



April 18, 2022

Mr. Tim Schmitt
Marcon Albert (GP) Ltd.
5645 – 199th Street
Langley, BC V3A 1H9

Dear Mr. Schmitt:

**Re: Construction Environmental Management Plan
2025 St. Johns Street, Port Moody, BC
Project No. 14296**

We have enclosed the report titled *Construction Environmental Management Plan, 2025 St. Johns Street, Port Moody, BC*. If you have any questions, please do not hesitate to contact us.

Sincerely,

Keystone Environmental Ltd.

Craig Patterson, R.P.Bio.
Project Manager

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**Keystone
Environmental**
Knowledge-Driven Results



Construction Environmental Management Plan

**2025 St. Johns Street
Port Moody, BC**

Prepared for: Marcon Albert (GP) Ltd.

**Project No. 14296-100
April 2022**

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EXECUTIVE SUMMARY

Keystone Environmental Ltd. (Keystone Environmental) was retained by Marcon Albert (GP) Ltd. (Marcon) to complete a Construction Environmental Management (CEMP) for the proposed development at 2025 St. Johns Street, Port Moody, BC (the Site). The proposed project will involve construction of a six-storey residential development featuring underground parking and a private community amenity area, along with habitat improvements to Environmentally Sensitive Area No. 8 (the ESA) and the protected riparian area surrounding Schoolhouse Brook. This CEMP summarizes and provides mitigation measures included in Keystone Environmental's Environmental Assessment and Restoration Plan, dated April 18, 2022.

This CEMP has been prepared to guide environmental protection practices and mitigation measures during Site preparation, building construction and riparian restoration. Instream works are not included in the project scope and provincial/federal permits or approvals are not required.

The primary objective of this document is the protection of environmental resources that may be impacted during project works; in particular, protection of Environmentally Sensitive Area No. 8, the Riparian Management Zone surrounding Schoolhouse Brook, surface water quality on-Site and discharge off-site into downstream receiving waters of Schoolhouse Brook. The primary means of achieving this objective include the following general mitigation measures:

- The limits of disturbance will be clearly defined prior to the start of construction activities
- Vegetation clearing activities should be conducted outside the nesting season for passerine species (March 1 – August 31)
- Removal and management of invasive species will follow the recommended measures outlined in this CEMP
- All equipment on-Site will be clean, leak-free and in good working order
- A spill prevention and response plan will be in place and spill response materials will be accessible on-Site during works
- An Erosion and Sediment Control Plan, prepared by RF Binnie & Associates Ltd., will be implemented during Site construction works, and similar sediment control measures and Best Management Practices will be implemented
- Stormwater runoff and discharge entering catch basins (directed to Schoolhouse Brook) will conform to the applicable criteria outlined for protection of aquatic life
- Regular environmental monitoring will be conducted for the duration of works

Detailed planting plans for riparian and restoration areas are provided herein. Annual habitat monitoring will be implemented following completion of works to confirm the ongoing health of riparian plantings and that habitat objectives are being met, and to guide implementation of adaptive management if required.

This Executive Summary is subject to the same general limitations as contained in the report and must be read in conjunction with the entire report.

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LIST OF ACRONYMS

BC	British Columbia
BCWQG	BC Water Quality Guidelines
BMP	Best Management Practice
CEMP	Construction Environmental Management Plan
DFO	Fisheries and Oceans Canada
DNV	District of North Vancouver
ECCC	Environment and Climate Change Canada
EMBC	Emergency Management BC
ESCP	Erosion and Sediment Control Plan
MFLNRO	BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MOE	BC Ministry of Environment and Climate Change Strategy
MSDS	Material Safety Data Sheets
NTU	Nephelometric Turbidity Unit
PPE	Personal Protective Equipment
TSS	Total Suspended Solids
QEP	Qualified Environmental Professional

1. INTRODUCTION

Keystone Environmental Ltd. (Keystone Environmental) was retained by Marcon Albert (GP) Ltd. (Marcon) to complete a Construction Environmental Management (CEMP) for the multi-unit residential development at 2025 St. Johns Street, Port Moody, BC (the Site). The project will involve construction of a six-storey residential development featuring underground parking and a private community amenity area, along with habitat improvements to Environmentally Sensitive Area No. 8 (the ESA) and the protected riparian area surrounding Schoolhouse Brook. This CEMP summarizes and provides mitigation measures included in Keystone Environmental's Environmental Assessment and Restoration Plan, dated April 18, 2022.

1.1 Project Description and Key Construction Activities

The building and underground parking development project includes restoration of the western ESA and southern Riparian Management Zone, with installation of an interceptor swale along the boundary of the ESA and residential building that directs stormwater to a catch basin at the southwest corner of the building footprint. A post-development project plan detailing the building footprint and adjacent restoration areas is provided in Appendix A.

Extensive invasive Himalayan blackberry and English ivy is present within the steep sloping mixed forested ESA on the western portion of the Site. Significant invasive vegetation present in the Schoolhouse Brook riparian area, particularly near and above the top-of-bank along the southern portion of the Site and outside the Site perimeter within the City road right-of-way on the northwest side of the brook, includes English ivy with occurrences of English holly, spurge laurel, cherry laurel and small-flowered jewelweed. Invasive species will be cleared and replanted following the detailed planting plans provided in the 2022 Environmental Assessment and Restoration Plan and attached Figures in Appendix D, with removal of isolated invasive plants within the right-of-way replaced with supplemented native plants if applicable.

The project works are anticipated to include the following activities that are covered under the scope of this CEMP:

- Vegetation clearing and invasive plant removal
- Site preparation, asphalt removal, excavation and grading
- Construction of parkade and residential building
- Restoration planting and landscaping

1.2 Objectives

The intent of this CEMP is to protect terrestrial and aquatic ecosystems, and environmental values with potential to be impacted by project works. This plan has been prepared to identify potential environmental issues associated with the project works, and to recommend environmental protection and mitigation measures that the contractor and their subcontractors (collectively, the Contractor) will be expected to implement. Included in this document are environmental mitigation measures intended to minimize or avoid environmental impacts during the ground preparations and construction.

The objectives of this CEMP are to:

- Provide a description of contacts, roles and communication requirements related to environmental aspects of the project.
- Identify environmental values in the project area that have potential to be negatively impacted during construction
- Describe the specific construction activities associated with the project
- Describe specific procedures for restoration works occurring in proximity to a Schoolhouse Brook
- Describe environmental mitigation and management strategies to protect environmental values, manage invasive species, and impacts to Schoolhouse Brook during construction
- Provide activity-specific mitigation measures and BMPs to be implemented by the Contractor during construction
- Provide information to be used in development of the Contractor's environmental protection or environmental training programs
- Describe the Environmental Monitoring program to be implemented during the project

This CEMP is intended to be used as a guide for all Contractors performing project works, as well as the designated Environmental Monitor, to maintain compliance with regulatory requirements. It is the Contractors' responsibility to confirm that their employees and subcontractors are familiar with the contents of this CEMP and applicable legislation and regulations. This plan is a living document, subject to change where construction practices may be upgraded and BMPs improved as technology is improved. The plan is also meant to be flexible, so as to accommodate changes to design or methodology that may be required once actual field conditions are known and possible obstacles discovered.

1.3 Environmental Resources and Potential Impacts

The Site is currently comprised of a paved central area bordered by the ESA and the Riparian Management Zone surrounding Schoolhouse Brook, both of which have dense invasive species. Primary project impacts involve vegetation clearing, excavation and grading within the riparian protection area and in proximity to Schoolhouse Brook along the southern edge of the Site.

Appendix A and Appendix D (Figures 2 and 3) indicate location of ESA and Riparian protection fencing as part of the post-development conditions. Placement of silt fence riparian protection fencing is included in Appendix B and tree retention/protection fencing included in Appendix C.

Potential impacts, including potential impact to bird nesting habitat, accidental spills and sedimentation of stormwater, and proliferation of invasive plant species, can be suitably mitigated through implementation of environmental protection measures and standard best management practices provided in this report.

1.4 Regulatory Requirements

The following summarizes Acts, Regulations, and Guidelines applicable to development of the Site:

Federal Legislation

- Federal Fisheries and Oceans Canada (DFO) *Fisheries Act*: Prohibits the harmful alteration, disruption or destruction of fish habitat and prohibits the death of a fish by means other than fishing.
- Federal *Migratory Bird Conventions Act*: Ensures the conservation of migratory bird populations by regulating all activities that are harmful to migratory birds, their eggs or their nests.
- Federal *Species at Risk Act*, Schedule 1: Protects the individual and critical habitat, as defined in the recovery strategy, of species listed as Threatened, Endangered, or Extirpated under Schedule 1 of the *Act* where they occur on federal lands.

Provincial Legislation

- BC Environmental Management Act: Establishes regulations related to waste management, discharge, and the handling and transport of contaminated material.
- BC Wildlife Act: Prohibits possessing, taking or destroying: (i) a bird or its egg, (ii) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or (iii) the nest of a bird not in (ii), when the nest is occupied by a bird or its egg unless authorized under permit. Can be used to authorize direct management of wildlife, including trapping, salvages, or relocation.
- Riparian Areas Protection Regulation (RAPR): establishes the assessment methods for Qualified Environmental Professionals (QEPs) to determine suitable streamside development setbacks. Based on the results of the stream measurements collected on August 14, 2018, Schoolhouse Brook requires a minimum 15.4 m setback from the high-water mark under the provincial RAPR (formerly known as RAR).
- Wildlife Act Section (34): protects wildlife, and birds and their nests.
- Weed Control Act Section (2): requires an occupier to control provincially-designated noxious weeds, such as Japanese knotweed, growing on land and premises occupied by that person.

Municipal Legislation

- Zoning Bylaw No. 2937, 2018: regulates the use and development of lands, buildings and structures in the City of Port Moody, and defines the minimum Riparian Management Zone (i.e., riparian development setbacks) from watercourses. The Riparian Management Zone includes the Riparian Protection and Enhancement Area (RPEA) and Riparian Transition Area (RTA). Development is not permitted within the RPEA setback, with the exception of ecological restoration works. Limited development activities may be allowed within the RTA,

including construction of trails and access roads, kiosks, signage, interpretative platforms, fences, stormwater management systems, and landscaping. Under this bylaw, ditches have a minimum RPEA of 5 m and do not require an RTA. The location of the RPEA setback in relation to proposed building works is shown on Figures 2 and 3 attached to this report.

- Official Community Plan Bylaw No. 2955, 2014: outlines the municipality's objectives and policies to guide land use in the community over the long term. Includes the City's ESA management strategy and Development Permit Guidelines for ESAs. The guidelines are a list of requirements and general recommendations to support wildlife corridors, watersheds, forest ecosystems, watercourses, riparian areas, and species at risk.
- Tree Protection Bylaw No. 2961, 2015: requires municipal permits to be obtained before removing trees on lands subject to Development Approval. The permitting process requires preparation of Tree Removal/Retention/Replanting Plans by a professional Arborist.
- Stream and Drainage System Protection Bylaw No. 2470, 2000: prohibits fouling or impeding flow of a watercourse or sewer. The Bylaw requires that a Sediment Control Plan be prepared by a Professional Engineer for developments to outline measures and a sampling program to be implemented during construction works to prevent the discharge of prohibited materials to the drainage system (i.e., water with total suspended solids in excess of 75 mg/L above background levels or a pH value outside of the range 6.5–8.0).

Guidelines and Best Practices

- BC and DFO Land Development Guidelines for the Protection of Aquatic Habitat: Provides guidelines, environmental protection and mitigation measures. Potential adverse effects to aquatic environments during Site development should be managed as per these guidelines.
- BC Develop with Care 2014 – Environmental Guidelines for Urban and Rural Land Development in British Columbia: Provides a comprehensive set of guidelines and Best Management Practices (BMPs) to guide protection of environmental values during land development. Project environmental protection and mitigation strategies should follow these guidelines.
- Salmon-Safe Urban Standards 2018: An eco-certification program that seeks to protect watersheds through a series of environmentally friendly management practices. Certification criteria include but are not limited to stormwater management, water use management, erosion and sediment control, pesticide reduction, in-stream and riparian habitat protection, and urban ecological function.
- Invasive Species Council of BC – Best management practices for invasive species management and removal

2. SUMMARY OF RESPONSIBILITIES

Regular and open communication between the project team members is essential to the success of the Project. The CEMP involves numerous contractors and consultant personnel that will contribute to its successful implementation. The following table outlines the roles and responsibilities of the Project authorities, the Contractor, and the Environmental Monitor, for achieving compliance with the CEMP during Project works.

Table 2-1 Project Team Roles and Responsibilities

Government Agency, Contractor, Consultant, etc.	Address	Role	Contact	Title	Phone Number
Marcon Albert (GP) Ltd.	5645 – 199th Street Langley, BC V3A 1H9	Developer / Construction	Tim Schmitt	Development Manager	604-530-5646
Keystone Environmental Ltd.	Suite 320 4400 Dominion Street Burnaby, BC V5G 4G3	Environmental Consultant	Craig Patterson	Environmental Manager	604-430-0671
TBD	-	-	-	Environmental Monitor	-
RF Binnie & Associates Ltd.	300-4940 Canada Way Burnaby, BC V5G 4K6	Civil Engineer	Donal Casey	Project Civil Engineer	778-945-6045
Froggers Creek Tree Consultants Ltd.	7763 McGregor Avenue, Burnaby, BC V5J 4H4	Arborist	-	-	604-721-6002

2.1 Contractor and Sub-Contractors

The Contractor(s) retained for the project is responsible for being familiar with this CEMP, implementing the mitigation measures listed, and for ensuring their activities are in compliance with the requirements of the CEMP and applicable legislation and permits issued for the project. The Contractor is also responsible for the adherence of their sub-contractors to the environmental requirements set out in this CEMP. The Contractor is also responsible for the following:

- Implementing the Erosion and Sediment Control Plan (ESCP), prepared for specific activities of construction phases that include drawings indicating the location of sediment control measures (e.g., silt fence, catch basin protection, etc.), as shown in Appendix B
- Observing 'no go zones/areas' as delineated in the field, and applying activity specific BMPs listed in this CEMP when working in and round sensitive environmental areas
- Complying with all legislative and regulatory requirements, and applicable permits and approvals
- Complying with the contract documents and requirements of the CEMP

- Reporting and documenting all environmental incidents, as outlined in this CEMP
- Incorporating environmental protection strategies into the design and planned work practices
- Understanding the roles and responsibilities of the Environmental Monitor
- Correcting deficiencies and non-compliance upon direction from the Environmental Manager and other Project authorities
- Conducting routine visual checks on vehicles, fuels storage areas, and equipment at the start of each day to identify potential equipment leaks
- Remaining on call to respond to environmental issues
- Providing individuals that are appropriately trained and equipped to respond to environmental incidents, such as spills

2.2 Environmental Manager

The Environmental Manager will report directly to the proponent's Project/Development Managers. The Environmental Manager will be responsible for providing overall environmental management and coordination; roles will include environmental compliance tracking and reporting, managing the Environmental Monitor, and liaising with regulatory agencies and other authorities in accordance with the EMP. Additional responsibilities of the Environmental Manager include:

- Providing input into the preparation of the CEMP and other environmental submittals (e.g., notifications or permits)
- Reviewing environmental monitoring reports, identification of appropriate environmental performance indicators and other activities
- Overseeing and directing qualified environmental professionals, and reviewing the deliverables (including ESCPs and Contractor protection plans, if applicable)

2.3 Environmental Monitor

The Environmental Monitor will report directly to the Environmental Manager. The Environmental Monitor will liaise with the proponent's Project Manager, Project Civil Engineer (responsible for the ESCP), Contractor and applicable regulatory agencies, as required. The Environmental Monitor will be appropriately trained and demonstrate relevant environmental monitoring experience. The Environmental Monitor will measure key environmental indicators during routine monitoring to determine if work being conducted is in accordance with the CEMP. The Environmental Monitor will have the authority to halt works if an activity is considered to be causing, or likely to cause, unacceptable environmental damage or risk, until an appropriate solution has been developed. The Environmental Monitor will be on-Site during relevant periods of increased potential environmental impacts (e.g., in proximity to Schoolhouse Brook top-of-bank, severe rainfall events, etc.) to ensure appropriate mitigation efforts are in place. The Environmental Monitor will have the following responsibilities and authorities:

- Providing Site monitoring to assess whether or not construction is complying with the mitigative measures outlined in the CEMP. The frequency of the monitoring activities would be influenced by the type of construction activities and weather conditions.
- Completing inspections of erosion and sediment control measures (including water quality tests) to determine that they are working properly and effectively.
- Monitoring whether the Contractor and project works comply with federal and provincial permits, approvals, guidelines and regulations relating to environmental protection.
- Liaising with the Contractor and proponent's Project Manager to assist in planning (i.e., identify potential environmental issues and the appropriate mitigation measures).
- Attending Site meetings, as required, to maintain environmental communications between the project team.
- Conducting ad-hoc Site visits to address concerns raised by the project team.
- Informing the Contractor and the Environmental Manager immediately of construction activities that fail to meet the environmental requirements as described in the CEMP or that present an unacceptable risk to the local environment.
- Promote timely correction of environmental deficiencies by working directly with the Contractor, and/or the Project Civil Engineer if measures presented in the ESCP are not functioning as intended and potential adaptive measures or ESCP revisions that may be required.
- Additional responsibilities are also defined within specific environmental management plans.

3. ENVIRONMENTAL MANAGEMENT PLANS

The following Site and activity-specific environmental protection measures have been developed for those construction activities that have the potential to affect the environment. Mitigation measures focus on preventing adverse impacts to on-Site and off-site downstream waterbodies, as well as other local environmental values. The limits of construction activities will be clearly defined in the field prior to the start of works. The following sections identify specific environmental protection and mitigation measures to be undertaken by the Contractor during the Project.

3.1 Air Quality Management Plan

Construction activities may result in degraded air quality, as a result of exhaust emissions and dust generation.

3.1.1 Idle Reduction Strategies

The Contractor will reduce idling of construction vehicles and equipment whenever possible. The following strategies to improve air quality and reduce greenhouse gas emissions will be implemented during project work:

- Exhaust emissions:
 - Operational equipment that is not yet required to meet emission standards in Canada must be fitted with catalyzed particulate traps, to filter out particulate matter emissions and to reduce diesel odour emissions.
 - Diesel vehicles shall use ultra-low sulphur diesel fuel, when and where available.
- Restrict idling times during periods of inactivity, such as when vehicles are stopped in a queue, off-road equipment and heavy machinery is not being used, according to the following guidelines:
 - Motor vehicles and light trucks – one minute
 - Heavy duty diesel vehicles – five minutes
 - Diesel vehicles involved in construction Site passenger transportation – ten minutes
- Idling for more than the above times is permitted under the following circumstances:
 - When vehicles or equipment is forced to remain motionless because of traffic conditions or mechanical difficulties where the operator has no control
 - When bringing the vehicle or equipment to the manufacturer's recommended operating temperature
 - When the outdoor temperature is below 0°C or above 30°C and the operator or passengers are inside the vehicle and there are no auxiliary power sources available to provide temperature control
 - When it is necessary to operate auxiliary equipment that is located in or on the vehicle or equipment to accomplish the intended use of the vehicle or equipment (i.e., cranes and cement mixers)

- When the vehicle is detaching or exchanging a trailer
- When the vehicle or equipment is being repaired or engaged in repairing another vehicle, if idling is necessary for that task
- When the vehicle or equipment is queued for inspection, if idling is necessary for such inspection
- For designated emergency vehicles or any vehicle or equipment assisting in police, fire, or ambulance services
- When defrosting or de-fogging windows
- The Contractor shall reinforce the idle reduction initiative through signage and during toolbox, health and safety, and other meetings.

3.1.2 Dust Control

As extensive earthworks will be required during Site preparation, grading and excavation works, dust control will be required to prevent dispersal onto nearby vegetation and into drainages, and for protection of air quality. Mitigation of fugitive dust emissions will consist of the following strategies:

- Wind fences (made from geo-textile or other material and modular fencing) may be used for those sources that are exposed to winds and for which watering and compacting does not reduce fugitive dust emissions
- If there has been no rain for seven days and the surface is not damp, watering may be conducted, contingent on municipal or regional water restrictions. A simple test for dampness is to take a handful of material and squeeze it tightly. The sample is “wet” if water squeezes out, “damp” if it holds its shape or “dry” if the sample will not hold shape and crumbles. Note that over watering should be avoided to reduce the risk of runoff from access routes and surface being graded
- Watering of an area can cease if the surface has crusted or there is no evidence of fugitive emissions by visual observation
- Street cleaning and/or sweeping will be conducted if sediment is seen to be tracking off-Site or accumulating on Albert or St. Johns Streets
- The Environmental Monitor should attend the Site if and when construction activities and weather conditions have potential to cause migration of airborne dust, to assess the risk of dust migration and provide guidance with respect to implementation of mitigation measures

3.2 Stormwater Management, and Erosion and Sediment Control Plan

Project works should be conducted in a manner to avoid adversely impacting surface water flows in downstream catchment areas. The Contractor shall manage surficial flows through appropriate Site preparation and planning to prevent severe flows of stormwater, or stormwater in exceedance of the criteria outlined in Section 3.2.2 from entering downstream watercourses.

3.2.1 Stormwater Management Plan

Site preparation, grading and excavation activities should be planned to occur during seasonally dry periods when stormwater runoff is minimal. In the event dewatering of accumulated stormwater is required, the following management measures should be followed to minimize water quality impacts to downstream receiving waterbodies:

- Minimize alteration or disturbance of the existing natural surface water flows from the project Site
- Prevent concrete leachate, runoff, or wash waters from entering watercourses. Pre-cast concrete should be used when possible
- Where possible, maintain permeable surfaces to enable infiltration of stormwater
- Excess runoff accumulated is to be pumped to the treatment system prior to being discharged off-site.
- Installation of gravel check dams during Site preparation works can be installed in constructed stormwater drainages to allow pumped water to settle out prior to entering treatment system and entering off-site drainages. The utilization of on-Site ditch and check dams is expected to aid in maintaining compliance with downstream and off-site water quality criteria during construction.
- Settling ditches are to be connected to an approved discharge point (i.e., culvert outfall)
- Pumped or discharged water will meet the water quality criteria outlined in Section 5.9.2
- When pumping, discharge water over tarps, poly, or through a diffuser (e.g., perforated pipe) to prevent erosion or scouring
- Gravel check dams are to be removed following the completion of project works
- Installation of protection devices around catch basins and manholes during construction to protect water quality leading to watercourses

3.2.2 Water Quality Criteria

Sediment-laden or alkaline runoff from excavation and construction areas has the potential to adversely impact downstream water quality in Schoolhouse Brook. Stormwater runoff from on-Site construction area will be directed to a water treatment system for appropriate treatment before being discharged off-site, as shown on the project ESCP (Appendix B).

Surface water quality in all receiving waters must adhere to the applicable water quality criteria from the City of Port Moody, BC Water Quality Guidelines (BCWQG) and the DFO Land Development Guidelines for the Protection of Aquatic Habitat (1992) during project works.

The following criteria must be adhered to and will be used for comparison with water quality results measured by the Environmental Monitor. Runoff and discharge from the Site must:

- Contain less than 25 mg/L of Total Suspended Solids (TSS) above receiving environment background levels during normal dry weather during the months of May to September

- Contain less than 75 mg/L of TSS above receiving environment background levels during rainfall events of >25 mm in 24 hours during the months of October to April
- Turbidity may be measured as a proxy for TSS, insofar as levels remain below 25 NTU, turbidity levels that exceed 25 NTU may require laboratory testing for TSS
- Not exceed 8 Nephelometric Turbidity Units (NTU) above background over a 24-hour period in all waters during clear flows
- Not exceed 2 NTU above background for a duration of 30 days in all waters during clear flows
- Not exceed 5 NTU above background ranges from 8 NTU to 50 NTU during high flows or in turbid waters
- Not exceed 10% above background ranges >50 NTU at any time during high flows or in turbid waters
- Be within the acceptable pH range of 6.5 – 8.0 for protection of freshwater aquatic life

3.2.3 *Erosion and Sediment Control Plan*

The Erosion and Sediment Control Plan (ESCP) provided in Appendix B details locations for sediment control measures including silt fence, catch basin filters, a northern and eastern interceptor swales directed to a temporary silt trap at the northeast corner of the Site, a water treatment system at the northwest corner of the Site, and gravel access pad from Albert Street. The following measures will be implemented in accordance with the ESCP to prevent impacts from erosion and sedimentation:

- Minimize disturbance of vegetation as a first defense in the control of erosion and sediment release, specifically in ESA and riparian restoration enhancement areas
- Minimize trenching, grading, benching and scarification in accordance with the design drawings
- Use swamp pads where necessary to minimize soil/sediment disturbance and erosion, especially on soft soils
- Take reasonable care to avoid damage to graded and/or planted/seeded areas
- Plan construction activities to minimize the generation of sediment-laden water within the work Site (i.e., by staging work and/or only undertaking that portion that can be reasonably completed within a work shift)
- Restrict construction during periods of heavy precipitation to minimize soil erosion and potential off-site sedimentation
- Install silt fencing at the toe of slopes and up-gradient of watercourses
- Cover temporary fills or stockpiles with polyethylene sheeting or tarps
- Locate stockpiles away from riparian protection areas
- In wet conditions, erosion control should be implemented immediately upon completion of any earthwork operations
- Redirect the flow of water away from bare areas and steep slopes

- Line drainage swales with erosive resistant material and place straw wattle berms at regular intervals to reduce the erosive energy of runoff
- Silt fence will be installed along the southern riparian setback line and extent of clearing/grading, as needed to prevent sediment-laden runoff from entering Schoolhouse Brook
- Sediment filters will be installed on new catch basins and will regularly remove accumulated sediment from filters during dry weather
- Clean fill, lacking fine sediment will be used for infilling. Fill will be inspected for fine sediment before being used or stockpiled
- Exposed slopes or stockpiles will be covered (e.g., with polyethylene sheeting) to prevent erosion
- Prevent mud/sediment from tracking onto adjacent street and use street sweepers (vacuum only – no flushing) as required
- Environmental monitoring and water quality testing will be conducted to confirm that sediment control measures are functioning properly and to provide guidance to assist the Contractor in promptly correcting deficiencies if required

3.3 Vegetation and Invasive Species Management Plan

Vegetation proposed for clearing is secondary mix forested area with understory comprised of both native plant species and invasive species (i.e., Japanese knotweed, Himalayan blackberry, etc.). In order to protect vegetation and prevent dispersal of invasive species, the Contractor shall abide by the following measures:

- Delineate Phase 1 areas of vegetation clearing in the field. A temporary high-visibility exclusion fence (i.e., snow fencing) no less than 1.2 m high should be installed around trees designated for retention at the base of the tree root protection zone, and around the perimeter of the clearing area (Appendix C).
- Not destroy, remove or clear trees and shrubs to any extent greater than is absolutely necessary for the performance of the restoration works, or to any greater extent than has been authorized (i.e., native species within the treed area should be retained where possible).
- Ensure that machine operators take extra care when backing up or swinging around to avoid damaging boles or overhanging limbs when working near trees to be retained (Appendix C)
- Utilize geotechnical fabric, coconut matting or other forms of slope stabilization after clearing if planting cannot take place immediately, to reduce erosion and suppress invasive species regrowth
- An Environmental Monitor will monitor invasive species removal
- In addition to only hand tools being used in treed area, an ISA certified arborist will monitor vegetation removal, grubbing and replanting activities being conducted in proximity to existing trees to be retained. This is expected to minimize damage to the trees and their root systems.
- Take care when clearing vegetation to maintain slope stability to minimize sloughing and soil erosion

- Riparian restoration planting will occur promptly following completion of construction works to minimize soil erosion and invasive species re-growth. Selected plant species and container size for riparian restoration planting will follow specific planting plans or project landscape plans. An Environmental Monitor will be present during riparian planting activities to allow for Site specific plant placement adjustments to be made. Planting will be “site fit” and placed to minimize disturbance to root zones of existing trees that are to be retained.
- As shown in Figure 1, high-density invasive species along the northwestern portion of the Site (primarily Himalayan blackberry) is to be controlled using intensive removal methods as stipulated in this plan, followed by replanting in conjunction with the planting plan. Japanese knotweed off-Site along the northeast corner will be treated using chemical or mechanical methods. Low intensity invasive species removal (primarily English ivy and other invasives) will take place along the southern portion of the Site, as well as the City right-of-way connecting to St. George Street. Below are detailed recommendations for the removal of individual plant species, with description of applicable low and high intensity removal methods.

3.3.1 Japanese Knotweed

Japanese knotweed is present along the boulevard of Albert Street, east of the Site boundary. Although located off-site, there is potential for knotweed roots to have extended onto the Site. Japanese knotweed typically requires multiple herbicide applications to kill the plant completely, therefore, it is recommended that chemical knotweed treatment by a professional applicator be conducted during the growing season prior to construction and vegetation removal. In the event that live knotweed roots are present within the project footprint prior to construction, the following BMPs should be implemented to appropriately remove the knotweed:

- Collaborate with other organizations (e.g. Invasive Species Council of BC or Invasive species Council of Metro Vancouver) regarding up-to-date methods for knotweed control, disposal, treatment, and practices.
- If herbicide treatments over multiple growing seasons are not feasible, mechanical excavation of the plants and root system, in conjunction with on-going environmental monitoring under the guidance of a professional biologist (QEP), will provide the most effective control of Japanese knotweed for the Site. Mowing or cutting is not recommended due to the increased risk of spread to other area.
- Where knotweed and soil removal is required, an Environmental Monitor trained in knotweed root identification should be present to assess the extent of soil contamination and to assist the contractor in targeting and removing knotweed roots and immediately adjacent soils. Typically, soil within 10 m horizontally and 3 m vertically below grade of a knotweed stem should be considered ‘contaminated’ and managed/disposed separately from other Site soil.
- Stems of existing plants on the Site are to be hand cut as low as possible ensuring that stems or root fragments are not scattered. Mechanical excavation can be used and go approximately 2 m deep with constant checking for the presence of root growth in the bottom of the excavation. The resulting excavations should be backfilled with clean inert fill and compacted.
- Knotweed cuttings should be placed in enclosed bags that will be taken to a commercial facility for disposal using one or both of the following methods:

- Knotweed cuttings will be placed into haul trucks that will have tarp covers and sent to a disposal facility where they will be destroyed
- Excavated soil potentially containing knotweed will be hauled by dump truck to an approved disposal site where it will be destroyed or buried at least 6 m deep
- Use separate trucks for hauling versus backfilling to prevent cross-contamination
- Material remaining after vehicle or equipment cleaning will be contained, collected and disposed of along with other Japanese knotweed material (soil/clippings)
- On-site handling of the knotweed-contaminated materials, including excavation of soils within the vicinity of the knotweed patch, should be supervised full time by an experienced environmental monitor experienced in invasive knotweed removal acting under the direction of a Qualified Environmental Professional (QEP)
- Infested areas will be restricted to vehicles and equipment used in removal/excavation, which will be inspected for loose soil and plant material before leaving the infested area, and thoroughly cleaned if required
- Delineate infected area with temporary exclusion fencing or tape to minimize spread of seeds and plant material to other project areas.
- Conduct environmental monitoring during and following removal/treatment of Japanese knotweed
- Continue application of an approved herbicide (foliar spray) by a certified pesticide applicator on any knotweed regrowth, in accordance with the notification requirements of the BC Integrated Pest Management Act.

3.3.2 *Himalayan Blackberry*

High intensity blackberry removal efforts along the northwest side of the Site during initial clearing to remove as much of the blackberry root material as possible, may require use of an excavator, brush cutters or equivalent, with due care and attention required when working around slopes and existing native vegetation to be retained. The method of removal should be determined in consultation with the Contractor and the Development Manager.

Blackberry removal should be avoided during the bird nesting season (March 1 – August 31), unless a QEP has conducted a bird nest survey a maximum of five days prior to clearing.

The following BMPs should be implemented when removing invasive blackberry:

- Adhere to no-go areas, which are to be clearly delineated prior to commencement of clearing
- Removal of blackberry will be monitored under the supervision of a QEP to confirm that invasive plants are removed in a manner that minimizes impacts to native species
- Contact an approved disposal facility prior to removal of the Himalayan blackberry to coordinate disposal
- Remove as much of the above ground blackberry stems as possible by mowing, brushing, or cutting, taking care not to disturb existing trees

- Use excavators and/or brush cutters, as high-intensity measures for removal of Himalayan blackberries and their roots to a depth of approximately 10-30 cm, where possible. It is important to remove the root crowns and as much of the roots as possible, without compromising the roots of existing trees that are planned for retention.
- Use due care and attention when grubbing and clearing near native trees to prevent root, bole and stem damage. Low-intensity removal with use of hand-held manual or powered equipment where possible when clearing blackberry material within the drip line of native trees while achieving a 10-30 cm root removal depth.
- When grubbing and clearing near trees marked to be retained, an Arborist will be present on Site monitoring the project works to prevent tree and tree root damage
- Shake soil loose from rhizomes and avoid plant material left in the soil, as blackberry can become re-established from root fragments.
- Use tarps, plastic sheets or equivalent to contain plant fragments for disposal separate from the soil, and dispose off-site at a facility that accepts invasive plant material.
- Geotextile fabric should be applied to the treatment area to suppress blackberry regrowth. Topsoil (30 cm deep) should be deposited over the geofabric and native tree and shrub species should be installed to restore the ecological function of the area, as described in the Planting Plan section of this report.
- Undertake compensation planting of native plant species immediately after clearing to suppress blackberry regrowth
- If planting cannot be conducted promptly, utilize coconut matting or other soil stabilization techniques along the bank to suppress the regrowth and minimize the re-establishment of Himalayan blackberry

3.3.3 *English Ivy*

English ivy was identified along the south and southwest portions of the Site, intermixed with the native plant community. It is proposed that English ivy will be treated using low-intensity methods (i.e., removed using hand tools) in order to preserve as much of the native plant community as possible. The following BMPs should be implemented when removing English ivy:

- Ivy vines should be cut and pulled from the ground, taking care to minimize damage to native shrubs.
- Ivy on trees should be cut at a comfortable height (e.g., 1.5 m). The rooted portion of the vine should be pulled by hand and the upper portion should be left to desiccate, as removal may harm the tree.
- Ivy should be segregated be loaded into a covered bin or truck hopper, and removed from Site for disposal at a facility that accepts invasive plants.
- The treatment area will be assessed following removal of ivy. If significant disturbance to the native plant community has occurred (i.e., less than one native plant remaining per m²) supplementary planting of native container stock will be conducted where needed.

3.3.4 Other Invasives

Invasives including cherry laurel, English holly, spurge laurel and small-flowered jewelweed were identified along the south and southwest portions of the Site, intermixed with the native plant community and English ivy. It is proposed that these invasives be treated using low-intensity methods (i.e., removed using hand tools) in order to preserve as much of the native plant community as possible. The following BMPs should be implemented during removal:

Cherry Laurel, Spurge Laurel and English Holly

- Stems should be removed and pulled out with root if possible, taking care to minimize damage to native shrubs. If roots cannot be pulled, the remainder of the stem should be cut as close to the ground as possible to reduce the likelihood of re-sprouting.
- Plants should be segregated be loaded into a covered bin or truck hopper and removed from Site for disposal at a facility that accepts invasive plants.
- Removal should take place in winter, spring, or early summer - outside the fruiting window to prevent spread. Repeat removal over multiple growing seasons may be required if plants re-sprout.
- The treatment area will be assessed following removal of these species. If significant disturbance to the native plant community has occurred (i.e., less than one native plant remaining per m²) supplementary planting of native container stock will be conducted where needed.

Small-Flowered Jewelweed

- Plants should be hand-pulled from the ground in their entirety, including the root system.
- Plants should be removed in spring, prior to seed capsule formation. Seeds are dispersed through physical contact with pods, are resilient and can easily be spread to colonize novel areas. It is recommended plants are removed during the flowering stage (May-June), to prevent misidentification with native *Impatiens* species.
- Plants should be segregated be loaded into a covered bin or truck hopper and removed from Site for disposal at a facility that accepts invasive plants. Plants exhibiting seed pods should be placed in plastic bags immediately upon removal, to promote safe transfer from the Site.
- The treatment area will be assessed following removal of jewelweed. If significant disturbance to the native plant community has occurred (i.e., less than one native plant remaining per m²) supplementary planting of native container stock will be conducted where needed.

3.4 Restoration Planting Plan

The on-Site Schoolhouse Brook RPEA and the portion of the ESA where removal of dense Himalayan blackberry is proposed, will be restored through planting of native shrubs and trees to support riparian habitat, wildlife and pollinators. The proposed planting areas are presented on Figures 2 and 3, and planting specifications are presented on Figure 4. Additional supplementary planting may be conducted in the ESA and riparian protection areas if required following removal of English ivy, as described in Section 3.3.

The existing asphalt and lock block wall will be removed, and following removal and regrading, topsoil (30 cm deep) should be applied to facilitate plant growth. Geotextile fabric should be applied in addition to topsoil in planting areas affected by Himalayan blackberry to assist in preventing regrowth.

Permanent riparian protection fencing will be installed around the RPEA and ESA perimeter to prevent accidental encroachment, as shown on Figures 2 and 3. The fencing will be aligned along the edge of the ESA and the proposed RPEA limit south of the building, and south along the eastern property line to tie-in with existing fencing at the Schoolhouse Brook headwall. The protection fence will consist of standard post-rail construction with a wire mesh fixed to the lower half to prevent access by dogs but allows for the movement of wildlife. A gate will be installed in the fence to enable access for the post-restoration monitoring program. A sign will be installed on the east side of the fencing that states “Environmentally Sensitive Area, Do Not Disturb” or similar.

Table 3-1 presents the native plant species proposed for restoration planting within the RPEA. These plants have been selected based on native plants observed on-Site, as well as ecologically beneficial species included in the BC Ministry of Environment Riparian Restoration Guidelines. Species have been selected to create a diverse vertical structure to support songbird nesting and provide a range of flowering times, which will encourage and extend the benefits for pollinators and insectivore bird species.

Table 3-1 Proposed Riparian Planting Plan Species List

Common Name	Scientific Name	Ecological Value
Trees		
Bigleaf Maple	<i>Acer macrophyllum</i>	Litter inputs, food source for pollinators, nesting habitat
Cascara Buckthorn	<i>Frangula purshiana</i>	Litter inputs, food source for pollinators, fruit bearing, nesting habitat
Douglas Fir	<i>Pseudotsuga menziesii</i>	Shade value, nesting habitat
Sitka Mountain Ash	<i>Sorbus sitchensis</i>	Pollinating flowers
Shore Pine	<i>Pinus contorta</i>	Adaptable to many sites, fast growing
Vine Maple	<i>Acer circinatum</i>	Shade value; sprouts from roots; autumn colour
Shrubs		
Mock Orange	<i>Philadelphus lewisii</i>	Spreading, fast growing, pollinating flowers
Nootka Rose	<i>Rosa nutkana</i>	Fruit bearing, deer resistant, slope stability
Pacific Ninebark	<i>Physocarpus capitatus</i>	Pollinating flowers/seeds, shade, slope stability
Beaked Hazelnut	<i>Corylus cornuta</i>	Fruit-nut bearing, spreading by suckers, pollinating flowers
Snowberry	<i>Symphoricarpos albus</i>	Fruit bearing, slope stability
Sword Fern	<i>Polystichum munitum</i>	Forage, prevents erosion, ground cover

The following criteria from the Riparian Restoration Guidelines were used in preparation of the Planting Plan (Figures 2 and 3):

- All plant material used in the restoration planting will meet current BC Landscape and Nursery Association Standards
- All riparian plantings should be based on 1 tree or shrub per 1 square metre density
- All tree/shrub species should be of guaranteed nursery stock
- The botanical name should be used when ordering stock to ensure that the desired native species is being purchased. Each specimen should be tagged with the botanical name and the tag should be left attached after planting
- Tree stock should be a minimum of 1.2 metres (4 feet) in height when purchased and planted 3 to 5 metres apart
- Stock planted during the fall (Sept.–Oct.) and spring (March–April) has the greatest likelihood of surviving. Regular watering may be required until the plants are established.
- Planting on a given area being enhanced must be successful to an 80% take. If more than 20% die over one year, replanting is necessary

3.5 Wildlife and Wildlife Habitat Management Plan

Vegetation clearing for the project is expected to be conducted during the least-risk timing window for songbird nesting (September 1 – February 28); however, there is high probability for the Site to be utilized by a variety of wildlife, based on the location adjacent to the vegetated Schoolhouse Brook riparian corridor. The following mitigation measures will be implemented to prevent potential impacts to wildlife:

- Avoid disturbance or harm to any wildlife, if present on-Site during construction work. This includes avoiding disturbance or harm to a bird, its eggs, or the nest of a bird when occupied by a bird or egg
- If vegetation clearing is conducted outside of the least-risk timing window for songbird nesting (September 1 – February 28), a nesting survey will be conducted by a qualified professional a maximum of three days prior to clearing. If an active nest is documented, a species-specific buffer will be established around the nest and clearing will not occur until it is demonstrated that juvenile birds have fledged and the nest is no longer active.
- Ensure safe and undisturbed passage through the Site for any wildlife encountered during construction activities
- Limit the use of machinery/loud noises if wildlife are present within the work area
- Use low-toxicity antifreeze and coolants in equipment to minimize the potential to affect wildlife that may stray on-Site after an unlikely malfunction or leak
- Dispose of garbage in secure bins and ensure that staging areas are clean and free of food items to avoid attracting wildlife on-Site (e.g., coyotes, raccoons, gulls and crows)
- Contact the Environmental Monitor in the event a wild animal is found trapped onsite or has taken up residence therein, and will not leave “willingly” (depending on the type of animal trapped, a professional animal control officer or company may be brought in to capture the animal and release it at an appropriate location outside of the work area)

3.6 Spill Prevention – Fuelling and Servicing Plan

The Contractor shall service or refuel vehicles and equipment in such a way that contaminants do not enter the Schoolhouse Brook, catch basins or any watercourse, and are not released to land. The following requirements are to be implemented during the Project activities:

- All machinery shall be free of excess oil and grease, and shall be in good mechanical order so that no leaks occur
- Equipment is to be inspected daily to ensure that it is leak-free or repaired prior to deployment
- Servicing and of equipment is to be done at the Contractor's yard, or at least 30 m from any waterbody
- All vehicles utilized for refueling will be equipped with automatic back-pressure shut-off valves, and nozzles should be kept locked at all times, except during refuelling. Spigots should be metal to prevent them being accidentally or intentionally damaged. A crew member is to remain in attendance at all times while refueling is being carried out.
- Fuel powered equipment should be stored/parked at least 30 m from waterbodies, if possible. Drip trays should be placed under vehicles and equipment being refueled
- All grease and oil required for maintenance will be properly applied. Any excess shall be cleaned up and disposed of in an environmentally appropriate manner, as shall all containers, lids, and contaminated cloths and applicators
- Refuelling of machinery, including portable generators and pumps, must occur away from roadside and site drainages, or be contained within a suitable pan
- Ensure that machinery working onsite is equipped with a spill kit
- Onsite oil spill response materials and equipment, such as absorbent pads, booms and leak proof containers, will be kept onsite in sufficient quantities and in an easily accessible location to contain and clean up the amount of fuel, oil or other petroleum hydrocarbons stored onsite. A detailed inventory list shall be located with the supplies.
- Used spill response materials will be bagged in heavy-duty polyethylene bags, labelled, and disposed of appropriately
- Waste containers will be appropriately labeled and stored in a secure location, protected from weather until removal and disposal can be arranged
- Waste oil or materials will be removed from site for appropriate disposal in accordance with Transportation of Dangerous Good requirements and the BC Hazardous Waste Regulation

3.7 Spill Response Plan

Under Section 1 of the MOE Spill Reporting Regulation, a "spill" is defined as a release or discharge of a substance in an amount equal or greater than that specified in the Schedule *Reportable Levels for Certain Substances* of this Regulation. The reportable quantities vary according to class of substance, ranging from any amount to 200 kg, depending on the nature of the material that has been spilled.

Activity specific environmental spill response plans will be developed and implement by the Contractor for operations based on the type and amount of equipment, and the activities using potentially deleterious substances. The purpose of these environmental spill response plans is to

identify potential risks at, or in proximity to, the Site. These plans will contain the procedures to facilitate rapid deployment of resources in the event of a spill and to minimize the impact and risk to the environment, the public and personnel onsite. The Contractor will be familiar with regulatory requirements and be adequately prepared to respond within the shortest possible time. A Spill Response Team will be assembled from suitably qualified members of the workforce at the work Site. Emergency preparedness must also be covered under the Contractor's own Occupational Health & Safety Program.

The Spill Response Plan will be posted in visible and strategic locations onsite, and all personnel made aware of its content and the location of response materials, emergency contact names and numbers. Fire extinguishers and other emergency spill response equipment and supplies must be kept in known and visible locations. Access to them will not be blocked by other materials or equipment. The locations of such equipment are to be made known during Site safety orientations, as locations may vary or change as the Project progresses.

All spills will be immediately reported to the proponent's Project Manager and the Environmental Monitor, regardless of its location within the construction zone, following the Spill Reporting Notification Chart below. In the event of a spill greater than 100 L (oil), in addition to all spills to water, the incident must immediately be reported to Emergency Management BC (EMBC) (formerly Provincial Emergency Program or PEP) at 1-800-663-3456 and/or EC at the 24-hour emergency telephone number 604-666-6100. EMBC will notify all concerned provincial and federal agencies. Spill response advice can be obtained from both EC and EMBC, as well as from Transport Canada's Chemical Accident Emergency Advisory Service at 1-800-613-9966.

The Contractor will implement the following mitigation measures to maintain adequate response in the event of a spill:

- Spill response materials and equipment, (e.g., absorbent pads, booms, leak proof containers) will be accessible in sufficient quantities to contain and clean up the amount of fuel, oil or other materials stored onsite. Used materials are to be replenished after an incident to maintain an adequate supply of spill response materials available onsite at all times.
- Used spill response materials will be bagged in heavy-duty plastic bags and any waste oil or other spill materials will be removed from Site, as soon as possible, in accordance with Transportation of Dangerous Goods requirements
- Waste containers will be appropriately labelled, stored in a secure location, and protected from weather until removal and disposal can be arranged
- Equipment operators and spill responders will review the Spill Response Plan regularly to certify it is up to date and all required materials are accessible onsite

3.7.1 Spill Response Plan Template

The following Spill Response Plan is provided as a template for developing Site-specific spill response plans for Project locations and activities. The Contractor should have its own Spill Response Plan, while the subcontractors should have their own plan. Contacts must be updated to include the Contractor, proponent's Project Manager, Environmental Manager and Environmental Monitor.

SPILL RESPONSE PLAN

If a spill of fuel, oils, lubricants or other harmful substances occurs at the Site, the following procedures are to be immediately implemented.

1. ENSURE SAFETY

- Prioritize critical issues
- Use appropriate personal protective equipment (PPE)
- Follow safe work procedures
- Consult Material Safety Data Sheets (MSDS) & appropriate safety standards

2. STOP THE FLOW (when and where possible)

- Act quickly
- Close valves, shut off pumps, plug leaks, upright containers
- Carry out any emergency repairs

3. SECURE THE AREA

- Limit access to spill area
- Essential personnel only
- Eliminate ignition sources

4. CONTAIN THE SPILL

- Protect drains, sewers, culverts, waterways and ditches, as required
- Contain spilled product with sorbents, booms, earth and/or sod
- Identify all potential spill sources and extent of the spilled material
- Monitor containment measures
- Stabilize the spill and get assistance

5. NOTIFY/REPORT

- All spills regardless of size, must be reported to the Environmental Manager and proponent's Project/Development Manager
- Notify Contractor's Supervisor or Environmental Manager and Environmental Monitor as soon as possible
- For spills greater than 100 L, the first external call will be made to (see *spill reporting requirements below*): EMBC 1-800-663-3456 (24 hours)

Reportable Quantities

SUBSTANCE:	AMOUNT	REPORTABLE TO:
Oils	> 100 litres	EMBC
	Any spill amount into water	EMBC, DFO & MoE
Special Wastes:		
PCB Oil	any amount > 2 ppm PCB	EMBC
Corrosive	> 5 kilograms	EMBC
Hazardous, e.g., pesticides/Herbicides	> 5 litres	EMBC

Note: If in doubt regarding spill size, affected environment, material involved or whether reportable, then err on the side of caution and report the spill.

A list of emergency contacts will be posted in strategic locations along with the Spill Response Plan (contacts will be updated as required).

6. CLEAN-UP

- Remove contaminated soil and collect clean up supplies/materials
- Label and store waste appropriately in a secure location until disposal can be arranged
- Store waste materials in leak-proof, sealed containers and ensure they are protected from the weather
- Restore site as required
- Notify property occupant or property owner, if readily identifiable and available

7. SPILL REPORT

The spill report will include the following information:

- Name and phone number of person reporting the spill
- Name and phone number of person involved with the spill
- Location and time of the spill
- Type and quantity of material spilled
- Cause and effect of spill
- Details of action taken or proposed to contain the spill and minimize its effect
- Names of other persons or agencies advised
- Identify corrective measures that can be implemented to prevent similar future spills, if applicable

3.7.2 *Environmental Incident Reporting*

An environmental incident is defined as one that has caused, or has the potential to cause, one or more of the following:

- Environmental damage
- An adverse effect on fish, wildlife or other environmental resources
- Heightened publicity associated with a negative effect on the environment
- Legal action with respect to environmental non-compliance and/or damage

The following actions are important when preparing an Environmental Incident Report (EIR):

- Immediate action must be taken to minimize environmental consequences and manage resolution of the incident.
- Liaise with proponent's Project/Development Manager/Environmental Manager/Environmental Monitor regarding the incident
- Gather information on the causes to facilitate prevention of future incidents.
- Prepare a written EIR, within 24 hours of the incident regardless of working days or not, to describe the occurrence, summarizing events, actions and recommendations for future avoidance.
- Submit the EIR to the Environmental Manager and other project authorities
- Prepare updates to the EIR (i.e., possible corrective actions), as necessary, and submit them to all representative parties

3.8 **Waste Management Plan**

The Contractor shall comply with applicable laws, regulations, permit conditions and requirements when disposing of wastes generated by the project, including but not limited to general garbage and trash, hazardous wastes (such as used paint or waste batteries), waste oil, or other materials not authorized for on-Site disposal. At no time shall any waste material be allowed to enter the riparian protection area or aquatic environment, or be discarded or abandoned on land. The Contractor shall be responsible for assuring that all reasonable efforts are implemented to eliminate or minimize waste production. In addition, only facilities approved by authorities having jurisdiction may be used for disposal or recycling of waste. The following potential impacts related to waste management during construction have been identified:

The Contractor shall follow the mitigation measures in the following subsections to prevent adverse environmental impacts related to waste.

3.8.1 *Garbage and General Waste*

All non-hazardous and non-toxic garbage, such as paper, paper products, wood, plastic, glass, and discarded food items, shall be stored in closed, leak-proof storage bins that are secure against nuisance wildlife. Materials which can be recycled, such as paper and cardboard

products, glass bottles and plastic and metal containers, will be sorted and recycled appropriately. The Contractor is responsible for the proper collection and transportation of garbage and recyclable waste to disposal facilities (i.e., sanitary landfill or appropriate recycling facilities, where available).

3.8.2 Recyclable Materials

Recovered recyclable materials will be taken to an appropriate recycling facility for handling and/or shipping to another location, where it will be recycled and re-used in other products, if feasible.

3.8.3 Sanitary Wastes

Portable sanitary facilities may be required on-Site during project works. These facilities will be serviced on a regular basis and the waste disposed at permitted treatment facilities. The Contractor will supply and service chemical toilets in construction areas. Portable sanitary facilities will be located at least 30 m from a watercourse/wetland, and will be tied down or anchored, such that they cannot be blown or tipped over, under reasonable conditions.

3.8.4 Equipment-related Wastes

For equipment related waste, the following measures should be adhered to:

- Used oil filters will be drained into a waste oil container and drained filters placed in an appropriate labelled container (i.e., drum) before disposal at a recycling facility or other approved facility.
- Waste-oil and antifreeze will be collected and recycled/disposed of at an approved facility.
- Used acid-lead batteries, if required, will be stored on an impervious surface, under cover, and disposed of at an approved recycling facility.

3.8.5 Hazardous Wastes

It is the Contractor's responsibility to determine whether any waste generated during the work has any hazardous or toxic characteristics, or is identified as a "Hazardous Waste" by BC Ministry of the Environment and Climate Change Strategy (MOE), Environment and Climate Change Canada (ECCC), or any other authority having jurisdiction, and to treat this material appropriately. The Contractor will also implement the following measures for management of Hazardous Wastes:

- The Contractor shall review the lists of Hazardous Wastes, as defined by MOE and ECCC to determine if any waste generated during construction is hazardous.
- If the waste item cannot be found in published Hazardous Waste lists, the Contractor shall determine if the waste displays a characteristic which would make it hazardous.
- The Contractor will review and comply with the Standards Applicable to Transporters of Hazardous Waste as defined by MOE and ECCC.

- Hazardous Waste shall be treated/disposed of in authorized facilities, permitted under regulations as defined by MOE and ECCC. The Contractor shall identify potential facilities for waste disposal and evaluate each facility's legitimacy, compliance with regulatory requirements and capacity. After selecting a facility, the Contractor shall periodically check and verify that the facility is properly handling and disposing of the Hazardous Waste.

3.9 Noise and Vibration Management Plan

Activities associated with project works can pose a concern to health or hearing, and wildlife (e.g., excavation, densification, etc.). The following strategies are provided in order to limit unnecessary disturbance:

- The use of back-up beepers should be minimized, particularly during twilight and dark hours, as long as compliance with regulatory requirements is maintained.
- Idling equipment, should be turned off when not in use and in compliance with emission-reduction strategies.
- Equipment should be operated at the minimum engine speeds that still provide for effective operation.
- Equipment or processes should be employed that have additional noise control features, such as better mufflers and enclosures on diesel- or gas-powered equipment or exhaust silencers on air tools.
- Machinery should be in good condition prior to construction and that contractors should not utilize excessively noisy equipment. Regular maintenance must be undertaken on all equipment, including lubrication and replacement of worn parts, especially exhaust systems.
- The quietest piece of equipment that is available should be used to conduct a task where feasible (i.e., utilize hydraulic-powered rather than pneumatic-powered equipment).
- All on-Site workers should be trained to be aware of noise issues and how to minimize noise emissions where possible.
- Communication and mitigation measures should be directed to local residents, who may transit or use the project area, in order to minimize negative community response to noise created by construction. In order to lessen any negative perceptions, the residents may have about noise impacts from construction activities, the following actions may be taken:
 - Keep residents informed about the project, its purpose and benefits, its local construction schedule, including when the periods of greatest noise may occur, and what is being done to minimize the noise as much as possible
 - Ensure that a public relations contact is available by phone at all times to respond directly to any concerns
 - Complete the project as efficiently and quickly as possible in order to limit the length of time that local residents and wildlife are exposed to noise and/or vibration disturbances

The applicable Port Moody Noise Bylaw restricts work to daytime during the hours of 7 am to 8 pm Monday to Saturday, and 9 am to 6 pm on Sundays or statutory holidays. Should there be the need for continuous noise outside of these hours, the Contractor must obtain approval through the City by contacting the Development Manager.

4. ENVIRONMENTAL MONITORING PLAN

4.1 Environmental Compliance Monitoring During Construction

Environmental monitoring and reporting will be conducted by a QEP or an experienced monitor under the direct supervision of a QEP for the duration of project works. The Environmental Monitor will observe invasive removal, Site grading and riparian restoration for compliance with mitigation measures in this CEMP, the project ESCP (Appendix B), and other applicable environmental regulations.

Environmental monitoring visits will be conducted at the following minimum frequency:

- Full-time monitoring will be conducted during along the top-of-bank prior to installation of erosion and sediment control measures (i.e., protective silt fencing), and until it is demonstrated Site conditions are maintained and in compliance with the projects mitigation measures
- Weekly for works occurring above the high-water mark, including, but not restricted to, grubbing, invasive species removal works, and restoration planting
- After significant rain events (25 mm within 24 hours) while exposed soils are present

The Environmental Monitor will maintain field notes and a photographic record documenting environmental conditions, water quality data, and environmental issues. These records will form the basis of environmental monitoring reports, which will be prepared and submitted to the project team on a minimum weekly basis (or more frequently during sensitive works). Reports will include a list of construction activities, the results of water quality testing, environmental observations and recommendations, and representative photographs. Events of non-compliance will be tracked with the measures taken to correct those deficiencies.

During the monitoring visits, the Environmental Monitor will:

- Meet with the Contractor's supervisor to discuss recent and pending work, as well as potential environmental issues and appropriate mitigation measures to be considered
- Provide technical assistance on environmental matters to construction staff
- Provide assistance in the event of spills or environmental incidents
- Inspect the on-Site and off-site works areas, taking notes of construction activities and the potential for adverse environmental effects
- Take representative photographs of project activities and any environmental protection measures implemented, as well as any other notable features or incidents
- Inspect sediment and erosion control works for effectiveness and recommend additional measures on an as-needed basis
- Measure water quality upstream and downstream of works
- Suspend activities if it appears that permit or approval conditions are not being followed, and work with the Contractor to correct deficiencies so work can resume promptly

4.2 Post-Construction Habitat Monitoring and Maintenance

A five-year post-restoration monitoring program will be conducted by a QEP to demonstrate that the restoration area is stable (e.g., invasive species regrowth is being removed and re-establishment not occurring within restoration areas) and functioning as intended. The post-construction monitoring will involve conducting surveys twice annually to assess whether the objectives of the restoration plan are being met. Restoration planting in a given area should be successful to an 80% take. If deficiencies in the restoration works are documented through the monitoring program, adaptive management will be implemented to correct the issue and achieve the restoration goals.

During the monitoring visits, the Environmental Monitor will:

- Sample a subset of the planting areas that are representative of the restoration area to determine percent survivorship
- Assess whether plants appear to be exhibiting drought stress
- Document general health and vigor of plantings
- Document wildlife or fish observed within the restoration area
- Document occurrence of invasive plant, including species, location, and extent
- An annual report summarizing the monitoring visit will be provided to the Project team for a period of five years. The report will include percent survivorship and recommend the number of replacement plantings required to achieve or exceed 80% survivorship. Continuation of watering practices past the initial two years will be assessed and extended if signs of drought stress are observed. The monitoring report will be submitted in a timeframe that allows for the facilitation of fall planting.

4.2.1 Watering Plan

Watering of plants in restoration areas where planting is to occur, will be conducted over at least the first two growing seasons to support plant health and prevent drought-related mortality. It is understood that municipal or regional watering restrictions will be adhered to when planning watering events.

The following watering plan will be implemented:

- Plants will be watered at a minimum frequency of every ten days from April 1 to July 31, and every fifteen days between August 1 and September 15 during the first year
- Plants will be watered at a minimum frequency of every twenty days from April 1 to July 31 and will be watered at least once between August 1 and September 15 during the second year
- During warm periods, watering will occur in the morning or late evening to avoid loss through evaporation
- Planting areas and soil moisture will be monitored during the growing season and watering frequency will be increased if plants begin to exhibit drought stress, (e.g. wilting)

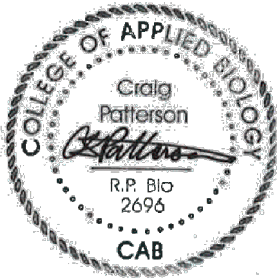
5. PROFESSIONAL STATEMENT

This report has been prepared and reviewed by Keystone Environmental Ltd. approved personnel who have the credentials and knowledge of the applicable public laws, regulations and/or policies which apply to this report.

Findings presented in this report are based upon (i) reviews of available documentation and discussions with available personnel and regulatory representatives, (ii) review of available records and the terms and conditions for the planned construction, and (iii) observations of the on-Site and off-site areas, and surrounding lands. Consequently, while conclusions and recommendations documented in this report have been prepared in a manner consistent with that level of care and skill normally exercised by other members of the environmental science and engineering profession, practising under similar circumstances in the area at the time of the performance of the work, this report is intended to provide information and to suggest mitigative strategies to reduce, but not necessarily eliminate, the potential for environmental impacts to occur as a result of planned construction activities. This report is meant to be a living and flexible document that can be used to provide guidance in the environmental assessment process.

This report has been prepared solely for the internal use of Marcon Albert (GP) Ltd. and its Contractor (s) / subcontractors pursuant to the agreement between Keystone Environmental Ltd. and Marcon Albert (GP) Ltd. Any use which other parties make of this report, or any reliance on or decisions made based on it, are the responsibility of such parties. Keystone Environmental Ltd. accepts no responsibility for damages, if any, suffered by other parties as a result of decisions made or actions based on this report.

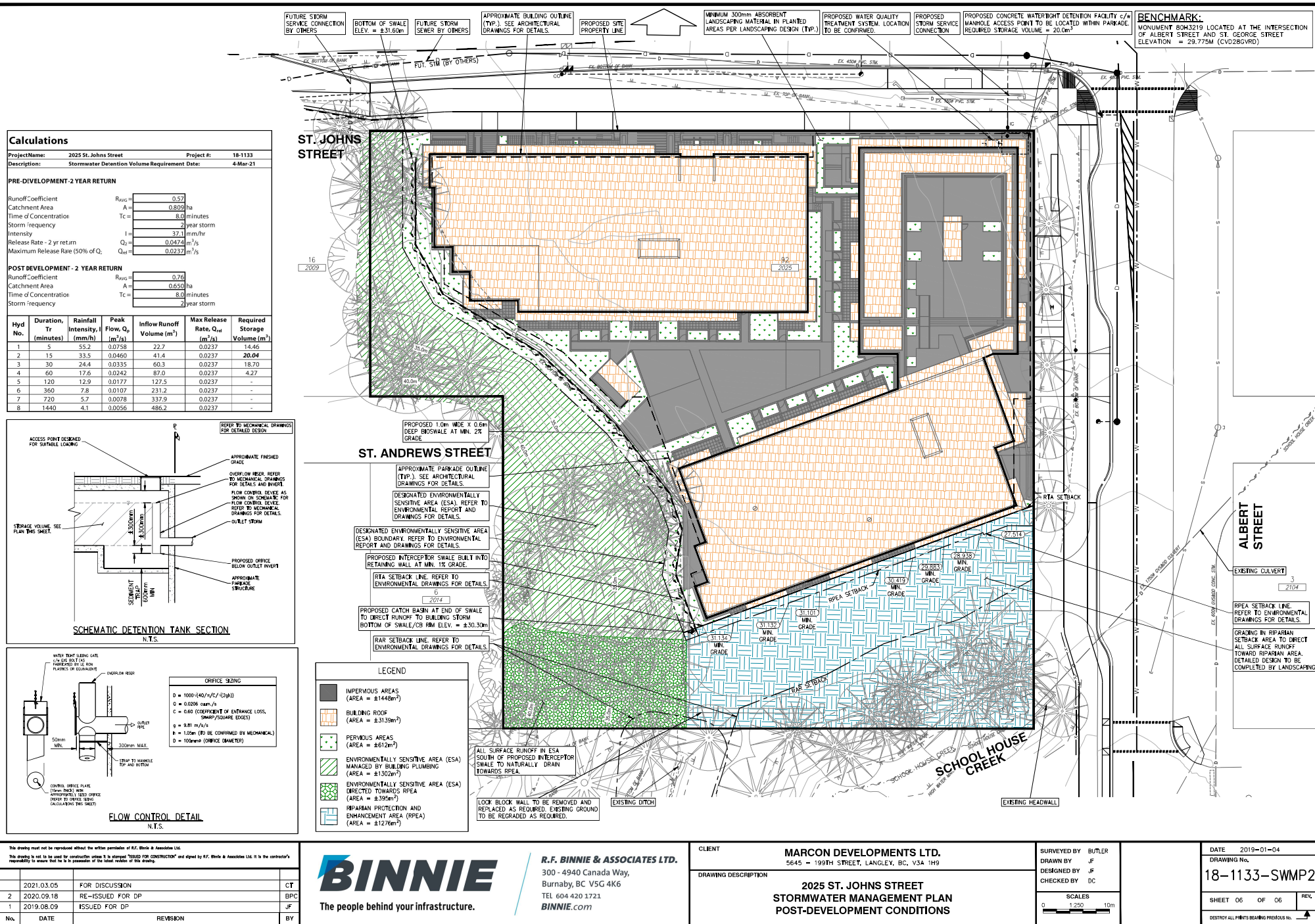
April 18, 2022
Date



Craig S. Patterson, R.P. Bio.
Project Manager

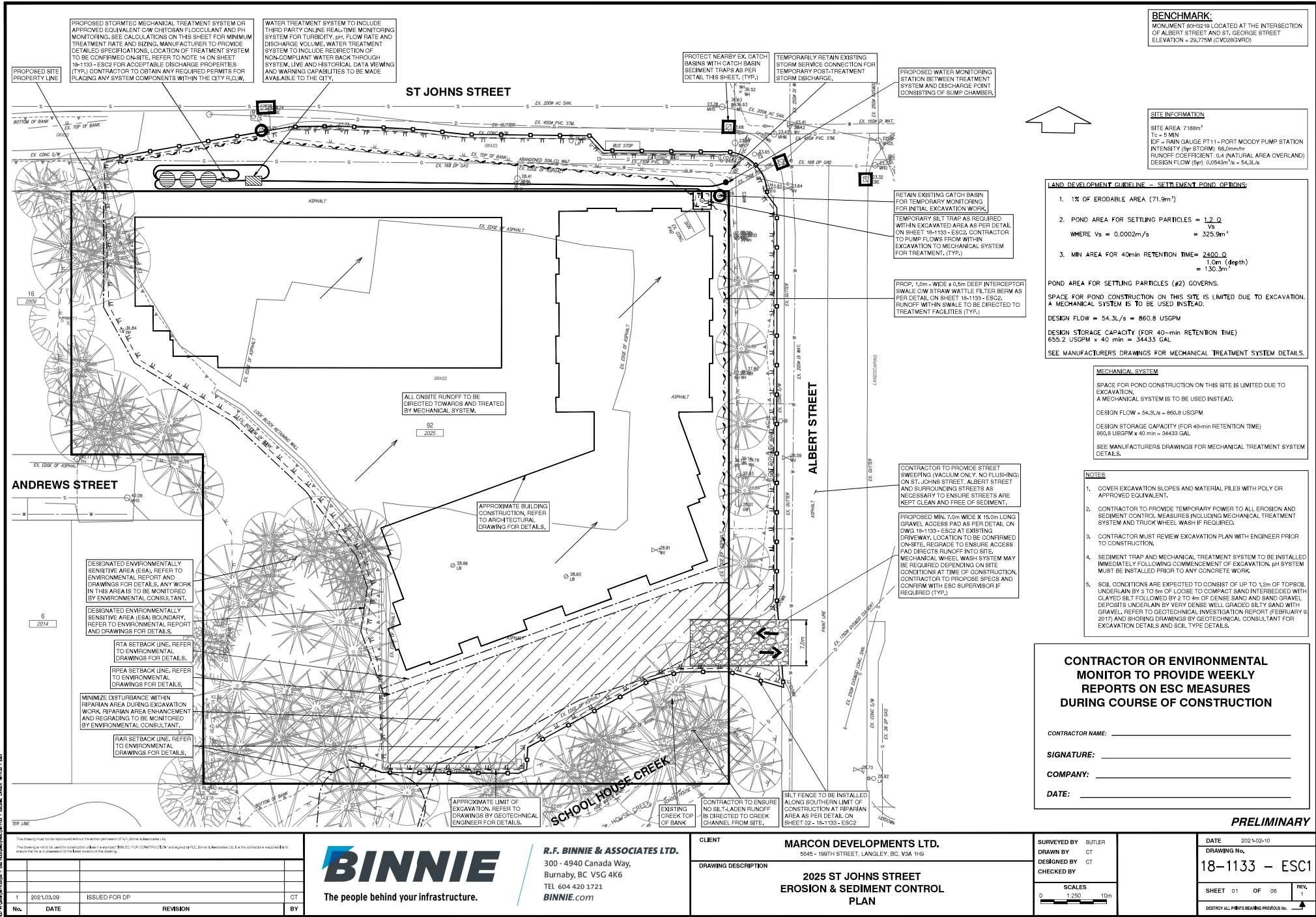
APPENDIX A

STORMWATER MANAGEMENT PLAN POST-DEVELOPMENT CONDITIONS RF BINNIE & ASSOCIATES LTD



APPENDIX B

EROSION AND SEDIMENT CONTROL PLAN RF BINNIE & ASSOCIATES LTD.



GENERAL NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT ALL ESC WORKS TO THE REQUIREMENTS OF THE CITY OF PORT MOODY, THE PROVINCIAL MINISTRY OF ENVIRONMENT, THE FEDERAL FISHERIES & OCEANS CANADA, AND OTHER AGENCIES.
2. EVERY CONSTRUCTION SITE WHERE ESC MEASURES ARE IN EFFECT MUST HAVE A SIGN POSTED IN A CLEARLY VISIBLE LOCATION FOR THE DURATION OF CONSTRUCTION. THE SIGN MUST CLEARLY STATE THE NAME AND CONTACT INFORMATION OF THE OWNER OR CONTRACTOR'S ESC PLAN DESIGNER AND THE ESC OR ENVIRONMENTAL MONITOR. THE SIGN MUST ALSO INCLUDE THESE CONTACTS AT THE CITY OF PORT MOODY.
- 2.1. ENVIRONMENTAL TECHNOLOGIST, 604-469-4500
- 2.2. CITY OF PORT MOODY WORKS YARD, 604-469-4574
- 2.3. INFRASTRUCTURE ENGINEERING TECHNOLOGIST, 604-469-4727 (FOR LAND DEVELOPMENT PROJECTS)
- 2.4. PROJECT ENGINEER, 604-469-4609 (FOR CAPITAL PROJECTS)
3. THE CONTRACTOR SHALL STOCKPILE, ON-SITE AT VARIOUS STRATEGIC LOCATIONS, ADEQUATE SUPPLIES OF ALL MATERIALS REQUIRED TO PROTECT DOWNSTREAM WATERCOURSES FROM DELETERIOUS SPILLS.
4. ALL VEHICULAR ACCESS TO THE SITE IS TO BE VIA EXISTING ROADS OR CLEAN GRAVEL SURFACES.
5. ALL EXCAVATION, STOCKPILING, AND GRADING TO OCCUR IN A MANNER THAT MINIMIZES DISTURBANCE TO EXISTING VEGETATION.
6. UPON INSTRUCTION/NOTIFICATION BY THE ESC SUPERVISOR, PERSONS RESPONSIBLE ARE REQUIRED TO UNDERTAKE MAINTENANCE ACTIVITIES AS SPECIFIED TO MODIFY OR MAINTAIN ESC FACILITIES.

SOIL STOCKPILES:

7. THE CONTRACTOR SHALL COVER ANY SOIL STOCKPILES AND EXPOSED EARTH FILL SLOPES WITH 6 MIL POLYETHYLENE. NO SOIL IS TO BE STOCKPILED WITHIN TREE RETENTION AREAS.
8. THE CONTRACTOR SHALL PLACE SILT FENCING AROUND SOIL STOCKPILES AT THE TOE OF EARTH FILL SLOPES.

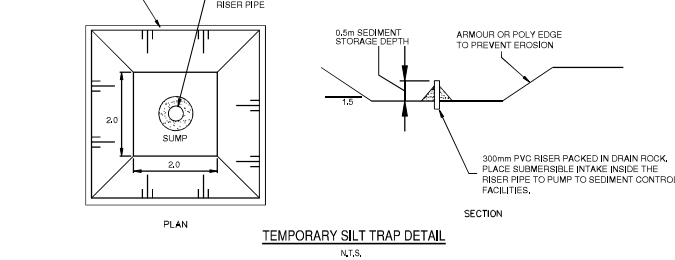
MONITORING PROGRAM

9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL ESC WORKS DAILY UNTIL CONSTRUCTION IS COMPLETE. THIS INCLUDES CATCH BASIN SEDIMENT TRAPS AND CURB LINES.
10. THE CONTRACTOR SHALL CORRECT ANY DEFICIENCIES IN ESC WORKS IMMEDIATELY. IF THE CONTRACTOR FAILS TO CORRECT THE DEFICIENCIES, THEY MUST BE CORRECTED BY THE OWNER, OR THE CITY OF PORT MOODY WILL CORRECT THE DEFICIENCIES AT THE CONTRACTOR'S EXPENSE.
11. AFTER EVERY SIGNIFICANT RAINFALL, THE CONTRACTOR SHALL CLEAN OUT ALL ESC WORKS, AND ANY VISIBLE DAMAGE TO THE WORKS FROM RAINFALL MUST BE REPAIRED IMMEDIATELY. WHEN REMOVING SEDIMENT, PLACE IT WHERE IT WILL NOT ENTER A STORM DRAIN OR WATER COURSE, AND WHERE IT WILL NOT RE-ENTER THE ESC WORKS.
12. ROADWAYS AND ASPHALT OR CONCRETE SURFACES MUST BE KEPT CLEAN AND FREE OF SEDIMENT AND DEBRIS. THE CONTRACTOR SHALL PERFORM STREET SWEEPING TO THE EXTENT NEEDED TO ENSURE ALL AFFECTED ROADS ARE KEPT CLEAN ON A DAILY BASIS.
13. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM THE ON-SITE STORM MAINS AND ESC WORKS, ESPECIALLY SEDIMENT FENCING. TO THE SATISFACTION OF THE OWNER'S ENGINEER OF RECORD, CCTV INSPECTION AND FLUSHING IS REQUIRED IF APPLICABLE.
14. THE OWNER IS TO RETAIN AN ESC SUPERVISOR TO INSPECT ALL ESC FACILITIES, TEST WATER QUALITY AT THE DESIGNATED TESTING POINTS, AND RECOMMEND NEW ESC MEASURES AND/OR MAINTENANCE REQUIREMENTS. DISCHARGE SHALL NOT EXCEED TOTAL SUSPENDED SOLIDS (TSS) IN EXCESS OF 75mg/L ABOVE BACKGROUND LEVELS OR A pH VALUE OUTSIDE OF THE RANGE 6.5 TO 9.0. ALL RESULTS ARE TO BE SUBMITTED TO THE CITY OF PORT MOODY AS WELL AS THE APPROPRIATE FEDERAL AND PROVINCIAL AGENCIES. ON-SITE WATER QUALITY TESTING OF DISCHARGE IS TO BE COMPLETED FOR pH AND TURBIDITY WITH LAB TESTING REQUIRED FOR TOTAL SUSPENDED SOLIDS IF TURBIDITY EXCEEDS AN APPROVED TSU THRESHOLD. LABORATORY TESTS FOR TSS, ACROSS A RANGE OF DISCHARGE CONDITIONS ARE REQUIRED TO VERIFY A WATER TREATMENT SYSTEM NTU TRIGGER VALUE.
15. A LOGBOOK OF ALL INSPECTIONS SHALL BE MAINTAINED & AVAILABLE TO THE CITY OF PORT MOODY UPON REQUEST. A RECORD OF ALL THE MAINTENANCE PROCEDURES ARE TO BE FILED WITH THE CITY OF PORT MOODY.
16. DAILY SITE INSPECTIONS BY CONTRACTOR TO INCLUDE VISUAL CHECKS THAT TARGET CRITICAL AREAS PER THE DAILY SITE INSPECTION CHECKLIST, AVAILABLE FROM THE CITY'S WEBSITE.
17. MINIMUM WATER QUALITY MONITORING BY ESC SUPERVISOR OR SUITABLY QUALIFIED DESIGNATE MUST BE CONDUCTED & REPORTED TO THE CITY OF PORT MOODY ON A WEEKLY BASIS.
18. INSPECTION OF ESC MEASURES, ASSESSMENT OF ESC MEASURES PERFORMED AND RECOMMENDATIONS OF MAINTENANCE AS REQUIRED.
19. FAILURE TO REPORT WILL RESULT IN ISSUANCE OF A **STOP WORK ORDER AND POSSIBLY FINES**.

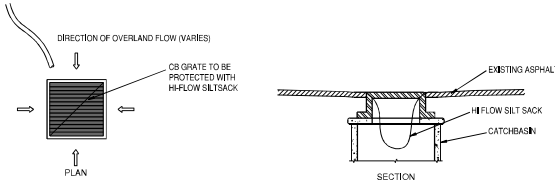
MAINTENANCE NOTES:

20. AREA STREETS AND CATCH BASINS ARE TO BE INSPECTED DAILY AND CLEANED IF REQUIRED AT THE END OF EACH WORK DAY.
21. STREETS ARE TO BE SWEEPED (NOT FLUSHED) TO ENSURE THAT MINIMUM DEBRIS ENTERS THE STORM DRAINAGE SYSTEM VIA CATCH BASINS.
22. CONSTRUCTION ACTIVITIES ARE TO BE STOPPED AND MAINTENANCE UNDERTAKEN IF WEATHER CONDITIONS OR GRAVEL ACCESS PADS, OR OTHER SITUATION ALLOW EXCESSIVE CONSTRUCTION MATERIAL TO BE DEPOSITED ON THE ROAD SURFACES.

23. SILT FENCE MAINTENANCE:
 - INSPECT IMMEDIATELY AFTER EACH RAINFALL, AND AT LEAST DAILY DURING PROLONGED RAINFALL, REPAIR AS NECESSARY.
 - SEDIMENT SHOULD BE REMOVED WHEN IT REACHES APPROXIMATELY ONE THIRD OF THE HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED.



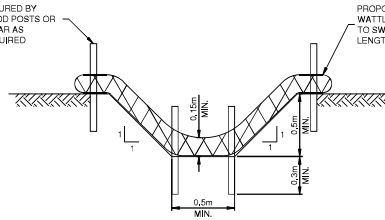
TEMPORARY SILT TRAP DETAIL
N.T.S.



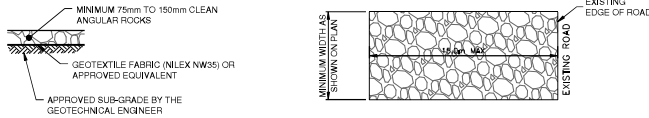
TYPICAL DETAIL OF CATCH BASIN SEDIMENT TRAP
ON ASPHALT SURFACES
N.T.S.

NOTES:

1. SILT SACK BY NILEX OR APPROVED EQUIVALENT TO BE MANUFACTURED FROM WOVEN POLYPROPYLENE AND SEWN BY DOUBLE NEEDLE MACHINE, USING HIGH STRENGTH NYLON THREAD
2. SILT SACK TO BE H-FLW SILT SACK STYLE TO ASTM D-4884
3. INSPECT SILT SACK SEDIMENT TRAP REGULARLY AND/OR AFTER EVERY MAJOR STORM EVENT
4. SILT SACK TO BE EMPTIED AND CLEANED OUT WHEN SILT SACK IS 50% FULL.
5. INSPECT SILT SACK DURING LOW TEMPERATURE AND/OR SNOW FREEZING CONDITIONS.



SWALE CROSS SECTION WITH STRAW
WATTLE FILTER BERM
N.T.S.



SECTION

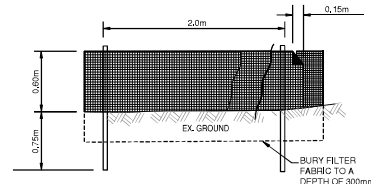
PLAN

TEMPORARY ROCK ACCESS PAD NOTES

N.T.S.

TEMPORARY ROCK ACCESS PAD NOTES

1. THE TEMPORARY ACCESS ROCK PAD SHALL BE CONSTRUCTED PRIOR TO ANY LICENSED VEHICLES TRAVERSING ONSITE, LICENSED VEHICLES ARE STRICTLY PROHIBITED TO TRAVERSE ON ROCK/GRAVEL AND/OR ASPHALT SURFACES ONLY.
2. REMOVE TOPSOIL AND OVER BURDEN WITHIN THE ROCK PAD LOCATION TO APPROVED SUB-GRADE AS INSPECTED BY THE GEOTECHNICAL ENGINEER.
3. PLACE GEOTEXTILE FABRIC (NILEX NW35 OR APPROVED EQUIVALENT) WITHIN ROCK PAD LOCATION OR AS SPECIFIED BY THE GEOTECHNICAL ENGINEER.
4. INSTALL A MINIMUM OF 300mm THICK OF 75mm TO 150mm CLEAN ANGULAR ROCKS (NO FINES) WITHIN THE SPECIFIED ROCK PAD LOCATION AND THE 300mm THICKNESS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL THE ROCK PAD HAS BEEN APPROVED FOR REMOVAL.
5. CONSTRUCTION EQUIPMENT AND VEHICLES TRAVELING OVER THE ROCK PAD SHALL MAINTAIN A SLOW AND CONSTANT SPEED.
6. ROCK(S) LODGED BETWEEN VEHICLE TIRES, ESPECIALLY OF DUAL WHEEL VEHICLES, SHALL BE REMOVED PRIOR TO LEAVING THE CONSTRUCTION SITE.
7. A STREET SWEEPER/SORAPER SHALL BE KEPT ONSITE UNTIL 90% CONSTRUCTION COMPLETION, ALL ASPHALT AND CONCRETE SURFACES (BOTH OFFSITE AND ONSITE) SHALL BE SWEEPED CLEAN IMMEDIATELY OF ANY SEDIMENT AND/OR TRACKING. IT SHALL NOT BE REMOVED FROM PAVED OR CONCRETE SURFACES BY MEANS OF FLUSHING.
8. OVERLAND SURFACE WATER FLOWS SHALL BE PREVENTED FROM PASSING THROUGH THE ROCK PAD AND THEY SHALL BE DIVERTED AWAY, UNDER AND/OR AROUND THE ROCK PAD BY MEANS OF SWALES AND/OR A TEMPORARY CULVERT.
9. THE ROCK PAD(S) SHALL BE INSPECTED DAILY DURING DRY WEATHER CONDITIONS AND PERIODICALLY THROUGHOUT THE DAY DURING WET WEATHER CONDITIONS.
10. THE CONTRACTOR SHALL ADD ADDITIONAL ROCK AND/OR REMOVE/INSTALL THE ROCK PAD AS REQUIRED IF THE ROCK PAD BECOMES BURIED AND/OR SATURATED WITH SEDIMENT.



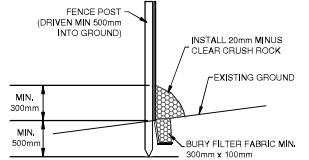
SILT FENCE DETAIL - PERIMETER FENCING

N.T.S.

NOTES:

1. INSPECT AFTER EVERY RAINFALL
2. REMOVE SEDIMENT WHEN DEPTH REACHES 1/3 FENCE HEIGHT
3. REPAIR AS REQUIRED
4. IF SITE SURROUNDED BY HOARDINGS, USE HOARDING AS STRUCTURAL SUPPORT FOR FILTER FABRIC, FASTEN FABRIC TO MESH OF HOARDING
5. FASTEN MESH ON UPHILL SIDE PRIOR TO ATTACHING FILTER FABRIC

BENCHMARK:
MONUMENT 80H3219 LOCATED AT THE INTERSECTION
OF ALBERT STREET AND ST. GEORGE STREET
ELEVATION = 29.775M (CVD283VRD)



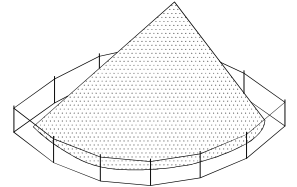
SILT FENCE SECTION - PERIMETER FENCING

N.T.S.

FILTER FABRIC SPECIFICATIONS

FILTER FABRIC MAY BE PERVIOUS SHEET OF SILT FILM OF WOVEN POLYPROPYLENE, NYLON, POLYESTER OR APPROVED EQUIVALENT, HAVING THE FOLLOWING PROPERTIES:

- MINIMUM FILTERING EFFICIENCY 90%
- MINIMUM FILTERING RATE 0.015m³/min
- MINIMUM GRAB TENSILE STRENGTH > 700N
- MINIMUM EQUIVALENT OPENING SIZE < 0.15mm (MEDIAN 0.21mm)



SILT FENCE AROUND SOIL STOCKPILES

- NOTES: 1 - FASTEN MESH ON UPHILL SIDE PRIOR TO ATTACHING FILTER FABRIC
2 - INSPECT AFTER EVERY RAINFALL
3 - REMOVE SEDIMENT BEFORE DEPTH REACHES 1/2 FENCE HEIGHT
4 - REPAIR AS REQUIRED

CONTRACTOR OR ENVIRONMENTAL
MONITOR TO PROVIDE WEEKLY
REPORTS ON ESC MEASURES
DURING COURSE OF CONSTRUCTION

CONTRACTOR NAME: _____
SIGNATURE: _____
COMPANY: _____
DATE: _____

PRELIMINARY

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No.	DATE	REVISION	BY
1	2021.03.09	ISSUED FOR DP	OT

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R.F. BINNIE & ASSOCIATES LTD.
300 - 4940 Canada Way,
Burnaby, BC V5G 4K6
TEL 604 420 1721
BINNIE.com

CLIENT	MARCON DEVELOPMENTS LTD. 5845 - 196TH STREET, LANGLEY, BC, V3A 1H6	SURVEYED BY BUTLER	DATE 2021-02-10
DRAWING DESCRIPTION	2025 ST JOHNS STREET EROSION & SEDIMENT CONTROL NOTES	DRAWN BY CT	DRAWING No. 18-1133 - ESC2
		DESIGNED BY CT	SHEET 02 OF 06
		CHECKED BY	REV. 1
		SCALES	DESTROY ALL PRINTS BEARING PREVIOUS NO.
		NOT TO SCALE	

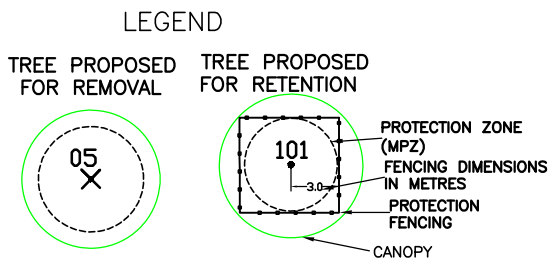
APPENDIX C

TREE PROTECTION DRAWING FROGGERS CREEK TREE CONSULTANTS LTD.



TREE INVENTORY				
#	Type	Action	DBH	MPZ
788	Red Alder	Retain	25/25/25/25	3.0m
789	Bigleaf Maple	Retain	25cm	1.5m
790	Bigleaf Maple	Retain	50cm	3.0m
791	Western Hemlock	Retain	70cm	4.2m
791.1	Western Hemlock	Retain	25cm	1.5m
792	Western Hemlock	Retain	30cm	1.8m
793	Western Hemlock	Retain	22cm	1.3m
793.1	Bigleaf Maple	Retain	30cm	1.8m
793.2	Bigleaf Maple	Retain	40/40cm	3.4m
794	Western Hemlock	Retain	38cm	2.3m
796	Western Hemlock	Retain	30cm	1.8m
797	Western Hemlock	Retain	45cm	2.7m
798	Western Hemlock	Retain	30cm	1.8m
798.1	Bigleaf Maple	Retain	40/20cm	3.0m
799	Bigleaf Maple	Retain	30cm	1.8m
799	Western Hemlock	Retain	25cm	1.5m
800	Western Hemlock	Retain	40cm	2.4m
801	Western Hemlock	Retain	30cm	1.8m
802	Western Hemlock	Retain	30cm	1.8m
803	Western Hemlock	Retain	30cm	1.8m
804	Bigleaf Maple	Retain	20cm	1.2m
804.1	Red Alder	Retain	15cm	0.9m
804.2	Red Alder	Retain	25cm	1.5m
804.3	Red Alder	Retain	20/20cm	2.0m
804.4	Bigleaf Maple	Retain	40cm	2.4m
804.5	Red Alder	Remove	25cm	1.5m
809	Cottonwood	Retain	70cm	4.2m
870	Naive Cherry	Remove	25cm	1.5m
871	Red Alder	Retain	25cm	1.5m
872	Naive Cherry	Retain	35cm	2.1m
873	Red Alder	Retain	30cm	1.8m
874	Cottonwood	Retain	90/70cm	6.0m
875	Red Alder	Retain	25cm	1.5m
876	Red Alder	Retain	35cm	2.1m
876.1	Western Redcedar	Retain	30cm	1.8m
876.2	Western Redcedar	Retain	30/20cm	2.5m
876.3	Red Alder	Retain	35cm	2.1m
876.4	Western Redcedar	Retain	25cm	1.5m
877	Bigleaf Maple	Retain	25cm	1.5m
877.1	Red Alder	Remove	30/30cm	2.8m
877.2	Red Alder	Remove	40cm	2.4m
878	Cottonwood	Retain	60cm	3.4m
878.1	Red Alder	Retain	20cm	1.2m
878.2	Naive Cherry	Retain	25cm	1.5m
878.3	Red Alder	Remove	35cm	2.1m
879	Bigleaf Maple	Retain	20cm	1.2m
879.1	Red Alder	Remove	15cm	0.9m
879.2	Red Alder	Remove	20cm	1.2m
879.3	Naive Cherry	Retain	25cm	1.5m
879.4	Red Alder	Retain	20cm	1.2m
879.5	Bigleaf Maple	Retain	30/30cm	2.8m
879.6	Douglas Fir	Retain	35cm	2.1m
879.7	Red Alder	Remove	15cm	0.9m
880	Bigleaf Maple	Retain	20cm	1.2m
881	Bigleaf Maple	Retain	20cm	1.2m
882	Bigleaf Maple	Retain	20cm	1.2m
883	Douglas Fir	Retain	25cm	1.5m
883.1	Red Alder	Remove	20cm	1.2m
883.2	Red Alder	Remove	25cm	1.5m
884	Bigleaf Maple	Retain	35/35/40cm	3.4m
885	Red Alder	Retain	30cm	1.8m
886	Bigleaf Maple	Retain	50/45cm	4.0m
887	Red Alder	Retain	45cm	2.7m
887.1	Red Alder	Retain	40cm	2.4m
887.2	Red Alder	Retain	35cm	2.1m
888	Cottonwood	Retain	70cm	4.2m
888.1	Red Alder	Remove	40cm	2.4m
888.2	Red Alder	Remove	40cm	2.4m
889	Cottonwood	Retain	70cm	4.2m
890	Red Alder	Retain	35cm	2.1m
891	Red Alder	Retain	50cm	3.0m
891.1	Red Alder	Retain	30/25cm	2.5m
891.2	Red Alder	Retain	30cm	1.8m
891.3	Red Alder	Retain	30cm	1.8m
892	Red Alder	Retain	25cm	1.5m
892.1	Red Alder	Retain	25cm	1.5m
893	Red Alder	Retain	25cm	1.5m
893.1	Red Alder	Retain	25cm	1.5m
893.2	Red Alder	Retain	25cm	1.5m
894	Red Alder	Retain	25cm	1.5m
894.1	Red Alder	Retain	25cm	1.5m
894.2	Red Alder	Retain	25cm	1.5m
894.3	Red Alder	Retain	25cm	1.5m
895	Red Alder	Retain	25cm	1.5m
895.1	Red Alder	Retain	25cm	1.5m
895.2	Red Alder	Retain	25cm	1.5m
895.3	Red Alder	Retain	25cm	1.5m
896	Red Alder	Retain	25cm	1.5m
896.1	Red Alder	Retain	25cm	1.5m
896.2	Red Alder	Retain	25cm	1.5m
896.3	Red Alder	Retain	25cm	1.5m
896.4	Red Alder	Retain	25cm	1.5m
896.5	Red Alder	Retain	25cm	1.5m
896.6	Red Alder	Retain	25cm	1.5m
896.7	Red Alder	Retain	25cm	1.5m
896.8	Red Alder	Retain	25cm	1.5m
896.9	Red Alder	Retain	25cm	1.5m
897	Red Alder	Retain	25cm	1.5m
897.1	Red Alder	Retain	25cm	1.5m
897.2	Red Alder	Retain	25cm	1.5m
897.3	Red Alder	Retain	25cm	1.5m
897.4	Red Alder	Retain	25cm	1.5m
897.5	Red Alder	Retain	25cm	1.5m
897.6	Red Alder	Retain	25cm	1.5m
897.7	Red Alder	Retain	25cm	1.5m
897.8	Red Alder	Retain	25cm	1.5m
897.9	Red Alder	Retain	25cm	1.5m
898	Red Alder	Retain	25cm	1.5m
898.1	Red Alder	Retain	25cm	1.5m
898.2	Red Alder	Retain	25cm	1.5m
898.3	Red Alder	Retain	25cm	1.5m
898.4	Red Alder	Retain	25cm	1.5m
898.5	Red Alder	Retain	25cm	1.5m
898.6	Red Alder	Retain	25cm	1.5m
898.7	Red Alder	Retain	25cm	1.5m
898.8	Red Alder	Retain	25cm	1.5m
898.9	Red Alder	Retain	25cm	1.5m
899	Red Alder	Retain	25cm	1.5m
899.1	Red Alder	Retain	25cm	1.5m
899.2	Red Alder	Retain	25cm	1.5m
899.3	Red Alder	Retain	25cm	1.5m
899.4	Red Alder	Retain	25cm	1.5m
899.5	Red Alder	Retain	25cm	1.5m
899.6	Red Alder	Retain	25cm	1.5m
899.7	Red Alder	Retain	25cm	1.5m
899.8	Red Alder	Retain	25cm	1.5m
899.9	Red Alder	Retain	25cm	1.5m
900	Red Alder	Retain	25cm	1.5m
900.1	Red Alder	Retain	25cm	1.5m
900.2	Red Alder	Retain	25cm	1.5m
900.3	Red Alder	Retain	25cm	1.5m
900.4	Red Alder	Retain	25cm	1.5m
900.5	Red Alder	Retain	25cm	1.5m
900.6	Red Alder	Retain	25cm	1.5m
900.7	Red Alder	Retain	25cm	1.5m
900.8	Red Alder	Retain	25cm	1.5m
900.9	Red Alder	Retain	25cm	1.5m
901	Red Alder	Retain	25cm	1.5m
901.1	Red Alder	Retain	25cm	1.5m
901.2	Red Alder	Retain	25cm	1.5m
901.3	Red Alder	Retain	25cm	1.5m
901.4	Red Alder	Retain	25cm	1.5m
901.5	Red Alder	Retain	25cm	1.5m
901.6	Red Alder	Retain	25cm	1.5m
901.7	Red Alder	Retain	25cm	1.5m
901.8	Red Alder	Retain	25cm	1.5m
901.9	Red Alder	Retain	25cm	1.5m
902	Red Alder	Retain	25cm	1.5m
902.1	Red Alder	Retain	25cm	1.5m
902.2	Red Alder	Retain	25cm	1.5m
902.3	Red Alder	Retain	25cm	1.5m
902.4	Red Alder	Retain	25cm	1.5m
902.5	Red Alder	Retain	25cm	1.5m
902.6	Red Alder	Retain	25cm	1.5m
902.7	Red Alder	Retain	25cm	1.5m
902.8	Red Alder	Retain	25cm	1.5m
902.9	Red Alder	Retain	25cm	1.5m
903	Red Alder	Retain	25cm	1.5m
903.1	Red Alder	Retain	25cm	1.5m
903.2	Red Alder	Retain	25cm	1.5m
903.3	Red Alder	Retain	25cm	1.5m
903.4	Red Alder	Retain	25cm	1.5m
903.5	Red Alder	Retain	25cm	1.5m
903.6	Red Alder	Retain	25cm	1.5m
903.7	Red Alder	Retain	25cm	1.5m
903.8	Red Alder	Retain	25cm	1.5m
903.9	Red Alder	Retain	25cm	1.5m
904	Red Alder	Retain	25cm	1.5m
904.1	Red Alder	Retain	25cm	1.5m
904.2	Red Alder	Retain	25cm	1.5m
904.3	Red Alder	Retain	25cm	1.5m
904.4	Red Alder	Retain	25cm	1.5m
904.5	Red Alder	Retain	25cm	1.5m
904.6	Red Alder	Retain	25cm	1.5m
904.7	Red Alder	Retain	25cm	1.5m
904.8	Red Alder	Retain	25cm	1.5m
904.9	Red Alder	Retain	25cm	1.5m
905	Red Alder	Retain	25cm	1.5m
905.1	Red Alder	Retain	25cm	1.5m
905.2	Red Alder	Retain	25cm	1.5m
905.3	Red Alder	Retain	25cm	1.5m
905.4	Red Alder	Retain	25cm	1.5m
905.5	Red Alder	Retain	25cm	1.5m
905.6	Red Alder	Retain	25cm	1.5m
905.7	Red Alder	Retain	25cm	1.5m
905.8	Red Alder	Retain	25cm	1.5m
905.9	Red Alder	Retain	25cm	1.5m
906	Red Alder	Retain	25cm	1.5m
906.1	Red Alder	Retain	25cm	1.5m
906.2	Red Alder	Retain	25cm	1.5m
906.3	Red Alder	Retain	25cm	1.5m
906.4	Red Alder	Retain	25cm	1.5m
906.5	Red Alder	Retain	25cm	1.5m
906.6	Red Alder	Retain	25cm	1.5m
906.7	Red Alder	Retain	25cm	1.5m
906.8	Red Alder	Retain	25cm	1.5m
906.9	Red Alder	Retain	25cm	1.5m
907	Red Alder	Retain	25cm	1.5m
907.1	Red Alder	Retain	25cm	1.5m
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907.3	Red Alder	Retain	25cm	1.5m
907.4	Red Alder	Retain	25cm	1.5m
907.5	Red Alder	Retain	25cm	1.5m
907.6	Red Alder	Retain	25cm	1.5m
907.7	Red Alder	Retain	25cm	1.5m
907.8	Red Alder	Retain	25cm	1.5m
907.9	Red Alder	Retain	25cm	1.5m

APPENDIX 3 TREE PROTECTION PLAN



- NOTES:
1. SITE LAYOUT INFORMATION AND TREE SURVEY DATA PER SUPPLIED DRAWING
 2. REFER TO ATTACHED TREE PROTECTION REPORT FOR INFORMATION CONCERNING TREE SPECIES, STEM DIAMETER, HEIGHT, CANOPY SPREAD AND CONDITION.
 3. ALL MEASUREMENTS ARE METRIC

Froggers Creek
Tree Consultants Ltd

7763 McGregor Avenue Burnaby BC V5J 4H4
Telephone: 604-721-6002 Fax: 604-437-0970

2025 St John Street Port Moody BC

TREE PROTECTION DRAWING

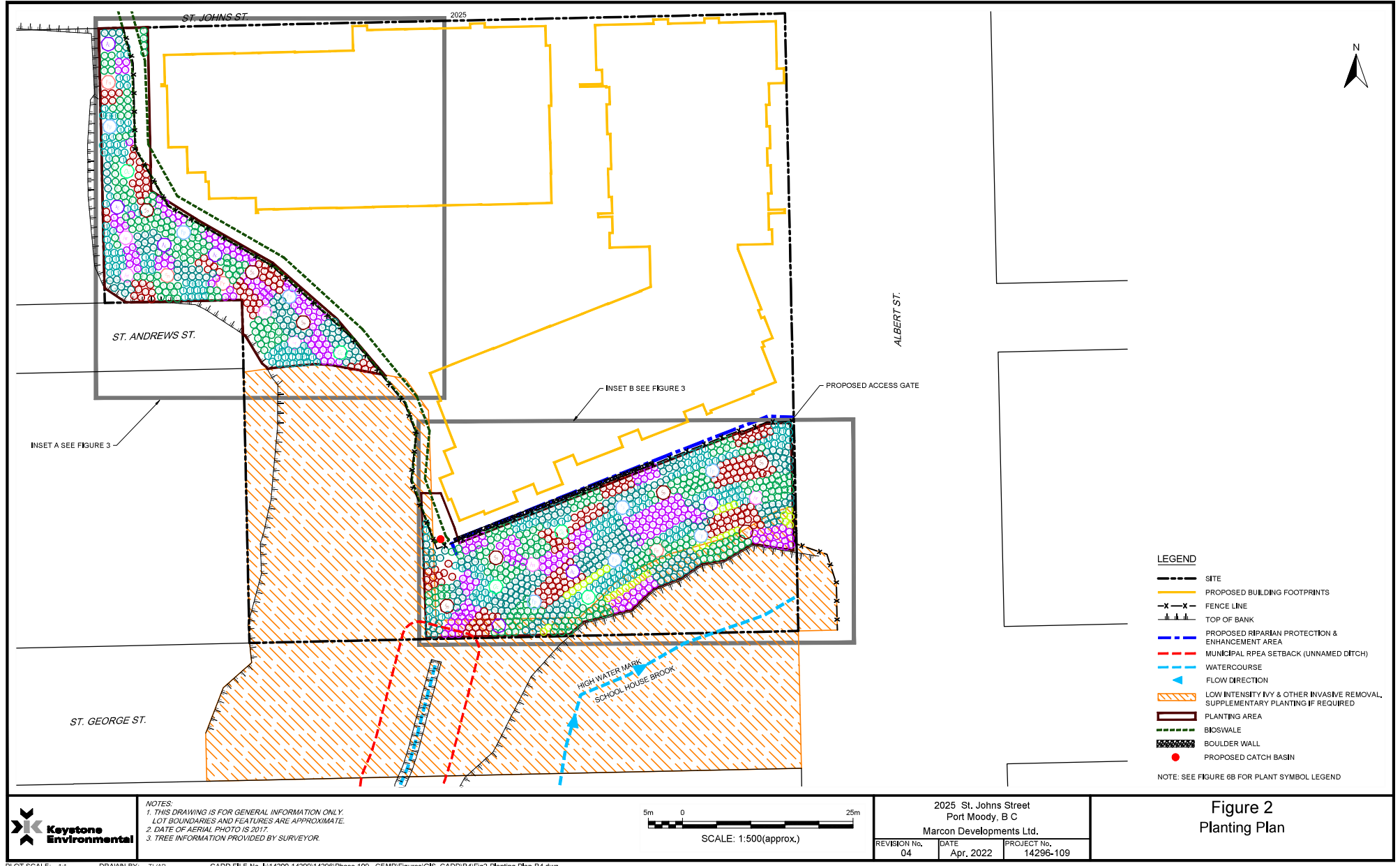
THE DRAWING PLOTS ALL TREES, PROPOSED FOR RETENTION, REMOVAL, THEIR CANOPIES, PROTECTION ZONES AND PROTECTION FENCING IN RELATION TO PROPOSED LAYOUT

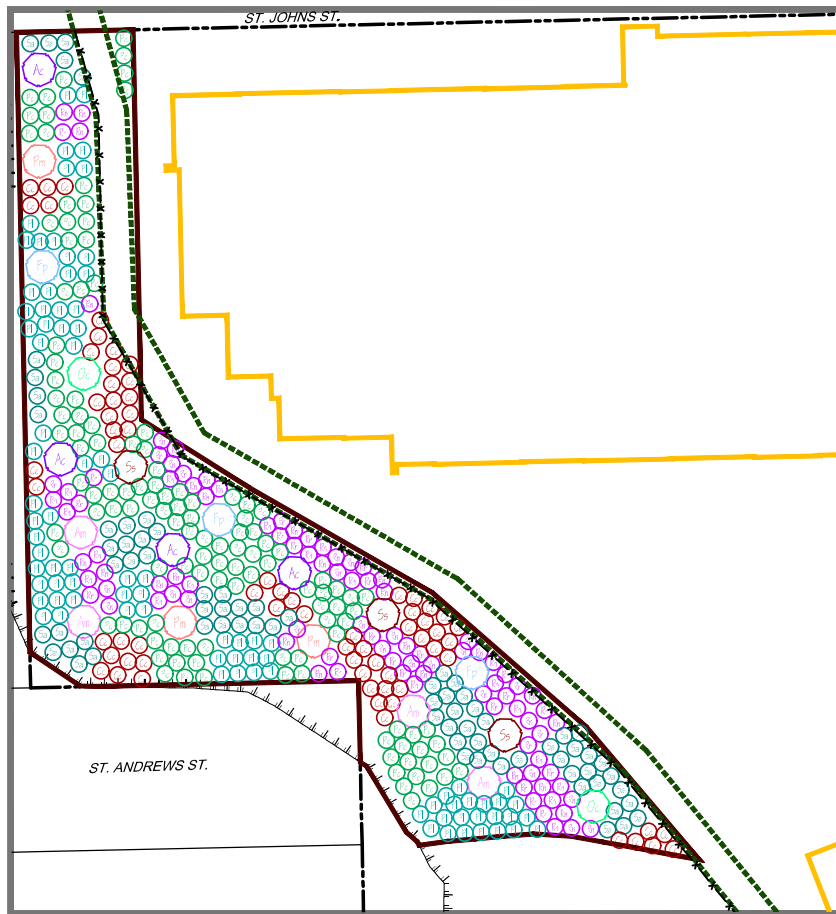
December 4, 2018

APPENDIX D

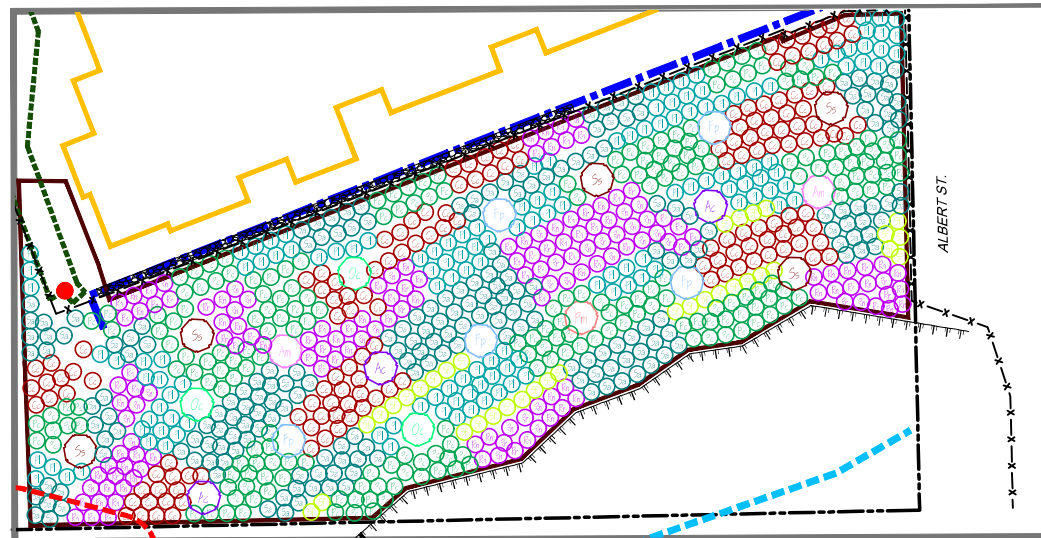
FIGURES – RIPARIAN PLANTING PLANS KEYSTONE ENVIRONMENTAL LTD.







INSET A



INSET B

LEGEND

- SITE
- PROPOSED BUILDING FOOTPRINTS
- X-X- FENCE LINE
- TOP OF BANK
- MUNICIPAL RPEA SETBACK (UNNAMED DITCH)
- WATERCOURSE
- FLOW DIRECTION
- PROPOSED RIPARIAN PROTECTION & ENHANCEMENT AREA
- PLANTING AREA
- BIOSWALE
- BOULDER WALL
- PROPOSED CATCH BASIN















NOTES:
1. THIS DRAWING IS FOR GENERAL INFORMATION ONLY.
LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.
2. TREE INFORMATION PROVIDED BY SURVEYOR.



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Marcon Developments Ltd.

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Figure 3
Planting Plan

SHRUBS				
SYMBOL	COMMON NAME	LATIN NAME	COUNT	SPECIFICATIONS
	Sword Fern	<i>Polystichum munitum</i>	35	1 Gallon; Fast-growing, slope stability, ground cover
	Beaked Hazelnut	<i>Corylus cornuta</i>	218	2 Gallon; spreading by suckers, pollinating flowers
	Mock Orange	<i>Philadelphus lewisii</i>	230	2 Gallon; spreading, fast growing, pollinating flowers
	Nootka Rose	<i>Rosa nutkana</i>	249	2 Gallon; Fruit bearing, slope stability
	Pacific Ninebark	<i>Physocarpus capitatus</i>	347	2 Gallon; Fruit bearing, slope stability
	Snowberry	<i>Symphoricarpos albus</i>	284	2 Gallon; Fruit bearing, slope stability
TREES				
	Bigleaf Maple	<i>Acer macrophyllum</i>	6	5 Gallon; Litter inputs, shade value, nesting habitat
	Cascara Buckthorn	<i>Frangula purshiana</i>	8	5 Gallon; Litter inputs, shade value, nesting habitat, fruit bearing
	Douglas-Fir	<i>Pseudotsuga menziesii</i>	4	5 Gallon; Shade value, nesting habitat
	Sitka Mountain Ash	<i>Sorbus sitchensis</i>	8	5 Gallon; pollinating flowers
	Shore Pine	<i>Pinus contorta</i>	5	5 Gallon; adaptable to many sites, fast growing
	Vine Maple	<i>Acer circinatum</i>	7	5 Gallon; Shade value; sprouts from roots; autumn colour

NOTES:

- ALL RIPARIAN PLANTINGS SHOULD BE BASED ON 1 TREE OR SHRUB PER 1 SQUARE METRE DENSITY (4x10cm PLUGS PER SQUARE METRE FOR RUSHES).
- ALL TREE/SHRUB SPECIES SHOULD BE OF GUARANTEED NURSERY STOCK.
- THE BOTANICAL NAME SHOULD BE USED WHEN ORDERING STOCK TO ENSURE THAT THE DESIRED NATIVE SPECIES IS BEING PURCHASED. EACH SPECIMEN SHOULD BE TAGGED WITH THE BOTANICAL NAME AND THE TAG SHOULD BE LEFT ATTACHED AFTER PLANTING.
- STOCK PLANTED DURING THE FALL (SEPT. - OCT.) AND SPRING (MARCH - APRIL) HAS THE GREATEST LIKELIHOOD OF SURVIVING. REGULAR WATERING MAY BE REQUIRED UNTIL THE PLANTS ARE ESTABLISHED. ADDITIONAL ADVICE ON PROPER PLANTING PROCEDURES SHOULD BE OBTAINED FROM THE NURSERY SUPPLYING THE STOCK.
- CONIFEROUS TREES SHOULD COMPRISE NOT LESS THAN 10% NOR MORE THAN 25% OF THE TREE STOCK PLANTED.
- TREE STOCK SHOULD BE A MINIMUM OF 1.2 M (4 FT) IN HEIGHT WHEN PURCHASED AND PLANTED 3 TO 5 M APART.
- PLANTING ON A GIVEN AREA BEING ENHANCED MUST BE SUCCESSFUL TO AN 80% TAKE. IF MORE THAN 20% DIE OVER ONE YEAR, REPLANTING IS REQUIRED.
- A MINIMUM OF 50% OF TREES AND SHRUBS PLANTED SHOULD BE FRUIT-BEARING SPECIES.



NOTES:
1. TREE INFORMATION PROVIDED BY SURVEYOR.

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Figure 4
Planting Plan Table and Notes