

**Sahtú Environmental Research and Monitoring Forum  
Teleconference Meeting Notes  
Wednesday June 29, 2016 1pm – 3:00pm**

Present:

- James Caesar, Fort Good Hope RRC
- Ted Mackeinzo, Youth delegate
- Ed Reeves, Délı̄në RRC
- Mylene Ratelle, University of Waterloo
- Diane Conrad, University of Alberta
- Kathryn Fiess, NWT Geological Survey (beginning of call for presentation)
- Viktor Terlaky, NWT Geological Survey (beginning of call for presentation)
- Gary Stern, University of Manitoba (beginning of call for presentation)
- Brian Sieben, ENR
- Audrey Giles, University of Ottawa (joined for second half of call)
- Stephanie Behrens, ENR

Forum resource people:

- Joe Hanlon, SRRB
- Mandy Bayha, SRRB, Délı̄në RRC
- Christine Wenman

Meeting Agenda

1. Research Updates
  - a) Kathy Fiess, NWT Geological Survey
  - b) Gary Stern, University of Manitoba
  - c) Brian Sieben, ENR
2. Research license application updates (Joe)
3. Aurora Research Institute Strategic Plan draft
4. Sahtú ERM Forum proposals and reports updates (Christine)
5. Cross-cultural camp (Joe, Mandy, Ted)

Meeting Notes

1. Research Updates
  - a) Kathy Fiess, NWT Geological Survey

Kathy joined the call to provide an update on the short program for which the NWT Geological Survey has received a research license. This was discussed on the previous Forum teleconference and members had had some questions so Kathy had been invited to present on the call.

The research team will be going into the field on July 29<sup>th</sup> and returning to Yellowknife on August 6<sup>th</sup>. Work will be conducted in the Peel Plateau based at the Artic Red basecamp. There will be two crews of people – small crews with 4 NTGS staff, 3 University of Alberta students and their professor. The crews will be sampling the Canol and Blue Fish formations as follow-up to a resources assessment that was conducted last year. These are continuing studies along about 150m of each section. Measurements and small rock samples are taken as well as photographs and written descriptions of what can be seen visually. As the Canol

and Bluefish formations are quite friable (break apart easily) they are able to take small samples that fit in the palm of one's hand. Samples are taken at 1 metre intervals. In addition, radioactivity is measured with a spectrometer. The rocks have a natural radioactivity and this measurement can provide insight to what the rocks are made of in the sub surface (underground). Radioactivity from old wells that have been drilled can also correlate from surface to sites that are a couple of miles away.

The University of Alberta team will be studying one location throughout the duration.

Q? What happens to the information?

A: The data is analyzed, interpreted and published. One year, the Geological Survey presented at an in-person meeting of the Sahtú ERM Forum, so something like that can be arranged again. The publications tend to target academic journals so a plain language summary is also possible.

Q? If other teams are doing geological work in the NWT would they typically partner with you and/or would you be aware of their work?

A: There is a permafrost scientist in the Geological Survey office who is often working in communities and who works closely with the Department of Transportation so there is a lot of communication and partnership through that kind of work. ENR also keeps us informed on any hydrogeological type of work that they are doing. When relevant, we collaborate with other partners. Classically, we have on-going collaborations with other geological surveys, either the Canada Survey or provincial counterparts.

Q? Am I correct in understanding that the main interest is Canol and BlueFish shales?

A: Yes, we are interested in studying the lithology and geochemistry of shale.

b) Gary Stern, University of Manitoba

Gary has been working in the Sahtu on collections and data analysis of fish tissues for many years and joined the call to present an update on on-going work and recent data analyses.

There is now a long running data set in the NWT with analysis complete from 1985 to 2013, Since 199 the collection has been annual - that is, there are datapoints for every year.

We have Fort Good Hope to thank for this consistency as we would not have been able to generate this dataset without their contributions. In particular, they are getting samples in December and January when it is really cold! This makes the Fort Good Hope dataset one of the best in existence for freshwater arctic fish.

This year there were 48 samples received. The major issue in Fort Good Hope is mercury accumulation in fish, which is increasing though remains within safe consumption limits. It is in the muscle and liver tissue and has gone up quite substantially over the years. Last year there was an average of .45 µg/g (microgram per gram) in the muscle. 0.5 µg/g is the consumption limit. This year, the average concentrations are lower at 0.35 µg/g. There is a lot of variability but the overall trend is upwards. The focus in FGH is on Burbot.

Similar work has been conducted elsewhere by other researchers (Tourt and Burbot) as well as some areas of Great Bear Lake and the trends seem to be that levels are increasing there as well.

Since the Minamata Accord there have been decreasing global mercury emissions, largely because of the decrease of the burning of coal or increased efficiencies in coal plants. Scientists therefore think that increasing temperatures related to climate change are causing an increase release of mercury from the soils or driving processes that increase its availability to the food chain.

Based on earlier trends, the team had expected that by 2015 the average might be up around 0.5 µg/g but this hasn't happened yet so the increasing trend has slowed down and isn't as rapid as anticipated.

Mercury concentration is higher in the muscle than the liver though the trends in liver are also upward. So, the muscle is the major one of concern when considering consumption guidelines and this is monitored by GNWT based on Health Canada Guidelines. So far, no advisories have been considered necessary and if there was one, this would come from GNWT's Health and Social Services Department.

The samples come from the Rampart rapids area of the Mackenzie River because this is where residents in Fort Good Hope have said that they traditionally net subsistence fish and that typically this is done in January each year. So, most of the samples come from this area in January because we have tried to keep consistent temporal and spatial data.

Q: Which parts of the fish are sent?

A: We receive the whole fish and we do some measurements on the fish like weight, size. The fish are sexed. We expected to see correlations between mercury accumulation and the size of fish or the age but we aren't seeing this in the 650 sample points that we have and we don't really understand why not. We hypothesize that the mercury might have a high turnover rate – it doesn't accumulate that much year to year but is more correlated with what the fish has eaten in the past 5-6 months.

Q: Additional detail about global emissions.

A: One main source of mercury transported to arctic latitudes are coal fired plants. Coal use has been significantly reduced and continues to go down but changes like that take along time to be reflected in the environment themselves. Methylmercury is a toxin and so they call mercury poisoning Minamata disease because of an example in Japan where a pulp mill was spilling raw mercury and many people got sick. The levels in your environment are much much lower. But there is what is called an 'inventory' of mercury stored in the ground and this takes a long time to reflect the reductions in deposition from reduced global emissions. With climate changes, like warmer water, a shorter ice period and resulting increases in productivity in the waters (like more algal growth for instance) this can make the mercury more available to fish. This is what we think is going on.

Q: Time of year?

A: When we were told that the community usually fishes for Burbot in Dec and Jan we focused our study at that time. SRRB organizes for the fish to be sent so we could always have additional fish sent over.

Q: Will study continue?

A: This is one of the core monitoring projects of the National Contaminants Program so we expect that it will be continued in the long-term so long as Fort Good Hope continues as a partner.

c) Brian Sieben, ENR

See previously circulated presentation.

Discussion – James Caesar discussed increasing landslides along the Mackenzie. GNWT's work seems to be focussed on infrastructure but fewer resources looking at areas on the land where people aren't based.

Brian: There is work looking at on-the-land effects which Kathy mentioned briefly, led by the Geological Survey. They had summer students using satellite imagery that can detect very small movements of land to map where landslides have occurred so this data is available and it sounds like it might be of interest to you.

There has been some discussion of creating a sort of automated system where people can log climate change effects.

James: Fort Good Hope occurs along a river bank and we are finding that it is hard to get insurance because it is a land slide zone. There are many situations in which insurance is needed to access government funding but we can't get insurance because of the liability caused by the risk of landslides. Christine also mentioned that in her recent work with the SSI talking to communities about waste sites, people in Fort Good Hope were finding that a lot of old buried waste from oil and gas or mining exploration camps was becoming exposed with erosion.

2. Research license application updates (Joe)

There are three applications currently in but they have local foci in Tulit'a and Norman Wells to do with Geology and water monitoring as part of Husky's on-going work. As there are no representatives on the line from Tulit'a nor Norman Wells, he will follow-up with the respective RRC's directly.

3. Aurora Research Institute Strategic Plan draft (Christine)

Christine provided a brief update that the ARI had distributed a draft strategic plan for review and the SRRB was one of the institutions invited to respond. A lot of the discussion held in the Forum over the past couple of years exploring research approaches was really insightful and the Board is drafting a response trying to share those insights. Some key messages are that ARI's plans should: explicitly talk about youth involvement and opportunities to have experiential learning to bridge paths to post-secondary education; have a robust discussion about what meaningful participation means and how to foster research as a means of strengthening local and regional government; and position the NWT as leaders in TK research. Most of these themes

are mentioned in the draft ARI plan but not with the rigor and boldness that could be possible given NWT's unique cultural and governance context.

The turn around time for the review was really short so the SRRB's response is going to be finished this evening without time for circulation to the Forum. However, as Forum members' insights are strongly informing the response, we wanted to mention that briefly here. Also, as ARI finalizes and implements its strategy, there should be lots of positive synergies with the research and monitoring plan in the Sahtú.

4. Sahtú ERM Forum proposals and reports updates (Christine)

Just a brief update that the reporting for the Forum had been delayed with a focus on proposal writing for the camp but it will be in this week. Two major funders for the cross-cultural camp are now confirmed and the team is working on some smaller complementary pots that will ensure as much Sahtú resident participation as possible.

5. Sahtú Cross-Cultural Camp updates (Joe, Mandy, Ted)

The team will be sending out invitations to the Renewable Resource Councils to the camp. It is hoped that the RRC's will lead the process of identifying and selecting interested participants and it is hoped that they will be a mix of youth, elders, land-users, RRC representatives and trained monitors. The vision is that there will be a large canvas tent so that youth and elders from each community can stay together and that way the youth will be responsible for ensuring that the elders have everything that they need. This will make it easier so that not all issues are coming to the camp organizer (Joe) but everyone shares responsibility in making sure things are running smoothly.

There was a question about travel from Fort Good Hope. Joe anticipates that there will be a charter that will bring people in from Fort Good Hope and Colville Lake so this will be confirmed once some participants are known. Diane mentioned that a charter from Fort Good Hope might help to ensure that she can participate for at least half of the camps as this would keep her costs down.

Gear will be provided for Sahtú residents. If visiting participants lack some gear, they can let Joe know and items can likely be found but otherwise they will be responsible for their own gear (puff tents, bedding etc.) and Joe will work on preparing a full gear list.

6. The next teleconference call is set for Wednesday July 13, 1-2pm as a cross-cultural camp planning call only.