Eagle Mountain – Woodfibre Gas Pipeline Project

Squamish Public Information Session

November 18th, 2020

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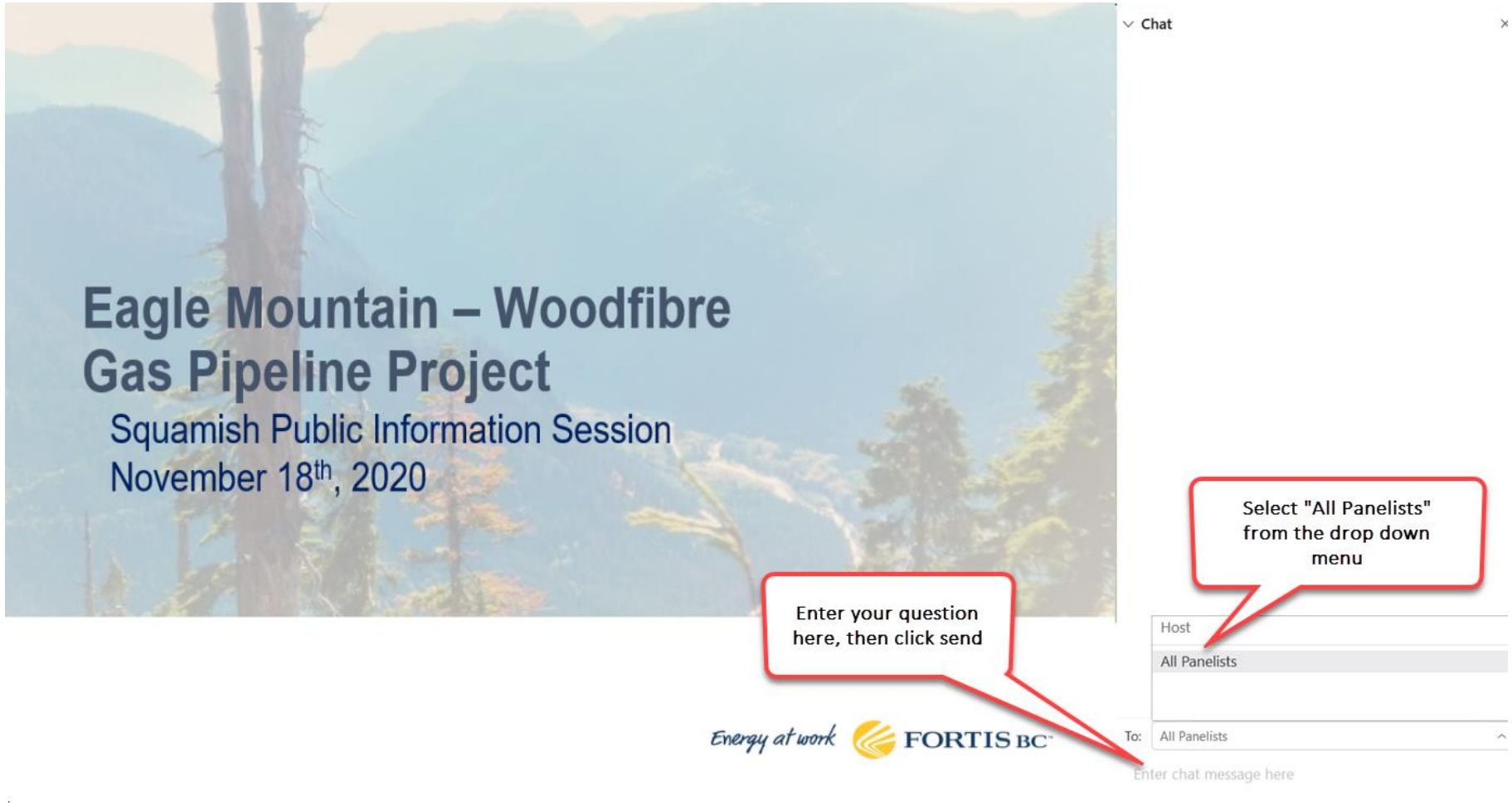
Agenda

- Intro to FortisBC
- Pipeline Safety
- FortisBC Clean Growth Pathways
- Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project:
  - What is EGP?
  - Regulatory Update
  - Water and Waste Discharge Authorization
  - Next Steps
- Questions and Answers

How to ask Questions



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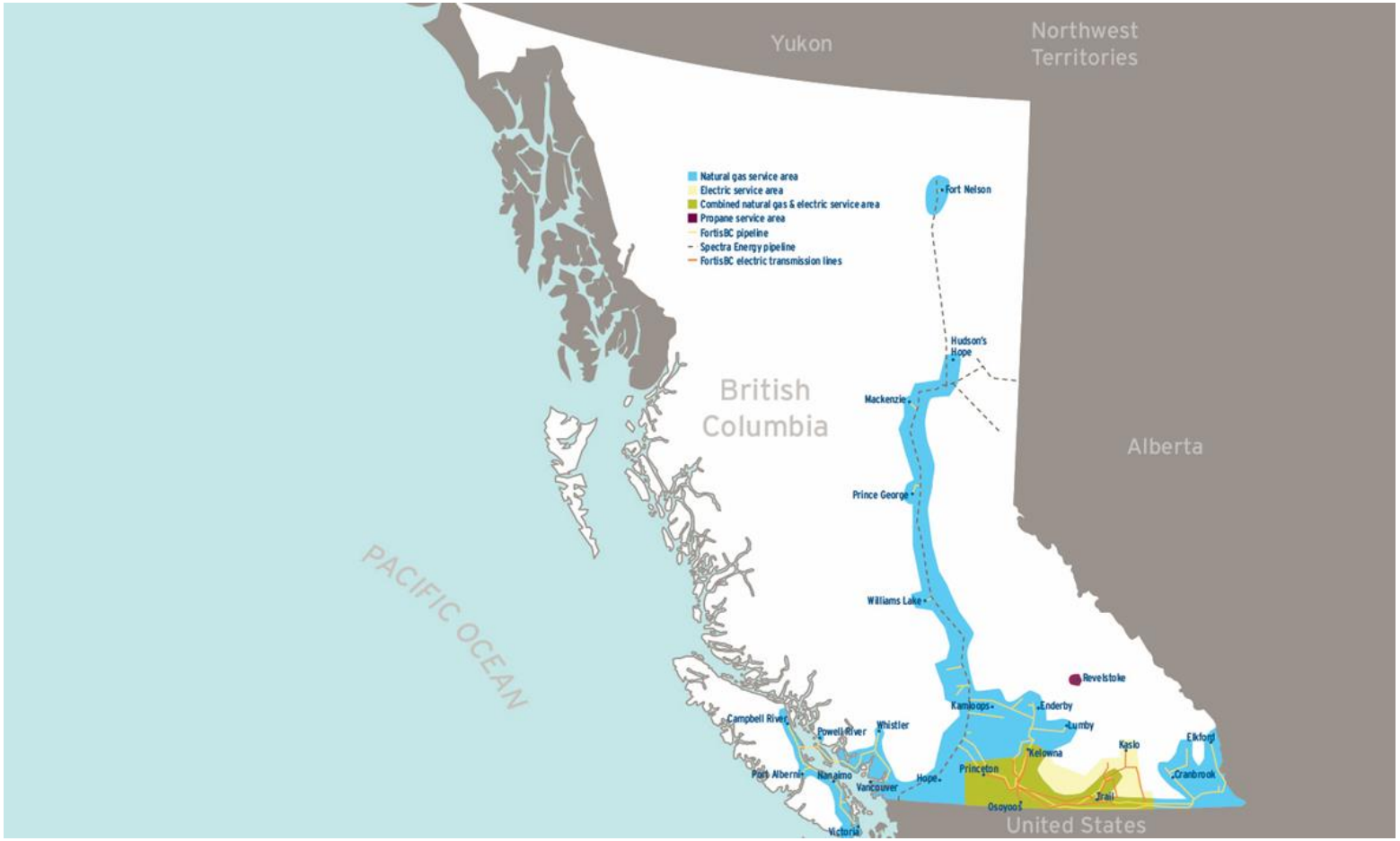
About FortisBC

FortisBC is an investor owned natural gas and electric utility serving 1.1 million customers.

Fortis operates about 49,000 km's of natural gas lines and over 7,200 km's of power lines.



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FortisBC Pipeline Safety – the top company priority

Regulation

Standards

Management Systems

Industry Participation

Corporate Commitment

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What is 30BY30?

It is our target to reduce our customers' GHG emissions by **30%** overall by the year **2030**

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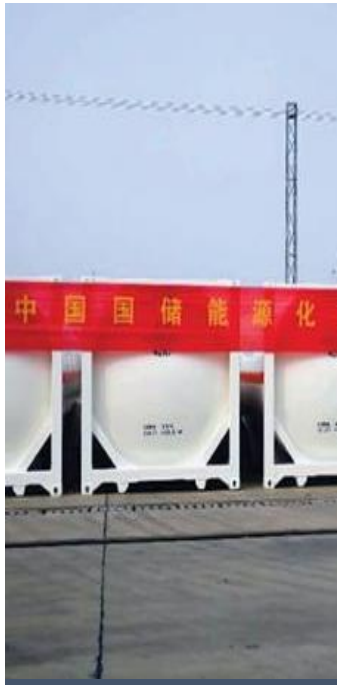
Four pillars of our Clean Growth Pathway

Energy efficiency

Renewable Natural Gas



Global LNG

Zero and low carbon transportation

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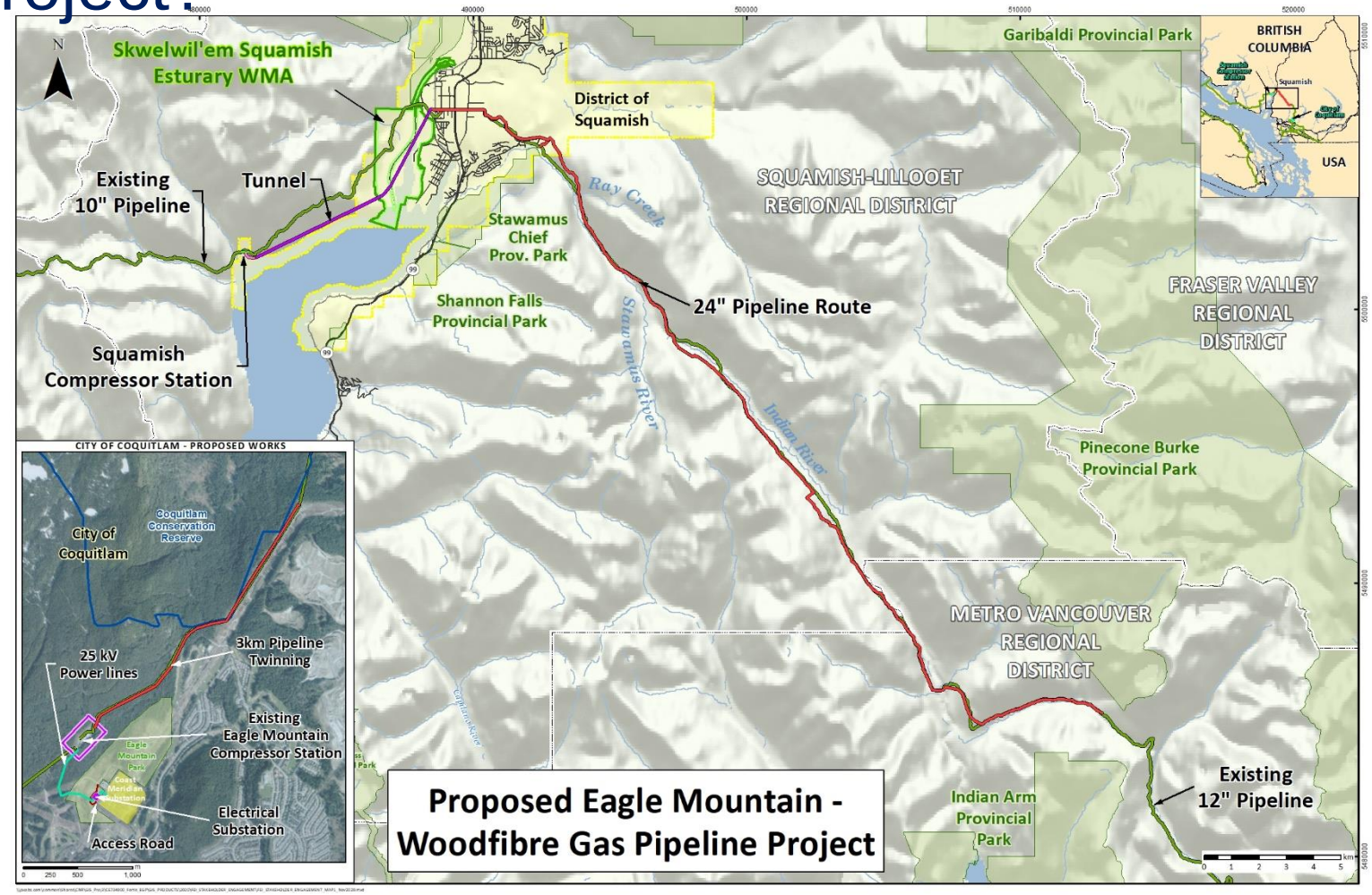
What is the Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project?



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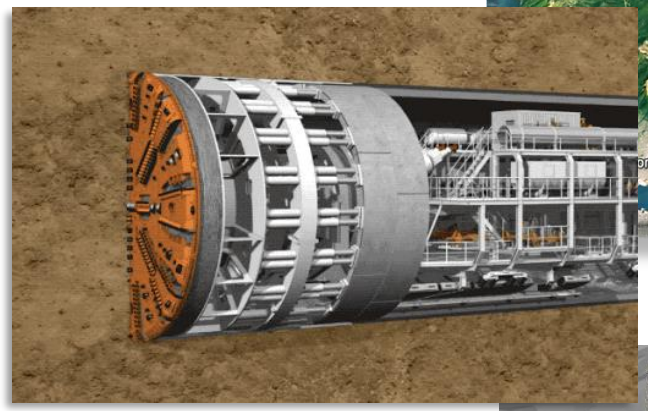
EGP Project Overview

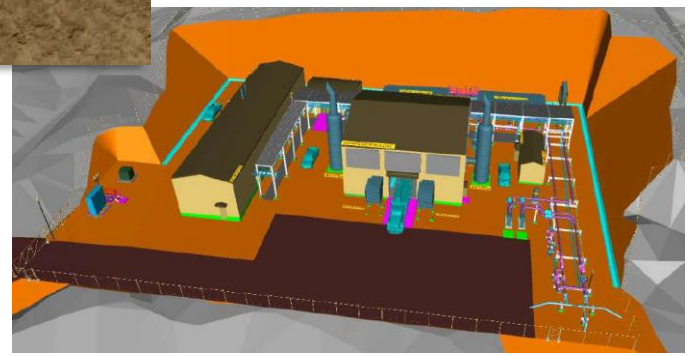
Project Components:

- Pipeline
- Tunnel
- Facilities

EGP Pipeline Overview



Tunnel Boring Machine



Squamish Compressor Station Rendering

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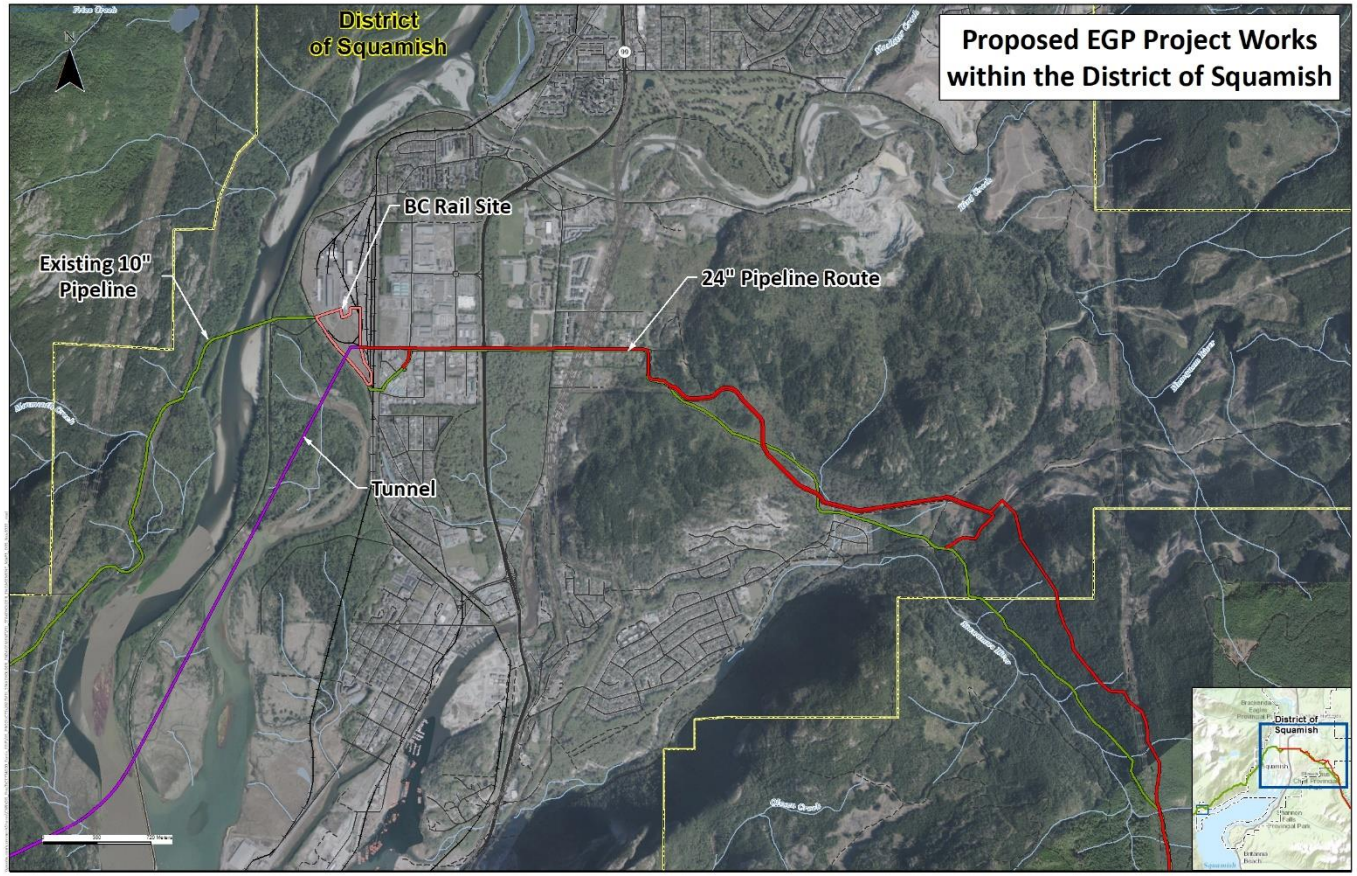
What is EGP: Pipeline



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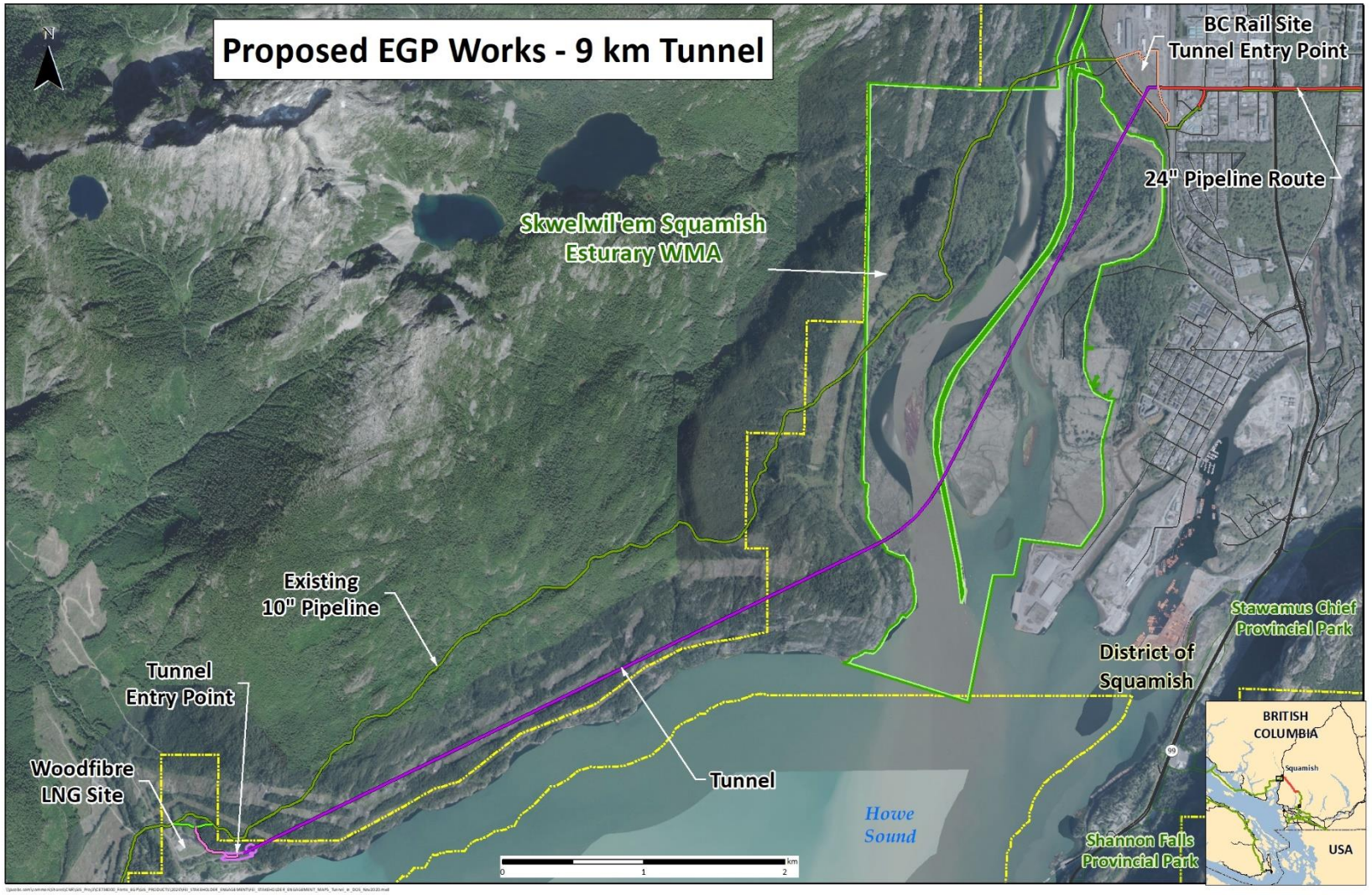
What is EGP: Tunnel



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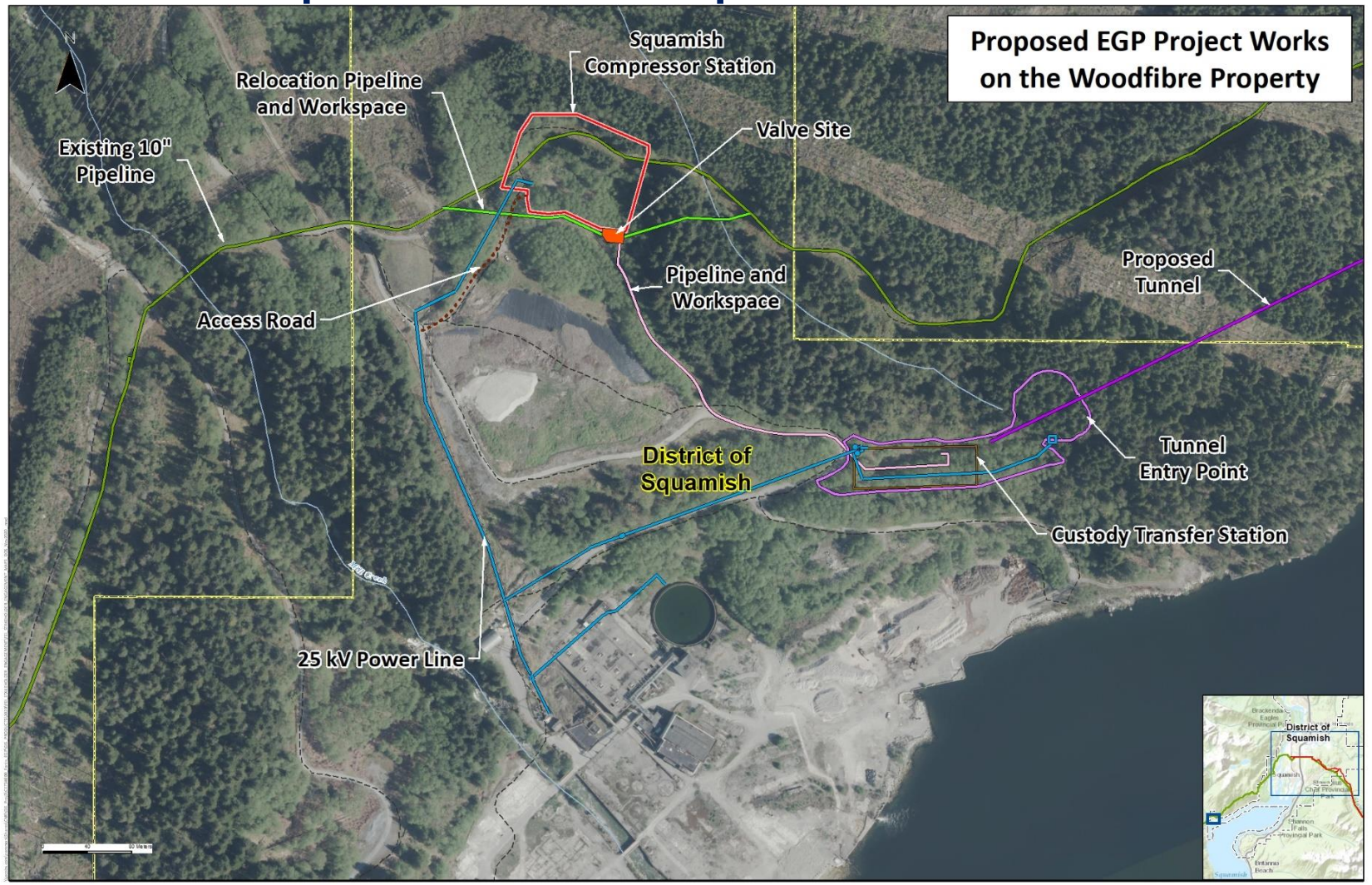
What is EGP: Squamish Compressor Station



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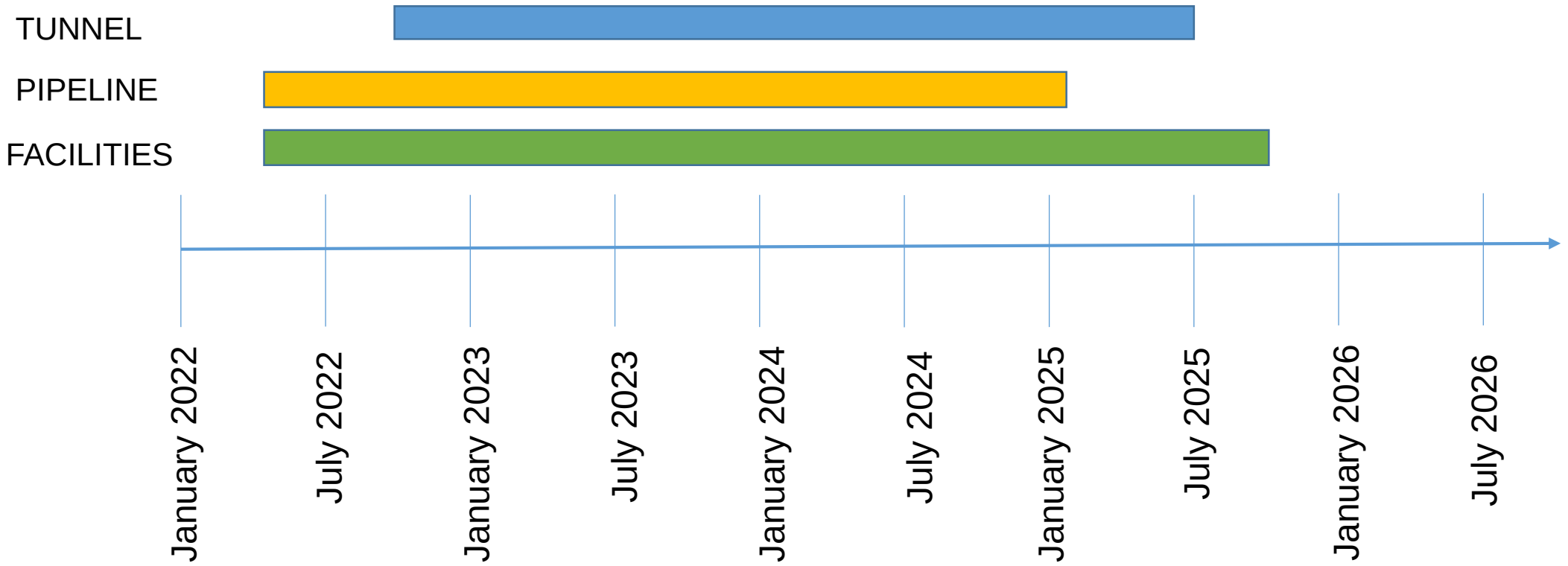
EGP Construction Schedule in Squamish



Note: Schedule subject to change

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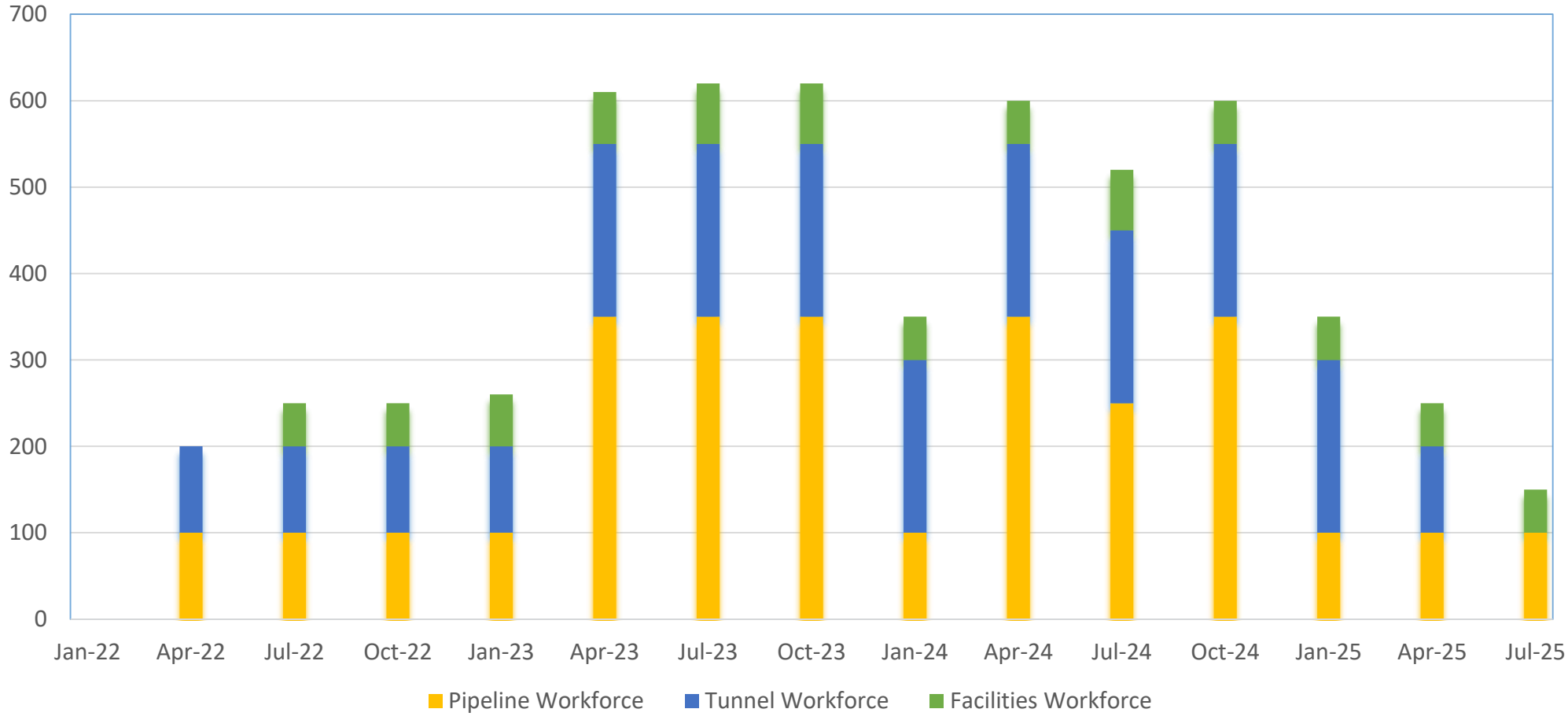
Forecasted Construction Workforce



Note: Workforce numbers subject to change

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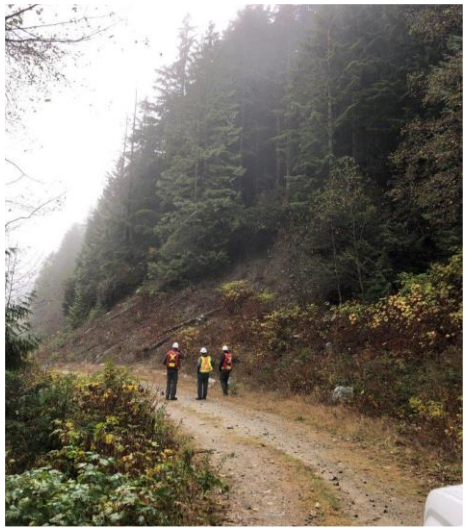
Regulatory Update

- BC EAC Amendment Application filed October 23rd
  - EAO public comment period (Nov 9 through Dec 23)
  - 4 amendments, 2 near Squamish
    - Stawamus Corridor Expansion to accommodate alternative route
    - Squamish Compressor Station alternative location
- BC EAC Extension Request filed October 30th
- Ongoing engagement with Indigenous Nations, municipalities, regulators and the public
- Ongoing engagement with Squamish Nation through the SN Environmental Assessment Agreement Process.
- Developing EAC Conditions Management Plans.



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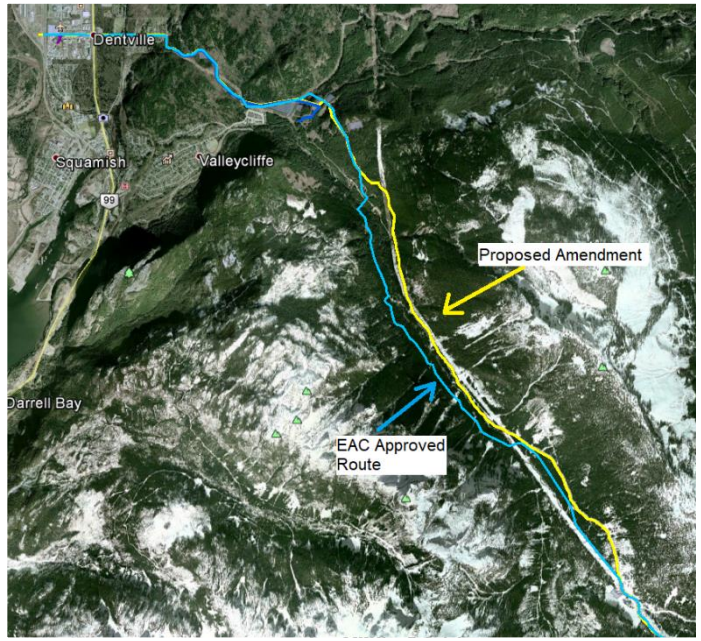
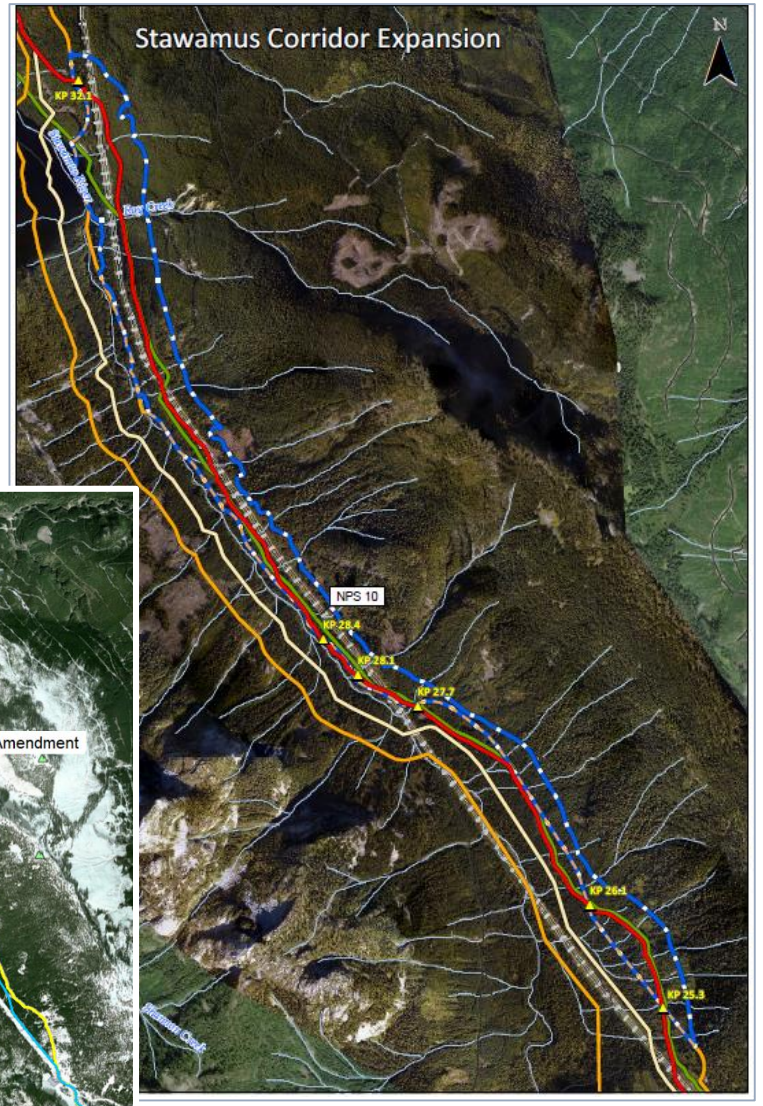
Stawamus Corridor Expansion

- An expansion to the Certified Pipeline Corridor by an average of 200m for approx. 7km between KP 25.0 and KP 32.1
- Proposed to provide flexibility to:
  - Reduce impacts;
  - address potential construction challenges associated with the Certified Pipeline Corridor;
  - respond to feedback from Squamish Nation with respect to reducing visual impacts and potential impacts on the Stawamus River
  - realize operational efficiencies as it is located adjacent to the existing FortisBC NPS 10 gas pipeline; and





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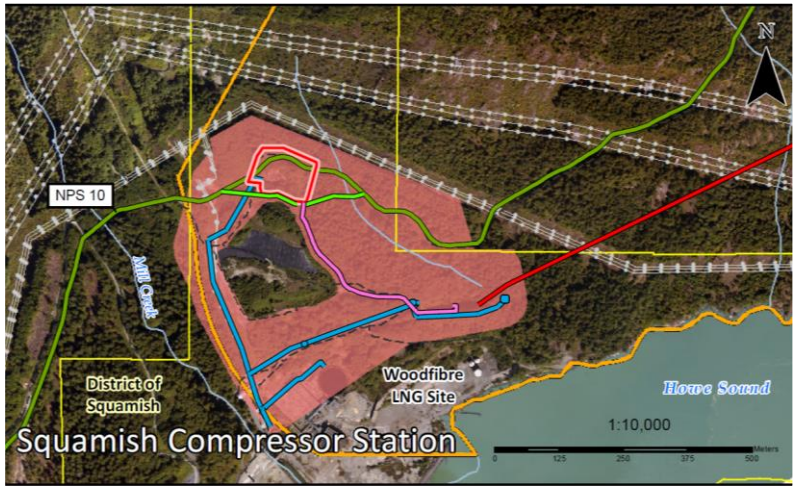
Squamish Compressor Station

- Proposed location at Woodfibre due to feedback received from Indigenous groups and stakeholders on the Certified Mt Mulligan location.
- Two approx. 6,300-hp gas turbine compressor units
- Supporting infrastructure:
  - Existing NPS 10 rerouted for 270m
  - New approx. 430m long NPS 10 pipeline lateral
  - New approx. 700m electrical powerline



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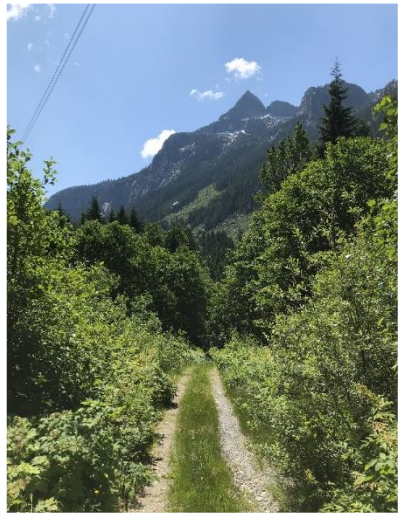
Permitting - update

- Progressing Applications for BC OGC Permits:
  - Tunnel Permit Received
  - Eagle Mountain and Squamish Compressor Stations applications filed
  - OGC North Pipeline permit – planned filing mid December
- Ongoing engagement with Indigenous Nations, municipal governments, Provincial, and Federal Regulators
- Initiated discussion with BC FLNRO on FSR Road Use Permit
- Initiated discussion with District of Squamish on municipal permitting requirements



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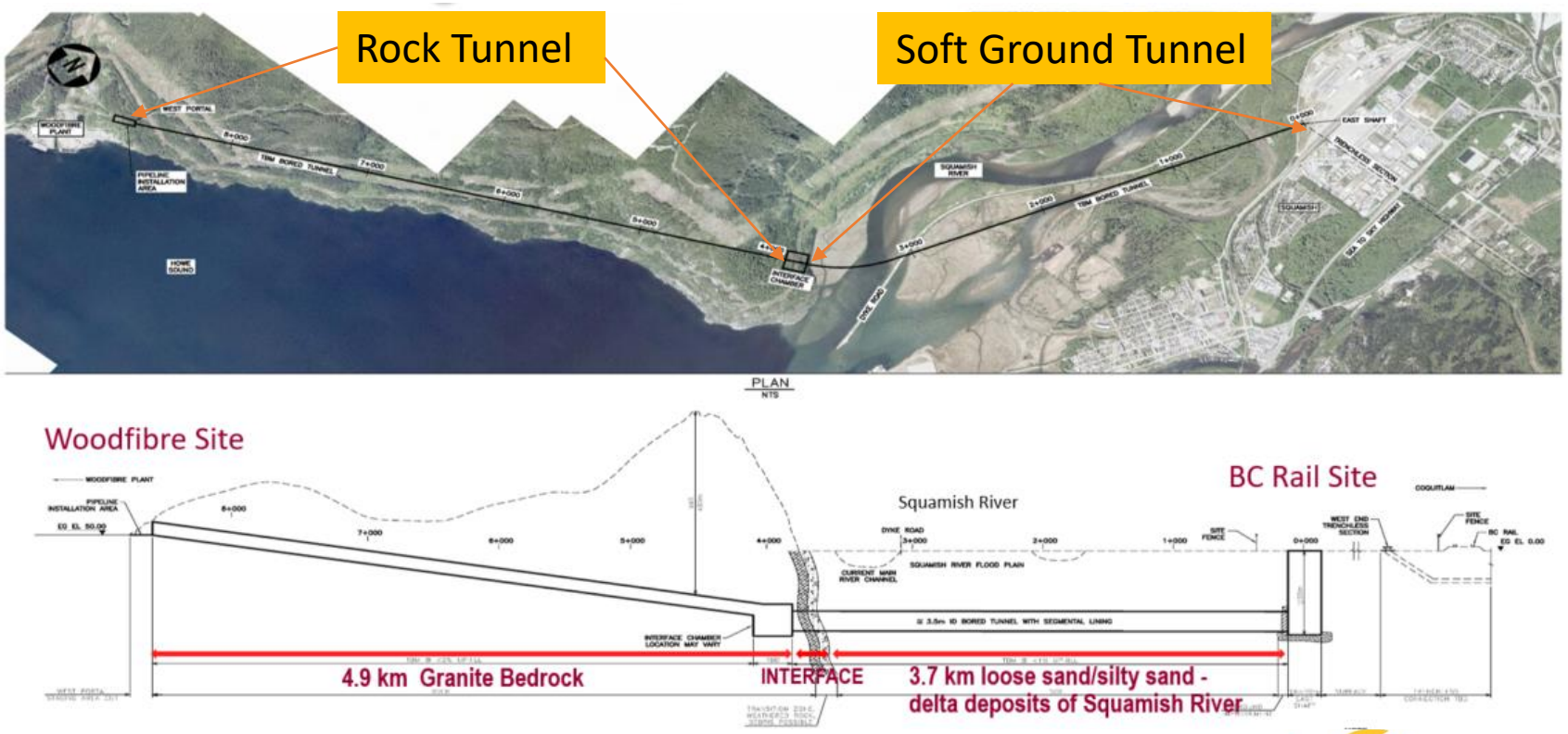
EGP Tunnel Overview

8.7 km (approx.) tunnel from the East Shaft (at BC Rail Site) to the Woodfibre Portal (at Woodfibre Site) to facilitate installation of new pipeline.



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Waste Discharge Authorization (Water)

Permit under the provincial Environmental Management Act to discharge water from tunnel construction activities

Sources of water discharge include:

- Shaft and Portal Construction
- Groundwater Inflow
- Industrial Water
- Precipitation
- Hydrostatic Testing

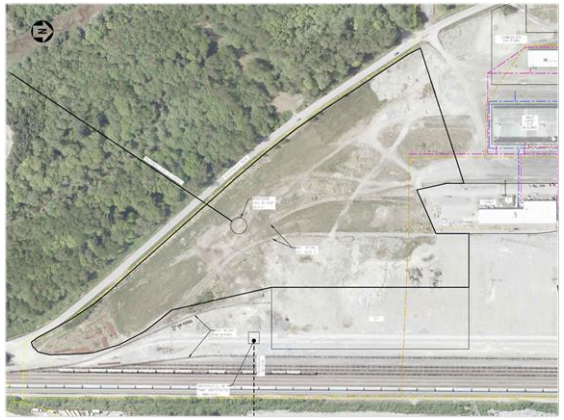
Shaft Construction BC Rail Site

Construction site to launch Soft Ground Tunnel Boring Machine (TBM)

Sources of water include:

- Groundwater inflow
- Water produced during excavation and placement of concrete panels and base slab

Shaft Excavation



BC Rail Site, Squamish Industrial Park

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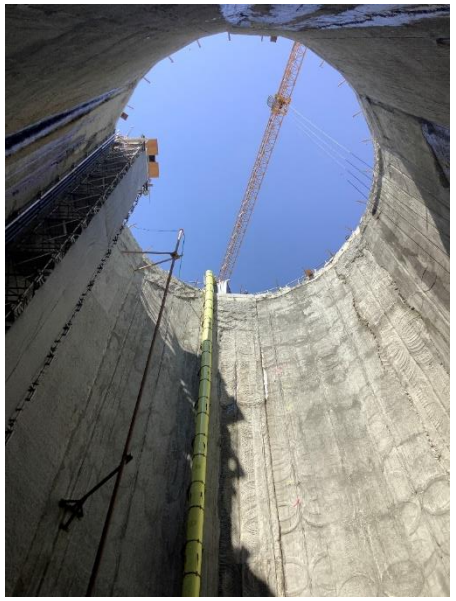
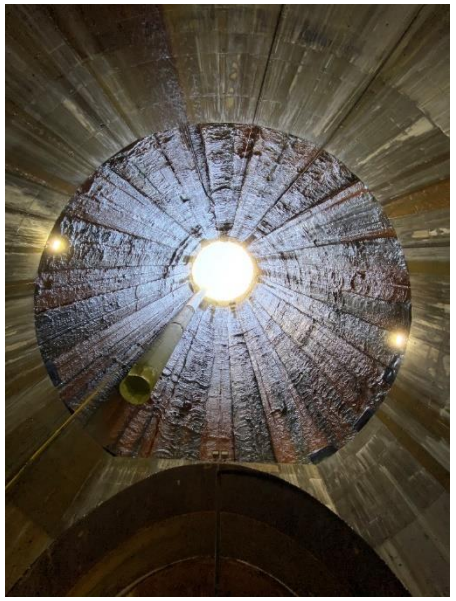
Shaft Operation BC Rail Site

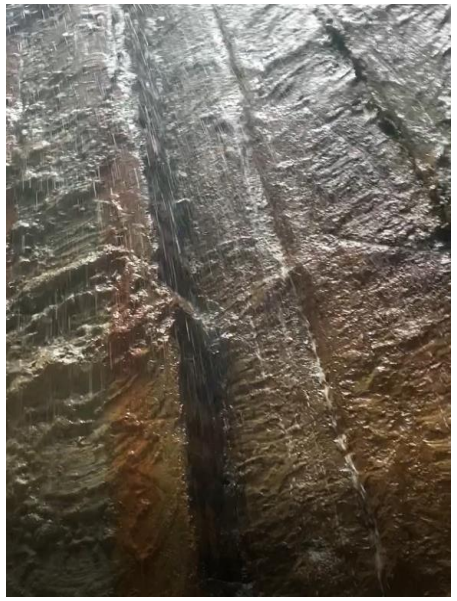
Groundwater may seep into shaft during tunnel construction

Sump pumps will be installed to manage water inflow and direct water for treatment and discharge



Dry Slurry Wall Shaft





Wet Slurry Wall Shaft

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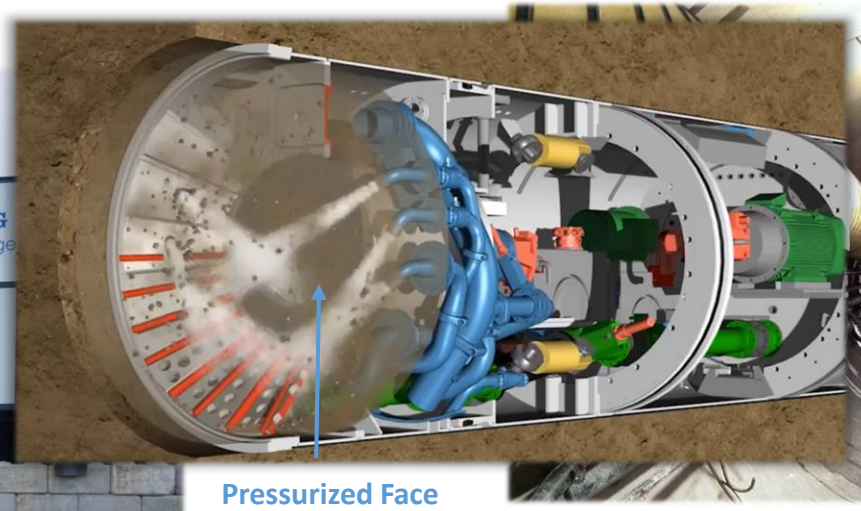
Tunnel Process Water BC Rail Site

The Soft Ground TBM uses bentonite slurry to pressurize the TBM face during excavation, ensuring the integrity of the surrounding ground

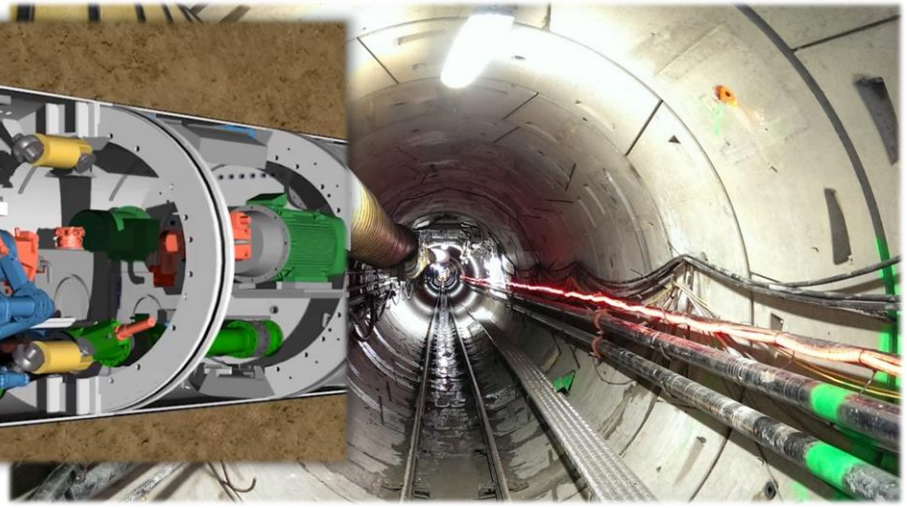
The slurry is also used as a means for transporting the excavated soil to surface

A watertight precast concrete and gasketed tunnel lining will be installed, as such, groundwater inflow during tunnel construction will be minimal

Slurry Separation Plant



Pressurized Face



Completed Impermeable Tunnel Lining

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Portal Construction and Operation Woodfibre Site

Construction site to launch Rock Tunnel TBM

Groundwater inflow anticipated to be negligible during portal construction due to presence of competent granite bedrock

Portal Construction
(Indicative)

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Tunnel Process Water Woodfibre Site

The Rock Tunnel will be mostly unlined

Groundwater inflow will occur during excavation from water draining through natural fractures in the rock. Volumes will increase as tunnel construction progresses

Natural fractures in the rock will be grouted to reduce groundwater inflows

Groundwater Inflow in Fractured Rock (Example)

Pipeline Hydrostatic Testing BC Rail Site

After the pipeline is installed, a hydrostatic test will be conducted to ensure the integrity of the pipeline before putting into service

Hydrostatic Test

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Anticipated Water Volumes

Water Source	Estimated Rate (m^3/day)	
	BC Rail Site	**Woodfibre Site**
Shaft/Portal Construction	70	0
Groundwater Inflow	50	0 to 1,400 as construction progresses
Industrial Water	30	70
Precipitation	Negligible	Negligible
Hydrostatic Testing	One time discharge of ~ 2,630 m^3	0

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Water Treatment and Quality

Water discharge will occur for the duration of construction activities (3 years) scheduled to start in late 2022

The types of treatment include: sedimentation ponds, pH balance, flocculent addition, and/or oil water separation at a minimum

Water treatment, sampling, analysis, and reporting will occur to ensure BC Approved Water Quality Guidelines are met prior to discharge

Water treatment facilities with sedimentation and pH monitoring

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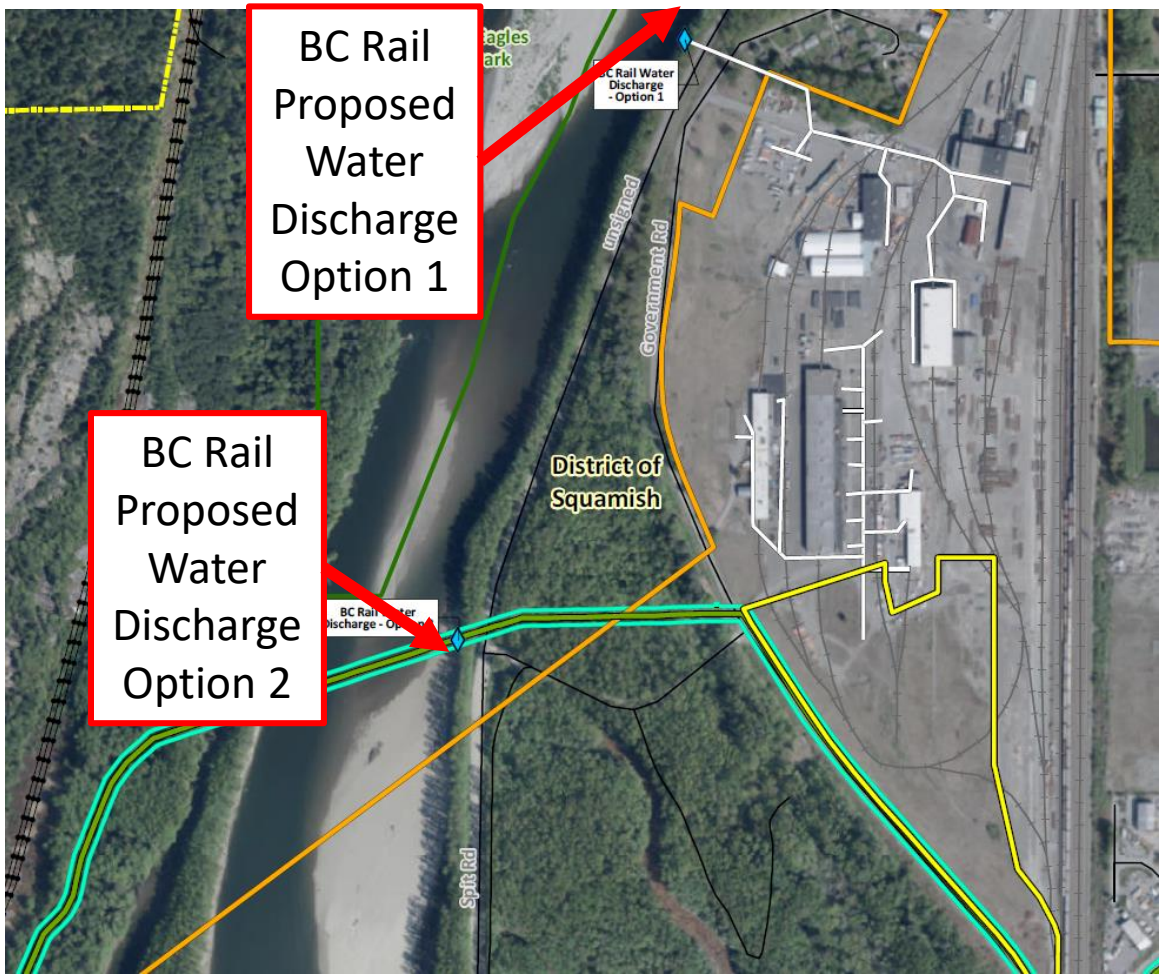
Proposed Discharge Locations BC Rail



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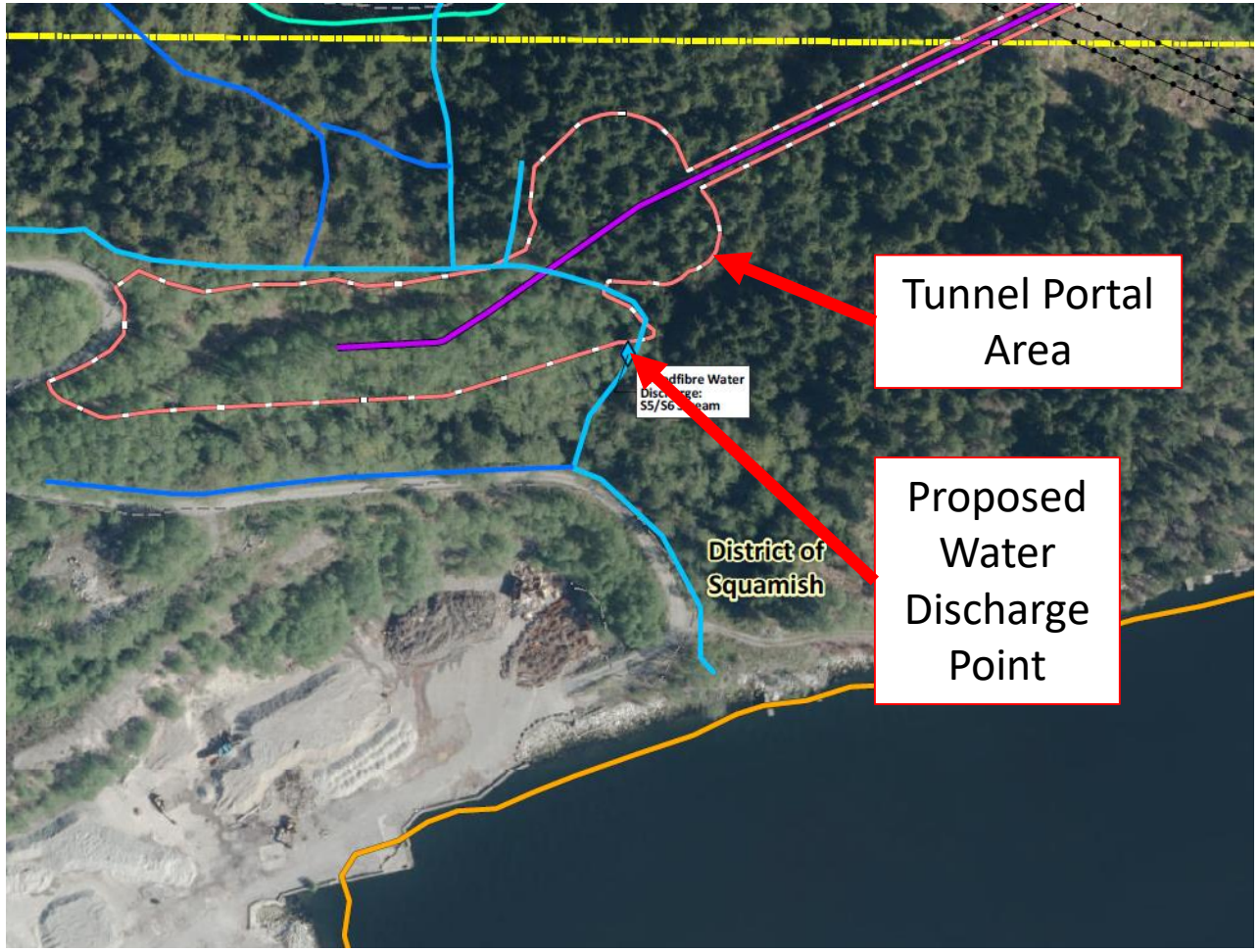
Proposed Discharge Location at Woodfibre Site



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Next Steps

- 2020:
  - Tunnel RFP goes to market
  - Squamish Lillooet Regional District Board update – Nov 25
  - Community Table – Nov 26

- 2021:
  - Select Tunnel general contractor
  - Confirm workforce accommodations with tunnel and pipeline general contractors
  - Develop socio-economic plan with Community Table

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Thank you

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For further information, please contact:

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Find FortisBC at:

Fortisbc.com

604-576-7000

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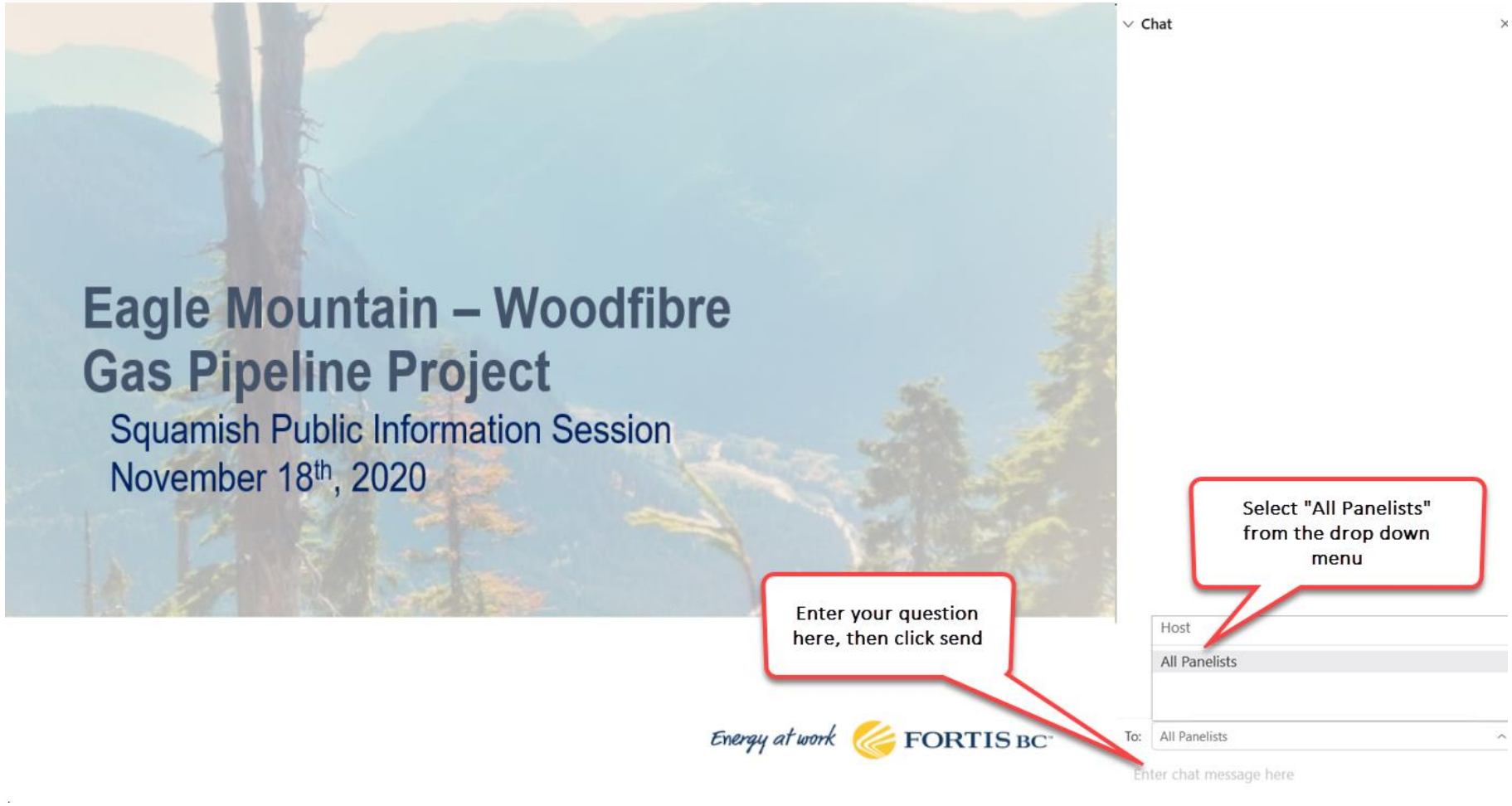

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