



THE BIOHUB CONCEPT

A Case Study from Merritt, BC

Presented by Brianna Brochez



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Brianna started with FPI in August 2023.

She has worked across the forest sector in British Columbia in consulting, industry, community forests, and academia.

Her background is primarily in silviculture and she is currently a Forester in Training and is certified with the Association of Fire Ecologists as a Wildland Fire Ecologist.





FPINNOVATIONS

2007-present

Who we are:

A private not-for-profit organization specializing in creating innovative solutions that support the Canadian forest sector.

We are the bridge between academic research and industrial application.

We have offices in Vancouver, BC, Montréal and Québec City, QC, and Edmonton, AB.



An aerial photograph of a logging site. A green tracked vehicle is positioned on a muddy path, surrounded by stacks of cut logs. The ground is wet and muddy, with some snow patches. The background shows a forest of tall, thin trees.

OUTLINE

01

BC SITUATION

Fibre supply issues and constraints.

02

BIOHUB OVERVIEW

Goals, objectives, and description of process.

03

CASE STUDY

Project location and development within BC.



01 – BC SITUATION

Changes to policy and natural disturbances have reduced fibre supply across Canada.

Reductions in Annual Allowable Cut (AAC) further constrict harvestable volume.

- Anticipated decline of 6.5 million m³ (14% decrease)

In British Columbia (BC), wildfire is a major issue limiting wood supply.

- In 2023, almost 3 million ha burned
- This trend will likely continue

Forest industry is seeking ways to improve fibre supply = **biomass and residual use**.



01 – BC SITUATION

Traditional harvest methods leave residues piled in the block or at the roadside.

- Low-grade logs, tops, branches, ends

Pellet plants/pulp and paper mills can collect these residues.

- Typically ground in field and transported as hog fuel/pulp chips to facilities

Only feasible where volume available offsets travel distance and processing costs.

- Material is low quality and low value
- In BC, transport distances can be extensive, so most residues end up piled and burned as a result



02 – BIOHUB OVERVIEW

The BioHub Concept employs the idea of **full-use** forestry.

It functions as a processing yard where full-length trees are brought in from the field and processed in a more central area.

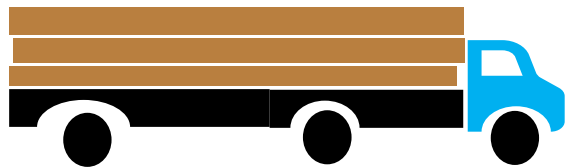
- This differs from traditional forestry in BC where logs are cut and processed in the field and hauled away directly to mills.
- Cut-to-length systems process stems into sawlogs and pile the waste for use by pellet/pulp mills or burning.
- Tree-length (or whole-tree) systems cut the trees and haul them to the roadside, where they are loaded on a truck and processed at a yard.



BIOHUB CONCEPT DIAGRAM

Full-Tree Harvest

Trees are cut and are either limbed by a processor at the roadside (tree-length system) or left with branches and tops intact (whole-tree system). Material is then loaded onto a truck configured for long-tree hauling.



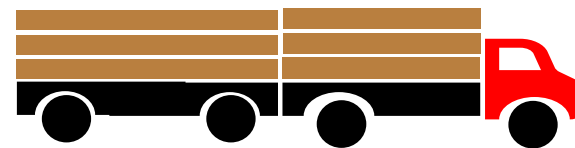
Yard Processing

Stems are brought to a large, open yard and are scaled and unloaded. Material is then processed by a limber according to different product specifications. Log sorts are piled separately based on end use.



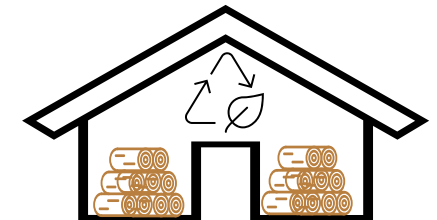
Transport to Market

Different sorts can be sold or marketed to various end users and hauled away accordingly. Trucks come into the yard, are loaded with material, scale out, and deliver as needed.



Residual Storage

Waste material from processed stems is piled and stored in sheds or bins to be later used as hog fuel, chips, or mulch. Longer pieces can be used, stored, and sold as firewood to the community.



02 – BIOHUB OVERVIEW

The goal of the BioHub is to have a centralized yard that will reduce wood processing costs, increase efficiencies, and add more value to all tree components.

Most importantly, the BioHub employs full-utilization such that there is [zero-waste](#).

Moves away from low-value logging residues being piled and burned in the field and enhances utilization of such products as biomass.

Can reduce carbon emissions and additional transport costs typically needed to manage waste material.





03 – CASE STUDY

A BioHub Pilot Project began in Merritt, BC in early 2023.

Merritt is a small community of a little under 8000 people.

It is located in the southern interior of the province.

Forest type is Douglas-fir, spruce, ponderosa pine, and subalpine fir.

Lodgepole pine is also dominant in stands.



Merritt, British Columbia, Canada

03 – CASE STUDY

The project was developed alongside Stuwix Resources Joint Venture (SRJV), which is a First Nations Forestry Company in Merritt.

- SRJV is a shareholder agreement between 8 First Nations in the area
- They operate with an AAC of 174,000 m³

SRJV was interested in the opportunities a BioHub could bring to the community, including additional jobs, more flexible market supply, and better forest management.

They partnered with Valley Carriers LTD. to work within their sort yard in Merritt and begin validating the BioHub scenarios run by FPInnovations in early 2023.

The project was financially supported by the Province of British Columbia.



03 – CASE STUDY

A tree-length system was used throughout harvesting.

- This meant a limber was used in the field to remove branches and tops from logs prior to hauling.
- Additional equipment included a skidder, buncher, and loader.

Logging trucks with Tri-Axle pole trailers were used to haul the tree length stems from the field to the BioHub in Merritt.

Residual material left in the block was initially piled for grinding but was later dispersed back onto the block.

- This will aid in meeting coarse woody debris requirements.
- It will also help cover skid trails and reduce mineral soil exposure.
- Finally, using the material in this way removes the need to return to the block to grind the branches and tops.



03 – CASE STUDY

Standard CTL harvesting would have meant SRJV would have to decide what sawlog lengths to cut in the field.

The BioHub enabled them to vary what products they delivered and make better use of available material.

- Sawlogs, peelers, and rail posts were some of the products delivered to different facilities in the area.

Initial data showed log quality was consistently high (99% on average) and is expected to meet 100% on average as the project nears its end.

- This was noted as likely being due to the processor operator being able to work within the community (no long hours for commuting to the field) during daylight hours.
- The operator was able to spend more time assessing each piece and ensuring each cut was of the highest quality.



03 – CASE STUDY

The project is set to be completed in February 2024 and final data will be synthesized in a report.

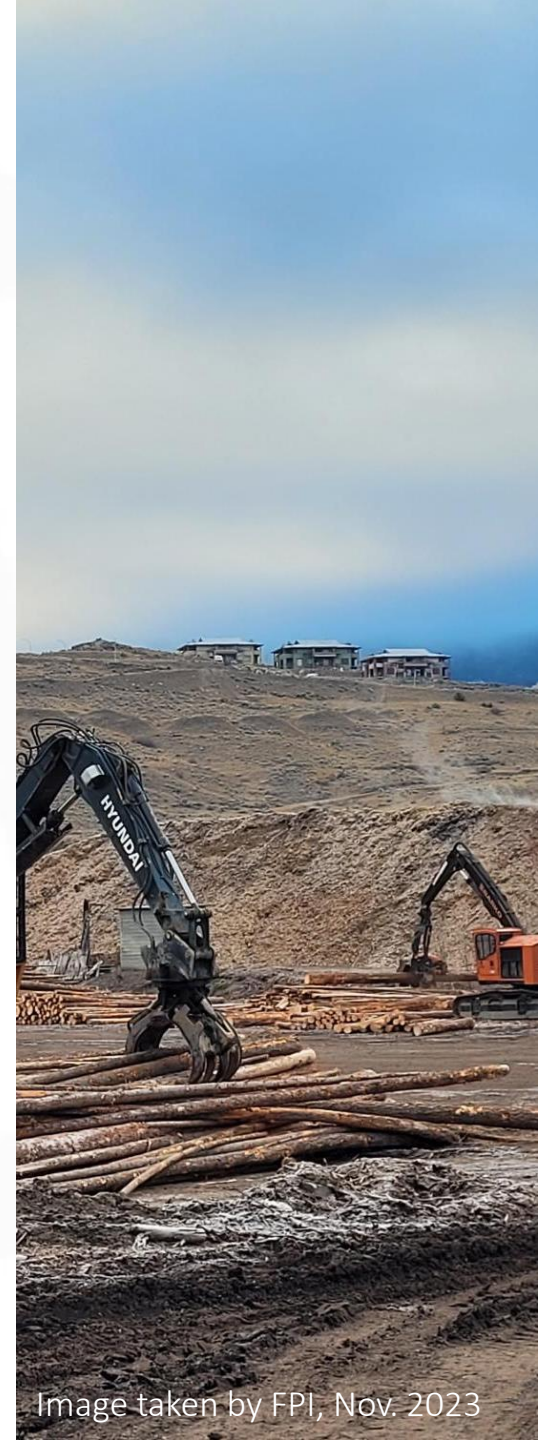
The main goal of the project was to determine if the costs of the BioHub would be offset by the products delivered.

- This includes profits from sawlogs as well as residual biomass in the form of chips and/or firewood.

BioHub costs include:

- Yard and facility use (including scale operations)
- Equipment and operator costs (both in the yard and the field)
- Fuel and maintenance
- Trucking costs
- Chipping activities and firewood cutting

Results will be available soon and the province is eager to see how the BioHub pilot project performed.





Thank you to Stuwix Resources Joint Venture and Valley Carriers LTD. in Merritt, BC, for granting us permission to present this case study. Thank you to IEA Bioenergy for giving us this opportunity to speak.



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QUESTIONS?

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