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Report prepared by Musqueam Indian Band staff:

- Tecla Van Bussel, Community Planner
- Kim A. Guerin, Lands Governance Officer
- Richard Hall, Lands Governance Director

With contributions from:

- Kevin Wilson, GIS Analyst (Musqueam Indian Band)
- Norm Point, Public Works (Musqueam Indian Band)
- Woody Sparrow, Musqueam Aquatic Habitat Restoration Program
- x^wməθk^wəýəm Archaeology
- The foreshore restoration project team, including staff from Vancouver Fraser Port Authority and Core Project Management.

SUMMARY

Musqueam Creek and the foreshore of the Fraser River are **critical areas in the heart of Musqueam**, for environmental stewardship, salmon restoration, and community use for fishing, canoe racing, and connection to the river.

Musqueam has **consistently advocated for restoration of the foreshore** to proponents and partners in Musqueam territory, including the Vancouver Fraser Port Authority.

The objective of the project is to restore the shoreline to enhance bank erosion protection and revive the Fraser River foreshore. The project will **improve habitat in the slough** by putting in logs and other woody debris to create cover for fish and control sediment and wave action in the water. The project will **enhance erosion protection of the foreshore** by replacing the existing broken concrete with rock material to stabilize the bank.

Article 6 of the Musqueam-Vancouver Fraser Port Authority Relationship Agreement specifically identifies the Musqueam foreshore area at Musqueam Indian Reserve #2 as a restoration opportunity, and the **Vancouver Fraser Port Authority committed to provide \$2,200,000 towards the foreshore restoration project.**

On June 5, 2024, Musqueam community members were invited to join an info session and dinner to learn about upcoming environmental restoration work at the foreshore and Musqueam Creek. **Answers to questions raised by members are in Section 5 of this report (page 20-32).**

On July 2, 2024, **Musqueam Chief & Council approved the Comprehensive Development Permit** for the foreshore restoration project (permit # MIB-CDP-2024-06-001).

Notice will be provided to Musqueam 2 weeks prior to the start of construction.

Construction is **anticipated to begin in mid August 2024**. The project construction is expected to take approx. 2-3 months.

As part of the conditions of the Musqueam Comprehensive Development Permit for the project, **access to the existing boat ramp** will be open to Musqueam members as required, and **additional inspections, tests, or audits** (such as soil testing) will be conducted as directed by Musqueam.

1. ABOUT THE PROJECT



Canoe races at Musqueam's foreshore. June 8, 2024.
Photo by Tecla Van Bussel.



Existing concrete at Musqueam's foreshore, used for erosion protection ("riprap"). This will be replaced by erosion protection made of rock. Photo provided by Core Project Management.

About the foreshore area and Musqueam Creek:

The slough of Musqueam Creek and the foreshore of the Fraser River are critical areas in the heart of Musqueam, for environmental stewardship, salmon restoration, and community use for fishing, canoe racing, and connection to the river.

Currently, much of Musqueam's foreshore is protected by haphazardly placed, improvised, broken waste concrete pieces, and is exposed to coastal and river hazards, including wind waves, ship waves, high tide, storm surge, freshet and river flooding that have the potential to be a safety risk, destabilize the bank, and contribute to land loss.

The foreshore and creeks are designated as Protected within Musqueam's <u>Land Use Plan</u> (2014). Environmental restoration work will protect the existing river bank and improve fish habitat within the slough (mouth of Musqueam Creek).

Restoration of the foreshore area aligns with the following community priorities outlined in Musqueam's Comprehensive Community Plan (2018):

Action 13: Increase Protection of Traditional Rights and Territory

Action 14: Exercise Land Management Jurisdiction

Action 15: Improve and Maintain Our Grounds and Infrastructure

About Musqueam and the Vancouver Fraser Port Authority:

Musqueam has consistently advocated for restoration of the foreshore to proponents and partners in Musqueam territory, including the Vancouver Fraser Port Authority (VFPA). Negotiation of the Musqueam-Vancouver Fraser Port Authority Relationship Agreement (signed in 2021) included discussion around Musqueam's foreshore on IR2 and restoration of the area.

Article 6 of the Relationship Agreement specifically identifies the Musqueam foreshore area at Musqueam Indian Reserve #2 as a restoration opportunity, and the VFPA committed to provide \$2,200,000 towards the foreshore restoration project.

The Musqueam-VFPA Relationship Committee responsible for ongoing implementation of the Relationship Agreement includes:

- Musqueam
 - o Councillor Jordan Point
 - o Councillor Rosalind Campbell
 - o Councillor Nolan Charles (alternate)
- Vancouver Fraser Port Authority
 - o Erin Harlos, Director, Community Government Relations
 - o Dianne Sparrow, Indigenous Relations Manager

About the project team:

Musqueam and VFPA staff began work on the foreshore restoration project in 2021.

The foreshore restoration project team structure includes:

Role	Entity	Staff
Project Sponsor	Musqueam Indian Band (MIB)	Participating staff: Norm Point, Public Works Manager Richard Hall, Lands Governance Director Kim Guerin, Lands Governance Officer Tecla Van Bussel, Community Planner Wade Grant*, Chief Intergovernmental Officer Sarah Skapski, Acting Environmental Stewardship Manager Martin Louis, Fisheries Manager Lawrence Guerin, Senior Fisheries Officer

Role	Entity	Staff
		Kevin Wilson, GIS Analyst Woody Sparrow, Aquatic Habitat Restoration Program (MIB contractor) Morgan Guerin*, Senior Marine Planning Specialist and Fisheries Officer Yeganeh Asadian*, Environmental Stewardship Manager
Project Sponsor	Vancouver Fraser Port Authority	Tony Meysen, Construction Project Coordinator Dianne Sparrow, Indigenous Relations Manager Lindsay Gibson, Musqueam Relationship Advisor
Project Manager	Core Project Management	Cormac Linehan (Professional Engineer), Project Director Negin Kerdar, Junior Project Manager
Design and Engineering Consultant	<u>McElhanney</u>	Anthony Peterson (Professional Engineer), Market Leader – Ports & Marine
Environmental Consultant	Kerr Wood Leidal	Clayton Hiles (Professional Engineer), Coastal Engineer Patrick Lilley (MSc, RP Bio, BC-CESCL), Sector Leader Note: KWL have previous experience working with Musqueam including aquatic habitat restoration and sediment removal in Musqueam Creek.
Archaeological Consultant	x ^w məθk ^w əÿəm Archaeology (Musqueam Indian Band)	Dale Norman, Senior Archaeologist Kody Huard*, Senior Archaeologist/permit holder Liz Campbell, Operations Coordinator Jon Point, Archaeologist (monitor)
Contractor	JJM Construction	

^{*} Indicates staff no longer working for Musqueam Indian Band as of July 26, 2024.

About the project design:

There are two major components to the project:

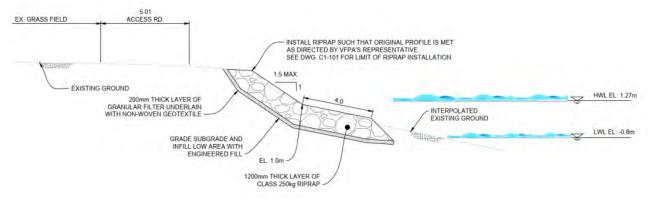
- 1. **Foreshore restoration:** Restore the shoreline to enhance bank erosion protection and revive the Fraser River foreshore.
- 2. **Creek habitat enhancements:** Aquatic and stream side ("riparian") habitat enhancements will also be made in the slough (mouth of Musqueam Creek).

See page 10 for a map that shows the project area.

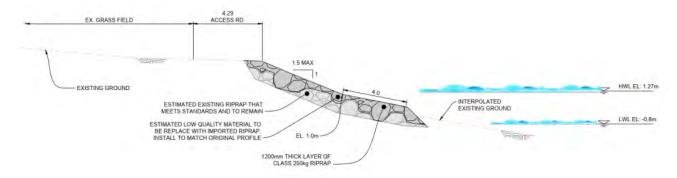


The blue area on the map (page 10) highlights the **foreshore restoration** area where broken concrete will be replaced with new erosion protection. This area is approximately 150 m total, between the boat ramp and the Highbury Interceptor pipe.

In 100 m of the foreshore, broken concrete pieces will be completely removed and replaced with new rock riprap.



In a 50 m section of the foreshore, there is a mix of broken concrete and existing rock. The broken concrete will be removed and augmented with new rock riprap.



Engineering drawings provided by Core Project Management.



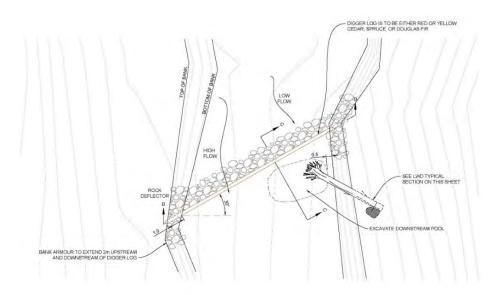
Example of new riprap rock material to be installed as erosion protection. This type of riprap will replace the existing concrete at the Musqueam foreshore. Photo provided by Core Project Management.



The yellow circles on the map (page 10) highlight spots in the slough where creek habitat enhancements will be installed.

Five angled "digger log" and "large woody debris" structures will be installed to provide habitat enhancement along an approximately 150 m section of Musqueam Creek below the

existing tide gate. Note: A tide gate is a one-way culvert designed to open and allow freshwater to drain during low tide, but to close at high tide. Musqueam's tide gate is a self-regulating tide gate that allows fish passage from the slough into the upstream part of the creek.



Engineering drawings provided by Core Project Management.



Example of digger log and large woody debris in a freshwater creek environment.

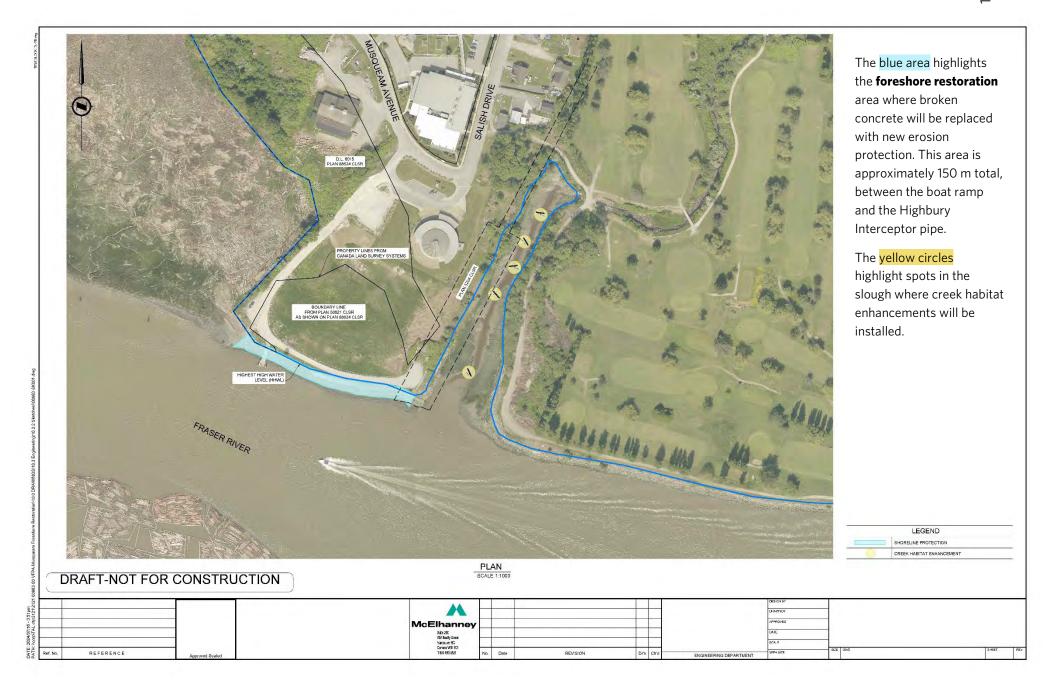
Photos provided by Core Project Management.

For definitions of technical terms

Go to Section 4 (page 19)

For responses to questions raised at the info session

Go to Section 5 (page 20)



About the Musqueam permitting process:

Under Musqueam's <u>Land Code</u> (enacted 2012; operational 2017) and Musqueam's <u>Subdivision, Development, and Servicing Law</u> (enacted 2023), Musqueam Chief & Council has the authority to issue permits for development on Musqueam reserve lands, including construction of environmental restoration works such as this project.

The following Musqueam departments have been involved with the Vancouver Fraser Port Authority in the negotiation, design, and review of the project: Intergovernmental Affairs, Environmental Stewardship, Fisheries, Archaeology, Public Works, Lands, and Community Planning.

Community input on the project was received through a dinner and information session on June 5, 2024.

Community feedback about soil testing for contaminants, construction notice and timing, and access to the boat ramp have been incorporated into the conditions of the Musqueam Comprehensive Development Permit.

For an overview of the info session

Go to Section 2 (page 13)

For responses to questions raised at the info session

Go to Section 5 (page 20)

The foreshore restoration project has gone through the following steps in the Musqueam Comprehensive Development Permit process:

May 21, 2024 - The Vancouver Fraser Port Authority **submitted an application** to the Musqueam Lands Governance Office for a Musqueam Indian Band Development Permit.

June 5, 2024 - Musqueam and the VFPA hosted a **community information session** for Musqueam community members to learn about the project. Feedback from members at this session was incorporated by Musqueam staff into the conditions designated in the Comprehensive Development Permit.

June 11, 2024 - Musqueam Lands Committee began their review of the Comprehensive Development Permit. The Committee identified additional work

required on the permit before recommendation could be made to Council. A special meeting was scheduled to continue the permit review after the work was completed.

June 17, 2024 - Musqueam Lands Committee completed their review of the Comprehensive Development Permit, and **recommended the Permit to Council** for approval.

July 2, 2024 - Musqueam Council approved the Comprehensive Development Permit for the foreshore restoration project (permit # MIB-CDP-2024-06-001).

The Comprehensive Development Permit is valid for 12 months (from July 2, 2024 to July 2, 2025), with possibility for extension with written application to Musqueam.

The applicant will complete the project following all conditions set out in the Comprehensive Development Permit, including:

- No substantial alterations to the project plan without approval from Musqueam;
- Notice to the community a minimum of two (2) weeks prior to the start of construction, including:
 - o Notice of construction start date and anticipated end date;
 - o Construction schedule:
 - o Notice of dedicated work area and any prohibited access to the foreshore area;
- Ensure access to the existing boat ramp be open to Musqueam as required;
- Conducting additional inspections, tests, or audits as directed by Musqueam or Musqueam's technical advisors;
- Any soil or fill material brought to the project site from outside Musqueam reserve lands must be certified clean to residential quality standards;
- Deposit and transport on Musqueam reserve lands of any excavated soil, sediment, or fill material requires a lined holding cell with 6mm poly-vinyl material on the ground beneath the material and covering the material.

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2. ABOUT THE COMMUNITY DINNER AND INFO SESSION

Musqueam community members were invited to join an info session and dinner to learn about upcoming environmental restoration work at the foreshore and Musqueam Creek.

The session was jointly hosted by Musqueam Indian Band and Vancouver Fraser Port Authority.

When: Wednesday, June 5, 2024 (5:00-7:00pm)

 The session was originally planned for May 23, 2024 but was postponed due to a loss in the community.

Where: Musqueam Cultural Centre

Agenda:

- 5:00pm Doors open and dinner served
- 5:30pm Presentation
- 6:00pm Q&A
- 7:00pm Closing and door prizes



Notice about the Foreshore restoration project community dinner and information session on June 5, 2024.

Event information sharing methods:

- The event was announced and shared in the Musqueam newsletter:
 - o Event information in the newsletter May 3, May 17, May 31
 - o Two full page colour notice inserts May 17, May 31
- The event was also shared on the Musqueam website and social media:
 - o Website event in the calendar page uploaded on May 4
 - o <u>Social media (instagram and facebook) reminders</u> shared on May 22, June 3, June 5

Other meeting details:

- Childcare provided 2 community members with Early Childhood Education certification were hired to work at the event.
- Online option provided A Zoom webinar with registration required was set up for the
 event so members could listen to the presentation and Q&A; the webinar was
 recorded.
- Handheld microphones were not working in the Cultural Centre. The online
 participants had trouble hearing the members speaking during the Q&A portion of the
 event.

Out of respect for information privacy, the recording of the info session can be viewed on request from the Musqueam Lands Governance Office. The recording is not to be shared publicly. Please contact Kim Guerin for more information: kimaguerin@musqueam.bc.ca

Attendance:

- 32 community members (including those Musqueam members who are listed below as members of Council, Lands Committee, or MIB staff)
 - o 30 members in person; plus 3 children
 - o 2 members online
- 4 MIB staff (who are not Musqueam members)
- 3 staff from Vancouver Fraser Port Authority
- 2 staff from Core Project Management

Musqueam Indian Band:

Musqueam Council:

- Councillor Rosalind Campbell (member of Musqueam-VFPA Relationship Committee)
- Councillor Howard Grant

Musqueam Lands Committee members:

- Cecilia Point
- Desirae Fraser

MIB staff (on project team):

Musqueam Indian Band:

- Tecla Van Bussel, Community Planner
- Kim Guerin, Lands Governance Officer
- Richard Hall, Lands Governance Director

Other MIB staff (not on project team):

- Rachel Tang, Environmental Stewardship Coordinator
- Ryan Kadoranian, Environmental Stewardship Coordinator
- Mark Guerin, Environmental Stewardship Coordinator
- Vivian Mearns-Notaro, Casual Lands Registry Officer
- Caroline Thomas, Administrative Assistant
- Ernestine Herman, Early Childhood Education Caregiver
- Kevin Wilson, GIS Analyst
- Kweyacan Guerin, Lands Monitor
- Woody Sparrow, Aquatic Habitat Restoration Program (MIB contractor)

External project team and guests:

Vancouver Fraser Port Authority (VFPA):

- Dianne Sparrow, Indigenous Relations Manager
- Erin Harlos, Director, Community Government Relations
- Tony Meysen, Construction Project Coordinator

Core Project Management:

- Cormac Linehan, Project Director
- Negin Kerdar, Junior Project Manager

Regrets:

Lindsay Gibson, Musqueam Relationship Liaison, Vancouver Fraser Port Authority

Event description:

At 5:00pm, doors were open. Attendees were asked to sign in and received a door prize ticket. Three children were at the session with their family members. The children wanted to stay in the room with the ECE workers instead of going to the community centre café (as originally planned).

At 5:15pm, Dianne Sparrow welcomed the attendees and opened the table for dinner (cooked by Rhea Guerin).

At 5:30pm, Dianne introduced Councillor Rosalind Campbell. Councillor Campbell provided opening remarks, speaking to her role on the relationship committee and emphasizing that this project is an example of the relationship agreement coming to life.

Dianne introduced the project team and external guests in the room. Dianne presented about the Musqueam-VFPA relationship agreement, including members of the committee. Dianne described the project scope, named the project team (from Musqueam, VFPA, and Core Project Management).

Cormac Linehan provided the technical presentation, describing the two components (foreshore restoration and creek habitat installation) of the project. Cormac also reviewed a timeline of the project to date, and described next steps (including permitting and construction timeline).

At 6:00pm, the Q&A portion began. Members spoke around the room, providing feedback and asking questions to the project team.



At 7:00pm, Dianne Sparrow closed the Q&A. Door prize tickets were drawn for nine gift cards.

In addition to the presentation and Q&A, feedback forms were distributed for members to share their thoughts about potential replacement of the Musqueam pier. This is being pursued separate to the foreshore restoration project. 8 feedback forms were received from members at the end of the session. The Musqueam Lands Governance Office and Community Planning is collecting this feedback to provide options for the future of the pier area.

3. FEEDBACK FROM THE COMMUNITY

Feedback heard from Musqueam community members (registered Musqueam members and family) in attendance at the community dinner is organized into major themes. The lists with numbers are used to make referencing specific items easier. The numbers do not indicate the priority or number of times something was heard.

Importance of the foreshore, river, and watershed

- 1. This is a place where we should be able to host visitors, gather with family; right now it is not up to the condition it should be.
- 2. We need to have pride and respect for our foreshore.
- 3. This river is who we are as Musqueam people; we should not be asking permission to do what we need to do on our lands.
- 4. This area has been impacted by so much development and industry for example logs, ship traffic, airport, and jet fuel. Looking forward to seeing some restoration work happen, but we need to be thinking about the whole river system.

Concern about fish and environmental conditions

- 5. Musqueam Fisheries and Aquatic Habitat program staff (Woody Sparrow) have a lot of knowledge about fisheries and habitat, and should be involved in this project.
- 6. We should be restoring this area so the fish can come back like they used to be there.
- 7. We know that the soil that was recently removed from higher up in the creek was significantly contaminated; would expect the same thing at the lower points in the slough. The project should be prepared for this.

Focus on Musqueam rights and title

- 8. This project is not only about restoration of the foreshore; it also has an impact on Musqueam's rights and title.
- 9. Councillor Howard Grant spoke about the history of negotiations between Musqueam and the Vancouver Fraser Port Authority, including how Musqueam fought to put the foreshore restoration priority on the table.

Need for better communication and information sharing

10. Feel uninformed about this project; nothing has been shared in the newsletter or notices about the project process (such as design and permits).

- 11. Want general band meetings to include project updates so that members are informed over time, not only at specific info sessions.
- 12. Want to know how the project as it is now compares to the original project scope when it was negotiated (in 2021).
- 13. Please break down any technical terms so they can be understood by community members.
- 14. Members want someone from Musqueam Chief & Council to be answering questions in these sessions.
- 15. Regarding the offer of an open door / come meet with Lands Director any time don't want to have to seek out information individually, want information to be communicated directly to community so everyone has a chance to learn.

For definitions of technical terms

Go to Section 4 (page 19)

For responses to questions raised at the info session

Go to Section 5 (page 20)



Dianne Sparrow (Indigenous Relations Manager, Vancouver Fraser Port Authority) opening the community information session. June 5, 2024. Photo by Tecla Van Bussel.

4. DEFINITIONS OF TECHNICAL TERMS

(Provided by Core Project Management)

Bank Armouring - Bank armoring refers to the process of reinforcing or protecting the banks of a watercourse, such as a river, stream, or creek, to prevent erosion and stabilize the surrounding land. This process is often necessary in areas where the natural banks are prone to erosion due to factors such as high water flow, fluctuating water levels, or human activity. Bank armoring techniques aim to mitigate erosion and maintain the integrity of the watercourse and its surrounding ecosystem

Digger Logs - Digger logs act as natural barriers within the creek, slowing down water flow and creating pools and riffles. They create diverse habitats for aquatic and semi-aquatic organisms. Fish, insects, and other wildlife often use the spaces around digger logs for shelter, feeding, and spawning.

Geotextile - geotextile is a synthetic fabric used in construction projects, especially in soil and water management. It serves several functions:

- Separation: It keeps different layers of soil or materials from mixing.
- Filtration: It allows water to pass through while trapping soil particles, preventing erosion.
- Reinforcement: It adds strength to the soil, helping to support loads.
- Protection: It protects the underlying soil from being washed away or eroded.

Granular Filter - A granular filter is a layer of small, coarse materials like gravel or sand placed underneath or around structures like riprap. It helps to:

- Prevent Soil Erosion: It stops soil particles from being washed away while allowing water to pass through.
- Support Drainage: It aids in draining water away from the protected area, reducing pressure on the structure.

Riprap - Riprap is a layer of large stones or rocks placed on shorelines, riverbanks, or other areas to prevent erosion. These rocks protect the soil from being washed away by water or wind. The riprap currently in place on Musqueam's foreshore is made of improvised, broken concrete pieces.

5. QUESTIONS AND ANSWERS

Questions and answers about the project are organized into themes: project process, design and construction, environment, and the pier and boat ramp.

Questions written in green were raised by Musqueam community members (registered Musqueam members and family) in attendance at the community dinner.

Questions written in black are additional questions provided for information.



Questions about the project process

1. Why is Musqueam seeking permits from the Province, Federal Government, and City of Vancouver for this project? The understanding by some members present at the information session is that the reserve boundary is at the low water mark.

The boundary of Musqueam Indian Reserve #2 at the Fraser River is at the "present natural boundary", commonly used to describe the change in vegetation or soil due to the continuous presence of water. The present natural boundary is defined as the Ordinary High Water Mark (OHWM). Plan 100259 CLSR, dated 2011, provides the most recent delineation of the Reserve's waterward boundary.

The project will not impact the legal boundaries of Musqueam Indian Reserve #2. The project's function is to protect the natural boundary of the river bank. The area of the river bank where the existing concrete currently sits (which is being replaced as part of this project) is below the Ordinary High Water Mark, which means it is outside the boundary of Musqueam Indian Reserve #2.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

2. How much has been spent on permit applications to the Provincial and Federal Governments?

There are no direct costs associated with submission of permit applications to the Provincial or Federal governments. There are no permits from the City of Vancouver for this project.

The Vancouver Fraser Port Authority paid a fee of \$288.75 to Musqueam Indian Band for application for a Musqueam Comprehensive Development Permit.

Summary of project permits:

- Heritage Conservation Act & Archaeological Impact Assessment- submitted August 8, 2023
- Request for Review to Fisheries and Oceans Canada- submitted November 8, 2023 (approved)
- Water Sustainability Act Change Approval to Ministry of Forests- submitted February 28, 2024 (approved)
- Project and Environmental Review, Vancouver Fraser Port Authority- submitted September 27, 2023
- Musqueam Comprehensive Development Permit (Lands Governance Office) permit
 # MIB-CDP-2024-06-001, approved by Musqueam Chief & Council on July 2, 2024
- Musqueam Heritage Permit (Musqueam Archaeology Department) permit # MIB-2023-128-AIA
- Project Notification & Review request to Metro Vancouver submitted April 15, 2024
- Notice of Works Application to Transport Canada, submitted November 2023

(List of permits provided by Core Project Management)

3. Has Musqueam legal counsel reviewed and approved the understanding of the reserve boundaries being used by this project team?

The boundaries being used by this project team (described in Question 1) come from approved legal surveys of Musqueam Indian Reserve #2.

The most recent survey of the foreshore area boundary of IR2 was completed in 2011, in order to support Musqueam's transition to lands governance under our own Land Code, away from the Indian Act. In 2011, the boundary survey was reviewed by Musqueam Legal Counsel (Jim Reynolds) and Lands staff, and approved by Musqueam Chief & Council.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

4. Is Musqueam contributing any funding to this project?

The complete project budget (maximum \$2.2 million) is covered by funding provided by the Vancouver Fraser Port Authority. This commitment is outlined in the Musqueam-Vancouver Fraser Port Authority Relationship Agreement.

Musqueam Indian Band is not responsible for any direct costs for design, management, or construction of this project. Staff time by Musqueam Indian Band employees involved in this project are paid by Musqueam Indian Band.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

5. What about participation or funding from other partners or proponents who are responsible for impacts to Musqueam in this area? For example – the airport, Metro Vancouver, the City of Vancouver, the City of Richmond, UBC.

Other partners and proponents are not involved in the foreshore restoration project.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

6. Is there any contingency in the budget for errors?

Yes, the project budget includes contingencies to account for unforeseen issues that may arise during construction. The construction budget is \$1.2 million, with a contingency of 15% for possible site unknowns including geotechnical and environmental constraints, soils contamination, and construction cost escalation.

(Response provided by Core Project Management)



Questions about design and construction

7. Will the whole Musqueam shoreline be restored including to the Wallace Street ditch?

No, the area of the foreshore that will be restored is between the boat ramp and the end of the gravel road next to the slough (Musqueam Creek) at the diversion chamber for the Highbury Interceptor sewage pipe. This area is approximately 150m.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

8. What is the risk of the concrete? The presentation mentioned risk associated with existing concrete at the foreshore.

The existing concrete is relatively inert; however, many pieces have steel reinforcements projecting from them, which could pose a hazard to people climbing on the rocks.

The new riprap is considered safe for its intended purpose, provided it is installed correctly. This includes prewashing to limit dust and careful placement to avoid localized turbidity, which will be overseen by the project engineer. No long-term risks are noted beyond the general caution needed when walking on it.

(Response provided by Core Project Management)



Existing concrete at Musqueam's foreshore, used for erosion protection ("riprap"). This will be replaced by erosion protection made of rock. Photo provided by Core Project Management.

9. Is the new riprap appropriate for this area of the river? The concrete that was put here before wasn't the right size, smaller pieces have washed away.

Riprap is angular blasted rock material from quarries, broken down into the appropriate sizing depending on the application. This is very similar to the rock material already in place in portions of the existing foreshore.

The new riprap is designed to provide the required protection from coastal and river hazards, including wind waves, ship waves, and storm surges. The riprap is comprised of large angular rocks, approx 1m in diameter, which will be placed across the foreshore area. No concrete will be used in the new riprap.

(Response provided by Core Project Management)



Example of new riprap rock material to be installed as erosion protection. This type of riprap will replace the existing concrete at the Musqueam foreshore. Photo provided by Core Project Management.

10. Where will the old concrete go?

The old concrete will be taken off site (away from Musqueam IR2) and go to an approved dump site. The exact dump site will be determined by the construction contractor, based on the quality of material removed.

The concrete will not be dumped into the ocean or any other water body. It has to be brought to an approved dump site, and the contractor will provide confirmation of this.

(Response provided by Core Project Management)

11. What is the long term plan / longevity of the project? Is it still going to be here when young people are Elders?

The foreshore improvements are designed to last 50 years, assuming conditions stay the same as when it was originally designed. While no regular maintenance is expected during this time, it's recommended to inspect it annually to catch any potential problems. Although the expected service life is 50 years, engineered shorelines often last much longer with regular inspections and occasional maintenance if needed. Maintenance is not anticipated over its life, however periodic inspection (up to annually) is recommended to identify any issues that may present.

(Response provided by Core Project Management)

12. Have the contractors done this kind of work before?

For the construction scope, the list of contractors invited to submit a tender were all from Musqueam Capital Corporation's (MCC) preferred contractor list and specialized in completing similar types of projects. <u>JJM Construction</u> has been selected as the contractor for the project, and they have extensive experience on similar projects that they have successfully completed over the years. Including foreshore land remediation in New Westminster, remediation of a fill site at Middle Harbour in Victoria, shoreline bank protection on McMillan Island in Fort Langley (a project with Kwantlen First Nation).

(Response provided by Core Project Management)

13. In what order will the construction occur? Will there be any impact to the slough by the construction at the foreshore area?

The specifics of the construction sequencing will need to be confirmed with the contractor once the tender process is complete and a contract is formally awarded.

The project construction is expected to take approx. 2-3 months. Work will respect the fish timing windows for marine habitat and the Musqueam creek freshwater habitat. This means work in the foreshore area must occur between July 16 2024 to February 28 2025. Work in Musqueam creek must occur between July 1 and September 30 2024.

Work is anticipated to start in July, 2024, with an assumed 2-3 months of construction.

The Contractor will provide notice to the community a minimum of a 2 weeks prior to the commencement of construction.

A construction schedule for the duration of the works will also be given to VFPA and MIB.

(Response provided by Core Project Management)

14. Low tide isn't always during the day. Will there be any work at night?

It is not expected that there will be any night work, however this will need to be determined with the contractor when the tender process is completed as the foreshore work will need to be scheduled around the tide. It's expected that a work schedule will likely consist of 10-hour shifts, six days a week, from Monday to Saturday, allowing for efficient completion of the project and utilization of low tide days. Regular working hours are expected to be from 7:00 am to 5:30 pm; however, start times may need to shift to align with the tide schedule.

(Response provided by Core Project Management)

15. Has there been consideration of improving the area for Musqueam members to use? Such as benches, sitting areas, or other improvements.

Yes, depending on the budget remaining in the project after construction is complete, there may be funds available for other improvements to the foreshore area for community use.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

16. What is the plan for maintenance?

There is no formal maintenance plan in the design specifications as this type of application doesn't require maintenance once the installation is completed and signed off by the Engineer of Record. However, the Contractor is obligated to address any defects or deficiencies for one year following the date of the Engineer's Certificate of Completion.

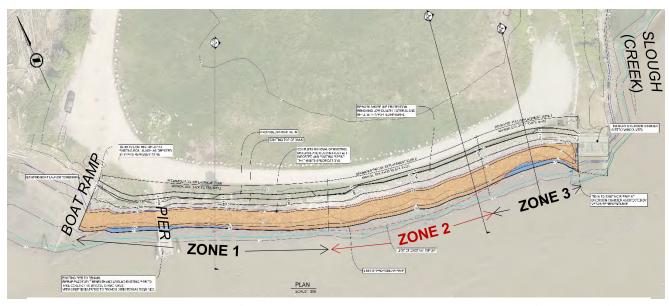
(Response provided by Core Project Management)

17. Can you explain the process for assessing the shoreline conditions? Areas that need complete replacement vs areas where existing riprap will be repaired?

This was determined by McElhanney as Engineer of Record (EOR) in the project design. McElhanney conducted a series of site inspections to identify sections of the foreshore needing replacement of existing materials.

It was determined that zones 1 and 3 required full replacement, with zone 2 expected to be partial replacement due to some existing good quality material. However, the full extent of the replacement work will be confirmed during the construction phase with oversight on site from the EOR.

(Response provided by Core Project Management)



Design drawing Showing Zone 1 and 3 (where full replacement of the existing concrete will occur) and Zone 2 (where partial replacement can occur because of some existing rocks that can remain). Design sketch provided by Core

Project Management.



Questions about the environment

18. Will there be any digging in the creek? Will sediment be tested for contaminants?

There will be some digging required in the creek but nothing that would be damaging to the current condition of the creek. Any soil that has to be removed from the creek would need to be tested and taken to an appropriate disposal facility.

Materials excavated or removed from the shoreline will be taken off-site and disposed of, except for existing riprap that can be reused in the final design. The construction work is expected to be done in dry conditions, minimizing risk. Riprap rocks will not be tested unless they are disposed of in a landfill or other facility, which is the contractor's responsibility. Testing is mainly to check the salt content. Concrete will be disposed of at approved facilities.

(Response provided by Core Project Management)

As part of the comprehensive development permit to be issued by Musqueam for this project, Musqueam has required the following conditions:

"7. Quality Control Plan and Soil Testing

- (a) As described in section 4.1.1 SECTION 01 00 00 General Requirements of Tender T240509-06 Musqueam Foreshore Restoration, the Contractor must conduct additional inspections, tests, or audits beyond those described in the Tender, as directed by Musqueam or Musqueam's technical advisors;
- (b) Any soil or fill material brought to the project site from outside Musqueam reserve lands must be certified clean to residential quality standards; and
- (c) Deposit and transport on Musqueam reserve lands of any excavated soil, sediment, or fill material requires a lined holding cell with 6mm poly-vinyl material on the ground beneath the material and covering the material."

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

19. Has the Aquatic Habitat Restoration Program / Woody Sparrow been involved in the project?

The Aquatic Habitat Restoration Program team (Woody and Signe Sparrow) provided advice on the appropriate timing windows for restoration works on the foreshore and in the slough (creek) to protect fish and fish habitat.

The Marine/Estuarine timing window for the protection of fish and fish habitat is July 16 to February 28. The Musqueam Creek fresh water timing window for the protection of fish and fish habitat is July 1 to September 30.

No works should occur in these areas outside of these timing windows, except during a dry season work can occur 14 days before and after the fresh water timing window with daily monitoring.

Fish habitat enhancement at the mouth of Musqueam Creek system is long over due. The installation of logs ("large woody debris") for habitat improvements in this project is aligned with the Aquatic Habitat Restoration Plan for the Musqueam Creek watershed.

(Response provided by Musqueam Indian Band Community Planning, Lands Governance Office, and Musqueam Aquatic Habitat Restoration Program)

20. How will this work affect fish and other species in the creek?

The Contractor is required to submit a Construction Environmental Management Plan (CEMP) outlining its method of construction, and detailing procedures that comply with the Environment Management Plan (EMP) included as part of the Contract. The document shall note each Work item and provide means of **mitigating environmental related construction concerns**.

Specific attention shall be made to the risks associated with the removal of the existing riprap and debris, working adjacent to the Metro Vancouver infrastructure, working adjacent to the existing concrete pier and boat launch, the removal of trees and other vegetation as required, installation of fills, rock, riprap and timber features and general operation of construction equipment at the Site. The CEMP is a requirement for Musqueam/Vancouver Fraser Port Authority review and written approval <u>prior</u> to commencement of construction activities.

The work also needs to conform with the environmental permit approvals that have been issued by Department of Fisheries and Oceans (Canada) and Ministry of Forests (British Columbia). The contractor will be responsible for ensuring that they are compliant, and McElhanney (engineers) / Kerr Wood Leidal (environmental consultants) will be on site to monitor and provide instruction as required.

(Response provided by Core Project Management)

Thanks to ongoing stewardship by Musqueam people, Musqueam Creek is the only wild salmon bearing stream within the boundaries of the City of Vancouver. Fish habitat enhancement at the mouth of the Musqueam Creek system is long over due.

The installation of logs in the creek adds fish habitat value by slowing the flow of water to keep clear of high levels of gravel and mud particles ("sediment suspension"). For example, after the atmospheric river in November 2021, unprecedented amounts of rain caused sedimentation and flooding of the storm drains and associated Musqueam Creek water system. Habitat enhancements in Musqueam Creek are part of the response to the atmospheric river event.



Example of a log and large woody debris that provides fish habitat. This type of habitat will be installed in the slough (mouth of Musqueam Creek). Photo provided by Core Project Management.

The installation of logs proposed in this project are the same type of habitat enhancements as a proposal that the Aquatic Habitat Restoration Program (AHRP) is working on to install logs further upstream in the creek (between Stautlo and Thellaiwhaltun).

This project will also improve the erosion protection of the river bank by removing the existing concrete waste from the foreshore area.

(Response provided by Musqueam Indian Band Community Planning, Lands Governance Office, and Musqueam Aquatic Habitat Restoration Program)

21. Will plants or trees be removed from the creek? What will be replaced?

Along the foreshore, we don't expect an impact to vegetation as the permanent riprap footprint will remain the same and access to site during construction will also be obtained using existing access roads. Plants and trees are not expected to be removed; any vegetation that is removed will be replanted.

To ensure the least disruption to the riprap footprint, the environmental consultant will be present throughout the site preparation and construction phases to minimize the impact to the vegetation.

(Response provided by Core Project Management)

Any invasive plant species that are encountered during the project will be identified and removed according to provincial standards (Weed Control Act [RSBC 1996, c. 487]).

A significant number of invasive plant species can be found throughout the area including Scotch broom (Cytisus scoparius), Himalayan blackberry (Rubus armeniacus), purple deadnettle (Lamium purpureum), common tansy (Tanacetum vulgare), and Japanese knotweed (Reynoutria japonica).

(Response provided from the project's Environmental Management Plan)

22. What are the impacts of this project on heritage and archaeology?

<u>x</u>^w<u>məθk</u>^wəyəm <u>Archaeology</u> (Musqueam Archaeology Department) has been hired as the archaeological contractor for the project, which means Musqueam archaeology staff will be doing the archaeological impact assessment testing, investigation, and monitoring.

Musqueam Archaeology Department has a Musqueam Heritage Permit in place for this project (permit # MIB-2023-128-AIA). This permit covers monitoring, assessment, and protection of heritage sites and resources on Musqueam IR2.

The project will receive a permit under the BC Heritage Conservation Act for the portion of the project area that is outside Musqueam reserve lands. Musqueam Archaeology has advised that because of the foreshore proximity to Musqueam, the project can proceed with work, but if anything is found in the area outside Musqueam reserve lands, work will stop until the HCA permits come in.

(Response provided by Musqueam Indian Band Community Planning, Lands Governance Office, and $x^{w}m \theta \theta k^{w} \partial \theta y$ Archaeology)

23. Does the project design criteria account for climate change?

The design has taken into account anticipated effects of climate change including, future sealevel rise and wind/wave impacts. The top of shoreline protection is not being raised as part of this project, but instead is designed to be added to into the future, since adjacent properties are not being raised.

(Response provided by Core Project Management)

Questions about the pier and boat ramp

24. What is happening with the pier? Is the pier safe to use?

The project will not make any changes to the existing pier.

Following the signage installed on the pier by MIB on April 12, 2024, no entry and no vehicles are permitted on the pier.

A visual condition assessment of the pier (including the concrete deck and crane on top) was completed by TetraTech, Metro Testing, and Kova Engineering in August 2022. The assessment report recommended that if the concrete deck is repaired as outlined in the report, the pier can potentially be used for light



No Entry signage installed on the pier by MIB on April 12, 2024. Photo by Norm Point.

vehicles and pedestrian use, but the actual weight limit cannot be determined without further assessment.

Additional structural load rating assessment is required to properly assess the load rating of the pier. This is dependent on the expected additional service life, pier functionality, decision about a new crane, and seismic safety requirements.

Musqueam Indian Band Administration understands that the pier is very important to community members, especially for canoe races and fishing use. Separate to this project, MIB will evaluate options for upgrading the pier in the future, for community to use safely.

(Response provided by Musqueam Indian Band Community Planning, Lands Governance Office, and Public Works)

25. What is happening with the boat ramp?

The project will not make any changes to the existing boat ramp.

(Response provided by Musqueam Indian Band Community Planning, Lands Governance Office, and Public Works)

26. How will construction impact our use of the boat ramp and foreshore area?

The contractor is asked to ensure access to the existing boat ramp be open to Musqueam as required; work can be scheduled accordingly, so Musqueam should provide input on when access is required.

The schedule will be communicated prior to construction starting, and if there are specific events that require access, then this should be communicated now so that the contractor can plan accordingly.

There would be no access to the rest of the foreshore during construction. The contractor will need to set up a dedicated work area, which will not allow public access due to safety requirements, so this will prohibit any use of the foreshore area during construction.

(Response provided by Core Project Management)

27. What is the water quality at the boat ramp?

Reminder to Musqueam community members that at this time, the beach area is known to be contaminated with enterococci bacteria and to enter the water at your own risk. The level of contamination can vary and spike at any time. Water quality monitoring data for the beach (site SW8 near the boat ramp) can be provided by Musqueam Lands Governance Office.

(Response provided by Musqueam Indian Band Community Planning and Lands Governance Office)

6. NEXT STEPS

Musqueam Chief & Council approved the Musqueam Comprehensive Development Permit (permit # MIB-CDP-2024-06-001) for the project on July 2, 2024.

Preparation for the restoration work will begin in the foreshore area on August 6, 2024.

Musqueam community members may see workers, fencing, and equipment being brought in, including a temporary barge for transportation of materials.

The boat ramp will remain OPEN for use during the restoration work. Musqueam community members will be notified of any anticipated changes to access.

The restoration work is expected to begin in mid August 2024, lasting approx. 2-3 months.

A complete construction notice with a map and schedule will be distributed to households on IR#2 and shared on the MIB website ahead of August 6.

Work will respect the marine and freshwater fish protection timing windows. Monitors from Musqueam Archaeology, Environmental Stewardship, and Lands will be on site.

MIB has requested to VFPA that a community event (BBQ, dinner, or other gathering) be held when the restoration work is complete to close the project.

Project information will be available on the Musqueam Indian Band website, including:

- A digital copy of this community update report
- The presentation from June 5, 2024 community information session
- The Musqueam Comprehensive Development Permit, including design drawings, Environmental Management Plan and Environmental Assessment
- Construction updates

<u>www.musqueam.bc.ca/community-engagement/foreshore</u>
Note: this webpage will be updated prior to August 6, 2024

Have questions? Want a paper copy of any information?

Musqueam community members are welcome to contact:

Lindsay Gibson (VFPA) Lindsay.Gibson@portvancouver.com

Kim Guerin (MIB) kimaguerin@musqueam.bc.ca