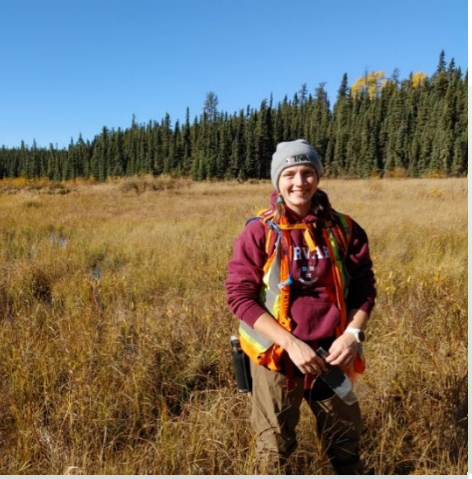

Return to Forest Cover

BERA Project Update

Soil Hydrophysical Properties of Seismic Lines in the Boreal Forest, Alberta

Project Update Year
2021 (Year One)

Lead
Lelia Weiland (MSc student)

Department of Geography, University of Calgary

Supervisor(s)
Scott Ketcheson

Project Theme Area
Eco-Hydrology

Project Code
SY1

Project Location
Stony Mountain (56°22'14.05"N; 111°18'7.62"W)

Kirby (55˚20’33”N; 111˚01’24W)

Working Group
Reach out to Lelia to join the working group

Why is this study important?
The return to forest cover on seismic lines is influenced heavily by local soil and moisture conditions. Previous work within BERA has shown that soils on seismic lines can be wetter and more compacted than adjacent areas, but there is much to learn beyond that. In this study, we will answer a series of questions about seismic lines, soils and water. For example, how do seismic lines impact the way that water moves in the soil? How much water is available for vegetation regrowth, especially in the rooting zone? We aim to relate these soil and water questions to basic vegetation metrics, such as sapling abundance and growth.

How was it completed?
We are working at four intensive sites, including one on Stony Mountain (near Fort McMurray) and three at Kirby South (near Conklin). At both Stony Mountain and Kirby, we have six transects which cross a seismic line and extend 25 m into the forest. On each of these transects, we installed wells, took soil samples, completed vegetation surveys, and measured relative elevation both on and off the seismic line. These measurements allow for quantification of compaction of the seismic line, vegetation regrowth, and soil water properties.

What are the core management implications to date?
This work will help us better understand how seismic lines impact soil properties and water movement. We will relate our findings to sapling growth success on seismic lines by working closely with other BERA teams. By investigating the relationship between soil properties, water movement and vegetation, we hope to better understand how plant water availability and regrowth on both treated and untreated lines are affected. As we work to understand the differences in the underlying hydrology, we will help inform future seismic line restoration planning.

Achievements
Recipient of NSERC Canada Graduate Scholarship Master’s award in 2021 for research on the hydrophysical properties of seismic lines as part of the BERA project

Boreal Ecosystem Recovery & Assessment