Enzoe: When you started draining the water out of the pits, do you have a record of how much water was in there before you drained it?

Gord Macdonald: We do know how much water came out but that's not the same as how much is going back in, because now we also have the big hole. But we do have an estimate on how much water it will take to fill up, I just can't remember what the numbers are though.

August Enzoe: That lake is big. Like Fred was saying, its running from a big lake up there, too. Like the concern in Kugluktuk and the water is all going down to them, lets cross our fingers that the water goes back up again.

Natasha Thorpe: I am sensing that everyone is starting to fade here. As I started to say, Joanne and I will be working tonight to try to pull together, you must have 50 pages of notes now to pull together recommendations from those notes, from these post-its. And tomorrow morning we will go over them, make sure they are in your words and that we don't miss anything. I want to, in 5 minutes, quickly read through what I have jotted down. If there is something that comes up where you think, no you totally got it wrong, let me know. And if you think we've missed something big time, likewise let me know. Okay?

Yesterday we talked about monitoring fish health and lake water in the future and the key themes that I had recorded is that certainly for 2018 you want to continue at the current camp site for the AEMP TK program, recognize that funding and administration of it will be difficult in the future [after the mine closes], science and TK work together, 2 Elders and 2 youth, monitoring should be done by Aboriginal people, maybe by Watchers of the Land. Change that you support testing the water by drinking, but not making tea.

Fred Sangris: One thing that we can probably use is, we all come from different communities, maybe there is something we can bring back to the community to show them what we are doing and they can see the progress we have made. So our community people have an idea, you were involved, we are helping with the recommendations, this is how closure is going to work and this is how we are going to be monitoring. We need to show something to the community so they know the mines are not being abandoned and you are not walking away. So there is progress and there are people thinking about the future. And safe guards are there.

Natasha Thorpe: Thank you, good point. I know that Diavik is required to, but also recognizes the importance of going into the communities regularly and talking about closure planning. But this may be one other way.

We have another video from this summer, its 22 minutes.

We talked more about monitoring water quality on East Island. I have here that you want to continue monitoring; you know that nature has a way of filtering and cleaning itself, making longer channels so the land has time to heal the water. Stock the water with bugs because bugs tell you the water is healthy.

Reefs and shorelines: currents are really important for spawning success and there is general support for creating the reef habitats but not clear on how deep, due to human safety. Possibly come up higher, like an island. The moon? Oxygen is important and the vegetation that has already grown back should be left and how that will effect.

Caribou health and safety on the cliff, so that it is not a solid kilometer long.

Would like to visit the sewage site.

Visit the pits to see the shoreline and cliff.

Better sense of the height of the NCR Pile.

The responsibility to make sure that all is well or that your minds are at ease: I heard that you still see that as Diavik's responsibility but that you're wanting to help and that you see yourselves doing the monitoring today, tomorrow and long into the future.

Not only the water quality, but also the water quantity.

Kathy Arden: To touch on the moon part you didn't know, Bobby was talking about how the moon affects the currents in the water.

Ed Jones: I think you and Natasha both missed something and that's the islands, rather than shoals and reefs, so that you won't have to worry about safety.

Joanne Barnaby: We got it.

Joanne Barnaby: Yes, we can start at 9am tomorrow morning.

Appendix D

Diavik Diamond Mines TK Panel Session #8 – Water Monitoring & Fish Habitat

Friday December 4th, 2015

Dora Migwi: Opening prayer

Joanne Barnaby: As we said today we are going to focus on the recommendations for Diavik. We want to make sure they are clear and everyone is comfortable with them and in agreement with them.

Last night Natasha and I went through all of the notes on the wall and the notes that Janet has provided us and we came up with a presentation that we will walk through this morning with you. So the first part of the presentation sets out some of the main comments, some of the main concerns, some of your insights. As we go through those, we may decide that one of those, or more of those, need to become recommendations so keep that in the back of your mind. But let's walk through that, and then we will walk through the actual recommendations that we heard and see if there is anything missing in there. And we can go back up and move things around or change things as we need.

Natasha Thorpe: Just a reminder that we will have this morning to do this and then Diavik will be here this afternoon, assuming we are ready to present to them. Also EMAB, who as you know is the independent monitoring agency for Diavik, asked if they could come this afternoon so I wanted to confirm with everybody that, that's okay? They are just going to sit and observe. (Yes)

Presentation – Draft TK Panel Session 8 Recommendations to Diavik (Appendix K)

Observations and Comments FISH

Observations and Comments WATER

Observations and Comments AEMP TK study (Aquatic Effects Monitoring Program)

Natasha Thorpe: Nancy was just asking if she could get a copy of this to take home, if you would like copies of this to take home we will get them to you.

Observations and Comments REEFS or SHOALS

Observations and Comments SHORELINE

A418 - Cliffs are a concern for animals

A154 – Shoreline looks okay

Observations and Comments GENERAL

AEMP Recommendations

August Enzoe: Can you go back to the reefs or shoals, it says reefs can shift?

Joanne Barnaby: I believe that was a comment that Bobby said, that reefs can shift. Did you want to explain that to August, what you have seen in the past?

Bobby Algona: The reefs don't shift; it's the water currents around the reefs that shift.

Joanne Barnaby: Any other concerns, comments?

Mike Francis: Yeah about the fish. When we are on the water, you can hear the motor going up to about 400 feet under the water. And the fish would be the same, they can hear the motor. I don't know about winter, but when you are walking on top of snow and freeze they can hear you. And then they get up. It should be the same underwater.

Joanne Barnaby: Are you concerned about activity on top of the ice disturbing the fish?

Mike Francis: Yes, because after Christmas, they freeze the top of the ice and when you are walking on top of the ice they can hear you. Same with the ski doo, they can hear you.

Natasha Thorpe: I just had another comment to me that ice can shift or alter the shoreline.

Louie Zoe: The TK camp where we are doing water study and fish study and there are some dangers and there are some things happening in our land. And people fall through the ice and arctic divers or the RCMP bring in a dive team to find the body. And the ice is sometimes unsafe because of the current. So the mine site happens to be right on the island and all of the debris that comes off the island goes to the lake. And 24 hours a day on the ice, the vehicles create a lot of dust and the airplane landing and taking off. But, none the less, all the dust, the rest goes back to the land and the rest goes in the lake. I hope that next time we can do some fish study right around the island, not far away.

Joanne Barnaby: We have added dust as a concern that should be monitored on the land, in the water and the air.

Lucas Enzoe: If there in too much algae it lets you know there is not enough oxygen for the fish. If it's balanced its fine, but if there is too much it shows there is something wrong.

Joanne Barnaby: What about some minimal algae growth? Do we want to have someone assessing whether it's balanced?

Lucas Enzoe: Yeah, you can ask someone to check the algae growth annually to see if the growth is going up or down.

Joanne Barnaby: So once a year.

On Island recommendations

Natasha Thorpe: There are two different things we are talking about: one is the vegetation inside the dikes, between the dike and the pit wall, but Bobby was also talking about the outside of the dikes and fishing in that deep water. I think it would be good to give Diavik advice on what to do with the outside of the dikes. I am wondering if you want to be able to set nets in that deep water beside the dike.

How do people feel about the slopes and such on the outside of the dikes, do we leave it?

August Enzoe: Yes, it is good.

Nancy Kadlun: Do not disturb it because it was already disturbed before. Leave it alone now.

August Enzoe: I want to let you guys know a lot of us have never been around that pit. But I have been around there and I think it is just fine. Leave it alone.

Joanne Barnaby: So we are going to clarify this by making two different recommendations. One relates to leaving the outside of the dike the way it is. And then inside the dike leaving the natural vegetation that has grown there in place, and do not disturb it to encourage ongoing natural re-vegetation.

REEFS Recommendations

Natasha Thorpe: Are there specific reef depths you would like to suggest? And why? How deep should those reefs be?

August Enzoe; It's not the reef you are talking about inside of the dike. For me, if you are going to make a reef it doesn't make sense for me because it is just small. It's going to be really deep when you fill up that dike, you would have to make a really high reef. You don't need the reefs, look around the island at the reefs - what more do you want.

Joanne Barnaby: No we are not talking about putting the reefs in the pits.

August Enzoe: Where are you going to put it?

Joanne Barnaby: Around the edges outside of the pit, but inside of the dike.

Joanne Barnaby: When we put the breaches in the dike it will fill up automatically. Currently there is the vegetation and we are not going to touch that, but it will be covered with water once we fill the pits.

Natasha Thorpe: I really appreciate you asking that question August because this can be confusing. So DFO explained yesterday the reason to make these finger like reefs is to create habitat for fish. When the mine was built, they took away fish habitat so they are required to put fish habitat back to help heal the land. Right now the recommendation is to build those at different heights or depths below the surface of the water and I am wondering if you want to be even more specific around how deep or how high those reefs should be.

Bobby Algona: Yeah just looking at this picture it distracted me. I thought they were doing this on the main lake, not inside the dike. That was my concern. I thought they were doing similar things out on the lake.

Natasha Thorpe: Yesterday you raised a concern about safety but now that you know they are inside the pits are you still concerned about safety?

Bobby Algona: I feel a little differently now I get the real picture. There isn't going to be much movement. Putting these little reefs inside the pit might promote growth. I think in my mind if we could leave that whole bottom, that whole natural bottom that you have there as is and maybe just for reference, just to see. You don't have to put as many shoals in there. It doesn't have to be as drastic, maybe just one on each corner.

Colleen English: I understand your point. Unfortunately DFO requires us to make those reefs, we have to compensate for the habitat that was lost because of the construction of the mine. We have pushed back on some of DFO's requirements. We do have to do this. Its more just a matter of those areas that are green. Most of A154 especially is pretty done for the fish habitat. These pockets that you see that are natural, will stay natural. Some of those fingers will still be put there, but there were all those blue zones, that were on that drawing I showed you, that would stay natural. Also, most of this is the original bottom of the lake. Anywhere that is not, we have talked about adding in that till to connect those reefs so that you have the type of habitat that Fred was talking about with the small gravel that is better, less sand, less dirt. Unfortunately we cannot do nothing, but hopefully we can find a middle ground for what you guys are looking for and what we need to do from a DFO perspective.

Bobby Algona: Looking at it a little differently now from yesterday, I think not all have to be real shoals. It might need to be just a couple on either side and if you can make

little islands along the way. Putting an island in there promotes re-vegetating naturally. The island would be a collection point, for the wind is always blowing leaves and the ground vegetation no matter how far. The vegetation grows way into the middle of the lake right from the shoreline creating a middle ground or from the surrounding areas and the leaves and grasses blowing. I think putting in a little island is a good idea.

Colleen English: I have one question. When I look at it from a scientific view, the reefs are beneficial because they are long and provide a lot of habitat for a fairly small footprint. For an island you need a lot more material to build up an island, all for a smaller area for fish to use. One thing I think you need to think about, too, is that the whole dike structure is kind of like an island, and that's still going to be there. That is going to be like an island, above the water level and its going to run almost all the way around. So how much effort do we put into making islands inside here when we have this dike which, when the pits are flooded again, is kind of like an island.

Joanne Barnaby: Is there something we can do on top of the dike to view them like islands, to encourage the very things that Bobby was talking about?

Ed Jones: I am a bit confused, are you [Colleen] an independent advisor, or are you representing Diavik?

Colleen English: I don't work for Diavik, but I contract to Diavik. Gord pays me to be here to answer some of these questions.

Ed Jones: What's your role? A consultant you say, but sometimes you are advising and sometimes you sound like you are Diavik staff. That's where I am confused.

Colleen English: I use to be, but I am not Diavik staff anymore. I may say 'we' a lot because I worked for them for too long!

Ed Jones: But my question is who are you and what are doing? You are an advisor, yes or no?

Colleen English: I am a consultant but I wouldn't call myself an advisor.

Ed Jones: You confuse me because a lot of the times you sound like Diavik staff. I know you were with Diavik at one time.

Colleen English: I haven't been with Diavik for 3½ years. I know it can be confusing.

Kathy Arden: I think it's because you know so much about the mine and what their plan is for closure.

Colleen English: That is part of the reason I am here. I have that knowledge and I've been involved with it for 10 years when I was with the company. That's why Gord wanted to keep me involved with this Panel.

Kathy Arden: I wanted to speak on the island but I think Bobby is talking about raising it more so it's a little warmer for the minnows and such, not so much to make a big island.

Nancy Kadlun: I was just wondering what about the very bottom of the pit what is there?

Colleen English: Right at the bottom of the pit is the underground mining. They do what's called open sky mining so that bottom of the pit connects to the underground. That's where you get into all of those little tunnels. Then it's largely rocks but some tunnels.

August Enzoe: For the future, the Diavik company doesn't know what is going to happen. They are going to fill it up with water. They should leave it, testing it for a few years. They might not break it, or they might. So we got two options after they close the mine. If the water is good, everything is going the way it is.

Natasha Thorpe: One thing about the reefs being above water versus being below water, the higher you are going to build something the bigger the base has to be. So if you are building reefs above water you are going to be taking up more of the bottom with rocks. So would you say half of the reefs should be above water and half under or maybe just 1 in 10 should be above water?

Kathy Arden: The land around the pit is not exactly flat so when you are putting in the shoals or reefs I would say use the high points in the land to make a higher reef and use the low points to make the low ones. Use the layout of the land to plan the reefs.

Bobby Algona: I did see that for a bit, too, the dike itself as a collection point for the natural wind-blown material from the land itself. I do agree. I see it now. You don't really have to have an island now. I keep thinking about the main lake itself, putting an island there, and I keep getting distracted. If you have to put those shoals and reefs, it doesn't really matter how deep they are, as long as you can see the shoreline. If you put some reefs out in the natural lake sometimes you see them, and some you don't. Some of those natural reefs are out in a larger area. In a small area, like in the dike, there is not going to be much movement. The space in between the ice and the shoal itself has a lot of movement and it will be more pronounced versus how thick the ice gets in the winter time.

Joanne Barnaby: I just wanted to check my assumptions with Colleen. Right now what we see around the pit, am I correct in saying what we see around the pit is old lake bottom?

Colleen English: Yes, the only thing is they have added some rock in there to build up some of those base areas for reefs.

Joanne Barnaby: We are actually going to be covering natural old lake bottom with water.

Louie Zoe: Flooding the open pit with the amount of water has been taken out. The vegetation that has already grown back on the dry land and once the water is back to normal, up to lake level, they are going to kill all the vegetation that's on the dry land. I don't know if the dry plant will come back to life.

Joanne Barnaby: So perhaps the concern that we are going to be killing the new vegetation on the old lake bottom. Maybe there is something to consider moving some of the bottom on to the tops of the dikes.

Bobby Algona: Just another observation, seeing the dike right now its sort of a slow accumulation place for the snow. I am wondering when all that snow has accumulated on there, and looking at it right now, that dike is there it is going to be a collection place for snow. It's going to be much deeper in that pit and it will be insulation for the water inside the dike. If the snow starts to accumulate inside the dike, the ice won't be as thick as it is out on the main lake where the ice is going to be thicker. It doesn't really matter how deep the shoals are; when you have less or more snow in one area, you have more or less insulation so the ice will vary.

Natasha Thorpe: Am I hearing that it doesn't matter if some of them come above the water?

Bobby Algona: Yes, I think being inside that dike is going to be less movement, just like in small bays. It will be breached in some corners. There will still be a little movement, depending on how deep the dike is going to be breached.

You are creating a little river channel now, when you breach these dikes, a little channel in these dikes, it's something to look at as well.

Joanne Barnaby: So new currents are being created through the breaches.

Natasha Thorpe: So maybe over break think about inside of the dike. I am hearing you don't want any islands inside the dike.

Break

Ed Jones: I believe the area within the dike walls is too small in comparison to the lake to put shoals, reefs in there.

Kathy Arden: I wanted to speak to the existing vegetation that's around the pit. Those plants are meant to grow on the land, so when we flood that area those plants are definitely going to die. Now they are growing there because of the rich silt from the bottom of the lake but it is also going to help sustain and grow new water plants and food for the fish. So removing it now and putting it up on the dike or something to try and build plant life on the dike I think is not a good idea. We are destroying something that is already there that's meant to be in water. I think on the dike itself plant life will come back from, you know, the seedlings that will be flying around through the wind. I think we should just let the plants be and get flooded and use that as part of the re-growth for the fish.

Joanne Barnaby: Ed just to remember Diavik has no choice; they are required by the Government of Canada to build the reefs around the pits.

Ed Jones: Joanne when you say around the dike do you mean inside or outside.

Joanne Barnaby: Inside the dike, outside the pit.

Nancy Kadlun: I won't be concerned about putting the reefs in as long as it's not harmful for any living animal.

Natasha Thorpe: It sounds to me that maybe we should get rid of 21-ensure built reefs have a portion above and below water and 23-put sand and gravel on top of built reefs.

Mary Louise Black: No body wants to disturb the land that is there and that is already re-growing but then there is the area that isn't and maybe to build the reefs there.

Natasha Thorpe: So the idea is don't disturb new growth and build on something that is already disturbed.

Show of hands to cut 21 and 23-Yes.

Change 22

I have a general question about the area inside the dikes. Do people want to fish inside that area, long into the future? Should we building for that? Do you want to set nets in there sometime, or would you set them out side of the dike?

August Enzoe: For that place around there, once the mine is gone? We know how to set nets. We are working for the future.

Natasha Thorpe: Anybody else have a question?

Nancy Kadlun: We don't usually put fish nets in really deep parts so we don't have to worry about that.

Kathy Arden: I was, forgive me if I am wrong, but I thought we were building this as a spawning area for the fish so they can go out to the big lake later, where we would fish. Putting nets on the outside of the dike was a really good place for the bigger fish. You wouldn't want to eat fish that is spawning so I am sure that when the fish go there they will be able to find the exit so that we can catch them in the net.

Joanne Barnaby: Its one of the questions that we have, do we design this for spawning, do we design it for feeding, resting or rearing because each is a little different. Which should it be designed for?

Ed Jones: Joanne I think we will let the fish decide that.

Natasha Thorpe: There is feeding, spawning, rearing and resting so of these different types of habitat, the fisheries biologists would make slight changes depending on which of those 4 you wanted to build for. Is there any guidance you can give Diavik or the fisheries biologist based on what you want to see? I hear that we don't want to build to set nets inside the dike but how can we plan for feeding, spawning, rearing and resting?

August Enzoe: I have been working for government for many years and they want us. They are sitting in the office a lot of them and they have never been on the land. They might change their mind if they go on the land.

Colleen English: A good point August. I just want to add a little bit to what Natasha was saying about how we want to design the habitat. We also need to think about what is going to be there when we are saying that. So Bobby I think you and Fred were talking yesterday that big fish need the currents for spawning, they like to put eggs on the rocks with some current. So this area is going to be pretty closed, so we need to think about the limitations that exist because of the structure [dike] that will be there.

Bobby Algona: If we were going to think about re-vegetating and having a spawning area, I am thinking to myself again that these little breaches will create some movement because most part of that lake on both sides. If we are going to think about re-vegetating fish habitat to be moving, the lake itself will be moving either way. Maybe if we were to breach one of the areas a little bigger so we could get some more movement because of the sediments we need to come in from the lake.

Joanne Barnaby: Do we know if there was spawning around the island before the mine was build?

Colleen English: Not for certain. There were rocks and islands that were probably used, but we don't have a definitive answer.

Natasha Thorpe: The location and size of the breaches are non-negotiable right?

Colleen English: Location yes, size I don't know. I am waiting to hear back from Gord.

Joanne Barnaby: So let's go back to our recommendations and continue going through them, we may need to come back to these ideas after we have time to get more information or when we think about it more.

Colleen English: It looks like maybe you and fishers disagree. Yes they could be bigger but it would increase the currents, something that goes against the fisheries objectives.

Joanne Barnaby: So DFO wants this area on the inside of the dike to be designed for rearing fish, not for spawning fish. Are you okay with that?

August Enzoe: Yes, for now.

Kathy Arden: We don't know if they spawned in that area before anyway.

Nancy Kadlun: What he said earlier, we don't decide for the fish.

August Enzoe: The two pits that are open now on the north side, after they fill it up and they test it, they should break it at the top and the bottom only, to make a stream across the pit.

Joanne Barnaby: So Lucas and August have proposed where the breaches should be located and what they want to achieve with those locations is a stream running south and north through both pits.

Lucas Enzoe: I am proposing that if you fill up the two pit with water, then make a breach on the north side and south side of the pits, and put the breaches to use the natural currents already there. (i.e. north of the big pit A154, south of the small pit A418 and a connector in between the two pits.)

Mary Louise Black: Why don't you want breaches on the side?

Lucas Enzoe: No breaks along the side because it would disrupt the natural flow.

Joanne Barnaby: So that objective is to keep the current strong? So keeping the current strong by limiting the breaches along the side.

How do other people feel about the idea?

August Enzoe: We are talking for the future so it sounds good.

Joanne Barnaby: August and Lucas, is this something we want Diavik to consider as an option and ask them for feedback on what issues they see with it so we can consider it as an option?

Lucas Enzoe: Absolutely.

Joanne Barnaby: Alright so this will give us another option to consider.

August Enzoe: Is fisheries going to come back today? It would be good if they did.

Natasha Thorpe: It might be possible, we can certainly ask, you never know what their schedule is like.

If I were to add this in observations and comments: general that we have a proposed solution for consideration or research to breach the dikes at the north end of A154 between the two pits A154 and A418 and at the south end of A418 to support strong current running through. Why do we want a strong current running through the pits?

Lucas Enzoe: It will make like a river from the north to the south and the fish will sense the current. They will think it's the perfect place for spawning. It's like a tiny lake, and around the edges its shallow and you could make reefs so it could be like a fish habitat. And at the same time you can keep all of the outside vegetation that is growing.

Natasha Thorpe: So you are thinking that you would only flood the pits and not the surrounding vegetation?

Bobby Algona: We want so much to re-vegetate these dikes, we want natural growth to go back in there. Creating these currents inside these dikes would be something that the big lake itself has all of these natural sediments and we wants parts of that lake to be moving and all the sediments and anything that is coming off of the big lake. It would encourage the natural sediments from the lake to go into the pits. We want the growth to go back in there so I think in my mind these breaches are going to bring back the natural growth and sediments from the bottom of the lake. The natural windblown leaves branches is something to think about as well.

Natasha Thorpe: So Bobby I added encourage the natural sediments of the lake to come back into the pits. Is everybody okay with the way this is written or added? Would we like this as a proposed solution, or an option to consider?

Our artist has given us a diagram, is that what you were thinking August and Lucas?

Kathy Arden: So the red is the vegetation and blue is the water? So what happened to the Fisheries idea of rearing and resting, it's gone? So it's going to be a big deep hole of water? It will be like a big river, no spawning, no resting, no nothing?

Lucas Enzoe: It will be like a big river and it will be up to the fish if they want to spawn. Think about the part between the two pits as where the fish may spawn.

Joanne Barnaby: My question to Diavik given Fisheries requirements is this an option that you can actually consider?

Colleen English: This small area in between the pits is likely not enough so it will be a challenge from a fisheries perspective. And then there is also A21 we need to think about it in the same manner. Ask Gord to look at it later today.

SHORELINE Recommendations

August Enzoe: Is that shoreline only inside the pit or around the island? Just the shoreline inside the pits.

Natasha Thorpe: We are not talking about outside, we are talking about the shorelines of the pits. Then the ramps, we need some closure on that one.

Joanne Barnaby: We want a recommendation on keeping that road way, which acts as a ramp.

August Enzoe: The first pit is okay around the shoreline, the second one with the cliff down to the lake is the one we are worrying about now.

Natasha Thorpe: Does the TK Panel support the two recommendations? One on leaving the shoreline on the pit A154, the bigger pit? Yes.

Kathy Arden: On 27, break up the 1km cliff on pit A418 with slopes because its too long for caribou. Wasn't it that it was dangerous, not that it was too long?

Joanne Barnaby: Break up the 1km cliff with slopes (poses a danger for caribou)

Joanne Barnaby: Natasha has added number 28. Leave current roads leading into the pit so they would act as ramps that animals can climb out if need to. Are people okay with that?

Louie Zoe: Discussed a lot of issues for recommendations, things that we are discussing today and maybe next visit to the mine in spring. We need to take a look at some of the areas and maybe we don't try to re-vegetate and let it naturally go. The mine people, they hear the people from the TK and I hope they take our recommendations seriously.

Joanne Barnaby: We did have a recommendation that the TK Panel visit the areas again in the spring or summer so that we can see it again.

Mike Francis: How are they going to put the water in the hole?

Colleen English: With siphons and pumps into the pit.

Joanne Barnaby: They are using pumps because they want to get the water in there fast and test it over a period of time before they open it.

Mike Francis: If you use a channel, fish are going to fall in and then they starve, but the pump is good.

Colleen English: There are screens on the pumps so the fish don't get sucked in.

Joanne Barnaby: Diavik wants to monitor for 7 years, TK Panel wants longer. So #28 is looking at how to do that. See what the options are and explore funding options, using a portion of the bond if possible.

Re-seed land and use dirt and human waste to facilitate re-growth.

Natasha Thorpe: We had a written recommendation from yesterday that this take place and I would like to take a few moments to talk about this idea. I don't think that we got closure on the whole concept of using human waste on site. This showed up on one of the maps, one group did recommend this.

Bobby Algona: Re-seed land and use dirt and human waste to facilitate re-growth. How are we going to do that as the human waste has already been chemically stabilized? I wonder how many chemicals are being used to treat the waste?

Colleen English: I am not 100% sure of all the chemicals that are used to treat the waste but I know the purpose of the treatment is to make the end produce stable, safe. It is stored on site in the environment anyway. It will stay on site even if it's not used as a fertilizer. But I will get back to you on the chemicals they use.

Natasha Thorpe: If the waste doesn't get put back in areas where people have identified where they want vegetation to re-grow, where would it go?

Colleen English: There are two places where it is stored and it would just stay where it was and then some may be buried in the rock pile.

Natasha Thorpe: If you don't use the waste for areas of re-vegetation then would you have to truck fertilizer up from down south?

Nancy Kadlun: As long as it is un-harmful, make sure its checked and everything because its human waste, and we also have so much chemicals going into the same area.

Mary Louise Black: I think that all the waste should be used if it is treated, and if it's there they don't have to bring anything in and if it would promote growth I think that is a good thing.

Bobby Algona: In my mind we are not only getting the fallout from the mines we are also getting it from the trucking companies that are coming up and are bringing lots up with them. They bring a lot of mud and everything under the wheels and we are having a lot of things come up from these trucking companies and when it falls, it falls out on the road. What they are bringing up from the south as well and all the containers is coming up from the south and these crates and we're having to see all these bugs as well and replanting themselves out on the tundra that we don't know about. Down along the arctic coast we never had grasshoppers before, now we have thousands of them. It's because of the crates and ships that come up. Some of these freighters that are coming from all parts of the world we have long known that these cruise ships are bringing all kinds of bugs and sediments up to us.

Natasha Thorpe: Okay so do we have some final direction about using waste as fertilizer? Can I have a show of hands? Yes, all are good.

We forgot to ask this morning if there is a volunteer to present these recommendations to Gord this afternoon.

Joanne Barnaby: We still have more to review after lunch but we really do need to think about a presenter. Perhaps the 4 youth could team up and present the recommendations to Diavik? Yes, okay good.

Okay I guess we don't have any further recommendations.

Natasha Thorpe: Gord has preliminary results for the slimes. He wants to know if you want him to present preliminary information, or wait until next time and have a better

presentation with all the information and maybe one of the researchers to present and answer questions.

Bobby Algona: It is good if we could have it next time, but maybe give us a little bit to think about this time, too.

Natasha Thorpe: I am super excited of what you have pulled together so I just want to say that I am going to put on the video again over lunch because we have Chloe here. She was one of the youth from the AEMP TK camp this past summer.

Lunch Break

Presentation – Recommendations for Diavik

Janelle, Mary and Ethan as the youth of the Panel are presenting to Diavik

Observations and Comments: FISH

Observations and Comments: WATER

Observations and Comments: AEMP

Observations and Comments: REEFS OR SHOALS

Observations and Comments: SHORELINES

Observations and Comments: GENERAL

AEMP Recommendations

On Island Recommendations

Reefs Recommendations

Shoreline Recommendations

General Recommendations

Questions for Diavik

Questions addressed by Diavik

Joanne Barnaby: Thank you to the youth. John McCullum has arrived from EMAB.

Gord Macdonald: Thank you, youth, for your presentation. I don't know why they keep bullying you to make the presentation, you should push back sometimes, but you did very well, thank you.

On the pressure ridges, is it something we should be looking at? Is there an intent with that or is it just an observation?

Bobby Algona: It is an observation from something that has been around for many, many years and they are caused by the weather and as you know the weather has fluctuations all season long. Winter time you have long spells of really warm weather in the fall and this creates pressure ridges in the lakes, the warmer the winter the more pressure ridges you have. The colder weather may not bring any pressure ridges. The moon effect and the sun and the rotation has an effect on weather and this causes fluctuations on weather, and the warm spells and the cold spells and how this affects in our season. The long warm weather is what causes the pressure ridges and the spells is not thickening the ice, maybe a week or two weeks because the ice is not thickening.

Natasha Thorpe: Pressure ridges being important in terms of oxygen and open water and fish, and that being why fish were attracted to those areas.

Gord Macdonald: But I am not sure there is anything we could do to create one. It's an observation, and I agree, I just don't think there is anything we can do.

Nancy Kadlun: How many pressure ridges do you see in Lac de Gras?

Gord Macdonald: Bobby would probably know more, he has snowmobiled on that lake way more then me.

Bobby Algona: Like I said before, the longer warm weather in the winter time creates more pressure ridges on the lakes. The longer colder spell in the winter time will not create pressure ridges. In my mind to create something like a pressure ridge I think another recommendation that I am coming up with again is to make an example if we want something to look like a pressure ridge maybe make holes on the ice inside the dike where the ice is to make it look like a pressure ridge. Every time you make a hole in the ice fish are going to be looking for that oxygen.

Gord Macdonald: I think you could do that initially to try and attract fish in the area but you wouldn't want to go back every year to do it.

Natasha Thorpe: I think, Gord, all of these observations and comments are understandings that are grounded in TK and part of your challenge is to see and track how those ultimately flow into operations or planning.

Gord Macdonald: Yeah, I was just curious what that was.

I like the animals drinking from the pit as an indicator, that's a good one that we could build into that monitoring of the pit before we breach it.

This one [north-south stream across the pits] makes it sound like all of this would have to be at a lower elevation than the lake. The only way to stop it from flooding into the shores, you can't do that and have the water at the same elevation. I like the idea but I just don't know how. Physics isn't helping you in this one.

What I understand Lucas is that you are suggesting to only flood the pits and not flood the edges, and leave a hole here [north] and here [between A154 and A418] and here [south] so the water could flow through and gradually add sediments and natural materials into the lake. But the problem is that the edge here [pit] would be 30-40 feet lower than the lake. If you put a hole in here [dike] you are going to fill the area all the way up to the lake level. You couldn't do it as a breach. You could control it with pipes but then you wouldn't get the currents going through there.

Why can't you do the same thing but with flooding the vegetation?

August Enzoe: That's because we don't want the water to spoil the vegetation that is growing now.

Gord Macdonald: I see.

Mary Louise Black: Another thing we had in there was flooding the whole inside and having the breaches where you said. I think one of the things we spoke about was where the reefs would go, and they didn't want to ruin the natural vegetation because it was originally the bottom of the water; so just using where you had already developed the land and poured the rock for reefs.

Gord Macdonald: That's exactly what we were thinking. We don't want to put any reefs where there is already natural lake bottom and, in fact, now vegetation. So we wanted to put it in areas, like up here, where we have intentionally put rock. But I think it would be hard not to flood it all.

Ed Jones: Gordie what I want to suggest is this. Instead of opening the north or east side of the pit walls, pump the water in there to the level that you want and leave it there and don't open the walls at all.

Gord Macdonald: Yeah we could do that. And then introduce fish in there, or just leave it?

Ed Jones: Leave it. Until such time that it's been tested and is suitable for fish habitat.

Gord Macdonald: Yes, that is exactly what we are doing.

For the TK Camp, I understand why you want it to stay but it is really difficult legally to own a camp and allow anybody to use it. We could sell it, give it away, but it would be difficult for us to hold on to it and take all the legal responsibility that comes with it. But I understand the intent. And why destroy it if it is of use to someone.

I am interested in the why of number 7 of AEMP Recommendations. Why are you interested in sampling there [the Narrows]? We sample water from there so we understand what's coming from our competitor's property to protect our interests, but why would you guys be interested in monitoring those fish?

August Enzoe: That is for the future because when they start working up there we want to be able to test the fish. For the future.

Gord Macdonald: That's something we should be recommending to Dominion, not to Diavik?

Natasha Thorpe: In LDS or LDG?

August Enzoe: Both sides, and in the narrows, because that is where the fish are going to go through.

Gord Macdonald: In the narrows is a very unique fish habitat. It seems more of something to understand the effects from J [pipe] then to help understand the effects from closure or operations at Diavik. Not that it isn't a good idea, but we might not want to do it if it seems to have other reasons.

Number nine is exactly what Ed was saying but being very specific, we should seek the approval of the Panel before doing that. I think that is a nice recommendation.

I am glad you picked up on 10. We think that is the most important for water quality as well.

11 and I think 22 seem to be about building some sort of wetland treatment or natural treatment particularly for the PKC to try and naturally clean the water. I have never thought of mosses, it's a good one as well; moss is on our list of things to research. I think it is one we need to bring forward. I wish I knew what the industry filtering system was.

Kathy Arden: Leave it the way it is when you flood it. The land plants are going to die but water plants are going to grow.

Gord Macdonald: 24 seems to be the main question that we all have to get at. I think if we put our minds to it we could design a fish habitat for any one or all of those fish habitat types, maybe the bigger question is what habitat types do we want in there. We had excluded spawning because we wanted to replace habitat that is in short supply in LDG, which is rearing and feeding and resting.

I like 26, the importance of us walking that in the field before and after we've created that habitat to see what the bottom of the lake looks like.

29 is an interesting one that we need to look at, and if you could be clear on this recommendation. If we are using 2030, which is what we are saying right now for when we think we will be done monitoring, whether there should be some sort of trust fund for ongoing monitoring is what I understand you are saying.

30 is very appropriate. I am just trying to get money as we speak to do that. So we have had a large group of scientists working on those test piles and it's done with 3 different Universities and they are interested in continuing the program and instrumenting the main pile.

Joanne Barnaby: Can you give us an idea when you are looking at long term monitoring the NCRP for stability of the frozen state. What kind of time frame do you have in mind? For monitoring?

Gord Macdonald: Same as everything else, 2030. If things all go as planned it would be 2030. If not, it could be longer. It's hard because it depends what we see.

Joanne Barnaby: That gives us a framework.

Gord Macdonald: The scenarios we look at now are 100 years because it's hard enough for 100 years.

There is a key word in 33 I'm taking and that is 'safe', the key word for all. We want it to be safe as well and we will have to demonstrate to you why we think it is safe.

Thank you very much.

Joanne Barnaby: Any questions or comments from the Panel?

August Enzoe: Do you agree with most for now?

Gord Macdonald: I don't think I disagree with anything. I agree to most. There are some very solid recommendations in there and things that I have never even thought of, like introducing bugs are a good one. And hearing that you view that healthy

environment at a bug level is the same place where science goes, so that is very useful.

Joanne Barnaby: Further thoughts. Everybody is good.

Gord Macdonald: Questions for Diavik number 1 is a really hard one. It can't get to that point, we have to have monitoring and control systems in place way before Kugluktuk. That's why we are monitoring on the island right now. The first test is, is it acceptable in the water right next to LDG because once it gets there its too late. I don't think we can even think of that. We have to have monitoring and controls in place at the island. It just can't get to there, because it's too late once it gets there. The most we could do once that happened would be to compensate, financially compensate Kugluktuk, which is not going to solve anything. It might help but it is not going to solve anything and it's certainly not where we want to go.

Bobby Algona: We have always had this ongoing thought in there that what if all the contaminants start to flow to Kugluktuk as well. We are not just looking at Diavik, we are looking at the other mines as well. Even though they are all related and are diamond mines, what if something else comes in. Where are we going to move Kugluktuk if ever this was going to happen, how would we present this to the community?

Gord Macdonald: Number 2 is what we have to do this year, making an inventory as to what is actually down there. Nothing really in the pits, it's the underground. So making an inventory of what is underground and what do we think has to come out and what do we think we can leave in there. That is what we think would be the start of the discussions with yourselves and with regulators; is our list okay so we can start planning. We won't be the first ones who have done it. Dominion has flooded an underground, they left stuff behind, don't know what it was but there is some precedent, Snap Lake might be doing the same inventory right now.

Number 3 we do know how many streams and rivers flow into LDG and about how much water comes with each of those but I can't tell you off the top of my head. I can certainly get the information for you.

Nancy Kadlun: I am concerned about the rock pile here but once everything settles what will happen then. The earth is very strong and can break man-made things no matter how good and thick. We are worried about this from spring and rain, it's still going to contaminate the areas.

Gord Macdonald: That long term settlement and moving is a valid concern and we share those concerns.

Natasha Thorpe: That's it in terms of questions for Diavik. Does anyone have any general comments, thoughts, concerns? Gord do you have any more questions.

Gord Macdonald: Thank you again for your time and effort.

Natasha Thorpe: I am going to walk through the changes, then we are going to go on to planning for 2016.

Kathy Arden: We had put in that one comment about testing fish in LDS and LDG. It might serve as a warning bell for the other diamond mine. I don't know what the communication is like between the two mines, but if they pulled a fish from there that was slightly contaminated with something they could say to Dominion, we have pulled this contaminated fish from the narrows and obviously the flow is coming from J-pipe. So I was thinking of that as more of an alarm bell.

Natasha Thorpe: I forgot this last suggested change in number 27. There was a suggestion to change the part in brackets so that it reads, break up the 1 km cliff on pit A418 with slopes to make it safe for caribou.

Presentation – TK Panel Process: Next Steps (Appendix L)

Colleen English: The next update for Diavik's closure plan is due at the end of 2016. That is going to include a number of the suggestions from the last few Panel sessions so we would like to have the time to include any changes that might come up in the August session.

Diavik prefers to have the summer session in August so they have time to change the closure plan if need be.

Natasha Thorpe: In April or May for the wildlife monitoring there would likely still be snow and ice so wouldn't it be harder to have a look at the shoreline and or the sewage treatment pile.

Colleen English: Yes, in April there would still be snow and ice but mid to end of May the snow would be melting. So if we did it mid to late May. The sewage piles, the one that is on top of the till pile is pretty exposed to wind so it doesn't get a tonne of snow on it and there is always fresh stuff being added.

Kathy Arden: We had mentioned earlier for water testing to happen in May and June when water runoff is at it's highest.

Colleen English: Around May long weekend is probably the best to see the water flowing and moving around the site. Freshet is usually the very start of June, end of May.

Kathy Arden: It's been very warm now so it's possible it may be early.

Colleen English: Yes, that is true. One of the reasons April was in there was because the northern migration can be happening then. But it is touch and go, and it's a really fast migration, as you well know, so it's really just the luck of the draw.

Bobby Algona: As an Elder out on the land for most of my life and my observations of caribou, the way the caribou migrate either way they are coming. North it's always the cows and calves that come first and the bulls always come later. It's always the same way going south. The cows are always making a trail for the bulls. Sometimes late March can be when the caribou come through. Working in Ekati late fall there was no caribou coming through those areas this year. The usual migration route comes through I am wondering if Diavik can keep the communities posted on when the caribou are coming through the mine.

Joanne Barnaby: Any other comments regarding timing of the sessions and the location of the sessions. Is there a preference for April, May or June. Do you prefer April, May or June?

Bobby Algona: I like the idea of what Kathy said, May or June, when the water is flowing at site. We are monitoring water a lot in our sessions so we want to look at the water. I am in agreement for that.

Joanne Barnaby: So you would want that session at site then.

August Enzoe: Plan a visit for after snow when everything is melting.

Mary Louise Black: I think this was for wildlife monitoring. I went to Ekati in June and there were lots of caribou, so I think June.

August Enzoe: Caribou is not like before, there would be a lot and in years coming now you probably won't see caribou there. In the spring time you are lucky if seeing them at Ekati.

Louie Zoe: I guess during the spring runoff is the time to go. Maybe early in spring as long as the eggs are hatching and the leaves are turning up and maybe the end of June when the leaves are coming out. The hunting season closes about that time.

Joanne Barnaby: We have had some consensus to look at June.

For the second session, August was suggested. Is that okay or not?

Natasha Thorpe: Also would you like it on site or in YK. So we will be there in May or June but the suggestion is to have the next one in Yellowknife, but we'd like your feedback. The discussion at that proposed session would be closure plan, the updates that they are working on now and reviewing that before it goes for licensing.

Joanne Barnaby: In terms of the stage of revision, I am wondering if delaying that August to the fall might give us a disadvantage affecting any change to the plan.

Colleen English: The August date was suggest because it gives Diavik enough time to have the report ready to share with you, but also take anything back that would come from the Panel and still incorporate that before we would be submitting it in December.

Natasha Thorpe: If we end up with the session in June, August might be a little close.

Bobby Algona: I am thinking about the youth. Some youth are going to school early August so we may want to think about that.

In Kugluktuk some kids start in early August.

Nancy Kadlun: Taking youth out of school for a week is not a problem. I have my son here who is in grade 10 and I talked to the principal. This makes them stronger, even one little trip like this can help the youth for a long, long time. They feel stronger and do more in school. You can still pull them out of school because these trips make them stronger and help them want to stay in school.

Natasha Thorpe: That's a good point Nancy. Some of it Colleen might depend on what's going on at the Diavik site as well, or as long as we are early we can book it.

Colleen English: Weekends, Travel Thursday and then come home on Monday. The best time is still weekends at the mine site.

Natasha Thorpe: Do you want to be at the mine in August/September or in YK?

August Enzoe: At site because you see the land. I look at it, if I see it with my eyes.

Natasha Thorpe: That's what we have heard all week, seeing with my own eyes. One last question. We talked a lot about how we could have ensured more youth come out to the camp, 1 youth from each group, and there was suppose to be an alternate in case they got sick or something. In the end we only had 3 youth come and I am thrilled we have 4 youth for this session. But planning into the future I am wondering if the Panel would be open to the idea that we always try to have 5 youth, or the designated number of youth. So if, for example, one group's youth

aren't available at the last minute, then the youth from another group could come. That we just keep moving down the list. It doesn't matter which group the youth are from, it's more important to have the youth here. I am putting it out to the Panel as a suggestion.

August Enzoe: It sounds good for the youth, they learn a lot from us to sitting with them in the meetings like this. You should think about the future of your youth. Depends on the money but we need to think of the youth.

Natasha Thorpe: To clarify, the youth right now are selected by your groups and for those that weren't here Monday and Tuesday when we talked about the Aquatic Effects Monitoring Program, there was a lot of discussion around the Elders getting involved with your schools, trying to encourage as much participation as possible.

Bobby Algona: I've touched a little bit on this earlier, sometimes the schools ask me to come and do a session at the school and as an Elder I certainly do. There are going to be more white folk coming to these parts so learn the language so you can be a part of it. I was pretty intimidated in the beginning. Everything my dad taught out on the land made it really easy for me to teach my children out on the land. If only I could get my health back I would be there. I am not going to go there with my health the way it is. So with the youth, having the youth around our Panel here is really nice to have.

Joanne Barnaby: I would encourage the youth that are here to tell your groups that sent you, tell them how you feel about being here, if you want to continue participation make sure that they hear that from you and they hear it from the Elders as well.

Colleen English: Just another logistical thing for when we hold meetings at the site, the youth have to be 18 years or older.

August Enzoe: I want the youth to say something about how they feel right now.

Lucas Enzoe: I feel that I have been enlightened by my grandpa and the western science and the importance. There are not a lot of people in the communities and some don't want to be involved. Our Elders won't be here long enough to keep this going. So I think it's important.

Mary Louise Black: I really enjoy doing all of this, I don't have a lot of knowledge or answers or info or anything like that and I don't say much, but I am observing and I am taking it all in. I like listening to Elders from all over. I am taking it in and I like this kind of stuff, it's where I plan to be hopefully, environmental monitoring.

Janelle Nitsiza: I am very grateful for the opportunity to be here. Learning about all this stuff is interesting and taking in culture everywhere and coming together is really amazing for me because we do have so many similarities and I think our duty as youth is to train to be an Elder one day. That is something that my grandmother engraved in me. One day you might be a grandma so what kind of stories are you going to give your grandchildren, are you going to give them bad stories or give them stories where you sat around the table and you learned from your Elders or learned stories. When I make decisions in life I normally have my grandmother on my shoulder saying are you doing the right thing or the bad thing.

I hang out with the young people and the Elders. Anytime I have gone to a meeting I have told the youth what I learned so that one day they can, too. We are Elders in training.

Ethan Kadlun: I feel pretty happy that I participated in this meeting because this is my first meeting. I have learned a lot even if I didn't talk much. I listened to the Elders talk a lot.

Joanne Barnaby: Before we break I just want to give you a chance to ask John McCullum any questions. Do you want to make a few comments John?

John McCullum: First thank you very much for letting me sitting in on your meeting. I have really enjoyed it so far and I can tell you our Board met just in the last few days. Part of the reason I am here is they are asking what is happening with the Panel. They really appreciate your work and the attempt that Diavik is making to hear what this TK Panel says and incorporate it in to closure. Our job is to be a watch dog and so the way the Board is looking at this is to see what kind of questions are you answering , are they the right questions, what do you think about what Diavik is doing with the information.

Great opportunity, great to meet you folks and to see your deliberations. Glad to be here. We are talking about maybe next time that you guys meet, trying to coordinate a Board meeting around the same time, so that maybe there is some overlap where our Board can actually come and talk with you, and you with them.

Joanne Barnaby: Question or comments for John, messages to their Board.

Nancy Kadlun: Thank you for what you said. We are always willing to go if we are invited because we learn a lot and we want to continue to have our air and water clean for our future. No matter if its 100 years, there will always be people here.

Joanne Barnaby: Thank you, Nancy. Anyone else.

Joanne Barnaby: People are ready for a break and then we will have a final round table for your final comments for today.

Break

Joanne Barnaby: We would like to give you the opportunity to share anything that you wish to and we have as usual your evaluation forms for you to fill out.

August Enzoe: What have we been doing since that time I was sitting on this Panel, the way it sounds like, is it is getting more input now in the last two years. We did all the information what should be done for when the mine closes. It sounds really good with how it will be done. What we are doing right now I hope the government will tell us we did a good job. We did a good job and getting the youth involved is really good.

Mary Louise Black: In the last three days I learned a lot, a lot of insight to what's happening, a lot of things I wasn't aware of. I think its good you are taking our recommendations and keeping us up to date.

Louie Zoe: The thing is its going to be very memorable in a way because a lot of the things we have done over the year. I didn't participate in activities there are some differences in the communities and I hope I will be able to participate in future activities. None the less we have a lot of Elders in the community and I hope to continue to participate but none the less I will encourage the Elders and the youth to participate.

Janelle Nitsiza: I learned a lot in the last 3 days. I remember in 2013 when we went to Diavik I think I made the recommendations to add the female Elders because there had to be a balance male and female, they both play such important rolls. I think that should go along with the youth, too. We can learn our rolls as men and women from the Elders. I really do see, I feel like Diavik could be a model for other diamond mines when it comes to closure because they are incorporating the TK and the science side.

Dora Migwi: Yes its quite a learning experience for me, too because it's quite a cross cultural experience. I do always listen to my Elders and respect them for that they are our main leaders. Today the youth are looking at us as leaders now and the possibility and we still carry the same notion of safety and preserving our land, despite losing Elders every year we are still here to help you. It's always good to have the majority of Elders, more ladies and more youth.

Mike Francis: Thank you for everything everybody, we had a good meeting. The baking it was good and we have people that come from a long ways, plane, truck everything. God bless you guys, thank you.

Ethan Kadlun: As I said before I am happy to be here, I am happy to a participant of this TK Panel, this is a great way of bringing Elders and youth together.

Nancy Kadlun: I am happy about being on the TK Panel, hearing Elders since I was young child they were always saying without the water one day the earth will burn because there will be no more water. There are so many people, some people, some day before there were scientists before we had TV and news there was no radio and they always said one day there will be no water left and we have to try and protect it any way we can. I am so happy I am part of these meetings, it's really helped me to come to these meetings.

Bobby Algona: The other day, when was it again, Janelle said it all for me and my people: water is really precious, not so much the diamonds, water is more precious then diamonds. No matter who it is, people are suffering all over the world because of water. I touched a little on this in the past, we cannot go without our water and our air; two most important ingredients, what we need the most. We cannot find another way to make our water so we have to keep it as clean as we can. Climate change is all around us. We can't get around whatever comes from that. We cannot only depend on land based animals we have to depend on water animals as well. For me my grandmothers stories were the most important, I traveled everywhere with my dad on his trap line.

I asked my dad many thousands of questions and my father never turned me away. Unlike some of the people I have heard before they said those things to me, you're important, you're my future, it made me appreciate how I interact with my family and be out on the land. Some of you might know I have an outpost camp on Pellet Lake which I grew up on for many years. I couldn't just leave it out there. I have been really blessed with the help of my Elders along the way.

I will use it in the future. I am going to be an Elder some day from my dad living out on the land really helped me to learn. I could never be doing this without him and their wonderful answers. I have come to learn a lot over the years through generation to generation. I have become an Elder and I try to do the things my father did for me and any questions my children pose to me I try to answer the best that I can.

Ed Jones: I am happy with most of the recommendations to Diavik. I have learned a lot this session and thank you for contributing their knowledge.

Kathy Arden: I have found it a real pleasure working with all of you the last few days and in listening to everyone speaking it awakened old memories of me being a child going out on the land with my parents, things I had forgotten about when you get involved in the modern world. So to be asked to come sit on this Panel with you and share our ideas and recommendations to close the mine that has scarred mother earth is a pleasure to work with you to help in that healing process. Thank you very much.

Joanne Barnaby: I wanted to tell you that it was a long week for some of you. It was a very long week and I really appreciate your commitment, your energy and insights. I am always amazed and this time in particular I was impressed the insights that you shared and the ideas that you brought forward and the honesty that you brought and your commitment to taking care of the land and your struggles to understand the mining process and the closure process and the science that we hear about and to come to terms with how you can bring your knowledge to this and make a positive change. Your patience and willingness to ask questions is fantastic. *Mahsi*.

Kathy Arden: I think on behalf of us we would like to thank our facilitators who have done a beautiful job getting us through this session. A big thank you to Joanne Barnaby, Natasha. I know you have worked late at night to put things together for us to review the next day and I am sure you are as tired as we are. Thank you John for coming.

Natasha Thorpe: I think Joanne said everything I was going to say. I want to echo my appreciation. Thank you for making the journey, the 3 and 5 days that you were here. The idea of this continuity and back and forth between youth and Elders and TK and science and as we continue in this TK Panel; we continue to respect one another, respect the land, the process and your passion and your stories are at the core of that. I think that the fact that we see such continuity in the faces around the table, honestly in an Indigenous setting as well as a non-Aboriginal setting, for this many years to have so many of the same faces is really, really exciting and it makes it much easier for this Panel to be effective because you've got the history.

I am also grateful that we have more women on the Panel now and I really hope that you are here and there is that continuity with you as well. I think we have a wonderful strong group. Likewise with the youth, you bring something to the table here that is really magical and a passion from the others.

Appendix D

Diavik Diamond Mines TK Panel Session #8 – Water Monitoring & Fish Habitat

Lucas Enzoe: My reflection for the last 3 days shows me how all these things are very important in all that we do. I am grateful that I took the time to participate and come to the TK Panel. I didn't think that I would enjoy it but I did and it feels good to be here.

Natasha Thorpe: It's hard to compete with all the things in your life.

Colleen English: I just want to say thank you to all who have been here all week. I really appreciate your patience and I was saying to Gord earlier today I feel like when I talk to this Panel, I feel like you know more about the site then some people that work there.

I think that the new additions are great. Thank you to everyone and I look forward to our next session.

Berna Martin: I would just like to thank every one of you until we meet in the New Year, thinking about your wellness, of your health and happiness and everyone have a good Christmas Holiday.

James Rabesca: I have been involved for many years and of course the Dene nation and the reason why they built it and as well as I did interpreter. I have been with them since day one so but now I am not involved in politics so I just interpret and I think I worked well and I enjoyed it. Thank you.

August Enzoe: Closing prayer

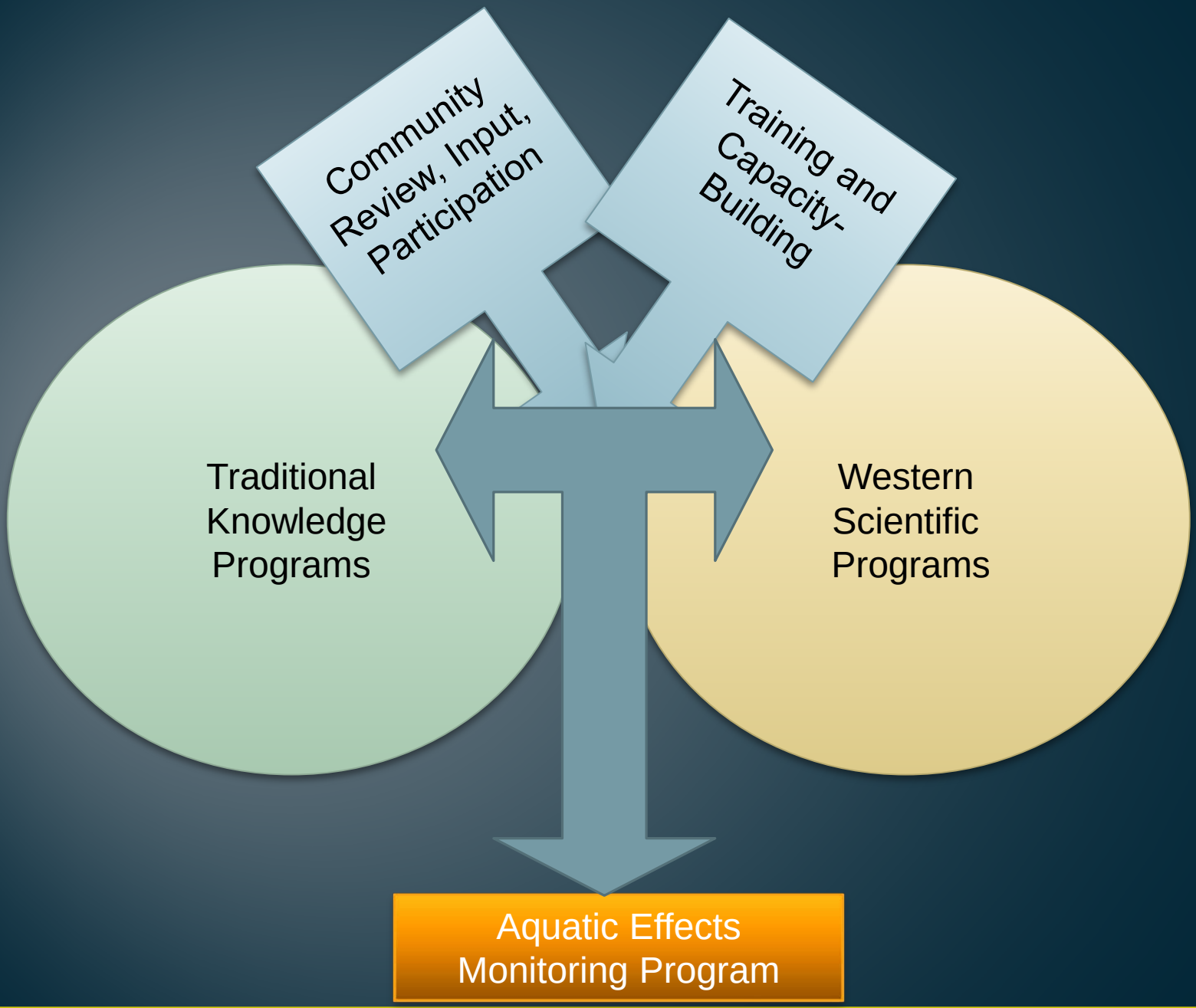
Appendix E

Post Camp Presentation

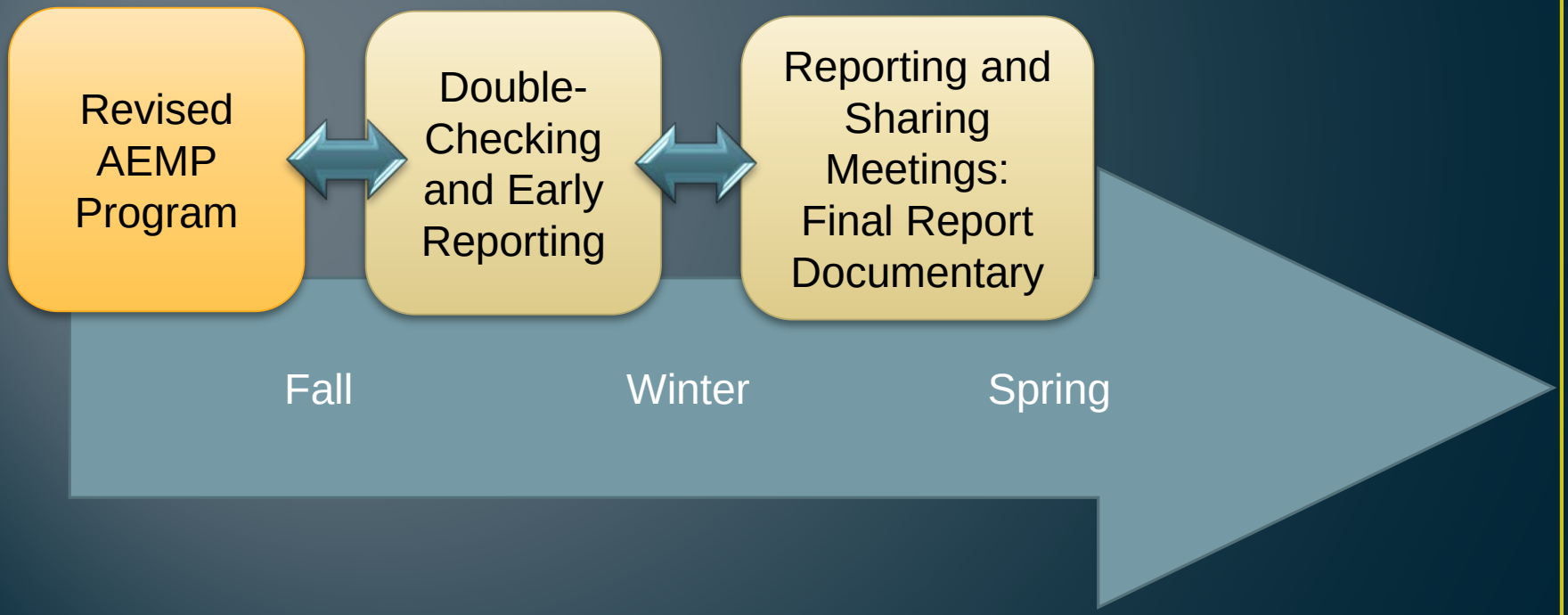
Diavik Diamond Mine
Aquatic Effects Monitoring Program: Report Update (2015)

November, 2015

Thorpe Consulting Services


Community Review, Input, Participation
Training and Capacity-Building
Traditional Knowledge Programs
Western Scientific Programs
Aquatic Effects Monitoring Program

Outcomes of 2015 AEMP



Report Over-view

Introduction

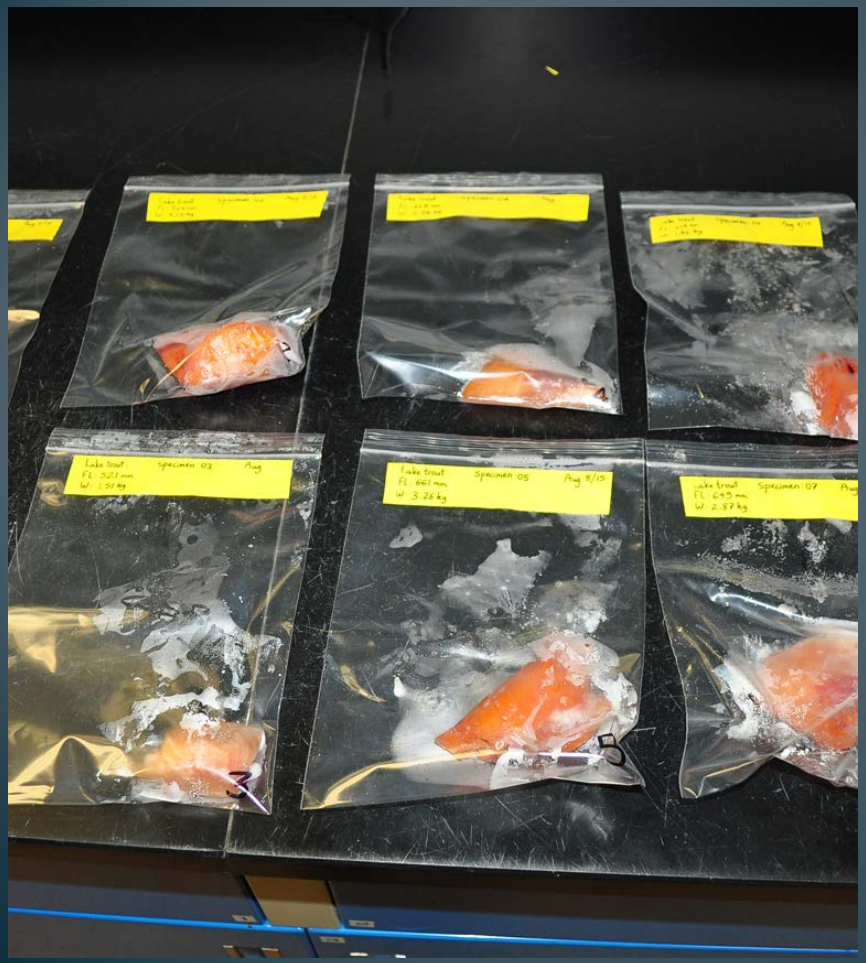
Approach and Methods

Observations, Learnings, Outcomes

Recommendations

Observations…

Fish


Lake trout Specimen: 03 Aug
Lake trout Specimen: 05 Aug 8/15
FL: 661 mm
W: 3.26 kg
Lake trout Specimen: 07

Water

Fish Palatability Study Questions

- 1) this fish tastes excellent for eating and looks better than fish we usually catch;
- 2) this fish tastes good for eating and looks similar to fish we usually catch;
- 3) this fish tastes okay for eating but does not look as good as fish we usually catch;
- 4) this fish does not look good for eating and looks much worse than fish we usually catch; and
- 5) we would not eat this fish.

Recommendations from 2015

Appendix F

Closure Overview Presentation

Diavik Diamond Mines

Diavik Closure Planning Overview
TK/IQ Panel – December 2015

Closure Planning

Content

Closure Plan – How we got here

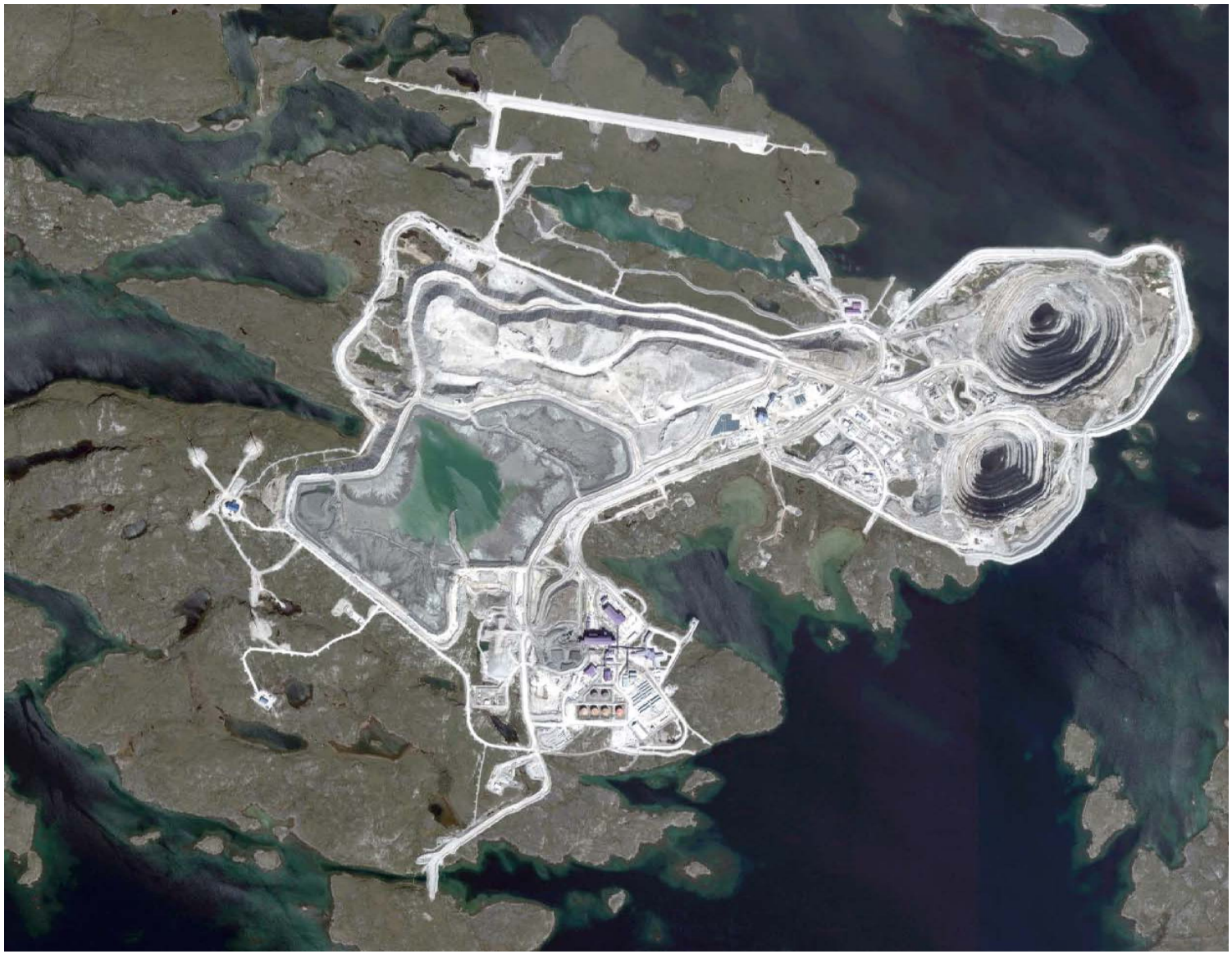
Water and Fish – the focus for TK Panel Session 8

1998 Pre-feasibility

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

Overview of Closure Plan by Area



North Country Rock Pile

PKC

North Inlet

Infrastructure

Open Pits & Underground

Fish Habitat Design & Water Quality

Appendix G

Response to Session #7 Recommendations Presentation

Diavik Diamond Mines

Diavik Response to TK Panel Session 7 Recommendations
TK/IQ Panel – December 2015

Response to Session 7 – Plants & Re-vegetation

Supported

- Further discussion on caribou deterrent methods & tools for animals approach East Island (7.3, 7.8)
- Caribou/wildlife ramp across the rock pile with smooth boulders at the bottom (7.5)
- Protecting natural vegetation left on the mine site, except where beneficial for wildlife safety (7.1)
- Study vegetation north and east of the island (7.2)
- Test plants for toxicity (7.4)
- Slopes on side of the road similar to test pile (7.9)
- Use natures quote to guide plant selection (7.11)
- Vegetation map produced by Panel to be used for further discussions with communities and Panel (7.15)
- Use old maps of migration routes to determine best travel corridors (7.16)
- Rock pile slopes similar to test piles (7.9)
- Literature review on TK of plants for LDG region (7.13)
- TK Panel informally share results with elders in their community (7.19)
- 1 female and 1 male on Panel; youth participation (7.20, 7.21)
- Sharing results of the Panel with government and other industries (7.22)

Response to Session 7 – Plants & Re-vegetation

Modify

- Fine crush rock, similar to the airstrip, on passage and road ways (7.6, 7.9)
  - Positive feedback from Panel on rock on the side of the test pile; suggest this is the appropriate material to use
- Create a barrier between the (NC) rock pile and the PKC (7.7)
  - Natural rock dump may not be good enough to prevent caribou movement between the two areas; need to investigate options how best to do this
- Womens session on vegetation (7.17)
  - Preference is to incorporate women into every program/meeting, along with men and youth, and using break out sessions to share information, rather than holding women-specific programs
- TK Panel to meet 2 times per year (7.18)
  - Committed to the Panel; number not as important as having the right information to share and the right topics/timing to apply to the closure plan

Response to Session 7 – Plants & Re-vegetation

Unsupported

- Use tundra mats to re-vegetate areas (7.10)
  - Requires access to an area planned to be disturbed (to take "tundra mats") while at the same time having areas available that require re-vegetation.

- Not using treated human sewage as fertilizer (7.12)
  - Diavik is interested in using treated human sewage waste as fertilizer for the first couple of years of reclamation, given that it is available on site and considered safe to use from a health perspective.

Appendix H

TK Panel Water Quality Presentation

Diavik Diamond Mines

Post-Closure Water Management and Quality Monitoring
TK Panel Discussion – December 2015

Post-closure Water Management and Quality Monitoring

Content

What does Diavik do now to monitor water quality?

- AEMP & SNP Overview

What will the different areas of site look like at closure?

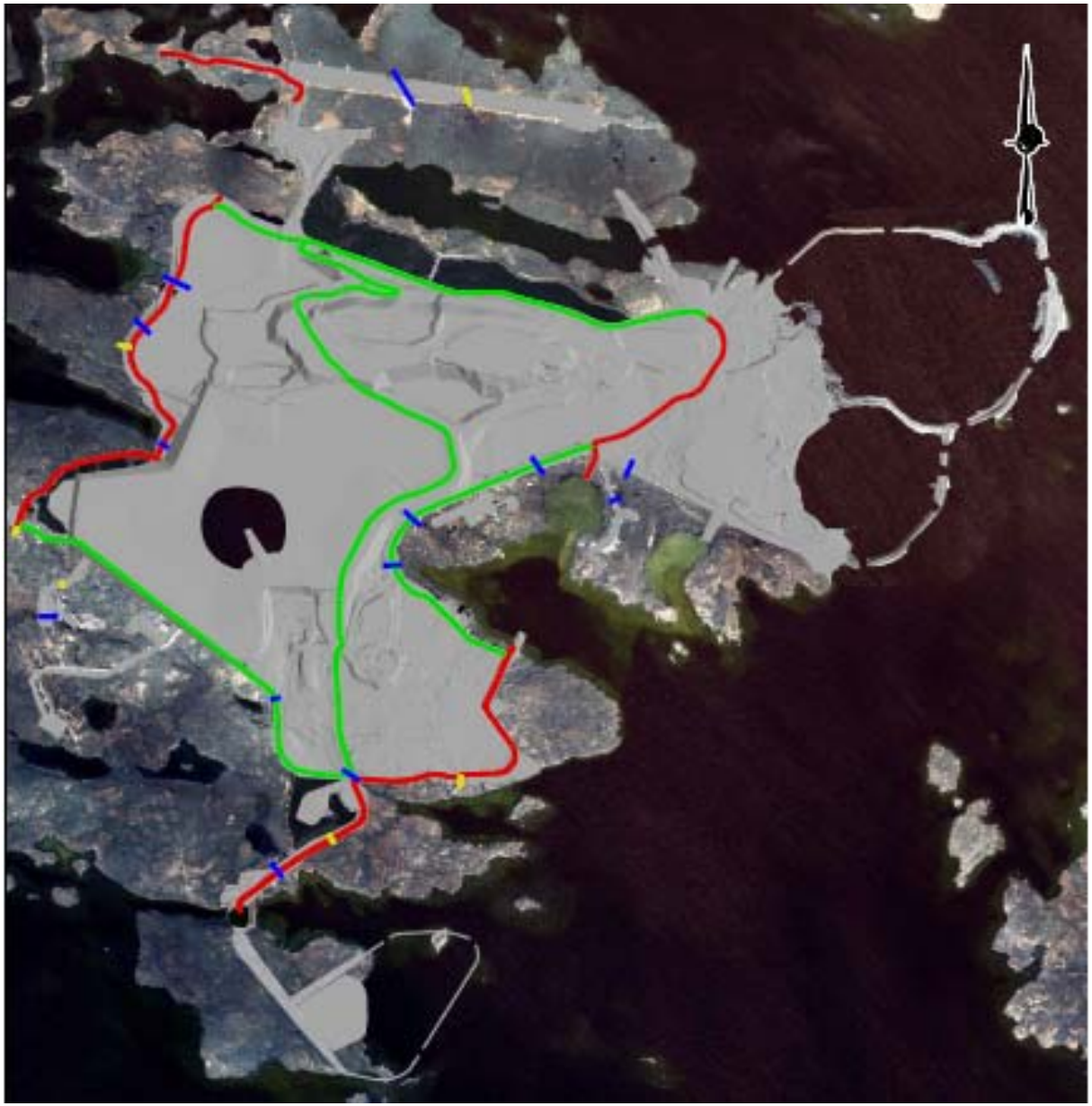
- Drainage patterns and holding areas
- What does Diavik plan to monitor?

Key Questions for the Panel

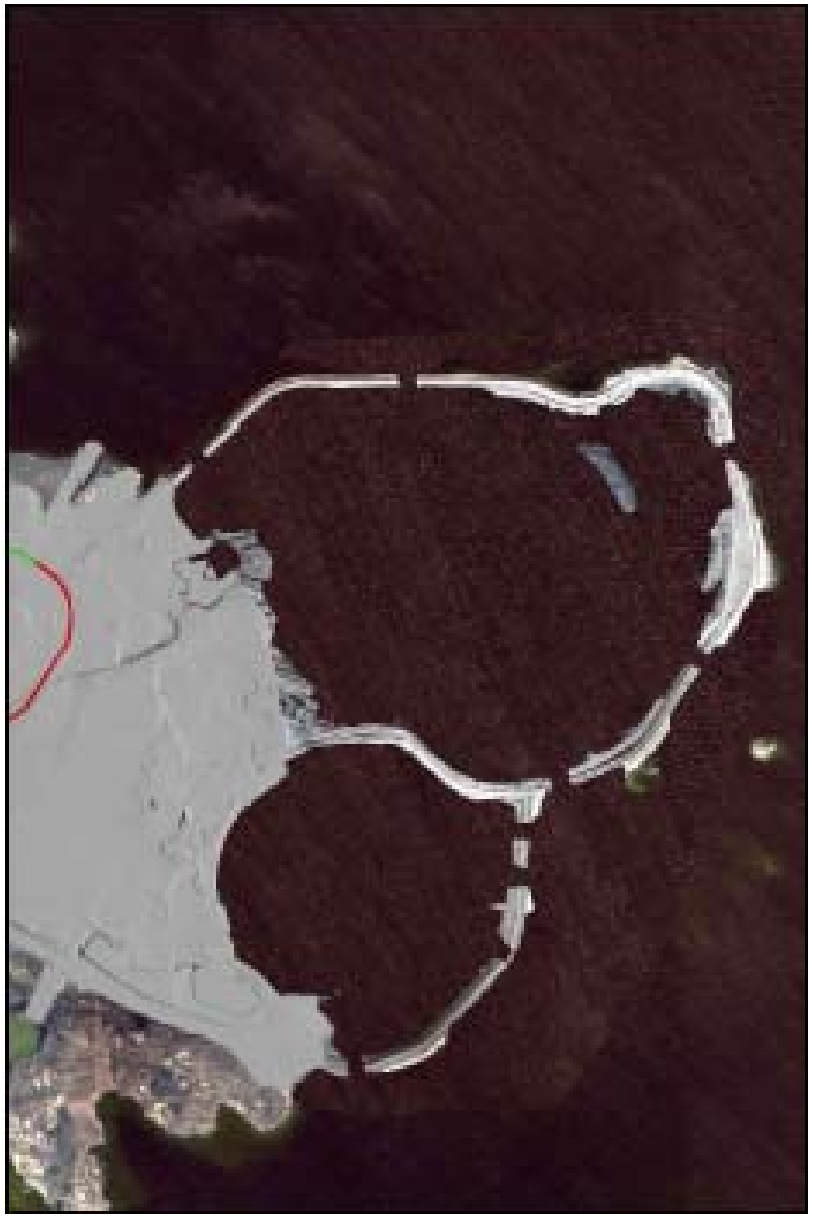
What do we do now? AEMP

What do we do now? SNP

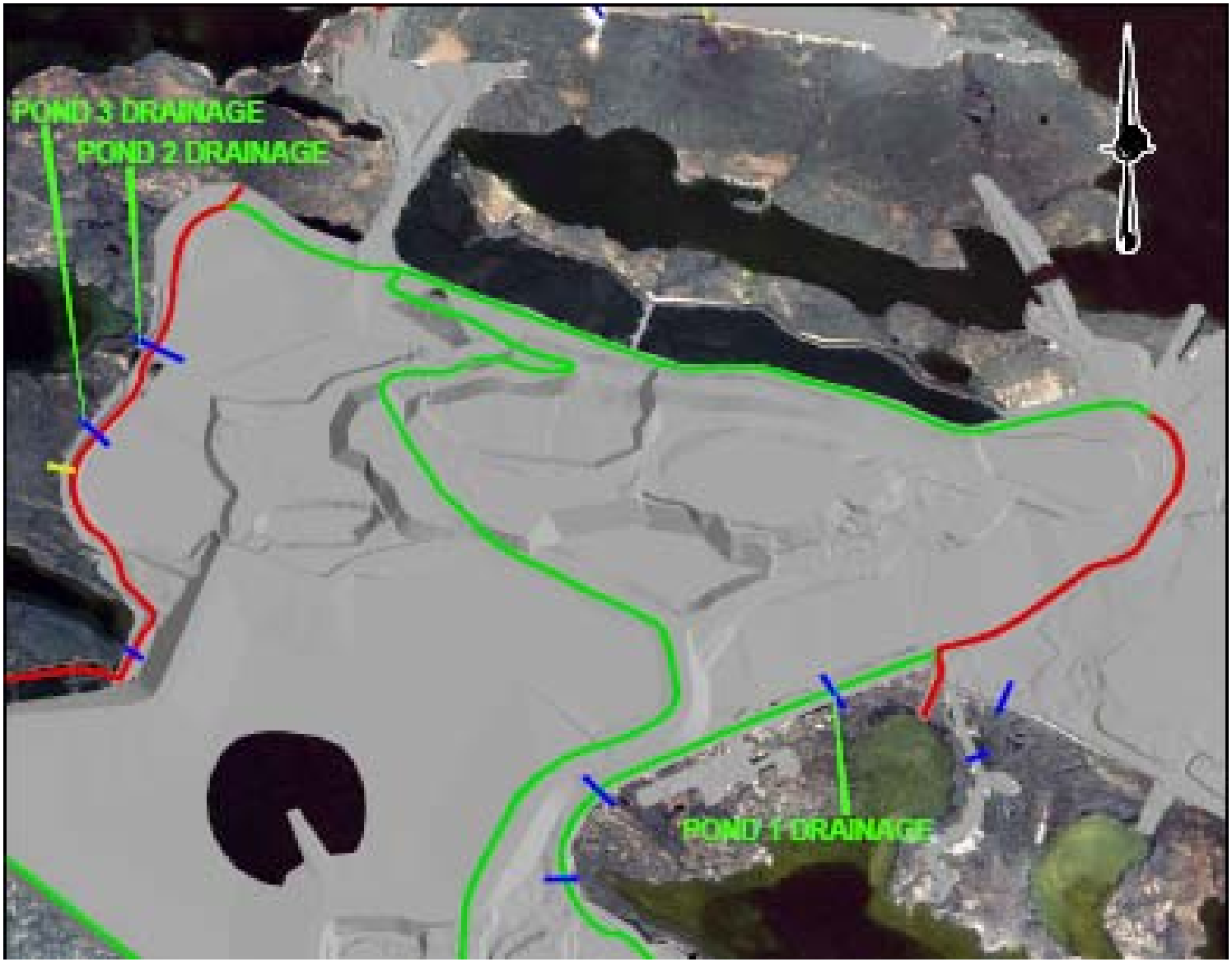
What will it look like at closure? Mine Site



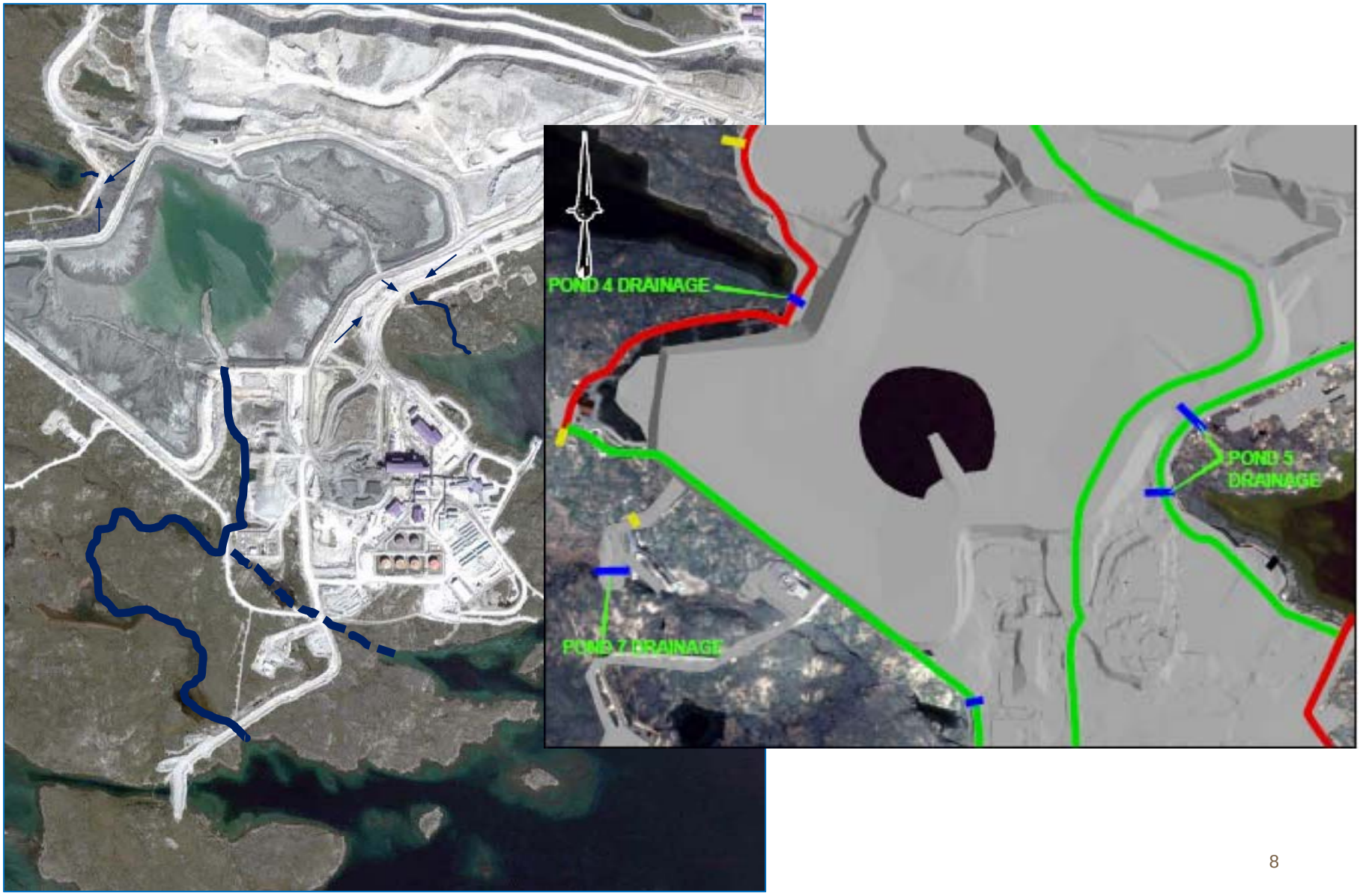
What will it look like at closure?



What will it look like at closure? NCRP



What will it look like at closure? PKC



What will it look like at closure? North Inlet

Closure WQ – Requested Input from TK Panel

1. What areas would you want to sample, and why? (e.g. migration routes, caribou crossings, ponds, etc.)
2. Would you want to do any type of TK monitoring of WQ on the island?
3. Are there features that would help clean/heal water draining from the land?

Appendix I

TK Panel Fish Habitat Presentation

Diavik Diamond Mines

Open Pit Closure - Fish Habitat & Shoreline Construction
TK Panel Discussion – December 2015

Open Pit Closure and Fish Habitat Construction

Content

What do the open pits look like now?

- A154 & A418

What did the open pits look like before?

  - A154 & A418

What will the open pits look like at closure?

Reef Building – what does it look like so far?

Key Questions for the Panel

A154 & A418 – What do they look like now?

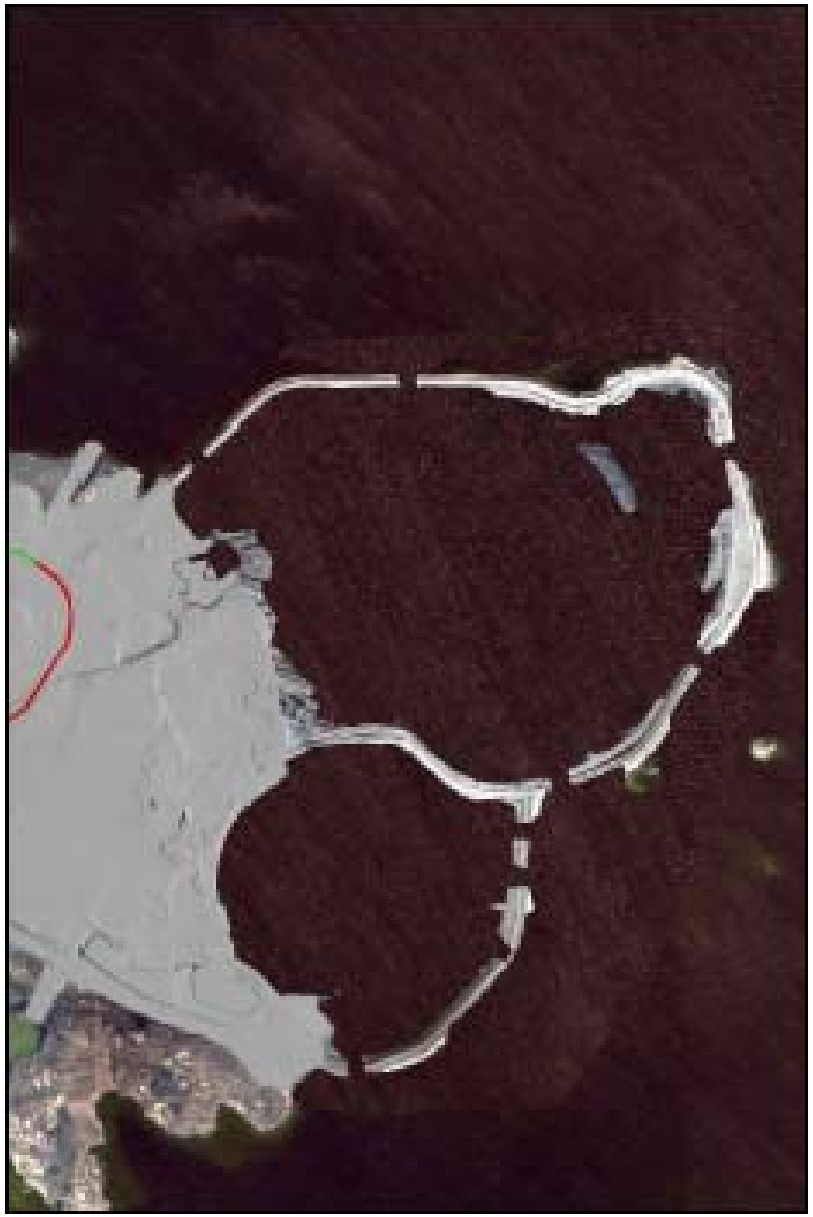
A154 & A418 – What did they used to look like?

A154 & A418 – What did they used to look like?

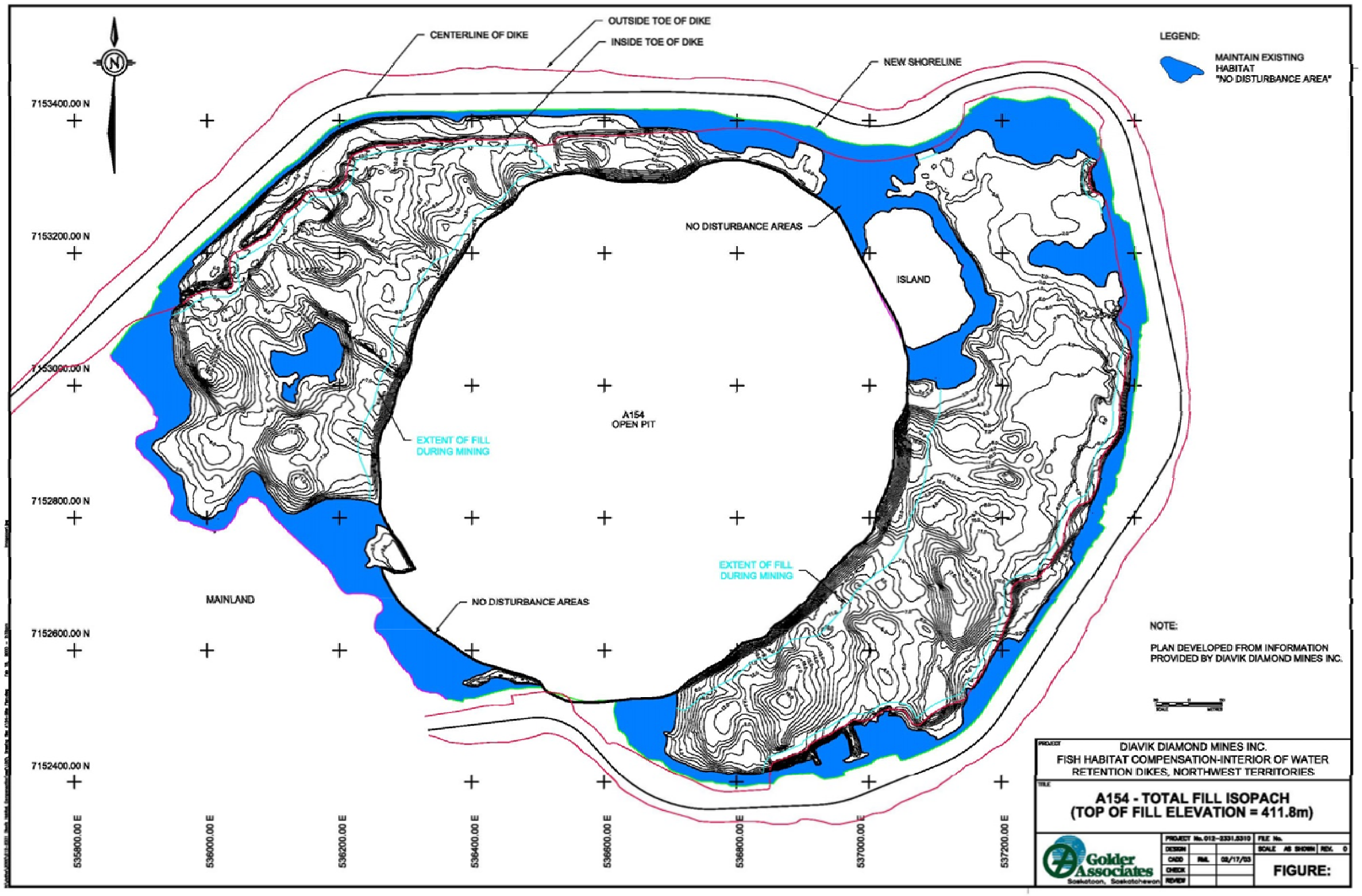
A154 & A418 – What did they used to look like?

A154 & A418 – What did they used to look like?

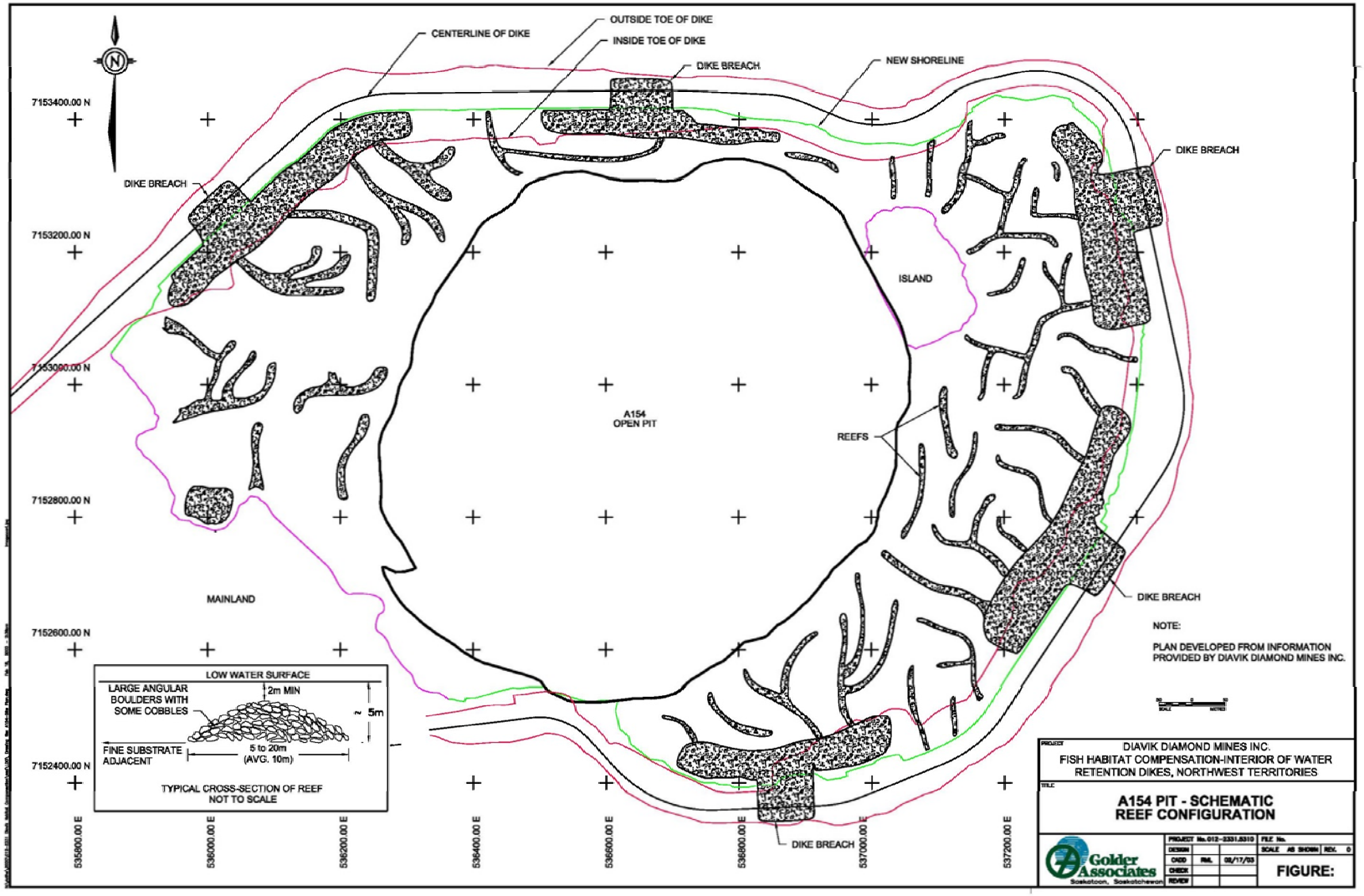
What will the open pits look like at closure?



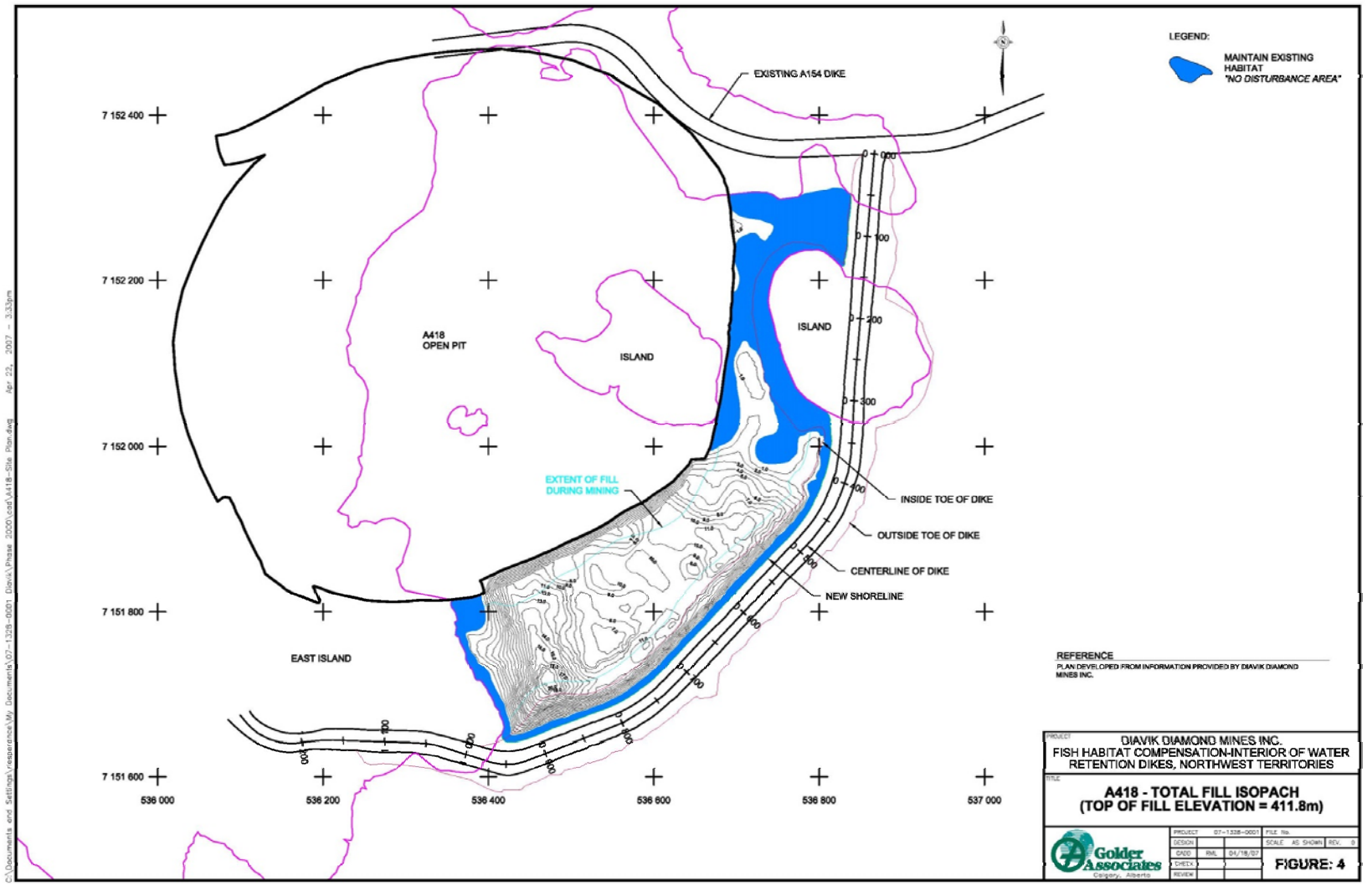
A154 Design


CENTERLINE OF DIKE
OUTSIDE TOE OF DIKE
INSIDE TOE OF DIKE
NEW SHORELINE
LEGEND:
MAINTAIN EXISTING HABITAT "NO DISTURBANCE AREA"
NO DISTURBANCE AREAS
ISLAND
A154 OPEN PIT
EXTENT OF FILL DURING MINING
EXTENT OF FILL DURING MINING
MAINLAND
NO DISTURBANCE AREAS
NOTE:
PLAN DEVELOPED FROM INFORMATION PROVIDED BY DIAVIK DIAMOND MINES INC.
7153400.00 N
7153200.00 N
7153000.00 N
7152800.00 N
7152600.00 N
7152400.00 N
535800.00 E
536000.00 E
536200.00 E
536400.00 E
536600.00 E
536800.00 E
537000.00 E
537200.00 E
DIAVIK DIAMOND MINES INC.
FISH HABITAT COMPENSATION-INTERIOR OF WATER RETENTION DIKES, NORTHWEST TERRITORIES
A154 - TOTAL FILL ISOPACH
(TOP OF FILL ELEVATION = 411.8m)
Golder Associates
Saskatoon, Saskatchewan
FIGURE:

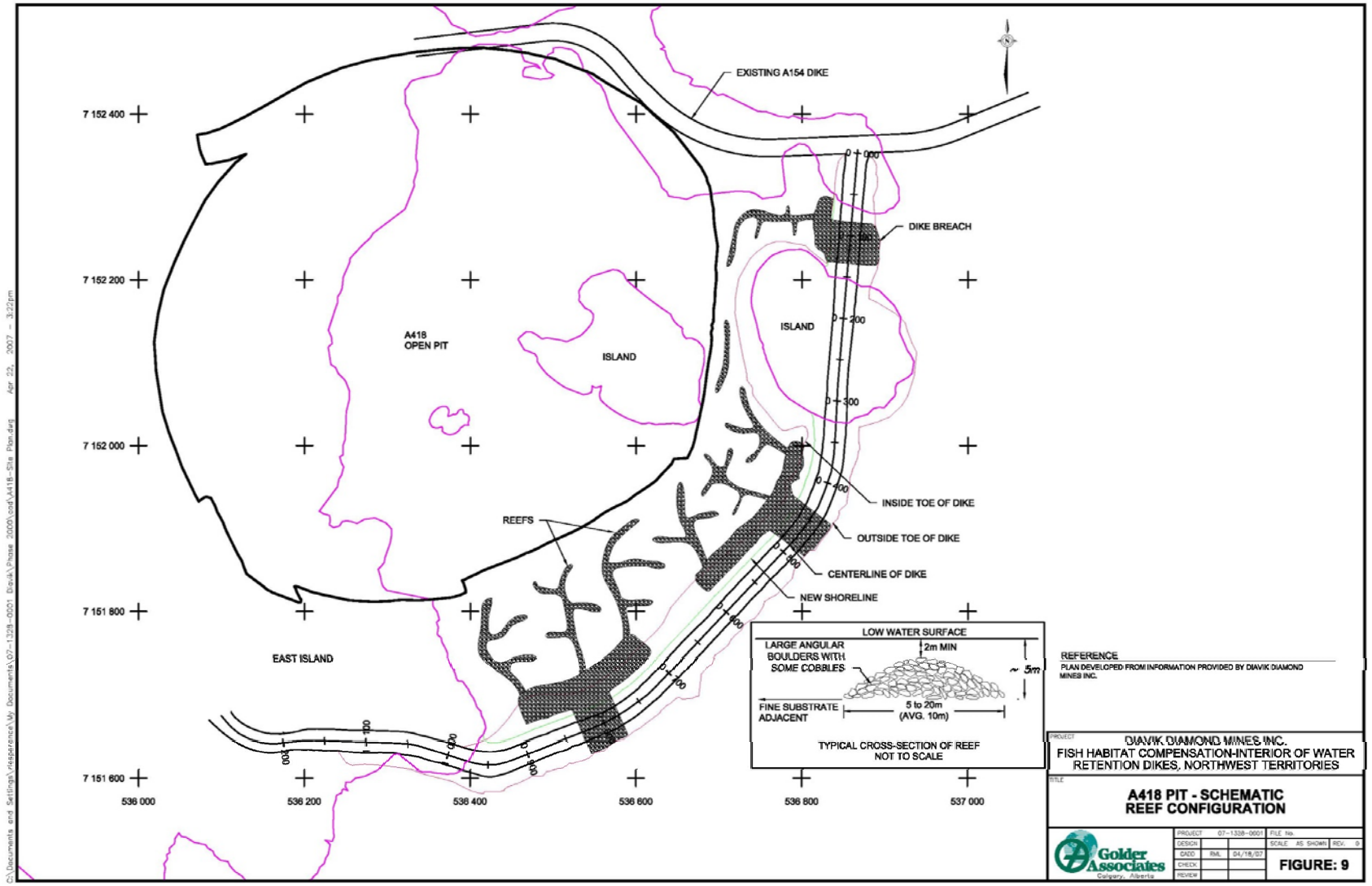
A154 Design


CENTERLINE OF DIKE
OUTSIDE TOE OF DIKE
INSIDE TOE OF DIKE
DIKE BREACH
NEW SHORELINE
DIKE BREACH
DIKE BREACH
7153400.00 N
7153200.00 N
7153000.00 N
7152800.00 N
7152600.00 N
7152400.00 N
ISLAND
A154
OPEN PIT
REEFS
MAINLAND
DIKE BREACH
NOTE:
PLAN DEVELOPED FROM INFORMATION
PROVIDED BY DIAVIK DIAMOND MINES INC.
LOW WATER SURFACE
LARGE ANGULAR
BOULDERS WITH
SOME COBBLES
2m MIN
~ 5m
FINE SUBSTRATE
ADJACENT
5 to 20m
(AVG. 10m)
TYPICAL CROSS-SECTION OF REEF
NOT TO SCALE
535800.00 E
536000.00 E
536200.00 E
536400.00 E
536600.00 E
536800.00 E
537000.00 E
537200.00 E
DIKE BREACH
DIAVIK DIAMOND MINES INC.
FISH HABITAT COMPENSATION-INTERIOR OF WATER
RETENTION DIKES, NORTHWEST TERRITORIES
A154 PIT - SCHEMATIC
REEF CONFIGURATION
Golder Associates
Saskatoon, Saskatchewan
FIGURE:

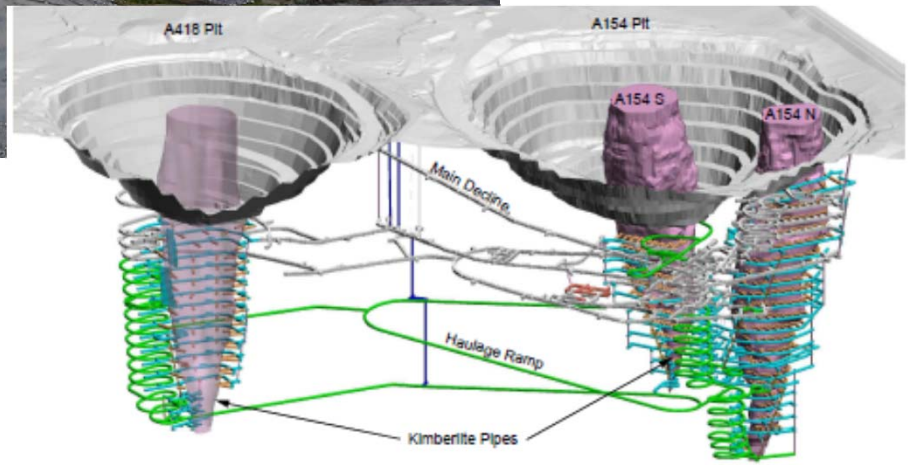
A418 Design


LEGEND:
MAINTAIN EXISTING HABITAT
"NO DISTURBANCE AREA"
EXISTING A154 DIKE
A418 OPEN PIT
ISLAND
ISLAND
EAST ISLAND
EXTENT OF FILL DURING MINING
INSIDE TOE OF DIKE
OUTSIDE TOE OF DIKE
CENTERLINE OF DIKE
NEW SHORELINE
7 152 400
7 152 200
7 152 000
7 151 800
7 151 600
536 000
536 200
536 400
536 600
536 800
537 000
REFERENCE
PLAN DEVELOPED FROM INFORMATION PROVIDED BY DIAVIK DIAMOND MINES INC.
DIAVIK DIAMOND MINES INC.
FISH HABITAT COMPENSATION-INTERIOR OF WATER RETENTION DIKES, NORTHWEST TERRITORIES
A418 - TOTAL FILL ISOPACH
(TOP OF FILL ELEVATION = 411.8m)
Golder Associates
Calgary, Alberta
FIGURE: 4

A418 Design


EXISTING A154 DIKE
DIKE BREACH
A418
OPEN PIT
ISLAND
ISLAND
EAST ISLAND
REEFS
INSIDE TOE OF DIKE
OUTSIDE TOE OF DIKE
CENTERLINE OF DIKE
NEW SHORELINE
0+000
0+200
0+300
0+400
0+500
0+600
0+700
7 152 400
7 152 200
7 152 000
7 151 800
7 151 600
536 000
536 200
536 400
536 600
536 800
537 000
LOW WATER SURFACE
LARGE ANGULAR BOULDERS WITH SOME COBBLES
2m MIN
~ 5m
FINE SUBSTRATE ADJACENT
5 to 20m (AVG. 10m)
TYPICAL CROSS-SECTION OF REEF
NOT TO SCALE
REFERENCE
PLAN DEVELOPED FROM INFORMATION PROVIDED BY DIAVIK DIAMOND MINES INC.
DIAVIK DIAMOND MINES INC.
FISH HABITAT COMPENSATION-INTERIOR OF WATER RETENTION DIKES, NORTHWEST TERRITORIES
A418 PIT - SCHEMATIC REEF CONFIGURATION
Golder Associates
Calgary, Alberta
FIGURE: 9

What will be underneath the water?



Pit Wall Washing

Results suggest that for all scenarios, Lac de Gras water quality dominates the overall pit water quality

Dry (pre-rinse)

Wet (post-rinse)

Where?

Building a reef base

Questions for the Panel

Reefs:

– What are the best shapes for shoals?

– How close/far from land are they ideally located?

– What size of rocks are they made of?

– How big are they?

– Are/how are reefs connected?

– How deep should they be?

Shoreline:

- What should it look like?

- Safe access for wildlife?

Appendix J

Fisheries and Oceans Canada Presentation

Artificial Reefs as Offsetting in the North

Julie Marentette

Fisheries and Oceans Canada

TK Panel Meeting, December 3, 2015

Image credit J. Fitzsimons

Outline

- DFO – Fisheries Protection Program
  - Mandate, legislation, policy
- Offsetting Measures
- Artificial Reefs
  - Use in the South and North
  - Characteristics
  - Monitoring
- Examples from the North
- Questions at the end

DFO's Fisheries Protection Program - Mandate

The **mandate** of the Fisheries Protection Program is to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries.

Legislation and Policy

- ***Fisheries Act***
  - Section 35
    - Prohibits *serious harm to fish*
    - Allows for Authorization of impacts with conditions, including *offsetting*
- ***Species at Risk Act***
- **Fisheries Protection Policy Statement** (2013)
  - Guidance on implementing the fisheries protection provisions of *Fisheries Act*
- **Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting** (2013)
  - Guidance on measures to offset *serious harm to fish*

Offsetting Measures

- Projects designed to counterbalance unavoidable *serious harm to fish*
- Goal: maintain or improve the productivity of the commercial, recreational and Aboriginal fishery.
- Can take a variety of forms.
- An enforceable condition of Authorization.

Artificial Reefs

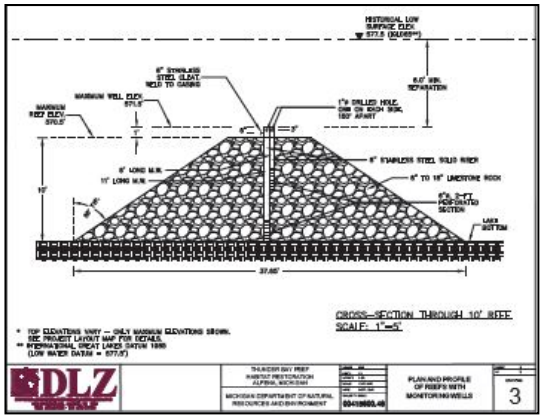
Built-up areas of coarse substrate

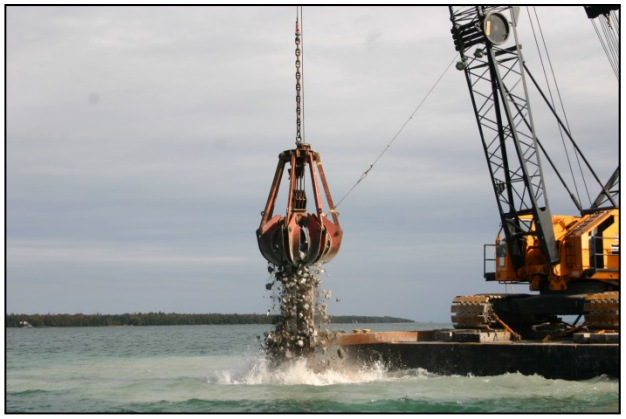
Oak Creek Power Plant (Lake Michigan) – image credit Chris Houghton

Artificial Reefs in the South

Used in Laurentian Great Lakes since 1980's

Lake Trout, Whitefish (spawning habitat is limited)

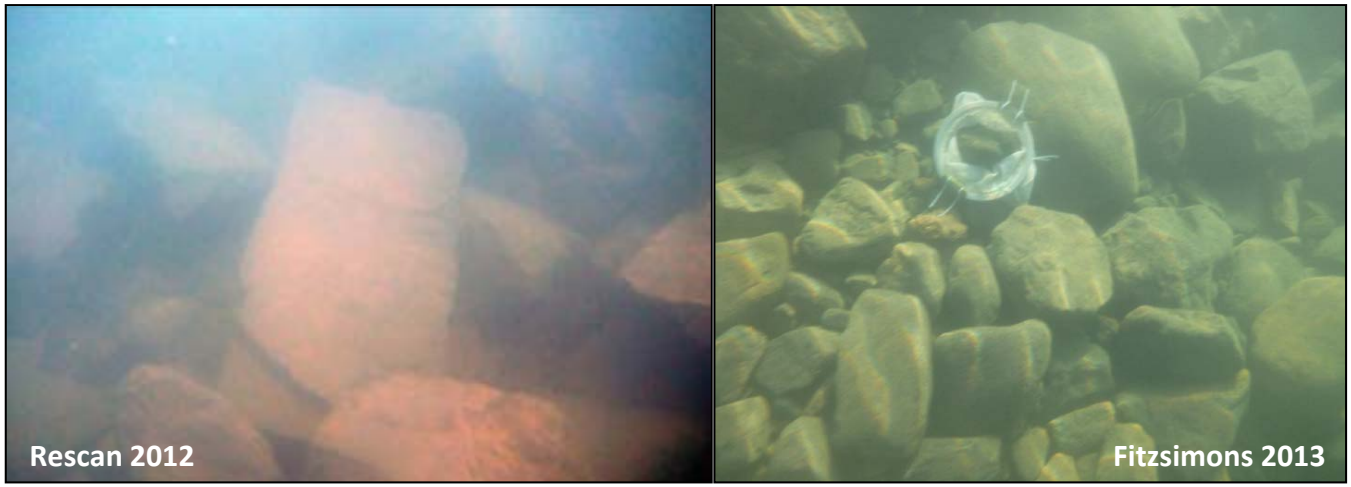




Thunder Bay, Michigan, USA (Lake Huron)
http://www.uvm.edu/rsenr/thunderbay/index.html

Artificial Reef Use in the North

Reefs have been used for offsetting for impacts to fish habitat in freshwater lakes and the marine environment.

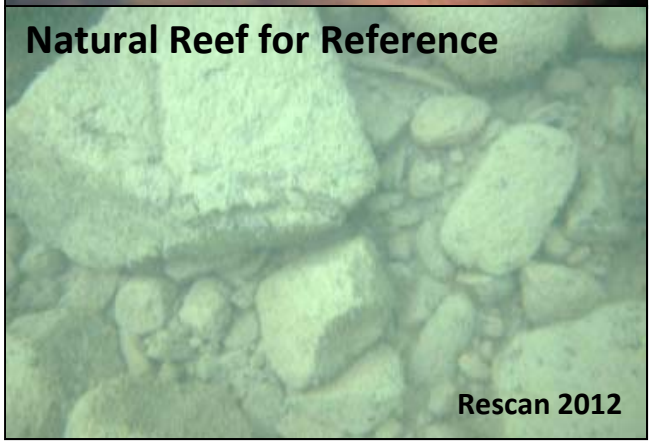


Snap Lake, Jericho, Doris North: Reefs range in size from 100 m^2 to >1000 m^2

Also approved for Diavik, Gahcho Kué and Meadowbank (post-closure)

Desireable Characteristics of Reefs

- Clean, non acid-generating rock
  - Rocks tend to be more similar in size than natural reefs
- Stable, no slumping
- Lots of gaps
  - Shelter for eggs and young fish



Characteristics of Spawning Reefs

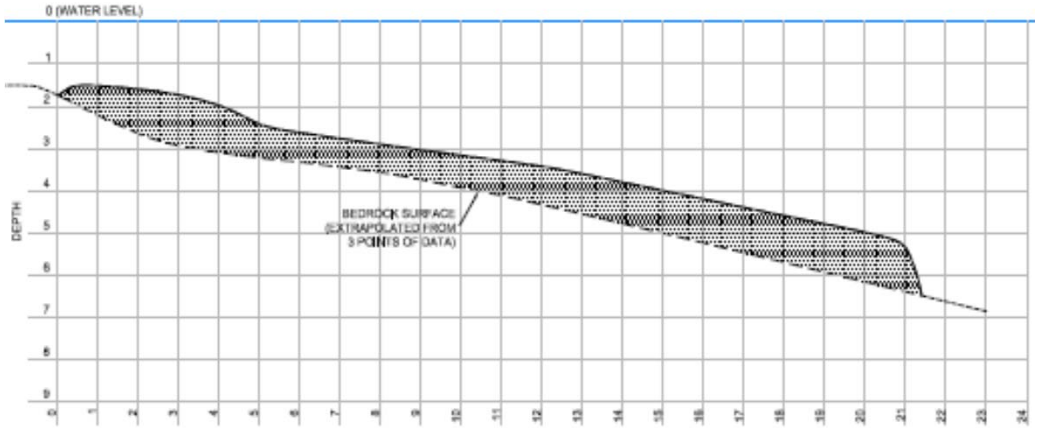
- Deeper than ice (generally >2 m)
  - Fall spawners
- Cobbles and boulders, no fine substrate
  - Lake Trout
  - Whitefish/Cisco can also use smaller gravel/sand
- Some wind-wave action
  - slope

Fitzsimons 1996

Monitoring Reefs

- Verify it is stable
- Compare it to natural reference areas
  - Substrate, depth profile, size, arrangement?

Engineering Plan for Artificial Reef (profile)



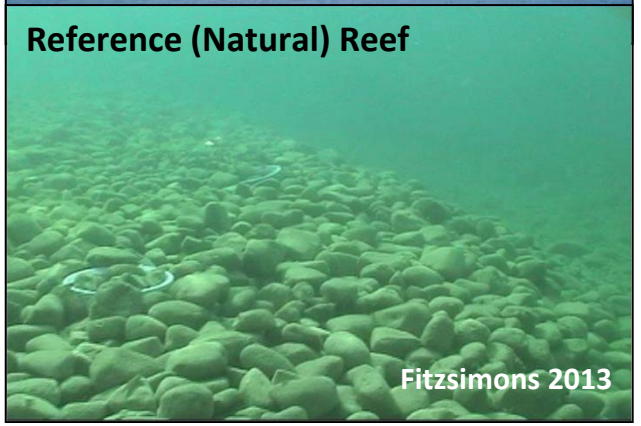
When Monitoring for Fish Use

- SPAWNING
  - Spawning Adults
    - But are they just passing by?
  - Egg abundance
  - Water temp/ice depth
- REARING
  - Juvenile abundance
  - Other fish
  - Benthic invertebrates
- Compare to reference areas

Smokorowski et al. 2015

Example 1

- Snap Lake, 2001
- 100 m^2
- Goal: Lake Trout/Whitefish spawning
- DFO Science (Fitzsimons et. al 2012)
  - 30% of reef used by Lake Trout
  - >100 eggs/m^2
  - No eggs on reference reefs
  - 2 and 6 years post-construction

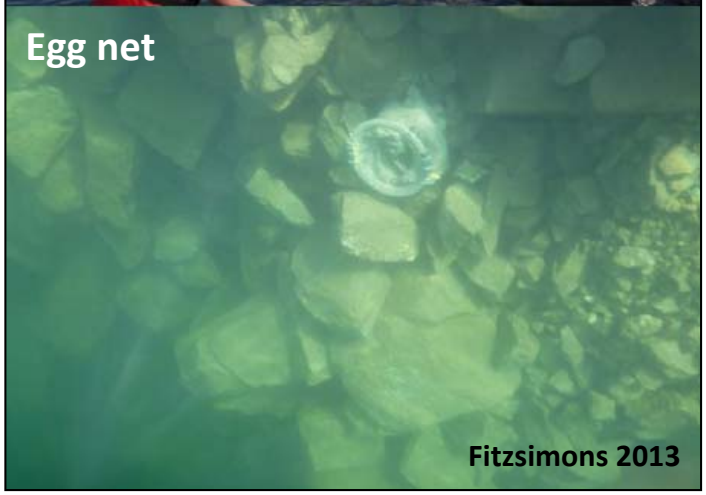


Example 2

- Windy Lake, 2011
- Six Shoals (621—1040 m^2)
- Goal: Lake Trout rearing/ foraging
- Years 1 2, 3, 5 post-construction
- Physically stable, but few fish observed nearby
  - Including natural reference shoals
- Similar # of invertebrates to reference shoals by year 2

Example 3

- Lac de Gras
- Dike exteriors
- DFO Science (Fitzsimons 2013)
  - No eggs retrieved from dikes or nearby reference habitat
  - Loss of 'artificial eggs' from egg nets → very strong currents



Summary

- Artificial reefs can be successful offsetting measures (depends on the project)
- Goal of the reef (spawning, rearing, foraging) determines how it is built and monitored
- Need to consider what natural reefs/shoals are like in the area (and where fish like to go)

Thank you!

Questions and comments?

Image credit J. Fitzsimons

Appendix K

TK Panel #8 Recommendations Presented to DDMI

Traditional Knowledge Panel

Session 8

DRAFT Presentation to DDMI

December 4, 2015

Observations and Comments: Fish

- Fish can hear and feel what you are doing on the ice (e.g. skidoos, walking on ice)
- Fish need shorelines that provide a source of oxygen
- Pressure ridges and open water attract fish during the winter; making holes on ice can mimic pressure ridges (as an oxygen source); consider this when constructing the reef

Observations and Comments: Water

- Bugs in the water are an indicator of health
- Important to monitor water continually even after closure
- Moon cycles affect water flow and currents
- If animals won't drink from the pits after they are filled, this is an indicator of a problem
- You can use a fish line as an indicator of current and watch how it changes; it is important to understand currents in LdG and LdS

Observations and Comments: AEMP

- Use Diavik and TK Panel as a model for TK / WS collaboration in monitoring
- Explore model of “Watchers of the Land” from LKDFN for future monitoring and learning opportunities from Aurora College, ENR – GC initiative, BEAHR, etc.
- Youth need to be trained in monitoring starting today.

Observations and Comments: Reefs or Shoals

- Minnows prefer gravel over fine, sandy material and they won't go into deep areas
- Currents are a key determining factor in spawning site selection and successful spawning
- Fish lay eggs in shallow areas
- We need to be clear on what makes a good habitat for spawning, rearing, resting and feeding
- Currents can shift around reefs
- Snow and ice will accumulate on top of reefs; ice is not as thick as in middle of lake (due to insulation)

Observations and Comments: Shorelines

- Cliffs on shoreline in Pit A418 are a concern for caribou and other animals, especially when being chased
- Shoreline around Pit A154 looks okay with the current vegetation
- Shifting ice can alter shorelines

Observations and Comments: General

- Mice, ground squirrels, and ermine help to clean land and water
- Water quality *and* quantity are both important issues
- Visiting disturbed sites (e.g. camp at Pellatt Lake) would be a good way to see natural regeneration
- Dust is a concern and should be monitored in the land, water and air

Observations and Comments: General

- Water is more precious than diamonds
- Warmer winters lead to more pressure ridges
- Practice energy efficiency today (*Note: Added after review of workshop notes, January, 2015*)

AEMP TK Study Recommendations

1. Maintain current camp site until at least 2018
2. Consider options to donate camp facilities to people traveling to LdG after the mine closes
3. In future programs, document why certain fish are rejected by elders
4. Water testing should be done by tasting fresh water and by boiling the water, letting it set overnight and drinking it the following day (observe scum and clarity)

AEMP TK Study Recommendations

5. Set fish nets on both sides of the island
6. Ensure two elders and two youth from each group attend future camps and meetings
7. Sample fish and water from the Narrows (In both LdG and LdS)
8. Consider additional water sampling locations from different areas

On Island Recommendations

9. Do not breach dikes until the TK Panel is satisfied with the water quality through visual inspection and reviewing results from scientific analysis
10. Focus water quality monitoring on the NCRP
11. Monitor and filter two streams from the east and west sides of the PKC by Mother Nature through mosses, bogs; moss should be placed throughout channel. In the short term, install industry filtering system. Monitor this water quality.
12. Monitor fish spawning areas closely, especially in the SE part of island (i.e. area just south of the pits)
13. Monitor and test water in pits and around East Island regularly

On Island Recommendations

14. Regularly stock on-island pond water with bugs to improve water quality
15. Test water scientifically and not by tasting
16. Regularly measure heavy metals all around island
17. Monitor water in late May and early June as these are critical times (i.e. melt)
18. Regularly measure water quality in all bays, drainage and run-off
19. Annually check for algae growth around shorelines as too much can be an indicator that there is less oxygen for the fish

On Island Recommendations

20. Leave the land between the pits and the dikes as it is for natural regrowth when flooding
21. Leave dikes as they are (i.e. do not modify the slope or current construction)

Reefs Recommendations

22. Vary depths of built reefs
23. Don’t build or minimize building reefs on previous lake bottom areas inside dike area (i.e. protect undisturbed and naturally vegetated areas)
24. Ensure good fish habitat for rearing, feeding and resting on reefs inside dike
25. Stock water in open pits with bugs to improve water quality

Shoreline Recommendations

26. Provide opportunity for the TK Panel to view the present shoreline when snow-free to consider further recommendations (in spring)
27. Break-up the 1 km cliff on pit A418 with slopes (to make it safe for caribou)
28. Leave current roads into the pits (e.g. A154)

General Recommendations

29. Explore long term monitoring options including how to coordinate and administer an ongoing post-2030 program that continues to integrate TK and science, involves both elders and youth trained in science (consider funding, and if some of the bond can be used)
30. Ensure long term scientific monitoring of NCRP to determine if it remains frozen and stable
31. Continue to provide TK Panel with teaching and communication ‘tools’ (i.e. videos, books, photos), to share progress and findings on closure planning with communities

General Recommendations

32. Plan for climate change hundreds of years into the future
33. Re-seed land and use dirt and *safe* sewage to facilitate re-growth

Questions for Diavik

- What if contaminated water flows downstream to Kugluktuk? – DDMI has to have controls and monitoring on the Island; too late if it were to get to Kugluktuk
- What will be left behind from operations underground or in the pits? – DDMI presently making an inventory of what has to come out versus what we can leave behind; starting planning and discussions with regulators
- How many streams and rivers flow into LDG? – DDMI will report this back to the TK Panel

Questions addressed by Diavik

- What do you mean by “bad” water? – Ground water is saltier than lake water
- Will the pit walls be washed? – No, tests have shown that it won’t make a difference
- How long will it take to fill pits? - Approx. 6 mos.
- Will filling the pits change the water level of LdG? - By 1 to 2 cm
- How deep and wide will dike breaches be? – Approx. 30 m wide and 2-3 m below low water depth

Questions addressed by Diavik

- What are the chemicals in the sewage? - DDMI will report this back to the TK Panel

Appendix L

TK Panel Process Presentation

Diavik Diamond Mines

TK Panel Session #8 – next steps

December 2015

TK Panel Topics & Schedule Suggestions

Session	Original Plan (2013)	Completed & Revised Plan
6	PKC	PKC
7	Re-vegetation	Re-vegetation
8	Review of Closure Landscape	Fish Habitat Design & Water Quality
9	Post-closure monitoring: Wildlife & Water	**Post-closure Wildlife Monitoring (Apr/May 2016 - site)**
10	Fish Habitat Design Reviews	**Closure Plan Update & Landscape Overview (Aug 2016 - Yk)**

The next update for Diavik's closure plan is due at the end of 2016

Appendix M

TK Panel Session #8 Evaluation Summary

2015 Diavik TK Panel, Session 8: Evalution Form Summary

Question	Very Good	Good	Neither Good nor Poor	Poor	Very Poor	Total Responses	Comments
How would you rate the session for working and communicating together?	11	3	0	0	0	**14**	
How would you rate the session for mutual respect among participants?	11	3	0	0	0	**14**	
How would you rate the recording of TK during the session?	10	2	1	0	1	**14**	Translations
How would you rate the facilitation of the session?	10	2	1	0	0	**13**	1 unanswered
How would you rate the outcomes and findings of the session?	10	4	0	0	0	**14**	
How would you rate the venue and food for the session?	10	1	2	0	0	**13**	1 missed
How would you rate the logistics for the session (e.g. hotel, travel, honoraria)	10	2	1	0	0	**13**	1 missed
Overall, how would you rate the session?	11	2	0	0	0	**13**	1 missed

Question	Too long/ many	Enough	Too short/few	Total Responses	Comments
How would you rate the opportunities for you to share your knowledge and experiences?	3	11	0	**14**	
How would you rate the amount of time to discuss the topics during the session?	1	9	3	**13**	1 missed

What were the strengths of the session? What did you enjoy most about the session?

- The feedback
- All the feedback and understandable info
- Everything good
- Very informative
- Everything was clear and not rushed; happy with the outcome
- Listening to the Elders; some of them had pretty awesome stories
- Enjoyed the group discussions, interacting with youth/Elders opinions; Elders hold stories from the past, youth bring with them modern information
- Meeting good friends from all over the North
- Being positive and making connections with other people from different communities
- Coming to solutions for problems
- Traditional Knowledge
- You all do a fine job
- Always repeating questions and giving time to go over issues until we were clear on our answers

How could the session be improved?

- More youth representation and involvement
- Having more youth participants
- On site next time
- Have more of these types of sessions on TK
- Providing more information to the mines
- More space for meeting
- More meetings with Diavik
- Lunch at the meeting