



Environmental Monitor Training Program:

**Tets'ehxe (Drum Lake), Sahtu
March 14th – March 29th 2014**

Genevieve Cote and Adam Bathe
Blyth & Bathe



We would like to thank all the funders and partners for their support and hard work to ensure that this program would be a success.

Aboriginal Skills and Employment Training Strategy (ASETS)
Aurora College
Behdzi Ahda Renewable Resources Council
ConocoPhillips Canada
Fort Good Hope Renewable Resources Council
GNWT Education, Culture and Employment
GNWT Industry, Tourism and Investment
GNWT Environment and Natural Resources
Norman Wells Renewable Resources Council
Sahtú Renewable Resources Board
Tulita Renewable Resource Council

Without your commitment to environmental skills development this training program would not have been possible.

Thank you for your support!



March 31st, 2014

Executive Summary:

Genevieve Cote (Gen) and Adam Bathe of Blyth & Bathe were contracted to carry out the delivery of the BEAHR Environmental Monitor Training Program (EMTP). Adam and Gen instructed both the Core Skills and Research Specialization modules together. The program ran from March 14th to March 29th 2014 at Drum Lake (referred to by its North Slavey name, Tets'ehxe, in this report) in the Mackenzie Mountains.

The Tets'ehxe EMTP course was offered to students from around the Sahtu Region. Two Students were from Colville Lake, five from Tulita, one from Norman Wells and three from Fort Good Hope. Students were selected through an abnormally stringent selection process, which was carried out by a selection committee from the Aurora College Campus in Norman Wells.

This course was delivered in a manner completely different from all other EMTP courses taught by Blyth & Bathe in the past. The project had been in the developing stages for a number of years, more so in the past few months preceding the delivery, and was co-managed by different organizations. Because of the logistics and costs of housing so many students for a long period of time, the organization committee settled on running the course in a pristine environment of cultural importance for the Sahtu Region, known as Tets'ehxe, or Drum Lake Lodge. As a result, the duration of the course had to be shortened to 15 days in order to minimize the costs. Longer class days were therefore planned in order to cover all the material necessary for the delivery of the BEAHR training program. Elements such as videos, readings, daily reporting and personal projects for the final presentations were done in the evening to allow maximum class time during the day.



Figure 1: From left to right Lawrence Jackson, Charles Oudzi, John Tobac, Natanda Oudzi, Adam Bathe, Gen Côté, Daniel Masuzumi and Louise Yukon. Photo Credit Jean Polfus

Being in the wilderness for two weeks without access to computers and internet did not prevent the students from producing high-quality reports. Everything was hand-written, and the students got to use the various documentation that was brought by the instructors. For this reason, TDG and WHMIS were not included in the course, but Adam Bathe was able to certify most of the students with the Canadian Firearms Safety Course, and help the other students and camp staff to renew their firearms license with the proper paperwork and pictures.



Figure 2: Charles Oudzi collecting caribou fecal samples, photo credit Jean Polfus

Student Evaluation

The following students successfully completed the EMTP course:

Dion Lennie (Tulita)

John Tobac (Fort Good Hope)

Natanda Oudzi (Colville Lake)

Daniel Masuzumi (Fort Good Hope)

Louise Yukon (Norman Wells)

Charles Oudzi (Colville Lake)

Lawrence Jackson (Fort Good Hope)

Kyle Kodakin Yakelaya (Tulita)

Joanne Krutko (Tulita)

Kristen E Yakelaya (Tulita)

Peter Silastiak Jr. (Tulita)

The students came from various backgrounds. Most had some experience or knowledge of the environment industry with varying levels of environmental monitoring experience. Others some worked for the oil and gas industry or as heavy equipment operators, which allowed them to speak authoritatively from an industrial perspective during class discussions on compliance monitoring. Furthermore, many of the students had a great wealth of on-the-land experience. This paired well some of the inexperienced youths' energy, desire to learn and abilities with technological equipment. Overall it was a very balanced group. This mix helped strengthen the delivery of the course, as our preferred method is to facilitate discussion such that the students are given space to share their skills and knowledge with the rest of the class rather than have instructors lecture for the majority of the class time.

For the most part the course followed the chapter layout in the BEAHR curriculum, except for the fact that the technical skill section was expanded and spread across the whole course, this allowed for more in-depth hands-on exercises that reinforced the teachings of non-technical core skills chapters outside of the classroom. This approach also allowed the students to request extra time to work on skills that they felt they needed more time to practise. By extending the CS3 (technical skills) segment throughout the whole course we were able to provide hands on practise with a number of research protocols.





Figure 3: Students Joanne Krutko and Dion Lennie prepare a caribou for sampling. They were coached through the process by experienced hunter and student John Tobac. Photo Credit Adam Bathe.

Local hunters, Denver Clement and Anthony Doctor, harvested caribou in the Tets'ehxe region throughout the course delivery period. This was an excellent opportunity for the students to work with the hunters to learn some traditional skills and teach them how to collect samples for submission to the caribou monitoring program. Their numerous successful hunts presented perfect opportunities for the class to hone their skills at data collecting. This happened on a few occasions during the 15 days at Tets'ehxe, a total of nine caribou were harvested by the hunter. In previous deliveries of this course, the protocols for this sampling procedure were covered but students had never before been given the chance to get the practical experience of collecting the samples and butchering the caribou. This is one of the many examples of how holding an EMTF course in a location like Tets'ehxe allows for a greatly enhanced experience for students that cannot be attained in other contexts.



Figure 4: The hall at Tets'ehxe Lodge had everything a classroom could ever need, and more. Photo credit Adam Bathe

Course Introduction and CS1 Foundation Skills

Day one was a relatively long day where we covered a lot of material. We did most of the introduction in the morning and went through the CS1 in the afternoon, intermingled with a bunch of games and icebreakers.

- Introduction and Icebreakers
- Course preamble, outlining the relationship between the CS and the RES portions of the course.
- The course Syllabus & BEAHR photo release form
- The National Occupational Standards for Environmental Monitors
- Hand out of the BEAHR work binder & field note books
- Collecting contact info and work placement opportunities
- Observation skills and note taking
- Effective Communication and qualities of an Environmental Monitors
- Conflict resolution and decision-making

It is important to note that prior to the start of the course, the students went through a rigorous application and selection process. This ensured that all students had the motivation and abilities to undertake this dense 15 days course. Their mathematics and writing skills were beyond the expectations of the instructors. This combined with some of the student's experiences in the field helped the whole class in getting up to speed in going through the material effectively, they learned immensely from one another and were all keen to hear more about the different subjects.



Figure 5: Louise Yukon recording some observations in her field note book. Photo Credit Adam Bathe

Knowing their strong writing skills, we pushed our students to write detailed daily reports in their field note books. We expected them to provide us with clean, easy to read notes that thoroughly covered the details of that day's work.

We were enforcing this part throughout the course, as note taking is a very important part of an environmental monitor's job. They were asked to write notes for every field exercise, as well as completing the report forms associated with various tasks such as the oil spill report form. Of course, they were asked to fill their daily accounts after each day, and we provided them with feedback regularly over the course of the 15 day program by reading through their note books and inserting comments.

CS2 (Introduction to the environmental sector)

This started on day 2 with an overview of some environmental sciences. Most students were familiar with the concepts of ecology and hydrology, but they were not as familiar with the terminology used to describe the various concepts.

Gen directed the class through the ecology and hydrology chapters of CS2 in the morning and Adam introduced the modules of Environmental Legislation in

the afternoon. The students were very keen learners and participated in the program by asking numerous questions and demonstrating a vivid understanding of the material. Environmental Monitors must be knowledgeable of their local environment in order to perform their duties and this was well understood by the students.

On the third day, Adam covered the Environmental Management Tools chapter. Understanding the mandates and jurisdictions of various agencies is crucial, as environmental monitors must navigate through the framework structured by these organizations.

We mixed in the photo taking part of the course in order to lighten the material load. We were able to provide each student with a camera and we prepared a photo hunt for the activity.

Again, the students were required to use their field note books to record all the data collected.



Figure 6: Kyle Kodakin Yakelaya and Dion Lennie taking notes during the mock spill. Photo Credit Adam Bathe

CS3 (Technical Skills):

Being the most “hands-on” part of the course, it is only natural for the instructors to break the module up throughout the program in order for the students to maximize their field experiences.

Most of this module ran from day 4 until the end of the course, but again, we covered things like field notes and photography in the first few days of the course so the student could combine these skills with all the upcoming activities.

Each student was supplied with 1:50,000 and 1:250,000 maps of Tets'ehxe area, and had map exercises every morning.



Figure 7: Students find the coordinates in Lat\Long of the camp on the 1:50,000 map

We were fortunate to be able to collect real samples from caribou during the course, as this validated all our efforts of proper note taking and sampling methods with the students. We got the students to talk to the hunters and make them point out on the map where the animals were harvested, they then had to figure out what the coordinates were in order to add this important piece of information on the sample bags. We have been often asked by the students in past courses why this kind of map knowledge is important, and here we had a perfect chance to apply this knowledge in a practical context. The students thought this was pretty handy to know how to read Lat-Long and UTM's in this kind of application.

Again we were able to see the amazing benefits of holding the EMTP course on the land instead of in a community. Everything was more relevant, baseline data was collected with the understanding of how precious it is to get

information of pristine environment before potential impacts from industry, something that people understand but can't always grasp fully when in a community.

The students took part in collecting caribou fecal samples for a study. We had the researcher Jean Polfus coming to Tets'ehxe to explain to the students the goals of her research and how to actually collect the data.



Figure 8: PHD student Jean Polfus explains the students how to participate in her caribou DNA research during their stay at Tets'ehxe. Photo credit Adam Bathe

This is an exercise we normally get the students to do in a "mock" context, we use "glossets" which are little chocolates to mimic the pile of fecal matter. But being on the land in caribou country, the real piles were all over the lake by the camp. Not only did the students have to locate them, but we got them to properly collect the samples with the tools needed, take photos and GPS locations and record all the data in their field note books. All the samples collected had to have the proper information on each bag and were to go directly to the researcher for the DNA study.

We did a few caribou fecal samplings during the 15 day course in order to provide the researcher with good amount of data. It was a gratifying experience for the students to be part of this study and again directly apply their skills learned during the BEAHR program.

We talked about compasses with the students but we quickly realized that the compasses were not working very well outside, perhaps the cold was having an impact on the properties of the compass, or perhaps the area contained too many ferrous minerals to give us a good reading. We had planed on using the

compass more in field exercises but because of our difficulties we had to give it up. This allowed us to have a good discussion on how important it is to be familiar with your tools so that you can recognize when they aren't functioning properly.

It is important to note how beneficial it is to have enough GPS and cameras for each student. In the past, the instructors had to group the students for them to practice using these tools, and the often result was that the weaker students would defer the responsibility to the stronger student to make it work. We made an effort to get the less experienced students in the Tets'ehxe course to use the tools more, so they would practice and get more comfortable with them. We also noted that the students were a lot closer together and taking more time to teach one another, probably because they were together day and night at camp together. The younger students, who were generally more agile with electronic tools were patiently coaching older students through the steps of using the GPS and cameras.

We covered the NU-NT spill report form on day 6 with a mock spill by some old fuel drums in the camp area. This is a very good exercise where the students have to properly fill the report form which is standard across the territories. We took this opportunity to move on to the Health and Safety chapter of module CS4, as well as the Hazardous Material chapter.

We brought along the Aurora College "snow sampling kit" and took it as a chance to describe how transects work in the afternoon of day 7th. This activity was great to again get the students to combine all their previously learned skills such as note taking, photography, GPS and team work. Split in 2 groups, they had to set a



Figure 9: Daniel Masuzumi and Charles Oudzi weight the different layers of snow on their transect line. Photo Credit Adam Bathe

30m transec, set up plots every 10m, and collect information about snow structure and density of the different layers from top to bottom.

We ran the water sampling exercise on day 8, the students had to follow the sampling protocols of AANC's Taiga Lab just as they would have to do it in the



Figure 10: Peter Silastiak took this photo of Natanda Oudzi collecting water samples during the activity with his field camera.

work place. Taiga Lab also has a form than has to be submitted with the samples and this was of course something the students easily completed. Some of the samples require the addition of preservatives, these are considered "dangerous goods" but we do not carry these preservatives in the educational water sampling kit. We discussed these as part of the course as well as "pretend" to add them to the sample as part of the exercise. Elements such as logistical and physical constraints of water sampling were discussed with the students.

The GPSs were used daily, the students got to practice using them in all sorts of different contexts in an attempt to maximize their comfort level in using the tool. This is important as it is a job requirement for the environmental monitor to know how to use a GPS correctly. Our activities ranged from tracking, entering a waypoint, using the "go-to" function to find a location, to using the calculator function for other activities. The students could also easily change the format of the coordinates and datum to match the requirements of the activities or sampling process.

CS4 (Health and Safety):

With many of the potential job opportunities for our students in the Oil and Gas industry, we made a point to cover much of module early in the course and then reinforce the safety protocols throughout the course in all of the relevant activities.

All students acknowledged the importance of having a safety plan and kit when out on the land, which will be a work requirement in their future career as environmental monitors.

Again, we were unable to deliver TDG and WHMIS certifications as part of the EMTP course in Tets'ehxe because we did not have access to computers. This is something we addressed ECE and the Aurora College campus in Norman Wells in the hope they will ensure the students will be able to get those certifications when back into their communities.

CS5 (Local and Traditional Knowledge):

Most of our older students had great "on-the-land" knowledge. That was not necessarily the case with some of the younger students, who lacked those important skills. These differences between our students were quickly bridged during the 15 days spent on the land; they naturally bonded together and the more experienced would share their knowledge with the less experienced for most of the field exercises, from skinning a caribou to gutting and filleting fish, or reading tracks in the snow and talking about weather.

We spent a fair bit of class time talking about local and traditional knowledge, and the conversation between the students, elders and locals (the camp staff were extremely knowledgeable about the area) was constant and natural throughout the 15 day period spent on the land. We note, again, that this is another direct benefit for holding the EMTP course out on the land surrounded by local harvesters and local knowledge holders. William Horassi, our "elder in residence" who much of his life travelling in the Tets'ehxe area, was also very helpful in this area. He talk with the students, at length about Tets'ehxe, sharing stories that expressed his rich knowledge of both the local history and ecology.

The Sahtu Renewable Resource Board had given the instructors copies of the final edition of the Shúhtagot'įnę Néné and Nááts'įhch'oh Traditional Knowledge Study for the students to read. This precious document was a perfect vehicle to talk about TK with them, as this was directly linked to their culture, many of them had family members named in the study with stories that were revealed to them for the first time. Again, this was a truly unique experience for all.



Research Skills 1 to 9



Figure 11: Kyle Kodakin Yakelaya (right) is giving Peter Silastiak (left) a hand with using his GPS. Photo credit Adam Bathe

During the 15 days of the course, the students were actively practicing the different skills required to properly sample and collect data of various sources, following various protocols. Before each activity, the students had to prepare the material required for the activity as well as the proper forms to take along with their field note books and review the protocols for each types of sampling. We therefore integrated the first 4 chapters (“preparing for an Environmental Monitoring Project”, “Protocols and Following Instructions” as well as “Quality Assurance and Quality Control”) of the Res module in each activity in order to save some time and allow maximum practice of all those important steps. Because some of the samples collected were actually going to researchers, we made sure the students were following the protocols step by step and that they understood the importance of their data collection.

Gen has extensive experience in data collection from past vegetation and wildlife surveys and was well equipped to guide the students through the chapters 5 to 9 of the Res module. Some of the students also had experience with water monitoring and air quality monitoring and were sharing their knowledge with the rest of the class.

Final projects

The final projects at Tets'ehxe were very different from the ones delivered during most other EMTP courses. For one thing, the course was condensed into a 15 day period instead of a five week period. The students had a few evenings to work on their presentations as opposed to full days with our normal EMTP course set-up. Another factor was the access to information. Without computers, our students at Tets'ehxe produced hand-written reports, and could refer to whatever documentation that was found at the camp or brought along by the instructors. They also interviewed each other as well as the camp staff. We originally thought it was going to be a bit harder without the internet, but we ended up being overwhelmingly pleased with the amount of thought and hard work the students put in their presentations. Most presentations were about 10 minutes long, and the students talked about subjects ranging from water quality to the importance of preserving the natural environment and traditional knowledge.

The instructors had given the students the choice of pairing up for the presentations and surprisingly all the students opted for making this presentation a personal project. We are pleased to announce we even got an "Environmental Monitoring rap", a first in the history of Blyth & Bathe teaching EMTP.

The instructors were blown away by the quality of those presentations.

Most were comfortable with speaking in front of the group and the students managed to choose their words well enough for everyone to understand and visualize their topics without the aid of Powerpoint.

Conclusion

We can't emphasize enough the benefits of holding the course at Tets'ehxe. Although we had less time to run it, the students learned a great deal more than they would have if we would have been in a community, simply by spending more time together and avoiding any distractions such as phones and internet, alcohol and other non-course related elements that are typically in a regular community-held course. Being on the land reinforced the discussion of traditional knowledge and the importance of environmental monitoring. There is no equal to the Tets'ehxe course, we can say that this was by far one of the best



course delivery in all our years teaching EMTP. Of course having such good students made the experience even better, they could all handle the fast pace of the program. It could have easily been a different story if some of our students would have had trouble with their literacy skills, or learning impediments.

The involvement and support of the many funders and partners were crucial in the delivery of the course. We are hopeful that they will provide the proper structure for the students to move forward from the training received at Tets'ehxe.

Recommendations

Several recommendations can be made following our experience at Tets'ehxe and recent work with the Inuvialuit and Fort Chipewyan CBMPs. The following are some basic suggestions for where to go from here.

1. Develop strong relationships with researchers working in the region. Monitoring for industry and groups with resource management responsibilities may be intermittent. Developing a strong core group of environmental technicians, that can provide researchers with on the land know-how and assist in data gathering will improve the quality of data collected in Sahtu-based research programs and provide meaningful employment.
2. Don't reinvent the wheel. Communities and industries in surrounding jurisdictions have monitoring programs in place or development. Learn



Figure 12: The students, instructors, camp staff, pilots and visitors who helped make the Tets'ehxe EMTP course happen.

from them and adapt from their successes and failures in developing sustainable monitoring programs.

3. Follow-up and ongoing training is essential. Numerous environmental monitoring training courses have been held in the area but it seems that there is little knowledge of what has become of them. Keeping in contact with students and providing on-going training will make it a lot easier to find skilled assistants on short notice when the need arises.
4. Future training programs should strongly consider the option of holding the course on the land. Holding the course at Tets'ehxe dramatically improved the delivery of this course in more ways than can be listed here.
5. A selection process such as the one used on this course should be used in future training programs. Selecting the right students with the right skill sets allowed us to meet and exceed our training goals in the limited time available.
6. BEAHR has developed a Contaminated Sites Remediation Coordinator curriculum and a Regulatory Specialization that are both 80 hours long. Blyth & Bathe has developed custom tailored training programs for monitoring programs in the past. These usually target specific skills and monitoring protocols that are required by the monitoring program. Any of these options would be an excellent follow-up to the EMTP course.



If you have any questions regarding this course, please feel free to contact us directly,

Adam Bathe

Blyth & Bathe Inc

Phone: (867) 872-8146

adam@blythandbathe.com

PO Box 487

Fort Smith, NT

X0E 0P0