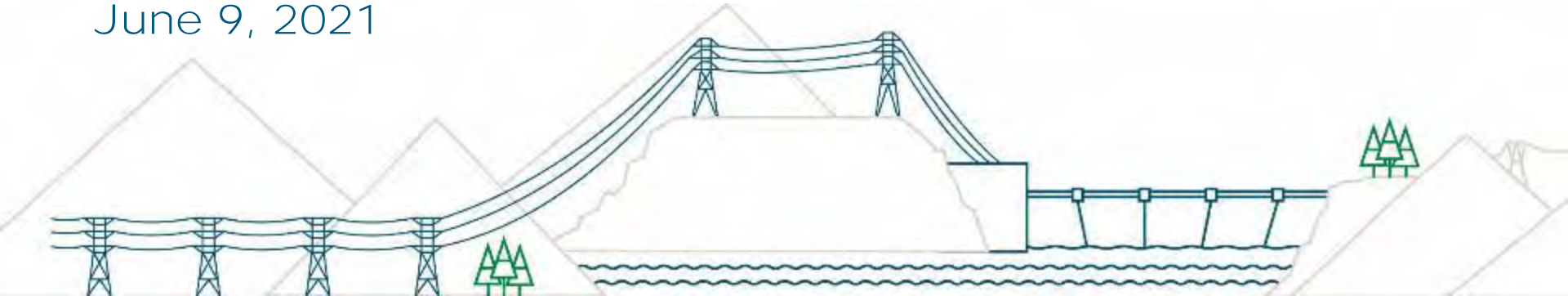


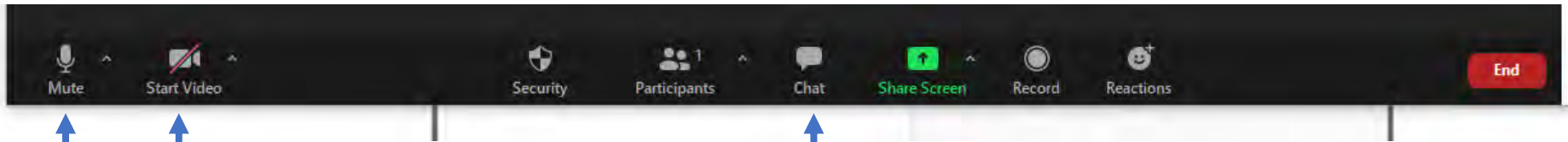
Regional Community Liaison Committee Project Briefing

June 9, 2021



Zoom Meeting Reminders

We'll be using a few basic tools, which you can find at the bottom of the screen

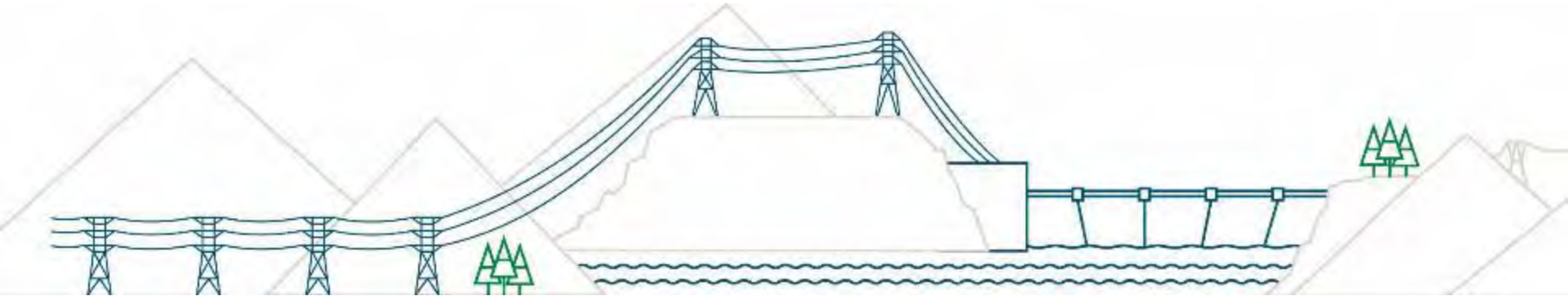


Mute/unmute your mic
& turn your video on/off

Open the chat panel for
questions / feedback

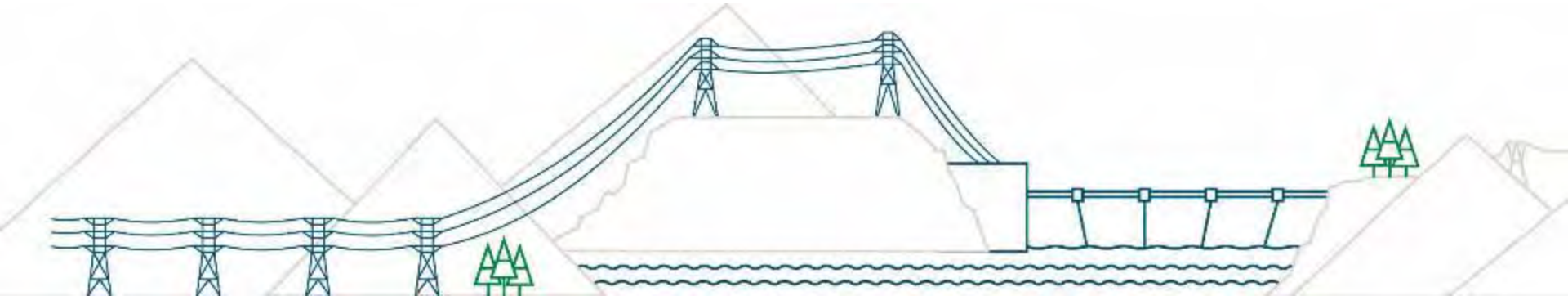
Site C COVID-19 Update

Shanna Mason



On Dam Site Construction Update

Chris Waite



On dam site construction update

- Main Civil Works
- Powerhouse, intakes, penstocks, and spillway
- Turbines and Generators

On dam site construction update



Main Civil Works

Core trench and earthfill dam



Dam buttress roller compacted concrete placement



Approach Channel



85th Avenue extraction area



Materials are stockpiled at site

Powerhouse, penstocks, intakes, and spillway



Intakes and penstocks installation



Spillway, headworks, and stilling basin





Spillway stilling basin and headworks

Powerhouse structural steel installation



Powerhouse unit turbine area

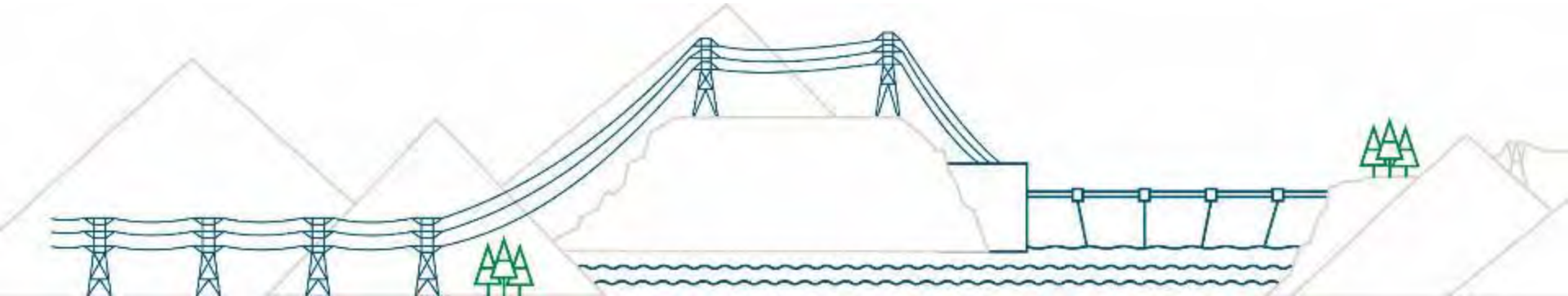


Questions?



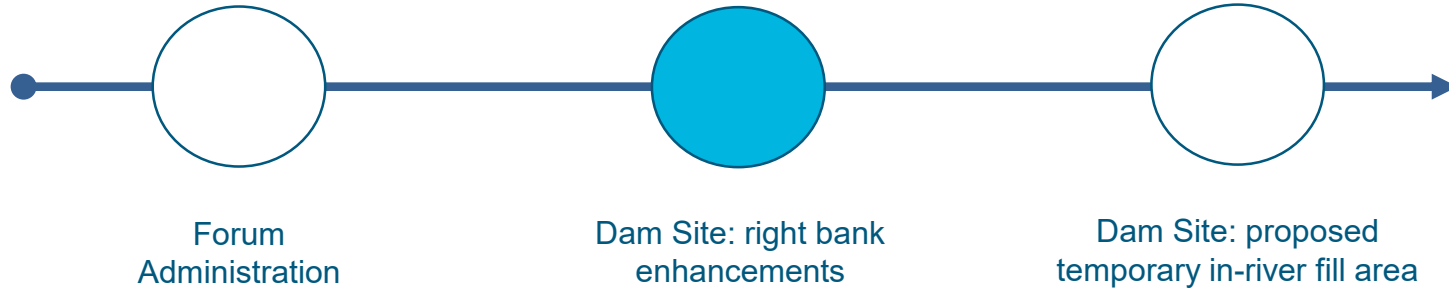
Right Bank Enhancements

Mike Clark



Site C: Right Bank Enhancements

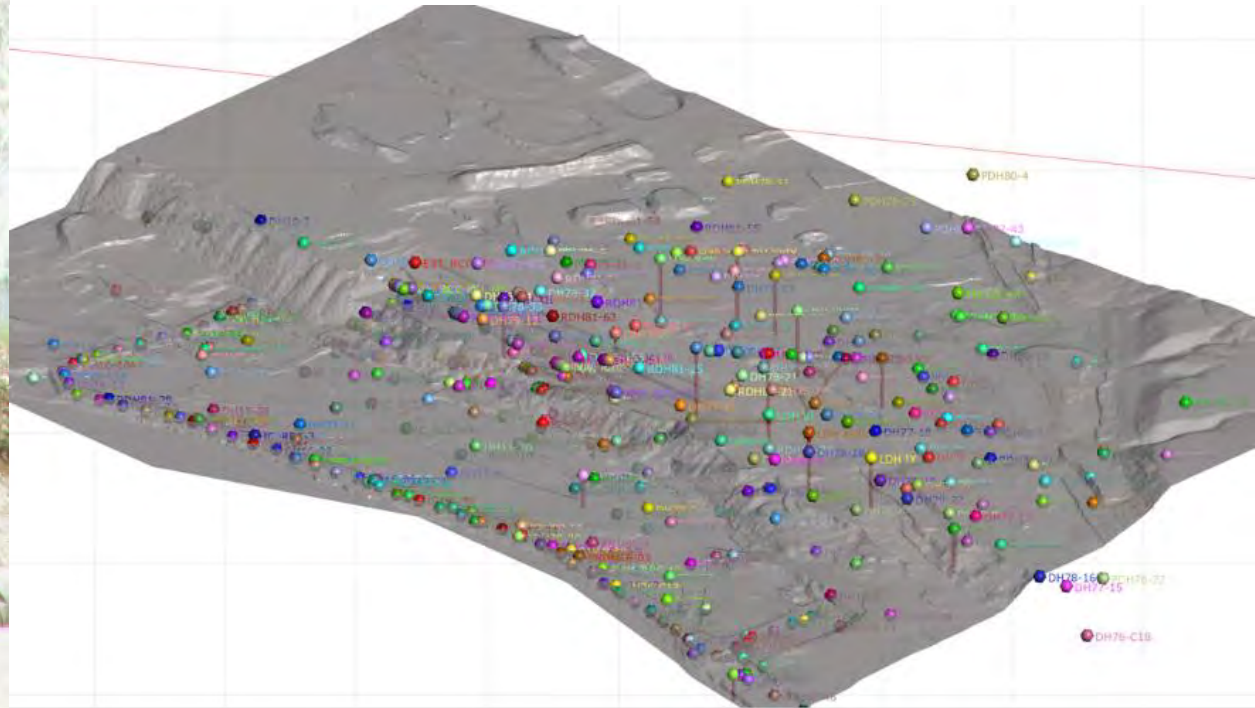
Agenda



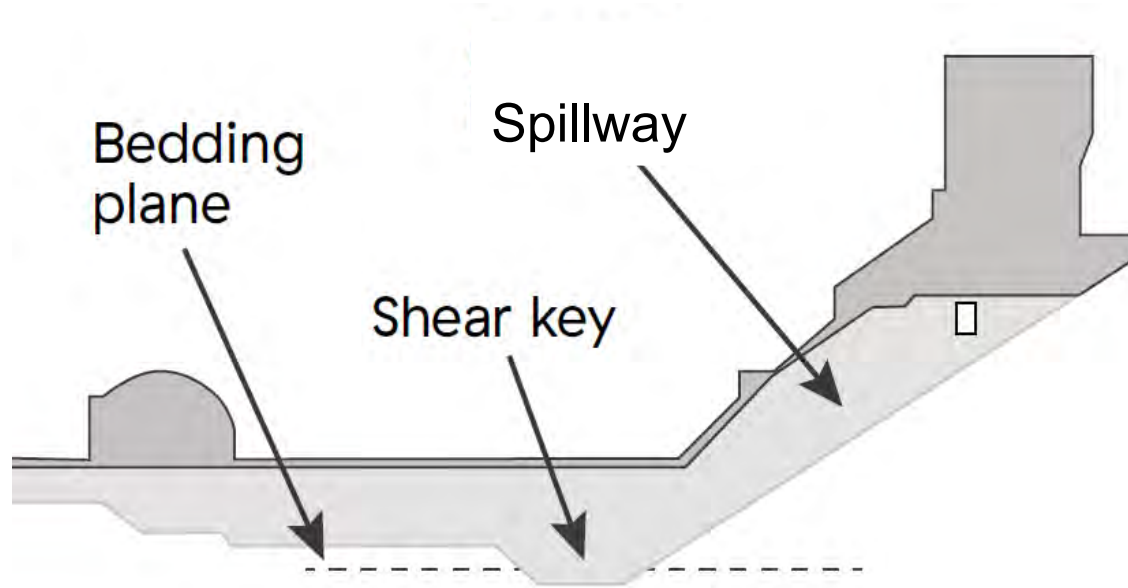
Right Bank Enhancements Summary

- BC Hydro determined right bank foundations require additional support (2020)
- Independent experts confirmed that the foundation approach follows best engineering practices.
- Solution includes:
 1. Additional foundation anchoring using piles,
 2. Additional approach channel waterproofing, and
 3. Additional water drainage

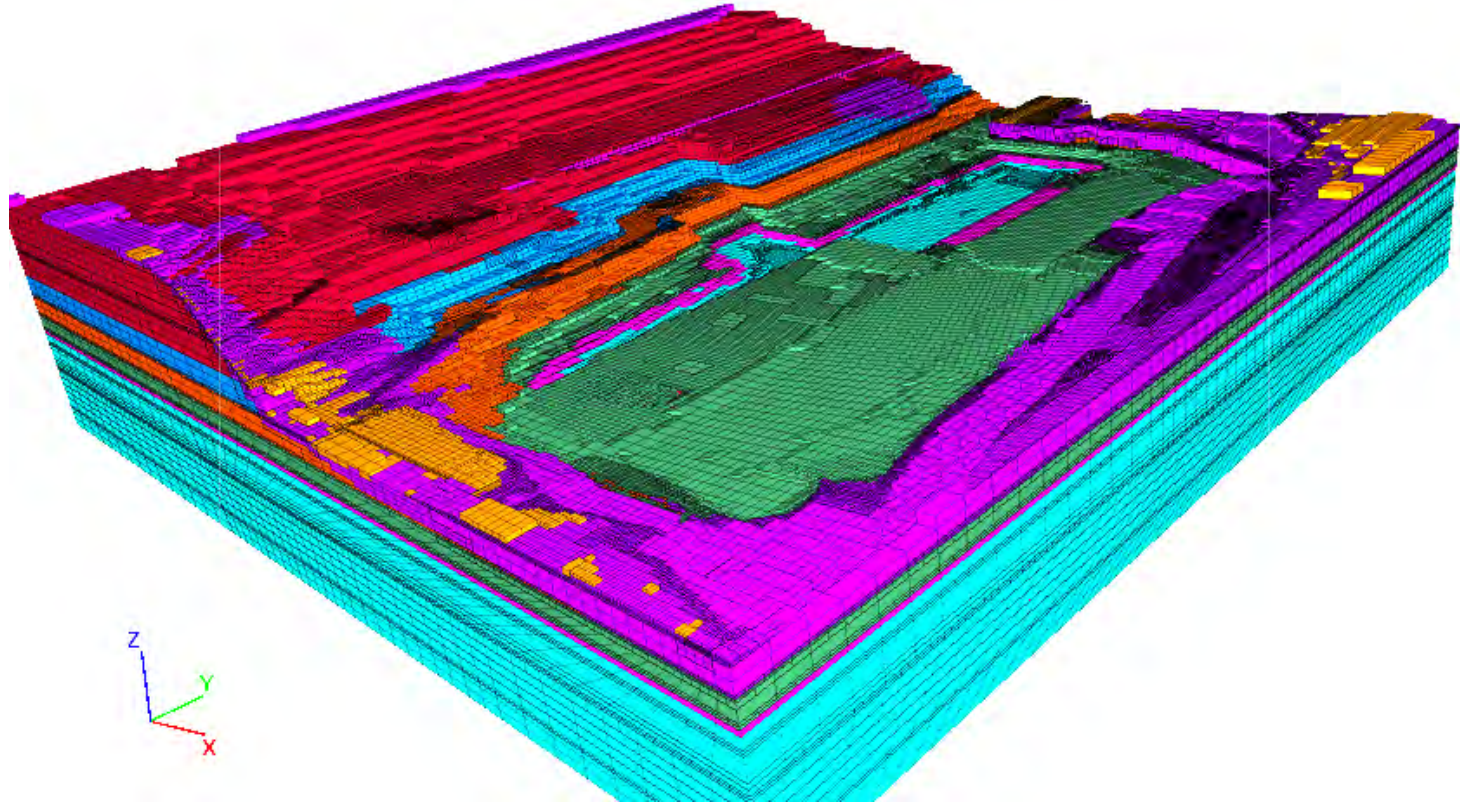
Geotechnical Update



Geotechnical Update



Geotechnical Update



Powerhouse and Spillways - Piles will provide additional anchoring



Spillways

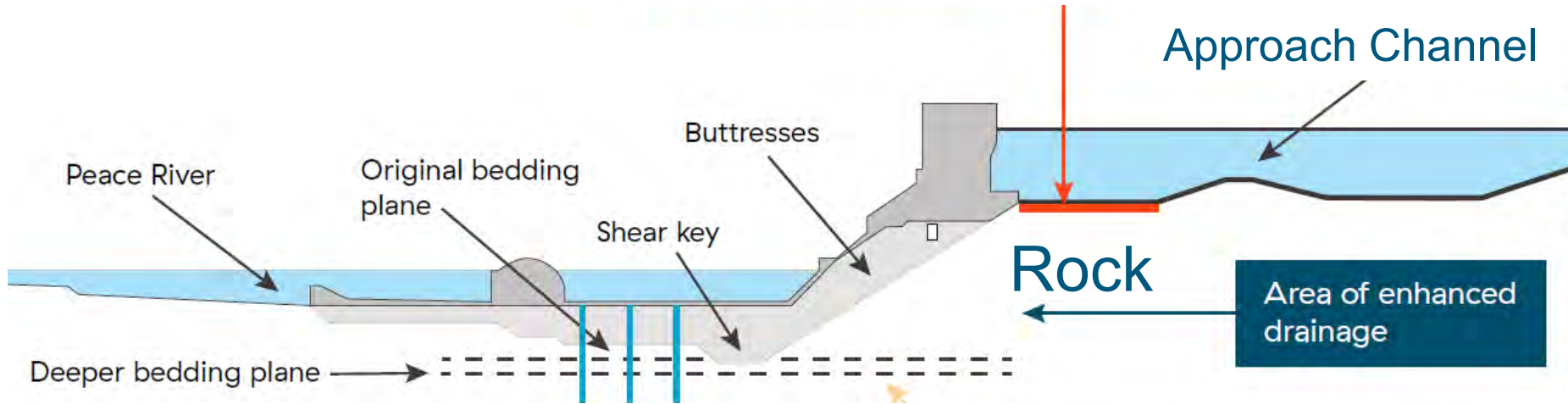
Powerhouse

Approach Channel – an enhanced liner will be provided to prevent water entering the rock.

Approach
Channel



Drainage – shafts will be drilled into the rock to enable any water to drain

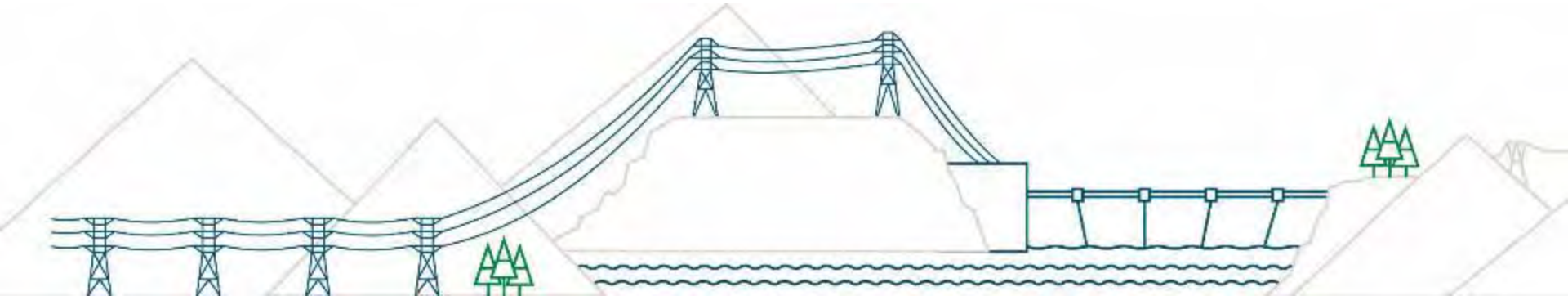


Questions?



Off Dam Site Construction Update

Matt Drown



Off dam site construction update

- Transmission work
- Highway 29 realignment
- Portage Mountain Quarry update
- **Hudson's Hope shoreline protection**



Last tower
405 of 405 installed

Highway 29 realignment segments



Construction Schedule Start to Finish

Lynx Creek – 8.1 km	2019 to 2023
Dry Creek - 1.4 km	2020 to 2022
Farrell Creek – 1.9 km	2020 to 2023
Farrell Creek East – 3.0 km	2021 to 2023

Halfway River – 3.7 km	2018 to 2023
Cache Creek West – 4.0 km	2018 to 2020
Cache Creek East – 8.6 km	2019 to 2023



Highway 29 realignment – Cache Creek

Highway 29 realignment – Halfway River



Halfway River Bridge concrete pour ongoing



Highway 29 realignment – Farrell Creek east



Farrell Creek east Facing east over road alignment and embankment





Highway 29 realignment – Farrell Creek



Farrell Creek bridge facing west from the east abutment

Highway 29 realignment – Dry Creek



Dry Creek alignment top view



Highway 29 realignment – Lynx Creek east embankment



Highway 29 realignment - Lynx Creek



Lynx Creek bridge facing west from the east causeway



Portage Mountain Quarry with rip rap stockpiles



Portage Mountain Quarry and a new stockpile zone – Area 5



Hudson's Hope shoreline protection toe berm



Shoreline protection – toe berm





Fall/Winter Clearing work:

Halfway River to Farrell Creek – Phase 2

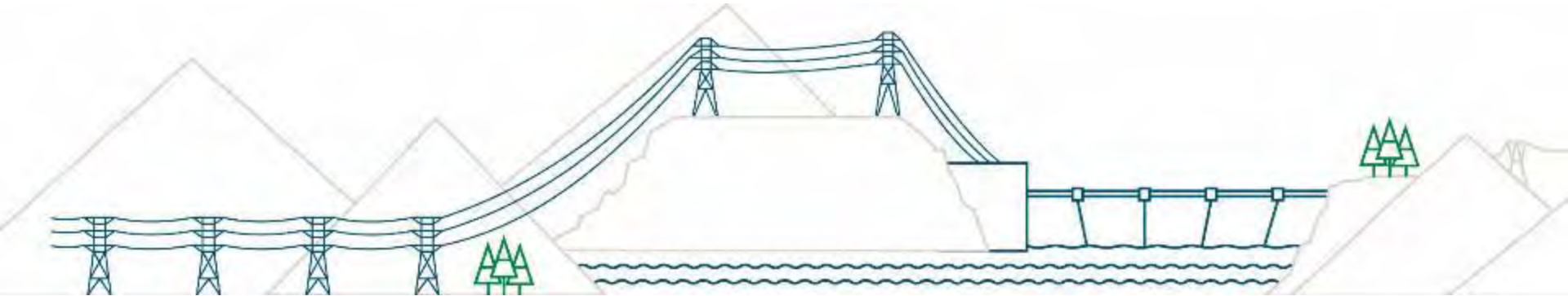
Farrell Creek to Peace Canyon

Questions?



Peace River Hydrology & Reservoir Operations

Kelvin Ketchum



GM Shrum and Peace Canyon



- Williston Reservoir, impounded by W.A.C. Bennett Dam:
--> 60% of BC Hydro's energy storage
- GM Shrum & Peace Canyon generating stations – 30% of BC Hydro's capacity
- Williston basin runoff:
50% snowmelt, 50% rainfall
- Multi-year reservoir operation
- Discharge is constrained by downstream ice formation/break-up in the winter



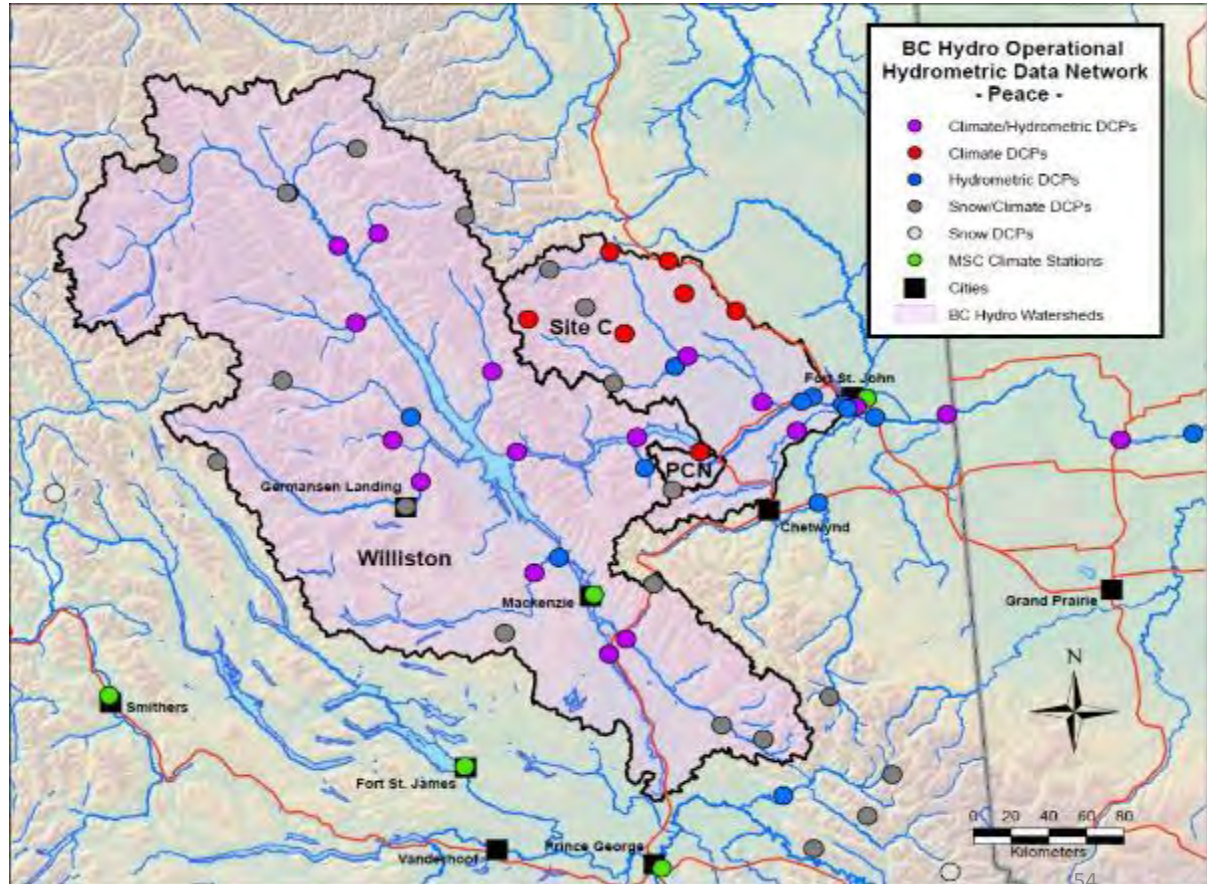
Site C Local basin

- Site C local basin (downstream of Peace Canyon) is not regulated
- Halfway River is the biggest tributary in this basin. Moberly River is also a significant tributary.
- Remaining local inflow (15%) originates from smaller ungauged tributaries
- Most severe local inflow events are associated with rainfall systems that travel NW from the Gulf of Mexico into the Peace River basin ... very infrequent, and hard to predict the location & amount of rainfall



Williston Reservoir & Site C gauges

There are a number of climate & hydrometric gauges in the Williston Reservoir basin and tributaries that allow BCH to forecast inflows and give some warning time.



Williston 2021 operations

- The 2021 snowpack is near-normal, leading to a near-normal runoff forecast.
- On average, about 50% of the runoff in the Peace River basin is produced by spring/summer rainfall, which cannot be predicted this early in the season.
- From January through April, GMS/PCN discharges were maximum possible, limited by:
 - management of downstream ice conditions,
 - GMS/PCN generating unit availability,
 - riverbank protection work at the Site C diversion outlet.



Peace River 2021 operations

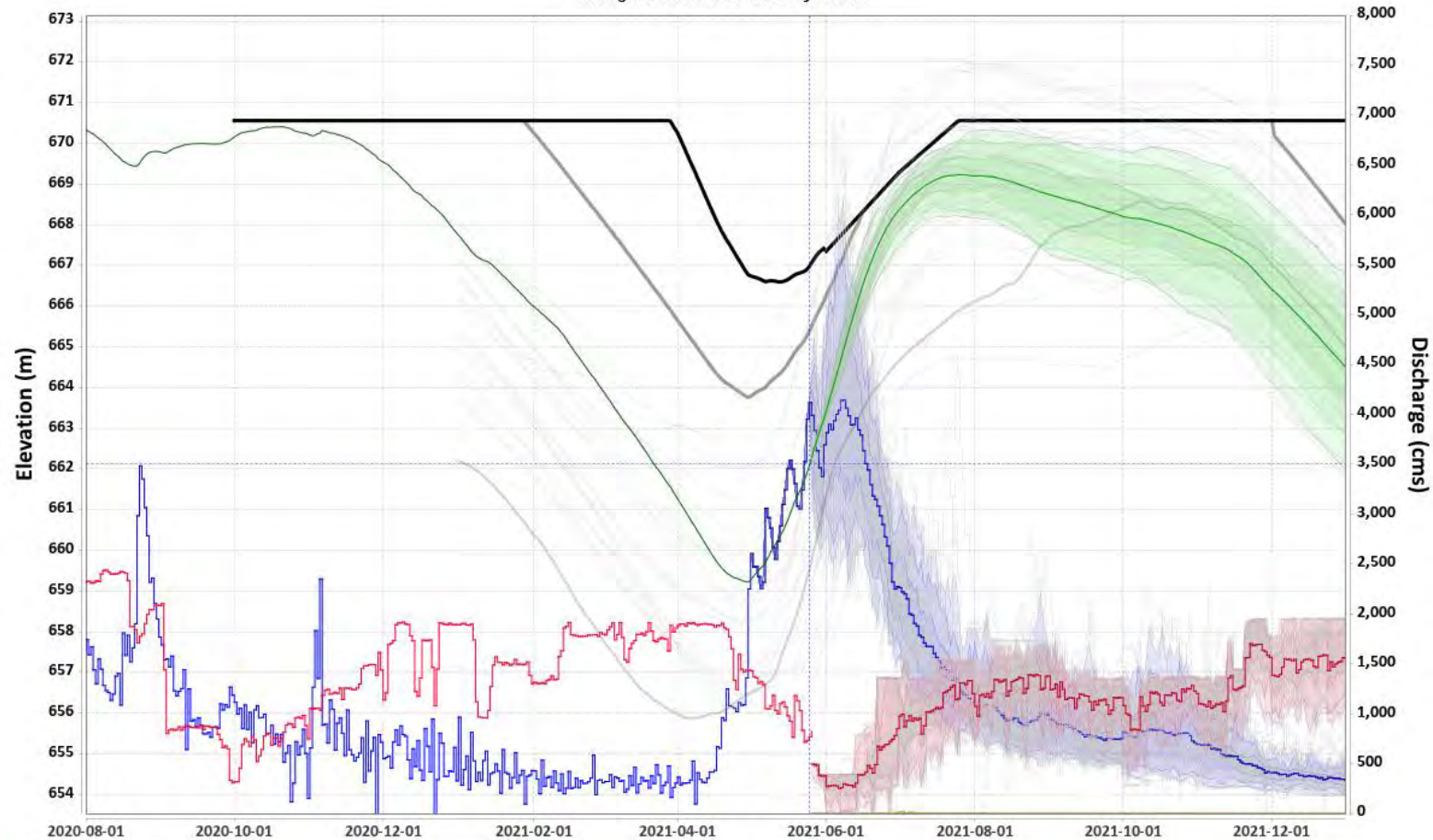
- Beginning in early May, discharges from the upstream powerplants (GMS & PCN) were reduced.
- Currently, until 21 June, upstream discharges are being held near minimum (325 m³/s) to facilitate work near the diversion tunnel inlet.
- The Williston Reservoir level is now expected to peak at El. 2196 ft (669.3 m) in July-August.
- Spill at the upstream dams (GMS & PCN) is not anticipated this spring/summer ... although spill is a possibility in any year.



<http://www.siteproject.com/construction-activities/photo-and-video-gallery> (Feb 2021)

Williston Operations Forecast for Site-C

Chart generated on: 2021-05-27 by: akeats



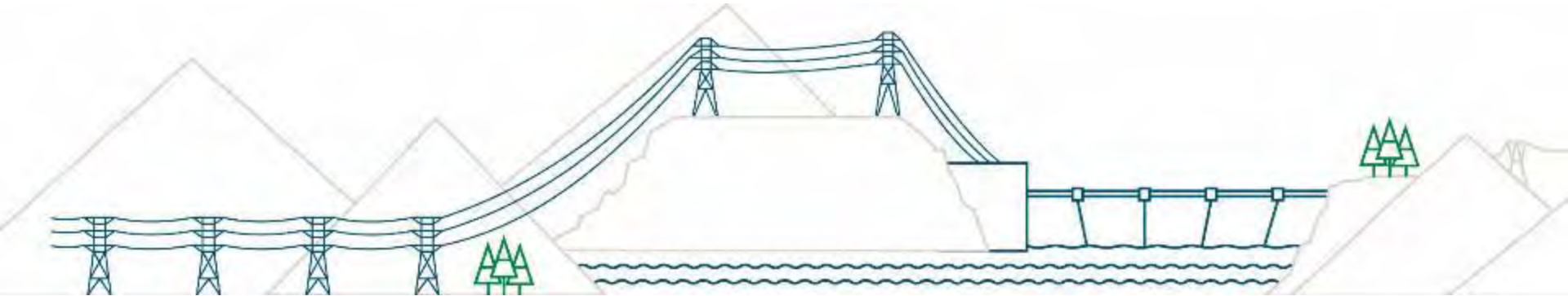
Williston Reservoir Elevation Williston Reservoir Elevation [1999-2020] Williston Reservoir Total Discharge Williston Reservoir Inflow Williston Spill
Williston Reservoir Dam Safety SRC Elevation Williston RunMaxGen SRC Elevation

Questions?



EAC Amendment Update

Karen von Muehldorfer



85th Ave EAC Amendment

EAC Amendment Request:

No hauling required during periods of regular or planned maintenance.

“Haul trucks may be required to transport material from 85th Avenue Industrial Lands to the dam site area via public roads **when the conveyor is not operational due to events beyond BC Hydro’s control**. Hauling may commence when the conveyor is expected to be not operational for more than three days.”



85th Ave EAC Amendment

Regulatory Process Update:

- BC Hydro has responded to the comments provided by the EAC Technical Advisory Committee
- Public comment period closed on May 29, 2021
- BC Hydro has provided the EAO with responses to those comments
- Most of the comments from both the TAC and the public focused on potential impacts of the contingency hauling on traffic and air quality/health



85th Ave EAC Amendment

Transportation, including Safety and Mitigation Measures

Methodology

Establish existing traffic volumes and performance of the roadway/intersections.

Include anticipated growth patterns for this background traffic years of operation.

Add the volume of contingency haul traffic.

Model any changes to performance of the roadway/intersections.

Identify any changes to the Level of Service for the route intersections.

85th Ave EAC Amendment

Transportation, including Safety and Mitigation Measures

Control Delay (seconds/vehicle)	Operational Level of Service
0 to 10	A
>10 to 15	B
>15 to 25	C
>25 to 35	D
>35 to 50	E
>50	F

Old Fort Road Segment	Operational Performance	
	Background (without haul)	Background (with haul)
Shaman intersection	A	B
Shaman to 240 Road	A	A
240 Road intersection	B	B
240 Road to Gate B	A	A
Gate B intersection	A	B

- Level of Service (LoS) A represents the highest operational performance, effectively unimpeded traffic movement
- LoS C or better represents acceptable conditions

85th Ave EAC Amendment

Transportation, including Safety and Mitigation Measures

Findings

- Analysis confirmed that the background traffic for current and future traffic volumes are performing very well.
- The addition of truck traffic demonstrates only slight increases in the expected delay for all vehicles using the proposed haul route (3 seconds or less at intersections).
- Greatest impact in terms of delay would be for the internal BC Hydro segments.
 - Westbound left turn from Shaman onto Old Fort Road
- Proposed haul route is viewed to be safe now; do not expect any changes to the road safety

85th Ave EAC Amendment

Transportation, including Safety and Mitigation Measures

Mitigation

- The contractor will be required to develop a traffic management plan in accordance with BC MoTI Traffic Management Manual for Work on Roadways – which would include:
 - Minor signage, variable message signs, speed reader boards.
 - Scheduling – school bus operating hours, local events.
 - Monitoring – dust/debris/surface base repairs
- Roadway maintenance – would be identified and completed as required in conjunction with MoTI.

85th Ave EAC Amendment

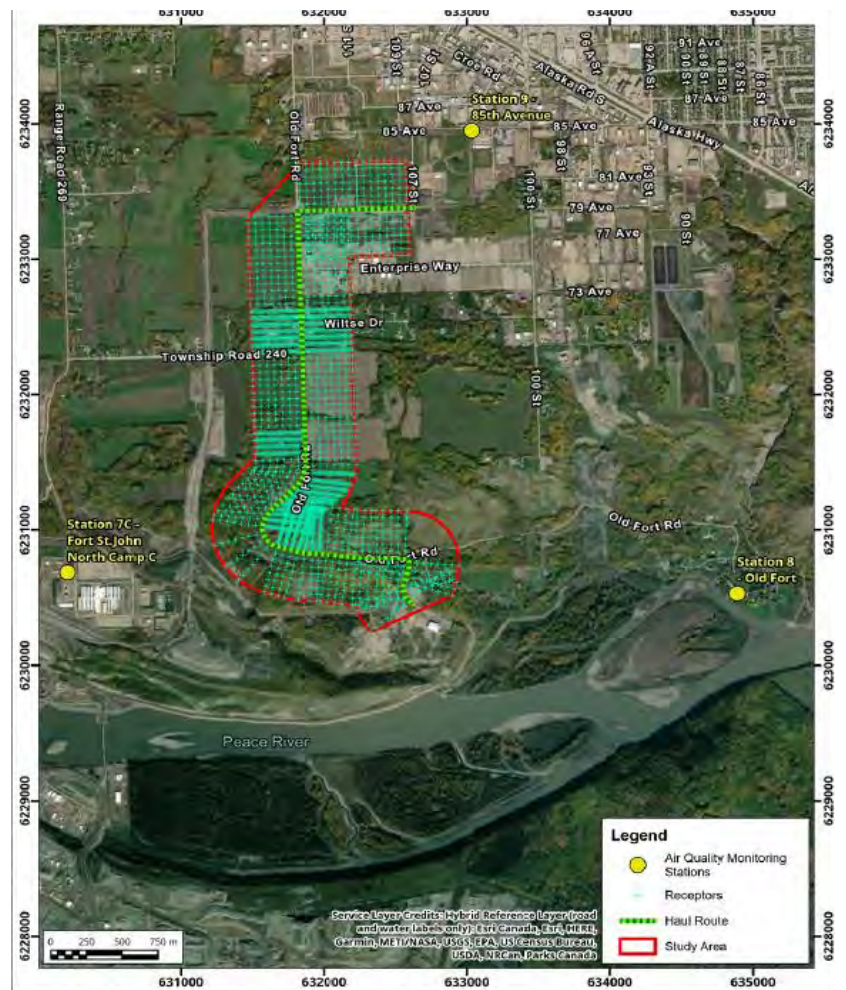
Air Quality

Additional modelled receptors were added to the entire haul route to accommodate the residential properties at the south end of Old Fort Road. Updated receptor grid for the Gate B analysis was extended by ~250 m from the roadway segments.

River Road connector (70 m gravel road) near Gate B particulate emissions were added to model.

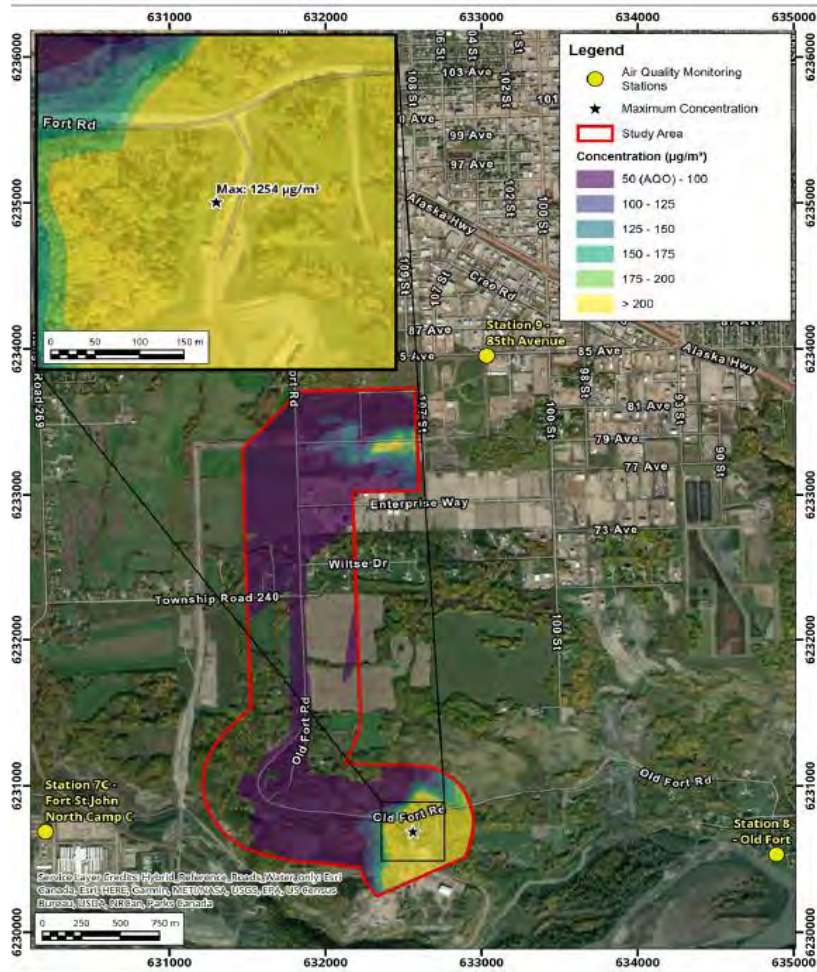
Yellow dots indicate three BCH ambient air quality monitoring stations with distance from closest haul route segment: 85th Ave (700 m), Old Fort (2.3 km) and FSJ Main Camp (1.3 km).

Haul route emissions would increase existing 85th Ave emissions by approximately 33% to 270% (annually) and Dam Construction Year 6 (2020-2021) emissions ranging from approximately 1% to 5%.



85th Ave EAC Amendment

Air Quality



Maximum predicted 24-hour PM_{10} concentrations with ambient background and mitigation.

Maximum ambient background PM_{10} taken between Old Fort and 85th Ave stations (~5% higher).

Gate B gravel road (River Road connector) PM emissions assume calcium chloride or continuous water application.

Residential areas – maximum 24-hour PM_{10} and $PM_{2.5}$ values ~10% higher (adjacent to Old Fort Road) than Gate A results. No change for annual $PM_{2.5}$.

South haul route - maximum PM_{10} and $PM_{2.5}$ values ~4 times higher than Gate A results, and located north of Gate B.

85th Ave EAC Amendment

Mitigation Measures

- **Air Quality:**

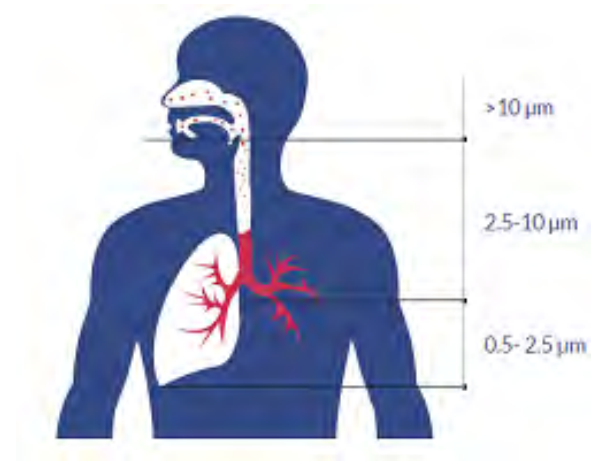
- Cover truck loads where feasible, check truck tires for rocks and dislodge as required.
- Keep first 200 m of paved road clean at both ends of haul route by continuous (as practical) water flushing of road surface using water trucks with spray bars.
- For the first 200 m of paved roads at both ends of haul route, continuously (as practical) wet sweep road surface to dislodge tracked out soil and gravel using wet sweepers.
- Continue to apply dust suppressant to gravel roads at borrow pit and dam site, and expand this effort to include River Road connector, or alternatively, continuously (as practical) apply water on this gravel segment.



85th Ave EAC Amendment

Human Health

- Based on findings of the air quality and noise assessments
- Health risks to the residents along the Gate B haul route
- Focus was on fine particulate matter (PM_{2.5})



85th Ave EAC Amendment

Human Health – Conservative Assumptions

- Assumed haul route would be required continuously from April 1 to October 31 from 2021 to 2023
- Analysis assumes 61 truck trips per hour per direction (total of 122 trips per hour)
- Addition of conservative background estimates
- Assumed residents would be continuously present at their home

85th Ave EAC Amendment

Human Health – Gate B Conclusions

1. Changes in air quality are not expected to have an adverse effect on health.
 - PM_{2.5} air concentrations are expected to remain below the health-based exposure limits at the homes along the Gate B route\
2. Noise associated with the haul route is not expected to have an adverse effect on health.

Conclusion: Effective implementation of BC Hydro's planned mitigation measures and a committed communication program with the nearby residents should ensure that use of the haul route will not result in adverse health effects.

85th Ave EAC Amendment

Next Steps:

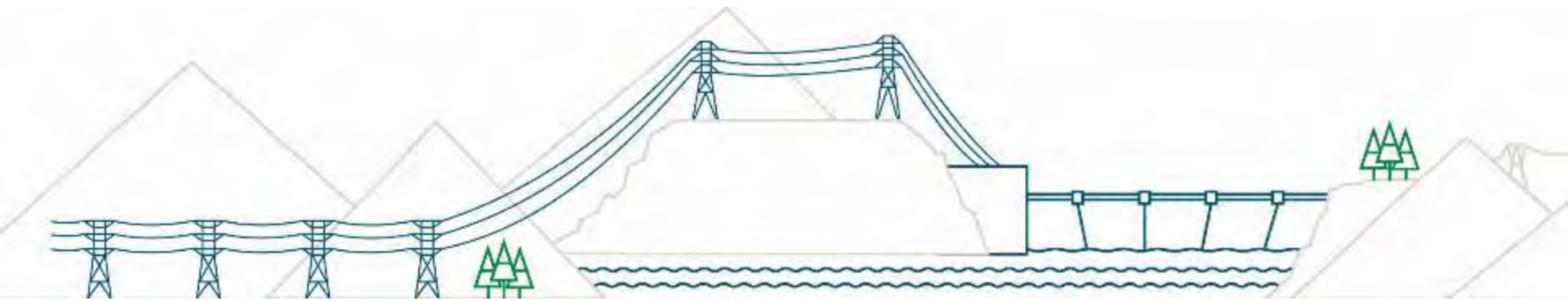
- Technical Advisory Committee to review BC Hydro responses to questions and provide feedback to EAO
- EAO to develop a draft report assessing the EAC Amendment request and share the draft with the TAC and Indigenous Nations for feedback
- Once the draft report is finalized, EAO has indicated it will be sent to the EAO executive director or a delegated decision maker for decision

Questions?



Community and Social Mitigation Update

Nancy Pepper



Boater Information

Updates to the Site C boater webpage are underway this summer including:

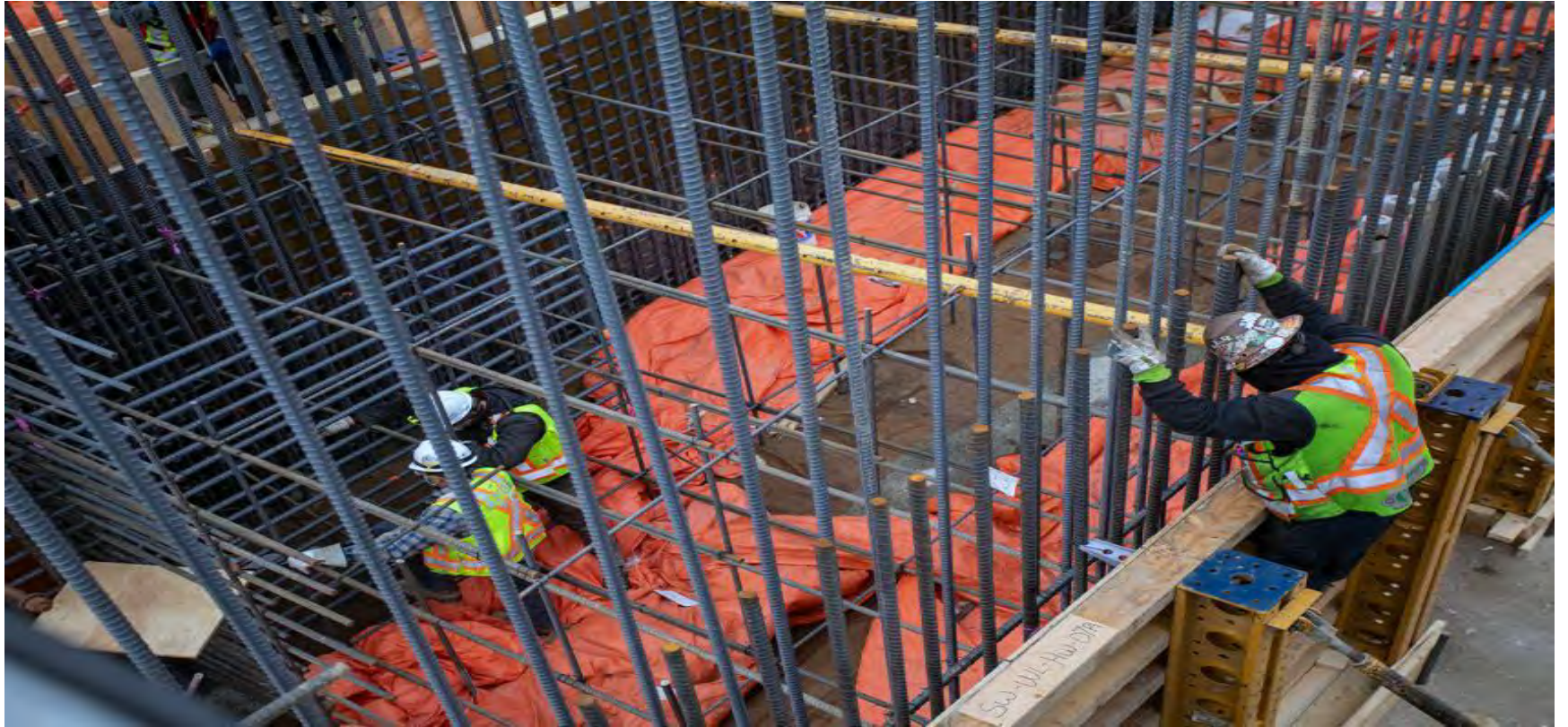
- Boater safety information and advisories for the Peace River
- Updates on the three new boat launch locations including renderings (where available)
- Bathymetric mapping of the future Site C Reservoir
- Portage program seasonal information
- Rustic Recreation Site Fund
- Reservoir Opportunities Plan
- Status of the current boat launches at Halfway River and Lynx Creek

Updates to the www.SiteCProject.com/boating website will be shared with local government, indigenous groups, stakeholder groups and the public.

Fund Updates

- GO Fund
 - \$503,991 to 57 projects to date
 - Next meeting is June 10th
- BC Hydro Peace Agricultural Compensation Fund
 - In 2020, the Board approved approximately \$400,000 in funding for 17 projects
 - The public Annual General Meeting is scheduled for Thursday, Jun 17th by Zoom
 - The next intake is planned for early fall 2021

Jobs and Business Opportunities



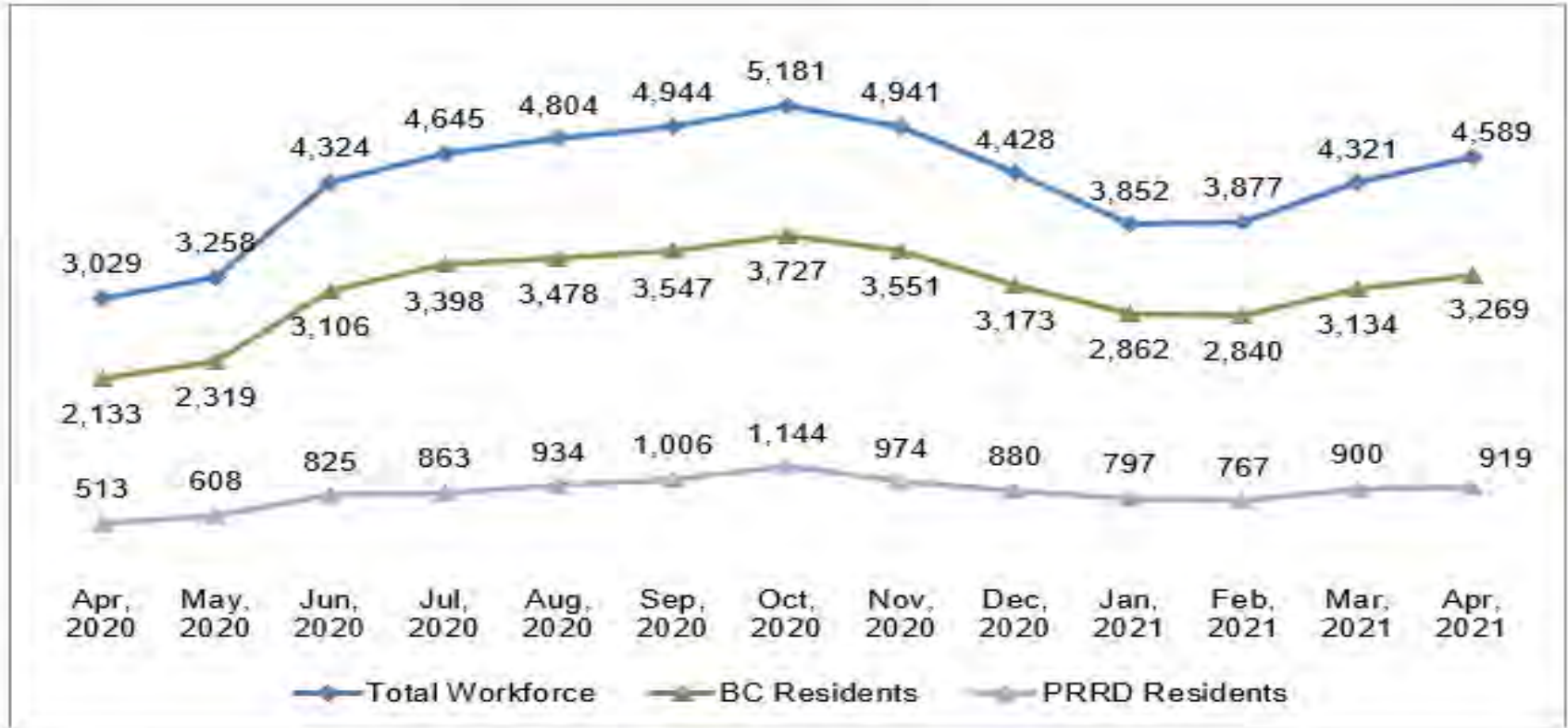
Employment Statistics

Note: The April workforce numbers reflect the the Provincial Health Officer order for large-scale industrial camps to gradually resume construction activities.

- BC Hydro requires all major contractors to report employment information.
- Total of **4,589** workers in April 2021; **3,269** from B.C (71%). Total of **919** workers from PRRD (24%).

Site C Employment Statistics – April 2021			
	# of Total Workers	# of BC Primary Residents	% of BC Workers
Construction and Environmental Contractors	3,852	2,589	67%
Engineers and Project Team	737	680	92%
Total Workforce	4,589	3,269	71%

Site C Jobs Annual Trending (April 2021)



2021 Q1 Regional Business Participation

Companies engaged by BC Hydro and Site C contractors to provide goods & services in relation to Site C construction between January – March 2021

Community	Number of Businesses	Community	Number of Businesses
Baldonnel	1	Moberly Lake	3
Cecil Lake	1	Montney	1
Charlie Lake	15	Pouce Coupe	3
Chetwynd	34	Prince George	30
Dawson Creek	27	Taylor	6
Fort St. John	264	Tumbler Ridge	3
Hudson's Hope	15		
Total		403	



BC Hydro

Power smart