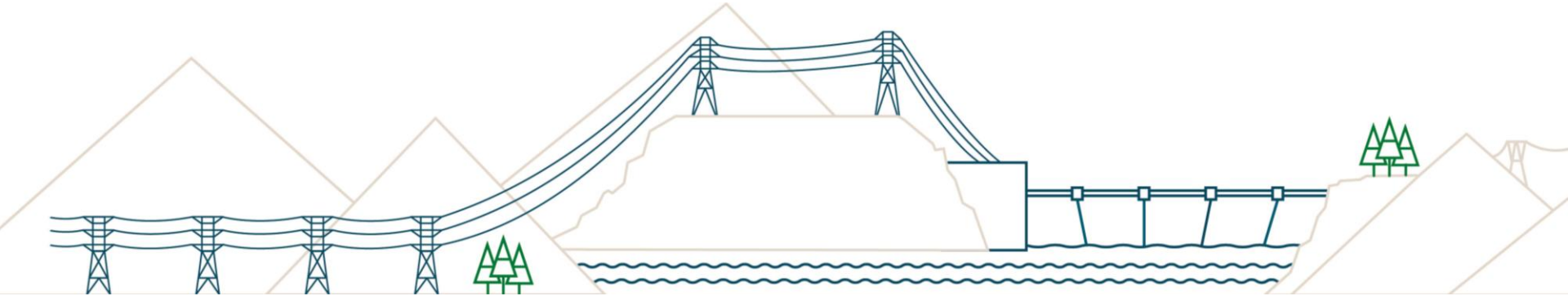
La Joie Dam Improvement Project

Open House



March 2022

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Agenda

- Bridge River System Overview
- Project Overview
- Identifying a Leading Alternative
- Dam Improvement Options
- Next Steps: Spring Studies
- Timeline , Consultation & Engagement
- Q&A

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Bridge River System Overview

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BC Hydro is making significant capital investments in the Bridge River system facilities.

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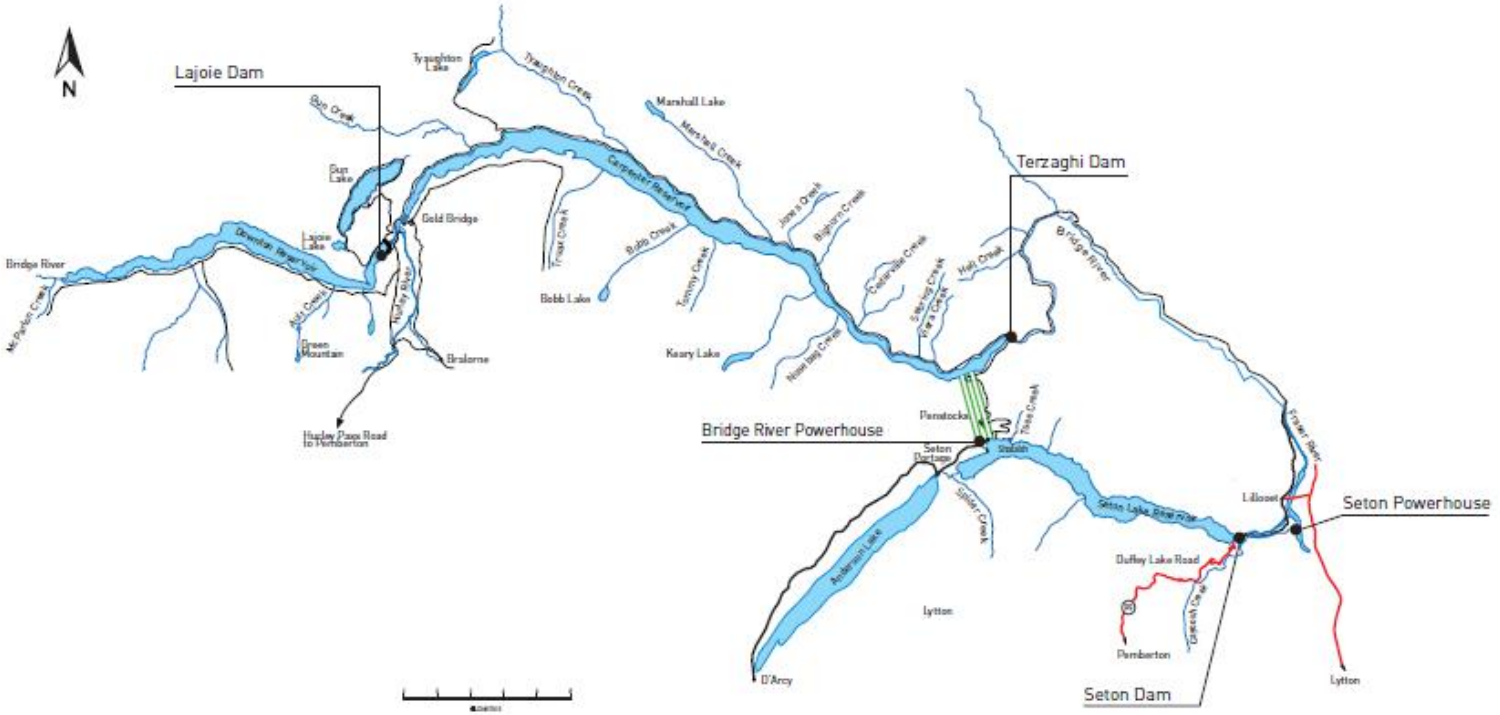

Bridge River System

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Project Overview

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Project Overview

Why is this project important?

- The LaJoie Dam is at the top end of the system and has a major influence in the watershed
- It is the biggest project in the Bridge River capital plan

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Identifying a Leading Alternative

Truescape Demo

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Project Overview

Alternatives considered

Over the past year, the following alternatives have been evaluated:

- **Do Nothing (deferral)**.
- **Improve dam to full reservoir levels**
- **Improve dam to reduced reservoir levels**
- **Decommission the dam**

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Identifying a Leading Alternative

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Structured Decision Making

Recommended Leading Alternative = Refurbish Dam for Normal Reservoir Level

Objectives/ Criteria:

- Dam Safety
- Environment
- Cost
- Service Reliability
- First Nations
- Stakeholders

Refurbish Dam for Normal Reservoir Level:

- Flexibility to manage system flow
- Minimizes environmental risks
- Increases value of generation
- Best opportunity to manage Dam Safety Risks

LEGEND		Not Viable		Alternative 1	Alternative 2
Leading Alternative		Do Nothing	Decommission La Joie Facility	Refurbish Dam for Normal Reservoir Level	Refurbish Dam for Reduced Reservoir Level
Worse than Leading Alternative					
Better than Leading Alternative					
Same as Leading Alternative					
Objective	**Measure**	(Do Nothing)	(Decommission)	(Normal Level)	(Reduced Level)
Minimize Cost to Ratepayers					
Project Lifecycle NPV	PV $M	Not Viable	Not Viable		
Maximize Service Reliability					
Flexibility to Manage System Flows/Risks	High/Med/Low	Low	None	High	Medium
Incremental Energy - Bridge River System	+/- GWh vs. no change	No change	All generation at Bridge River System at risk	+50 GWh	No change
La Joie Peaking Capacity	MW	15 MW	0 MW	15-22 MW	15 MW
Minimize Safety Risks (Dam Safety)					
Seismic Risks on Bridge System - Step 1	Is Risk Manageable?	Only in short-term	Yes	Yes	Yes
Seismic Risk at La Joie		Seismic risk acceptable in short term but further dam face deterioration threatens long-term seismic safety	Eliminates seismic risk at La Joie	Improvements address seismic risk	Improvements address seismic risk
Seismic Risks on Bridge System - Step 2	Relative Difference	Worst	Bad	Best	Middle
Seismic Risk Downstream (cascading failure at Terzaghi due to more frequent flood post-earthquake)		Only provides opportunity to avoid cascading failure of Terzaghi through operational measures, but does not allow for managing post-earthquake flows. This relies heavily on Terzaghi to manage the flows from a potentially failed Dam.	Eliminates storage buffer provides no opportunity for managing post-earthquake flows to avoid loading of other potentially damaged structures downstream	Largest storage buffer provides best opportunity for managing post-EQ flows to avoid loading of other potentially damaged structures downstream	Reduced storage buffer provides less opportunity for managing post-earthquake flows to avoid loading of other potentially damaged structures downstream

Above: Structured Decision-Making Table. Example for discussion.

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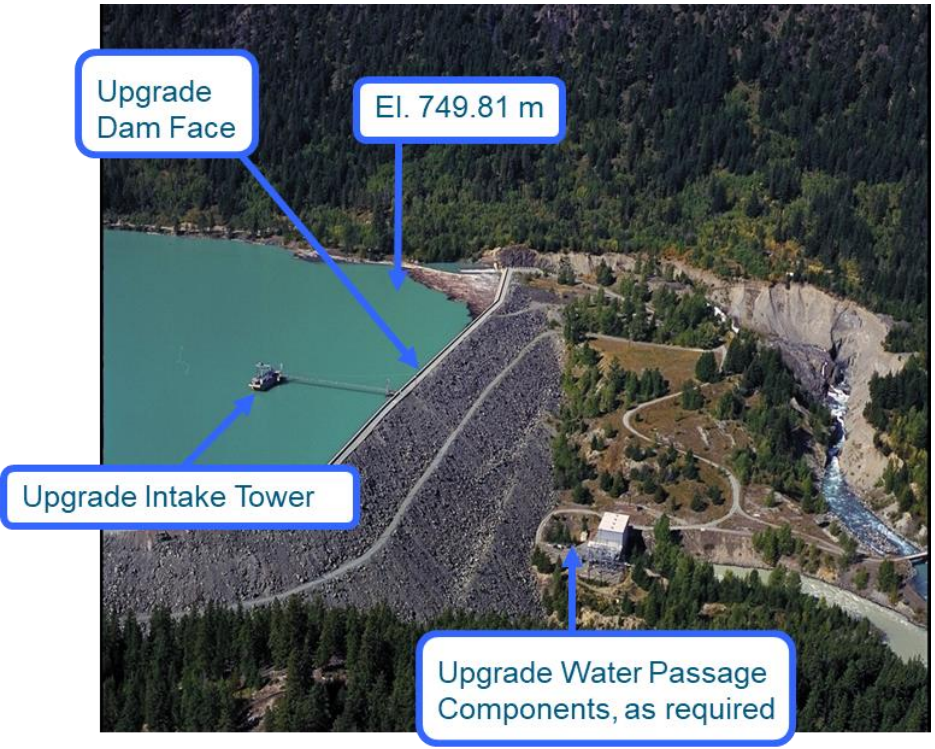
Leading Alternative



Refurbish Dam for Safe Operation of Normal Reservoir Level

- Maximum Normal Reservoir Level El. 749.8 m
- Addresses existing deterioration and seismic deficiencies
- Upgrade dam and intake tower
- Endorsement from St’at’imc Nation

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Dam Improvement Options

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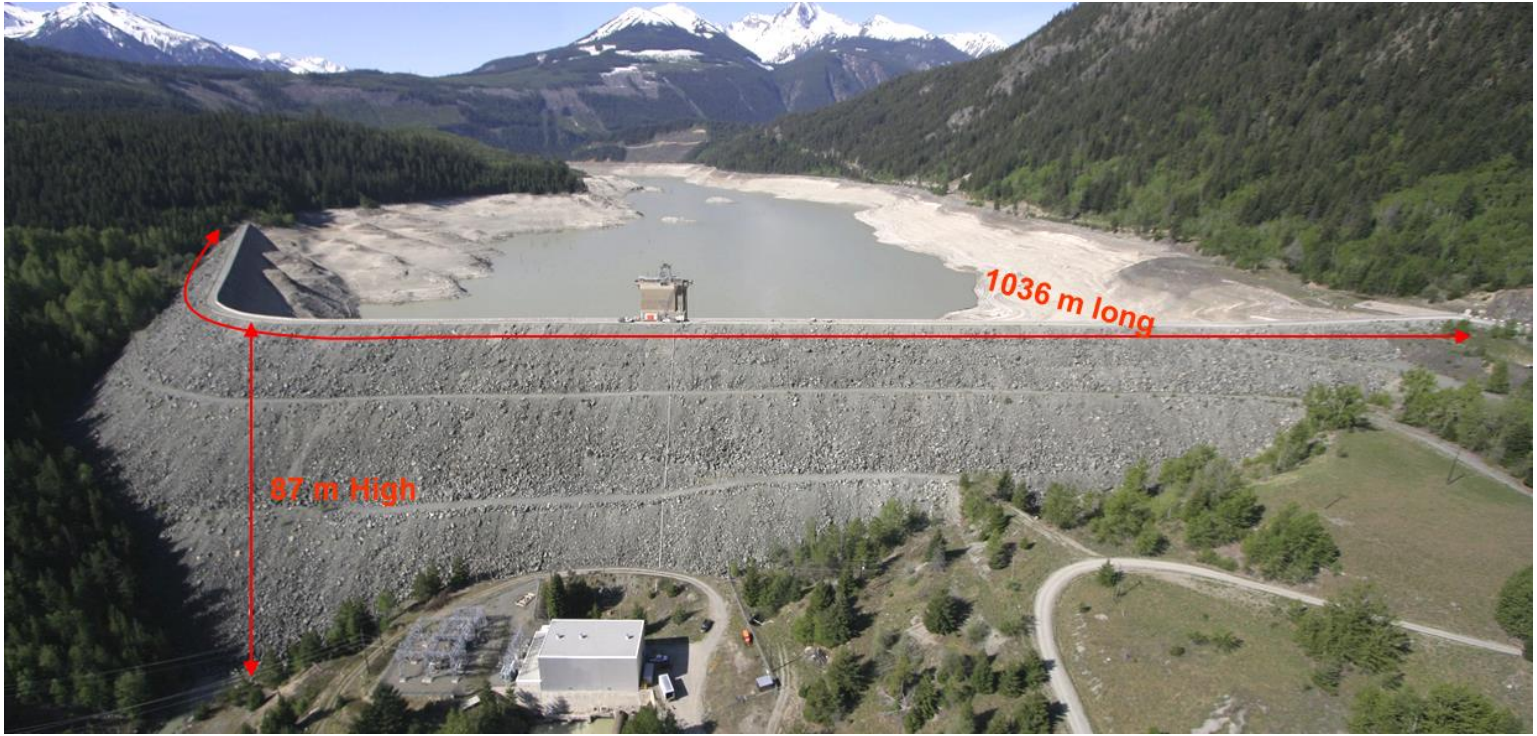
Project Overview



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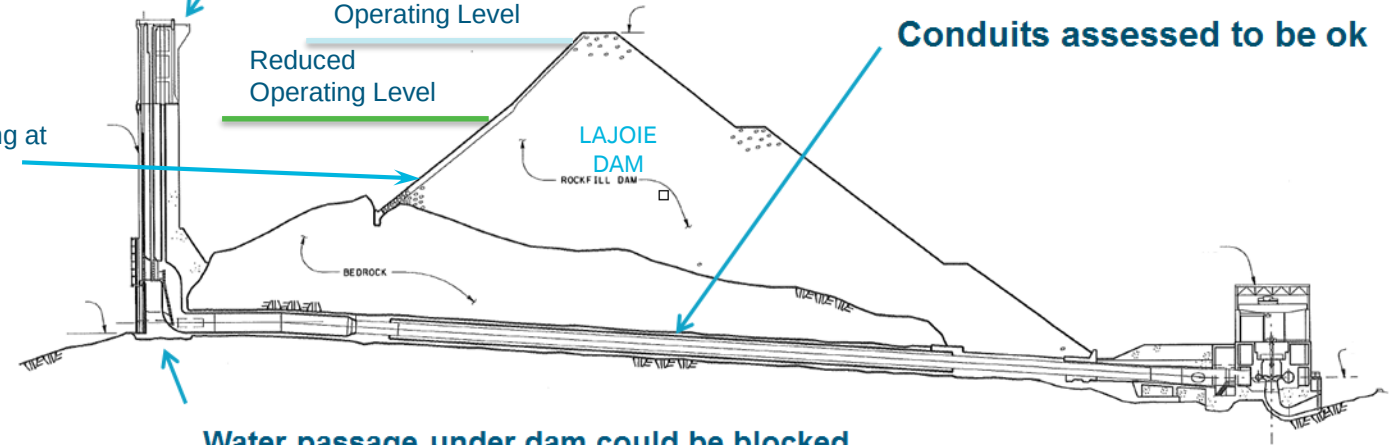
Project Overview

Dam Safety Issues

A large earthquake would cause extensive damage or failure of intake tower

- *Could occur at ~ 5,000-yr earthquake*



Water passage under dam could be blocked

- *No ability to draw reservoir down after earthquake*

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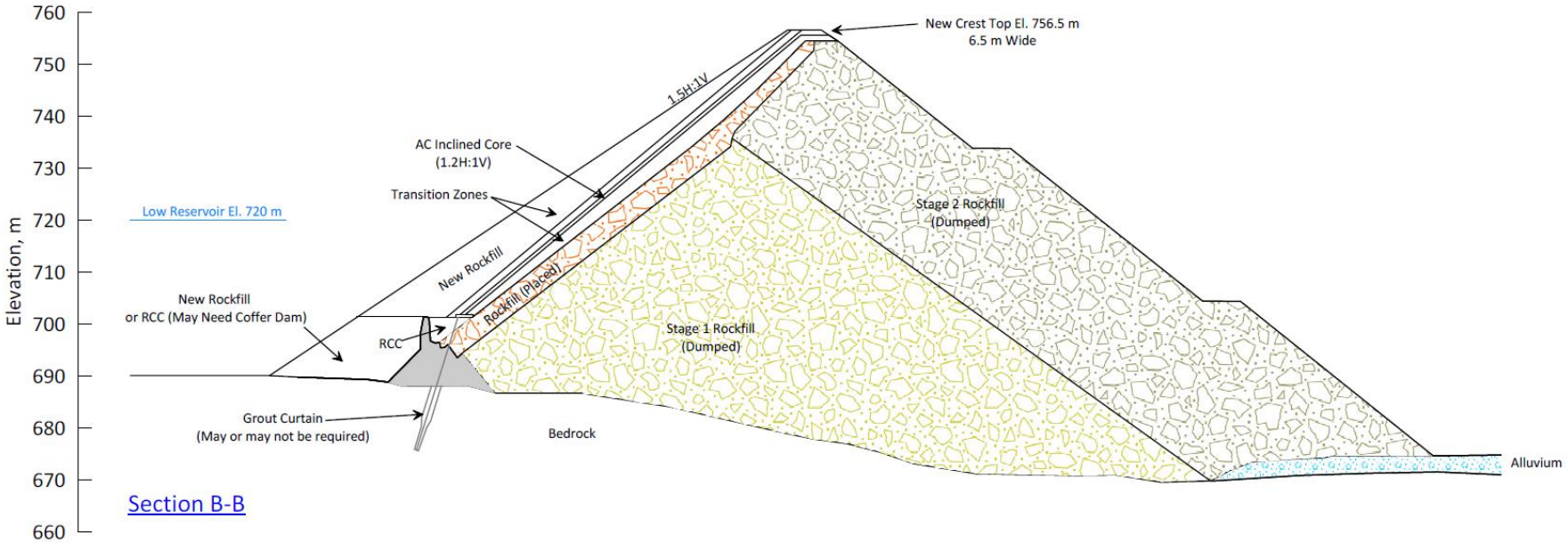
Dam Improvement Options

Upstream Only Options



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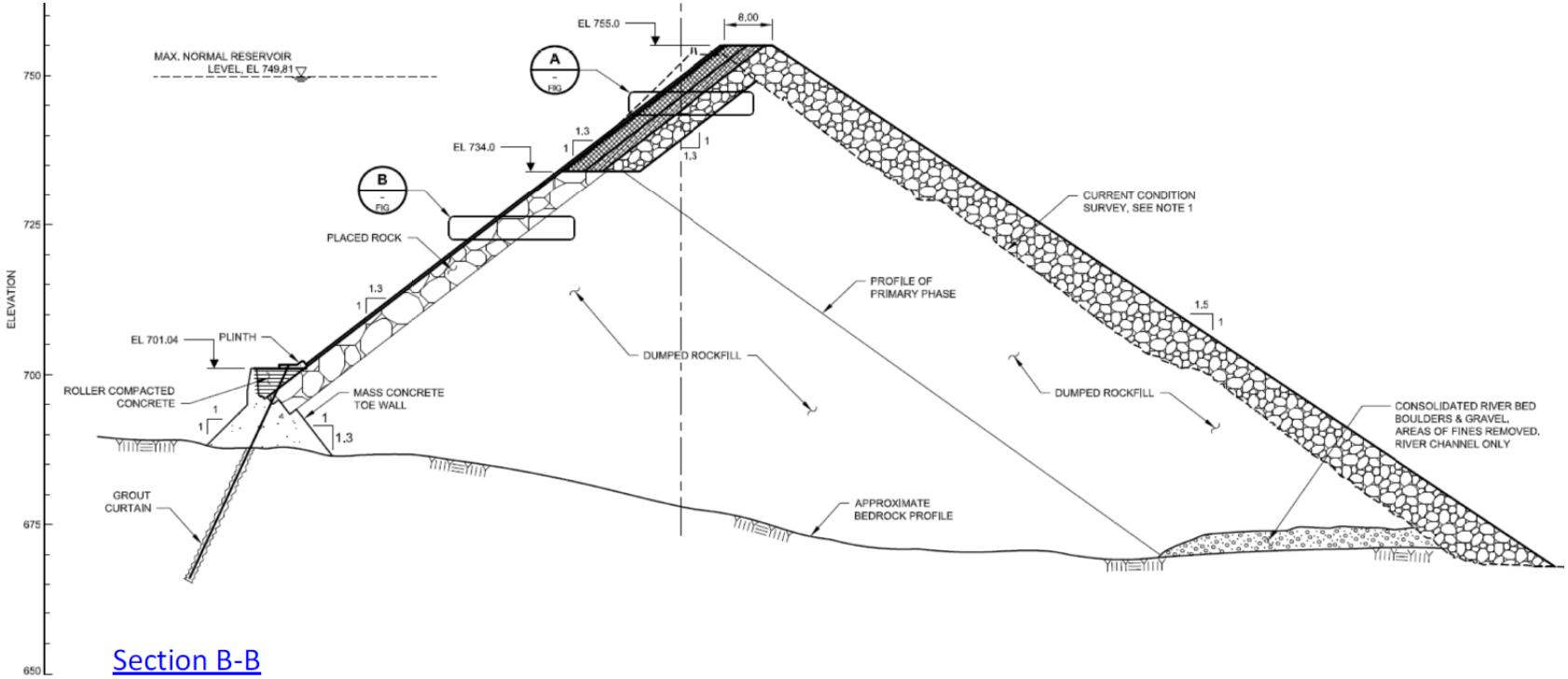
Dam Improvement Options

Combined Upstream & Downstream Options



Section B-B

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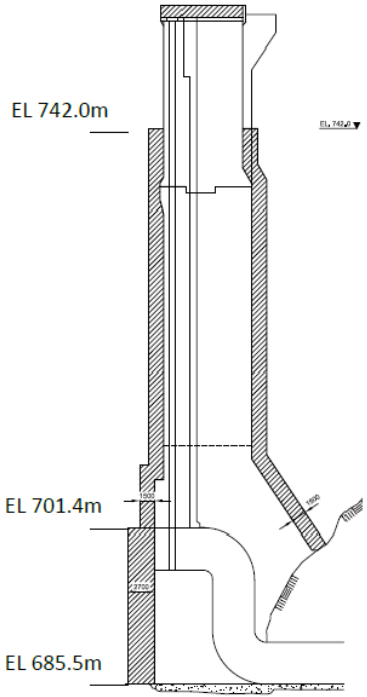
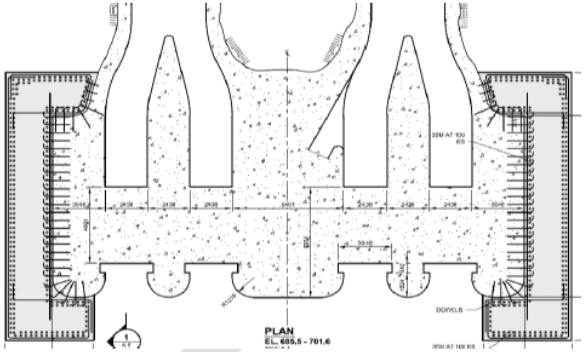
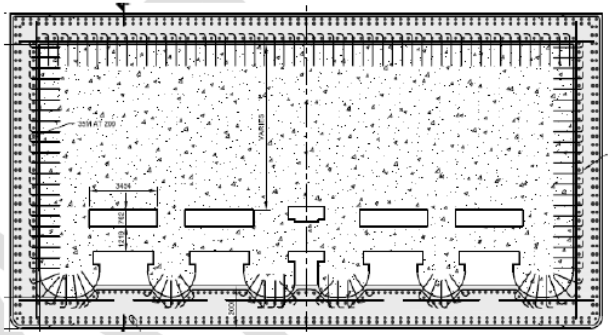
Intake Tower Improvement Options

Upgrading of Existing Intake Tower Options





Plan @ EL 685.5 to EL 701.4



Plan @ EL 701.4 to EL 742.0

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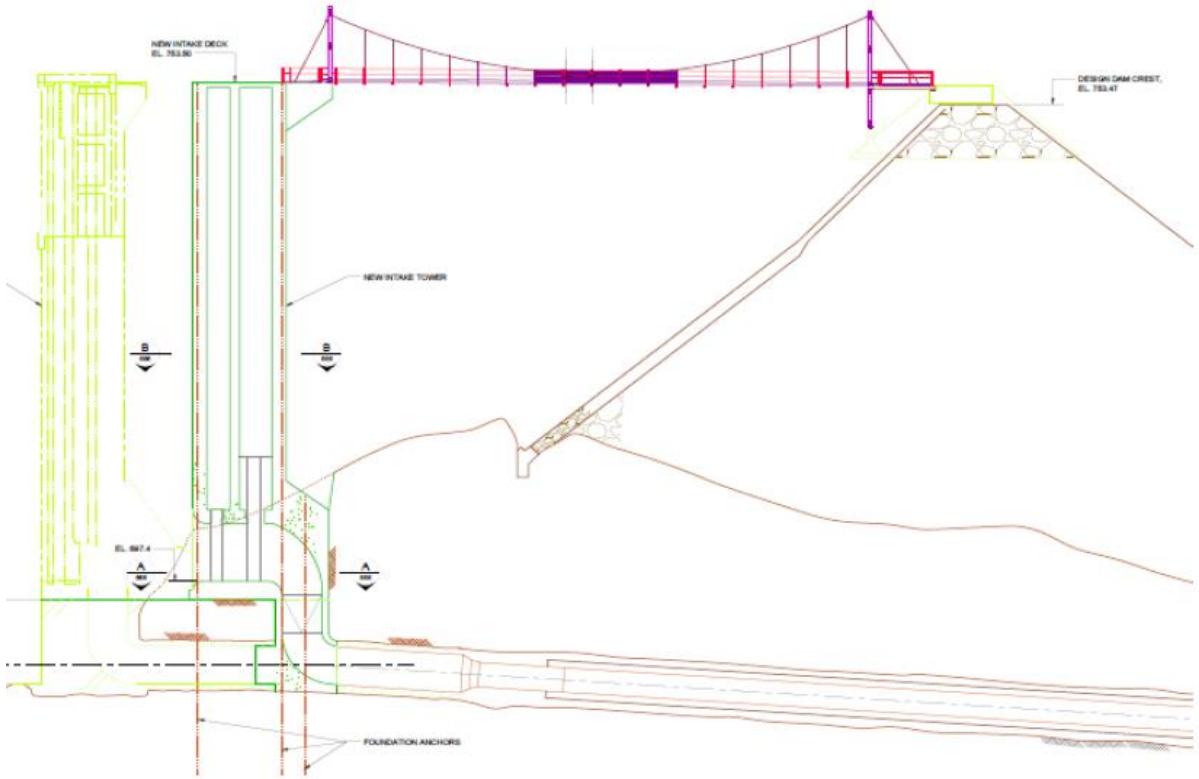
Intake Tower Improvement Options

Construct New Intake Tower Options



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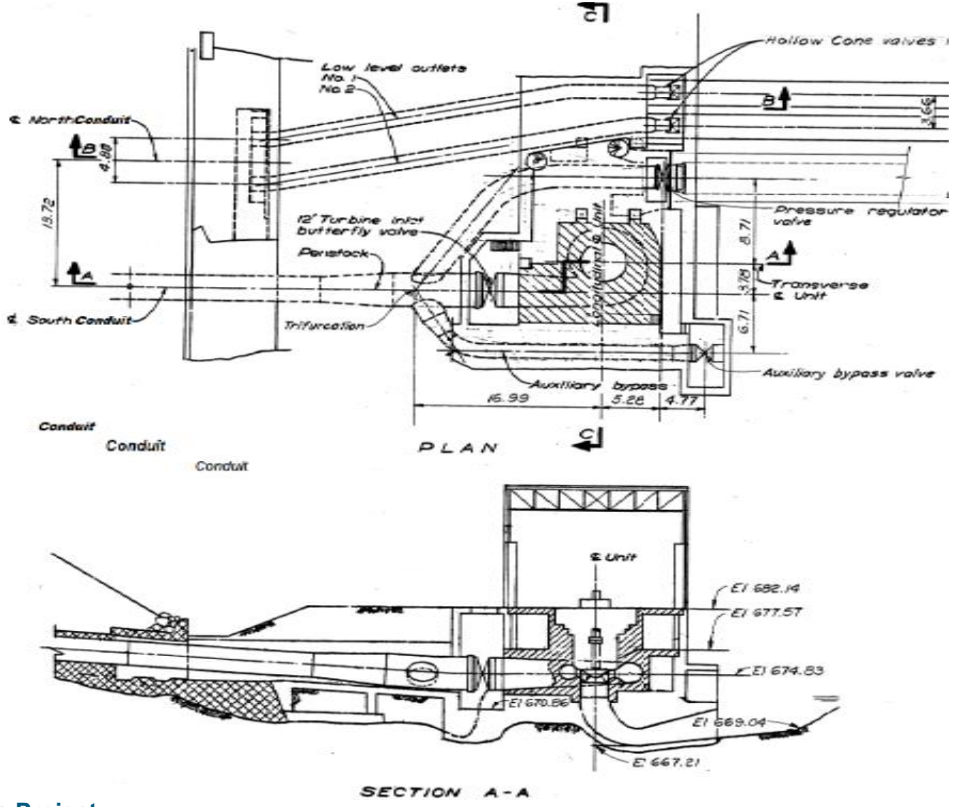
Intake Tower Improvement Options

Transfer post-EQ Intake functions to downstream components



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Shortlisting the Options

Key considerations

- Safety:
    - Winter construction
- Environment
    - Number & length of deep reservoir drawdowns
- Cost versus Robustness & Reliability
- Socio-economic
- First Nations
- Stakeholders
- Constructability

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Next Steps: Spring Studies

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Next Steps

Reservoir Drawdown and Site investigations

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Next Steps

Reservoir Drawdown and Site investigations

- Spring drawdown
  - One week in late April/Early May
  - 699m-700m (which is about 10m below normal low levels but significantly reduces the extent of the lake area)
- Site investigations include:
  - Test pitting and geotechnical drilling
  - Environmental Impacts
  - Cultural heritage

Timeline, Consultation & Engagement

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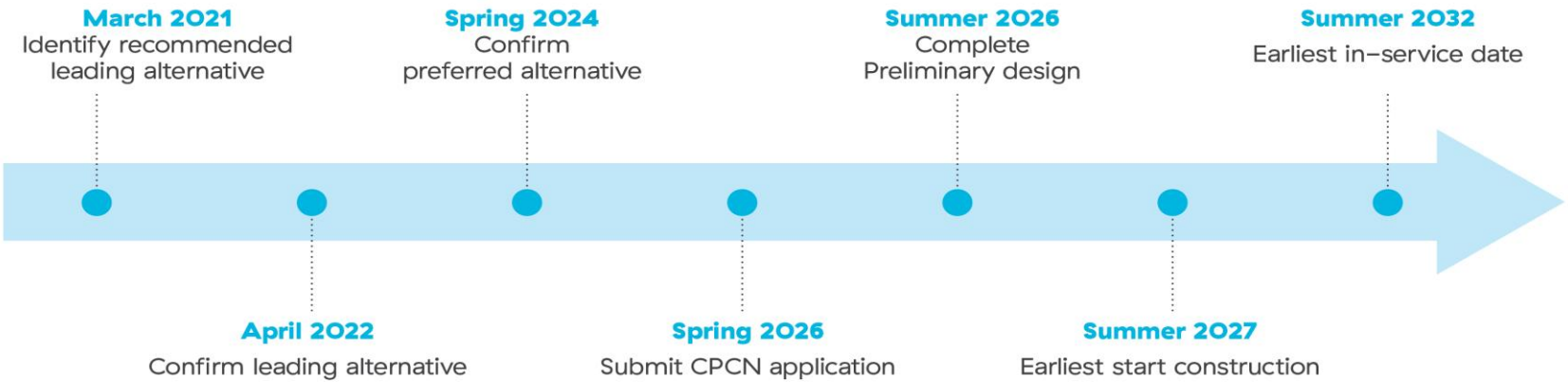
Timeline


March 2021
Identify recommended leading alternative
April 2022
Confirm leading alternative
Spring 2024
Confirm preferred alternative
Spring 2026
Submit CPCN application
Summer 2026
Complete Preliminary design
Summer 2027
Earliest start construction
Summer 2032
Earliest in-service date

Economic Opportunities

- As we're at the very early stages of the project, we haven't identified what opportunities will be available.
- We'll share more information as we move forward with our planning.

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Consultation and Engagement

Consultation and engagement will be ongoing throughout the La Joie Dam Improvements Project. If you have any questions or comments on our project work, you can reach us at:

Email: **projects@bchydro.com**

Phone: 1 866 647 3334

You can also find the latest project information on our website - **www.bchydro.com/bridgeriver**

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Q&A

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