

**August 23, 2018**

## **Maplewood Marine Restoration Project - Project and Environmental Review Application**

### **MMRP AIR 1: Additional Information Regarding Works Outside of Regular Work Hours and Noise Screening Worksheet**

The Maplewood Marine Restoration Project (MMRP, or the “Project”) is a habitat enhancement project proposed by the Vancouver Fraser Port Authority (VFPA) Habitat Enhancement Program (HEP). HEP is a VFPA program whose goal is to balance a healthy environment with infrastructure development opportunities.

This document has been prepared in response to the VFPA Project Environmental Review (PER) Program’s Additional Information Request (AIR) for MMRP regarding works outside of regular work hours. The following information is intended to address the information requirements set out in Section 3 of the PER Guidelines – Requests to Conduct Construction (Works) Outside of Regular Work Hours and is additional to the MMRP PER Application and supporting attachments submitted to the PER Program on August 1<sup>st</sup>, 2018.

#### **Rationale for Extended Work Hours Request**

The Project is anticipated to require high tides for equipment to access the Project site, and to avoid grounding equipment in marine habitat. Suitable high tides occur outside standard regular work hours (i.e., Monday to Saturday between 7:00 am and 8:00 pm, excluding holidays). To complete the marine construction work associated with the Project, and in as short a duration possible, it is proposed that construction be completed based on 24-hour operation (if required). Completion of the marine works based on 24-hour operation will reduce the overall duration of the work program, thus reducing the potential for noise disturbance, and ensure the works are completed in the most efficient manner by taking advantage of optimal tides.

#### **Works Methodology**

The Project proposes to create fish and wildlife habitat in the Northeast Basin and Southwest Channel (**Figure AIR1-1**). Dredging, material placement and placement of rock material will be required to create the habitat. Further details regarding the Project and the construction methodology can be found in the MMRP Project Description and Section 3.3 (Marine Works) of the 60% Design Report & Design Drawings (Attachment 1 to the MMRP Project Description) submitted as part of the MMRP PER Application.

Habitat in the Northeast Basin will be created by beneficially using dredged material from the proposed Southwest Channel, and placing imported clean fill material to raise the elevation of the existing substrate at the Northeast Basin. Fraser River sand, or a suitable clean alternate (e.g., approved Sechelt sand), is proposed as the additional fill material. Placement of rock material to

create a rock dyke is required to contain the fill material in the Northeast Basin and to create subtidal rock reef habitat. Rock material will also be placed in the Southwest Channel to create subtidal rock reef habitat.

Construction equipment could include a barge-mounted clam-shell dredge or cutter-suction dredge, flat bottom or bottom dump scows, front-end loader, tugboat and workboat. Construction equipment will be required to cross over the shallow Southern Intertidal Area (see **Figure AIR1-1**) during a high tide before the start of dredging activities. It is anticipated that the Southwest Channel will be dredged using a barge-mounted clam-shell dredge, or by using a cutter-suction dredge. To facilitate placement of material from the Southwest Channel into the Northeast Basin, it is anticipated that dredging will start from the inner (i.e., northeastern) end of the channel to avoid transporting and potentially grounding, loaded or partially-loaded, scows on the shallow Southern Intertidal Area. Once the Southwest Channel is dredged to design grade (i.e., -4.0 m CD), it is anticipated that loaded material scows will be able to enter/exit the Project site during low tides (utilizing the Southwest Channel) for placement of fill or rock material in the Northeast Basin. Rock material placement work in the Northeast Basin and Southwest Channel would be carried out by a barge-mounted clam-shell with rock supplied to site on flat-deck or bottom-dump scows. Construction methodology details will be refined as the Project advances to a procurement-ready stage.

The number of personnel that will be on site, and the precise location for access mobilization of equipment and personnel into the water will not be known until the construction contract is awarded. The selected construction contractor will determine the means of access into the water for equipment (likely via an established boat ramp, barge ramp or dock within Burrard Inlet or on the Fraser River). Equipment such as a barge or scow will likely be towed to site via a tug boat and repositioned during construction by a tug boat as necessary. On completion of the program, the tugboat will bring the barge or scow back to the boat ramp, barge ramp or dock within Burrard Inlet or on the Fraser River. The construction contractor will likely provide a water taxi to deliver personnel to site from a public boat ramp or dock in proximity to the MMRP site at the end of each shift.

No laydown or stockpiling areas will be required onshore since all equipment and personnel mobilization and operations will be by marine access.

### **Description of the Potential Offsite Noise Disturbances from the Work**

Noise may be generated during construction operations outside of regular working hours from within the Maplewood Basin and Southwest Channel shown on **Figure AIR1-1**. The Maplewood Basin consists of the previously dredged area of Maplewood Flats, encompassing the Northeast Basin and Main Basin. The Project site is located near to shipping areas in Burrard Inlet, the Ironworkers Memorial Bridge, and industrial operations along the Central Harbour shoreline, where ambient noise levels can be classified as moderately high. The Project is located relatively far away (greater than 500 m) from residential areas. The types of noise that may be generated include tonal noises (hums and whirs) from engine operation. Impulsive noise events may also intermittently occur as a result of standard equipment handling impacts, placement of dredged material in scows, or movement/placement of rock materials, and operation of marine-based equipment and machinery (e.g., derricks, scows, tugboats, workboats, etc.). No high-energy impulsive noises (e.g., from pile driving) are proposed, or are anticipated to occur, as part of the Project. Noise levels within the Project boundary are anticipated to be moderate. Noise will be generated during the construction

phase of the Project. However, only minimal noise is anticipated to be associated with the post-construction monitoring phase (e.g., boat access to facilitate dive surveys of the Project site).

The area west of the MMRP site is industrial and no offsite disturbance is anticipated in this area. The area north of the MMRP site is a wooded conservation area used for recreational purposes. Project related noise may be audible in this area. However, visitors to the Maplewood Flats Conservation Area are not anticipated outside of regular work hours. The nearest known residence to the Project boundary is approximately 560 m northeast of Northeast Basin. Given that noise levels within the Project boundary are anticipated to be moderate, that the existing noise environment is moderately noisy, and that residents or neighbors that may be disturbed by works-related noise are greater than 500 m away, noise levels at the nearest noise-sensitive receptors (i.e., residential homes) are anticipated to be low.

### **Dates and Time of Proposed Work**

The precise dates and times of the work outside regular work hours will not be finalized until the construction contract is awarded and will be determined pending construction progress. Construction of the Project is forecast to begin in late summer/early fall 2019 with an anticipated construction period of approximately eight months. The majority of the construction work is scheduled to occur during the appropriate least-risk timing windows for Burrard Inlet. The least-risk timing window to mitigate risk of negative effects to juvenile salmonids is August 16<sup>th</sup> to February 28<sup>th</sup>. However, due to the potential material settlement time required for sediment placement in the Northeast Basin, material placement may extend beyond the end of the least-risk timing window (e.g., post-February 28<sup>th</sup>). Any work outside the window would occur with appropriate mitigation in place. The Project construction schedule will be refined as the Project advances to a procurement-ready stage, however there will be multiple weeks throughout the construction period when no/minimal construction is undertaken due to the anticipated material settlement period required for materials placed in the Northeast Basin. The MMRP PER Application requests that approval be given for works to occur 24hrs/day, 7 days/week - per the rationale provided herein, and within the MMRP PER Application.

### **Description of Proposed Mitigation Measures**

A Construction Environmental Management Plan outlining best management practices to minimize noise generation was prepared for the Project and submitted as Attachment 8 of the MMRP PER Application. The equipment for construction of the Project is likely to cause some noise that can be heard across open-water. No significant mitigation is feasible at the noise source (e.g., dredging equipment). The affected surrounding community will be notified (as appropriate) of the nature and duration of noisy operations in advance of work taking place and/or when work is required outside regular work hours. Noise generation and vibrations resulting from equipment and associated activities during construction will be addressed through appropriate noise management practices, including:

- Maintaining all equipment to limit noise emissions, and ensuring machinery is fitted with functioning exhaust and muffler systems;
- Ensuring machine covers and equipment panels are well-fitted and remain in place to muffle noise. Bolts and fasteners will be tightened to avoid rattling; and,

- Preventing unnecessary idling by turning off engines when not in use.

High noise levels, such as those resulting from impact pile-driving techniques, are not anticipated to occur as part of this Project.

### **Map of Proposed Work Area and Surrounding Property**

**Figure AIR1-1** below shows the location of the nearest residential receptor that may be affected by work-related noise. Noise levels at the nearest noise-sensitive receptors are anticipated to be low.

### **Site Plan Showing Structures, Buildings and Topography**

**Figure AIR1-1** provides a site plan illustrating the Project boundary. As the MMRP site is in a marine tidal area, no structures or buildings are present. Scattered noise shielding by trees to the north of the Project boundary in the Maplewood Flats Conservation Area will impact the line of direct hearing, thus naturally mitigating potential construction noise to the north, and northeast.

### **Appendix I Noise Screening Worksheet**

The completed Appendix I Noise Screening Worksheet can be found below.

### **Contact Information – Applicant**

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**Additional Information Request 1:  
Nearest Residential Noise Receptor and  
500 m Offset from Project Boundary**



**Legend**

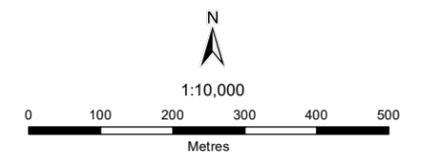
- Nearest Potential Residential Noise Receptor
- Maplewood Marine Restoration Project Boundary
- 500m Offset from Maplewood Marine Restoration Project Boundary
- Maplewood Basin
- VFPA Boundary

**Notes**

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

**Sources**

- Project Boundary and Maplewood Basin: AECOM, 2018
- Aerial Image: Bing Imagery



Path: S:\GIS\emissions\Maplewood\05\mxd\air\FigAIR1-1\_989565\_05\_Maplewood\_IR1\_ResidentialNoiseReceptor\_ProjectBoundary\_180827.mxd

**APPENDIX I – NOISE SCREENING WORKSHEET**

This worksheet should be filled out by one or more informed individuals representing the Applicant in order to establish the potential to create noise impacts within surrounding areas. This screening procedure is opinion-based and largely qualitative in nature. Complete this worksheet marking each of the eight questions and submit to the Vancouver Fraser Port Authority as part of the extended work hours request.

| <b>Question 1 – Noise levels expected on project site</b>  |                          |
|--|--------------------------|
| Based on experience with similar construction operations, or on your best judgment, do you expect that noise levels within the project site will be: |                          |
| Very Low   | <input type="checkbox"/> |
| Low  | <input type="checkbox"/> |
| Moderate   | <input type="checkbox"/> |
| High   | <input type="checkbox"/> |
| Very High  | <input type="checkbox"/> |

| <b>Question 2 - Presence of undesirable characteristics</b>  |                          |
|--|--------------------------|
| Will any of the key activities create ongoing noise which (indicate all that apply):   |                          |
| are clearly tonal (hums, whirs, whines)  | <input type="checkbox"/> |
| are impulsive or have very rapid onset (bumps, bangs, material handling impacts, rail car shunting, compressed air release etc.) | <input type="checkbox"/> |
| contains strong low-frequency content (e.g. large diesel engines, large fans or air compressors)                                 | <input type="checkbox"/> |

| <b>Question 3 – Presence of high-energy impulsive noise</b>  |                          |
|--|--------------------------|
| Will any activities create noise which could be classified as “High-energy Impulsive”? Examples could include the industrial use of explosives, explosive circuit breakers, or pile driving. |                          |
| No   | <input type="checkbox"/> |
| Yes  | <input type="checkbox"/> |

| <b>Question 4 – Hours/days of operation</b>                 |                          |
|---|--------------------------|
| Will the extended hours schedule be (check all that apply): |                          |
| Evening Shift [ 8 p.m. to midnight; weekdays ]              | <input type="checkbox"/> |
| Evening Shift [ 8 p.m. to midnight; weekend ]               | <input type="checkbox"/> |
| Night Shift [ midnight to 7 a.m.; weekdays ]                | <input type="checkbox"/> |
| Night Shift [ midnight to 7 a.m.; weekend ]                 | <input type="checkbox"/> |

| <b>Question 5 – Proximity to noise-sensitive areas</b>   |                          |
|--|--------------------------|
| How far is the nearest noise-sensitive land use (residences, schools, hospitals, parks etc.) from the property line of the project site? |                          |
| More than 1,000 m  | <input type="checkbox"/> |
| 500 to 1,000 m   | <input type="checkbox"/> |
| 250 to 500 m   | <input type="checkbox"/> |
| 125 to 250 m   | <input type="checkbox"/> |
| less than 125 m  | <input type="checkbox"/> |

| <b>Question 6 – Presence of noise shielding or reflection</b>   |                          |
|---|--------------------------|
| Will buildings, structures and/or landforms partially or totally screen construction noise sources from nearby noise receptors (that is, interrupt the line of sight and direct hearing)? Here consideration should be given to the relative elevations of the noise sources, the noise receivers (ground and upper floors) and the intervening buildings and/or landforms. |                          |
| Substantial, continuous noise shielding   | <input type="checkbox"/> |
| Substantial, but not total, screening   | <input type="checkbox"/> |
| Intermittent shielding, e.g., row of smaller, non-adjointing buildings  | <input type="checkbox"/> |
| Scattered shielding by objects, machinery, stockpiles   | <input type="checkbox"/> |
| No shielding potential  | <input type="checkbox"/> |

| <b>Question 7 – Existing noise environment</b>   |                          |
|--|--------------------------|
| How would you rate the existing noise environment in the vicinity of the project site? |                          |
| Very noisy (near busy highway, busy port, airport, heavy industry)                     | <input type="checkbox"/> |
| Noisy (near busy arterial road, light industrial area, urban core)                     | <input type="checkbox"/> |
| Moderately noisy (near collector road, suburban residential)                           | <input type="checkbox"/> |
| Quiet (suburban residential away from collector roads)                                 | <input type="checkbox"/> |
| Very quiet (rural residential, well away from industry or main roads)                  | <input type="checkbox"/> |

| <b>Question 8 – Population potentially exposed to project noise</b>             |                          |
|---|--------------------------|
| Approximately how many residences are located within 500 m of the project site? |                          |
| 5 or less   | <input type="checkbox"/> |
| 5 to 15   | <input type="checkbox"/> |
| 16 to 40  | <input type="checkbox"/> |
| 41 to 100   | <input type="checkbox"/> |
| more than 100   | <input type="checkbox"/> |