



WATERSHED TALK NEWSLETTER

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In it for the long haul.

By: Walter Quinlan, FRAFS Communications

Sam Albers was outside in the yard, enjoying a holiday Monday with his daughter when a friend phoned. There'd been a problem at Hazeltine Creek. So he hopped in his car, met up with his friend in Likely and they took a boat to where the creek enters Quesnel Lake.

"We live here," said Sam. It was with "sadness" that he took in the amount of damage done. "And as a scientist, I grabbed some samples." Perhaps the very first samples taken in Quesnel Lake in the aftermath of the Mount Polley tailings pond breach.

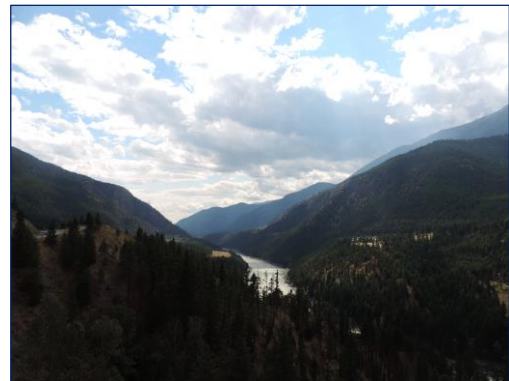
Sam is the Operations Manager of the [Quesnel River Research Centre](#) a University of Northern BC (UNBC) facility that focuses on watershed science. It's located on the river just two kilometres downstream from the outlet at Quesnel Lake.

The team at QRRC is led by two endowed Research Chairs: Dr. Phil Owens (contaminants and historic and local mining in the Quesnel system); and Dr. Ellen Petticrew (salmon nutrients and their positive impacts on local ecosystems).

While current sampling by the MOE and the First Nation Health Authority focuses on immediate results to answer the question "Is it safe to fish?" the QRRC is well situated, with the equipment and expertise, to start some of the long-term monitoring of the impact of what has spilled into Quesnel Lake.

Watershed Talk caught up with Sam Albers (MSc) for an update.

See next page



Mid-river this week on the Fraser.

*See Pages 4 and 5
for a list and map of
FNHA tissue sample sites.*

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In it for the long haul

WST: How has the QRRC responded to the Mount Polley breach?

Sam: We're out on the lake measuring the physical limnology data – a profile of the lake. It helps to track changes over the course of time and to identify any odd behavior in the lake. We're also looking at how long-term monitoring and research sites could be set up on the lake.

WST: What other work are you doing?

Sam: We're also collecting sediment samples. There's a delay in sending these to the lab. We want to make sure that we have a large number of samples. This will give us a better picture when we get the results back.

QRRC is an independent body and we're committed to reporting back to the community, but right now we're one boat and two people. The Dean of UNBC's College of Science and Management has made a commitment and we'll be hiring an on-site Research Associate.

WST: What are the questions that you'll be looking to answer over the long-term?

Sam: A concern for me is: What is the potential for these materials to move through the food web?

For example, if there are tailings sitting on the bottom of the lake, what happens when they get stirred up in spring turnover? Then absorbed by phytoplankton, by zooplankton, then eaten by smaller fish, and ultimately eaten by larger food fish. Potential bio-magnification is a worry.

WST: Where the creek meets the lake is referred to as the "impact zone" and debris and sediment as the "plume." Why are measurements being taken "at depth" at the plume?

Sam: It's partially about what's in the water coming in from Hazeltine Creek and what the water temperature is. The plume is anything - sediments, fine sand – that's coming down the creek, that's now suspended in the lake water and working its way into the system.

What appears to be happening here is that the plume is deep into the water. When you have water coming in that is denser, due to temperature or for what it's carrying, this water will plunge, it'll go deep. On the surface you may not see any evidence of material, but deep down you might.



Sam Albers



In it for the long haul

WST: Of what interest might this be to the QRRC?

Sam: What's unique about Quesnel Lake is that it has odd mixing patterns. Right now we have material coming in from Hazeltine Creek. Because of the odd mixing patterns, where will that material end up? In the lake, down Quesnel River? It depends on the summertime temperatures of the lake. It's a real concern; it's an unknown impact.

WST: What challenges do you see coming up?

Sam: We're nine weeks from snow and once it gets really cold it becomes difficult to monitor. Logistically, QRRC can't monitor the lake in the winter. The question is: How are the breach's effects going to be monitored over the winter? What would be really important would be to get some remote long-term monitoring capability on the lake. Basically machines that could be put into the lake that don't have to be checked daily.

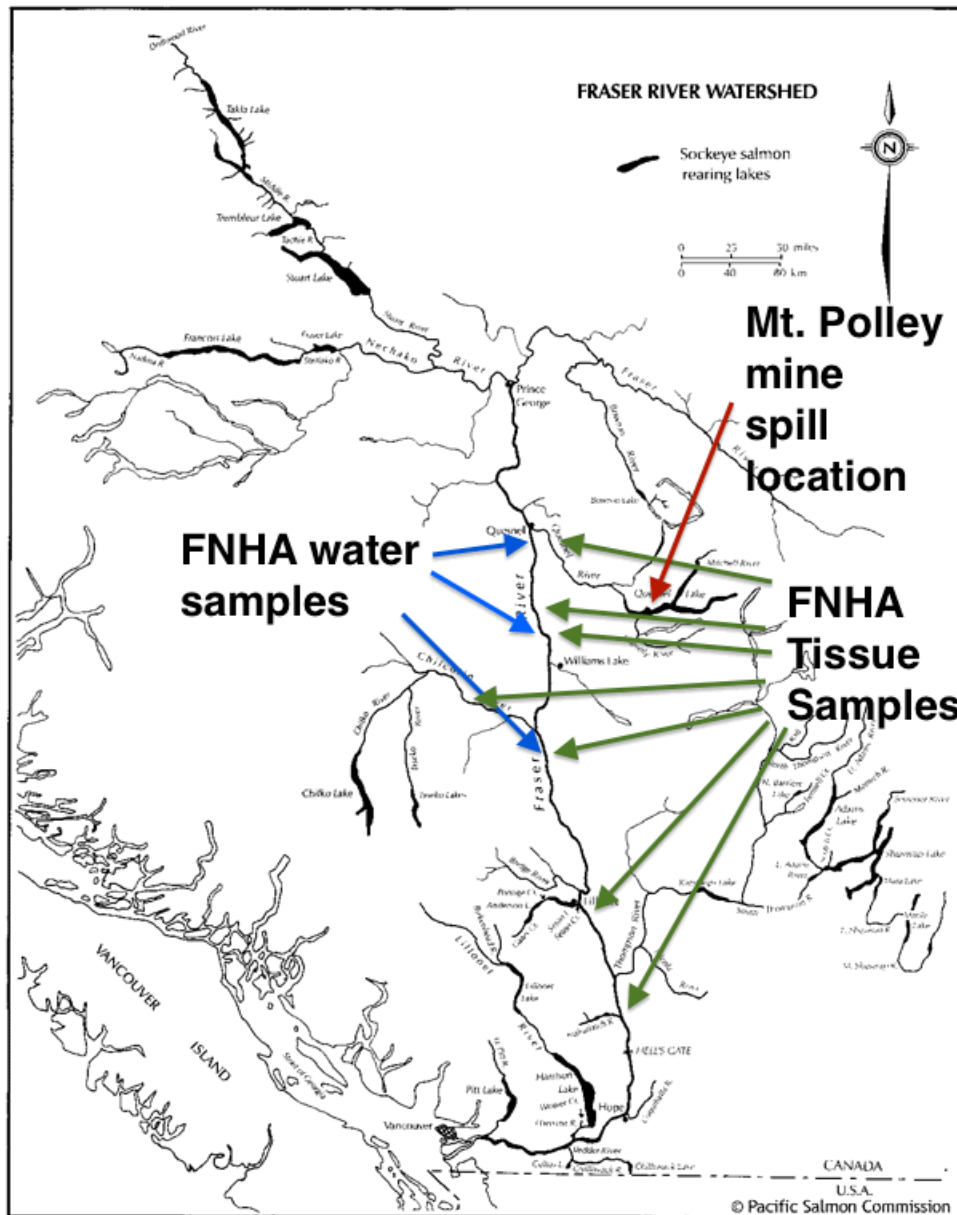
With the resources it has, the Quesnel River Research Centre has taken the initiative in starting long term research on Quesnel Lake. And it could well become the hub of monitoring activities for the years to come.



FNHA update starts on the next page



A Snapshot of Water and Fish Sample Sites (First Nations Health Authority).



Original map sourced from PSC website.

Note: Blue arrows are water sample sites; green arrows are fish sample sites.



A List of FNHA Tissue Sample Sites (to date)

Tissue samples (1-2 week turnaround)

- shipment of 5 sockeye and 1 chinook (Chilcotin system) last Wednesday (mix of 2013 and 2014 fish)
- 6 sockeye samples (shipped from Williams Lake Aug 20): 2 from Chilcotin (Farwell Canyon), 2 from Xat'sull, 2 from Gang Ranch Bridge (downstream from Chilcotin confluence)
- 7 tissue samples from Quesnel (expected to be sockeye but may include chinook): Nazko and Lhtako Dene
- 2 sockeye from Esdilagh
- 9 from the main-stem Fraser mid-fraser (upstream and downstream of the Thompson River): to be shipped hopefully by August 21
- Gates Creek – 2 sockeye (2014), St'at'imc Resources
- 6 Mile – 1 sockeye (2014), Xaxl'ip
- 200m Downstream of Bridge River confluence – 1 sockeye (2013), Bridge River
- 13km W Pavilion Rd – 3 sockeye (2014), Bridge River
- Old Lillooet Bridge – 6 sockeye (2014), T'it'qet