



To: General Purposes Committee **Date:** August 14, 2020
From: Milton Chan, P.Eng.
Director, Engineering **File:** 10-6060-01/2020-Vol
01
Re: **13740 Westminster Highway – Unauthorized Watercourse Crossing and
Decorative Wall**




Staff Recommendation

1. Pursuant to the authority provided in Sections 72, 73 and 75 of the *Community Charter*, that:
 - a. the infill and culvert in the watercourse fronting the property located at 13740 Westminster Highway, and having a legal description of Lot 2 Section 8 Block 4 North Range 5 West New Westminster District Plan 12960 (Parcel Identifier: 001-703-269) (the “Property”) be declared as having obstructed, filled up or damaged the watercourse fronting the Property without the City’s approval or consent (the “Unauthorized Watercourse Crossing”); and
 - b. the decorative wall located at the Property, be declared as creating an unsafe condition.
2. Pursuant to Sections 72 and 73 of the *Community Charter*, the following remedial action requirements be imposed on Swarn Singh Panesar and Gurbax Kaur Panesar, as the registered owner of the Property (the “Owners”):
 - a. to demolish the decorative wall at the Property; and
 - b. to remove all debris from the decorative wall in accordance with any applicable federal, provincial and municipal laws.
3. Pursuant to Sections 72 and 75 of the *Community Charter*, and Part 7 of the Watercourse Protection and Crossing Bylaw No. 8441, the following remedial action requirements be imposed on the Owners:
 - a. to remove the Unauthorized Watercourse Crossing in and about the watercourse fronting the Property; and
 - b. to undertake and complete the restoration work identified in the Scope of Work, attached as Attachment 6 of the report to committee titled 13740 Westminster Highway – Unauthorized Crossing and Decorative Wall, dated August 14, 2020, from the Director, Engineering (the “Report”);

- c. to undertake and complete the restoration work identified in the Construction Environmental Management Plan for 13740 Westminster Highway dated October 2, 2018 by Madrone Environmental Services Ltd., attached as Attachment 7 of the Report;
 - d. to undertake any additional measures as directed by the General Manager, Engineering and Public Works, to restore the watercourse to its previous condition; and
 - e. to dispose of all material associated with the removal of the Unauthorized Watercourse Crossing at a permitted site under the guidance of a Qualified Professional, in compliance with all applicable federal, provincial and municipal laws.
4. That the time limit for completion of all the remedial action requirements described above be set as 5:00 pm on October 30, 2020.
 5. That staff be authorized to take all appropriate action in accordance with Section 17 [Municipal Action at Defaulter's Expense] of the *Community Charter* to ensure compliance with all remedial action requirements imposed on the Owners, provided that:
 - a. the Owners have not fully completed the remedial action requirements on or before the time limit specified by Council; and
 - b. all costs incurred by the City to fulfill the remedial action requirements shall be at the expense of the Owner, and subject to Section 17 of the *Community Charter*, such costs shall be recovered from the Owner as a debt owed to the City of Richmond.



Milton Chan, P.Eng.
Director, Engineering
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REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law Community Bylaws Sewerage & Drainage Environmental Sustainability	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	 <hr/>
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO  (Acting)

Staff Report

Origin

The watercourse fronting 13740 Westminster Highway (the “Watercourse”) is an integral part of the City’s drainage network, contributing to drainage conveyance for the area towards the Bath Slough Drainage Pump Station.

Pursuant to sections 2.0 and 2.2 of the *Watercourse Protection and Crossing Bylaw No. 8441*, no person shall place any fill or material in a watercourse in the City unless they have obtained a watercourse crossing permit. On January 8, 2018, the City received a Watercourse Crossing Permit Application to infill the Watercourse. The City rejected the permit application, as the Watercourse is in a Riparian Management Area (RMA) and, therefore, not eligible for an infill. The application fee was refunded in 2018.

The owners of 13740 Westminster Hwy have since installed a culvert and infilled the Watercourse (the “Unauthorized Watercourse Crossing”) without a City-approved Watercourse Crossing Permit. A copy of the *Watercourse Protection and Crossing Bylaw No. 8441* is included as Attachment 1.

The owners of 13740 Westminster Hwy have also since constructed a decorative wall (the “Decorative Wall”) on top of the Unauthorized Watercourse Crossing, on a portion of the property that is in a RMA, without obtaining a permit from the City. The Decorative Wall was constructed in contravention of section 4.20.3 of the Richmond Zoning Bylaw No. 8500, which provides that no development is permitted in a RMA unless it is for the purpose of environmental enhancement or is authorized by a City permit. Excerpts of the applicable provisions of the Richmond Zoning Bylaw No. 8500 are included in Attachment 2.

This report provides additional information on the impacts of this Unauthorized Watercourse Crossing and Decorative Wall and seeks Council authorization to impose remedial action on the property to bring the property into compliance.

Analysis

The culvert works installed in the Watercourse do not meet the City’s Engineering Design Specifications and the Unauthorized Watercourse Crossing is located in the City’s RMA. A comparison of the City’s design specifications to the current unauthorized conditions of the culvert works is outlined in Attachment 3. Under current unauthorized conditions, the boulevard experiences substantial surface ponding fronting the Property and the neighbouring church located at 13780 Westminster Hwy. This ponding is a result of the unauthorized infill. Previous to the infill, the RMA ditch collected run off from both the boulevard and road. Photos of the current unauthorized conditions of the Unauthorized Watercourse Crossing are included in Attachment 4. Staff had the area video inspected, but were unable to access the newly-installed drainage pipe within the Unauthorized Watercourse Crossing due to the non-compliant installation.

In addition, the Unauthorized Watercourse Crossing raised the surrounding ground elevation, which has caused the existing water meter to be located approximately 1 m below the ground surface, making it inaccessible for servicing.

The unpermitted Decorative Wall was installed in August 2019 on top of the Unauthorized Watercourse Crossing (which is located in the RMA) and has started to fail. As a result, the Unauthorized Watercourse Crossing cannot be removed without subjecting workers to the safety hazard of the Decorative Wall potentially collapsing into the work area. In addition, the Decorative Wall is located directly on what previously was the top of the ditch bank and will prevent the ditch from being restored and constructed in accordance with the City's Engineering Design Specifications. A drawing of the Watercourse, the Unauthorized Watercourse Crossing and Decorative Wall is included in Attachment 8. Photos of the deteriorating Decorative Wall are included in Attachment 4.

To date staff have taken the following steps to encourage compliance without success:

- Mailed a letter on August 27, 2019, requesting compliance by September 30, 2019.
- Hand delivered a letter on September 17, 2019, requesting compliance by September 30, 2019.
- Hand delivered a letter on October 30, 2019 and started issuing daily fines.
- Issued fines for a total of \$8,500, which have not been paid by the owner to date.

The Law Department has reviewed and provided input on the Unauthorized Watercourse Crossing and Decorative Wall. Sections 72 through 80 of the *Community Charter* (which are set out in Attachment 5) outline the process for remedial action requirements. Remedial action requirements are imposed by Council resolution, and cannot be delegated to staff.

Pursuant to Sections 72 and 75 of the *Community Charter* Council may impose a remedial action requirement, requiring a person to undertake restoration work in accordance with directions of Council or a person authorized by Council, if a person has obstructed, filled up or damaged a ditch, drain, creek or watercourse that was constructed or improved under this *Act* or the *Local Government Act*.

Pursuant to sections 72 and 73 of the *Community Charter* Council may also impose a remedial action requirement in relation to a building or other structure, including a requirement to remove or demolish the building or structure, if Council considers that the building or structure is in or creates an unsafe condition.

If remedial action is not completed by the date specified by Council for compliance, then pursuant to sections 17 and 77 of the *Community Charter* the City may fulfill the requirement at the expense of the person, and may recover the costs incurred from that person as a debt. Furthermore, section 17 authorizes the City to collect all related costs as a debt owed to the City, which if unpaid would be transferred to property taxes as arrears at the end of the year.

Part 7 of the City's Watercourse Crossing Bylaw No. 8441 contains similar remedial action and cost recovery powers, so although Council authority is not required for the removal and remediation of the Unauthorized Watercourse Crossing, staff are seeking Council authority for consistency between all the remedial actions related to the Property.

Staff recommend that Council impose remedial actions on the owners of the property, requiring them to demolish the Decorative Wall and remove the debris, and remove the Unauthorized Watercourse Crossing and undertake and complete the restoration work for the Watercourse

identified in the Scope of Work, attached as Attachment 6 and the Construction Environmental Management Plan for 13740 Westminster Highway dated October 2, 2018 by Madrone Environmental Services Ltd., attached as Attachment 7, by 5:00 pm on Friday, October 30, 2020.

If the property owners do not comply, staff recommend that the City begin remediating the area to fully restore drainage system functionality and public safety. The cost for the removal of the Unauthorized Watercourse Crossing and the Decorative Wall and remediation back to Watercourse is estimated to be \$58,400.

The owner will be expected to pay to the City all expenses incurred to remove and remediate the area back to RMA watercourse. If the owner fails to pay the City by the end of the calendar year, the costs will be applied to the taxes payable in connection to the property.

Financial Impact

None.

Conclusion

The owners of 13740 Westminster Highway have infilled the Watercourse without a City-approved Watercourse Crossing Permit and have constructed a Decorative Wall in the RMA that creates an unsafe condition. Staff have taken a number of steps to encourage compliance without success. Staff recommend that remedial action orders be imposed on the property owners and, if they continue to be non-responsive, that the City begin remediating the area to fully restore drainage system functionality and public safety at the property owners' cost.



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JH:ch

- Att. 1: Watercourse Protection and Crossing Bylaw No. 8441
- Att. 2: Excerpts of Richmond Zoning Bylaw No. 8500
- Att. 3: Engineering Design Specifications Comparison
- Att. 4: Photos
- Att. 5: Excerpts of the *Community Charter*
- Att. 6: Scope of Work
- Att. 7: Construction Environmental Management Plan for 13740 Westminster Highway dated October 2, 2018 by Madrone Environmental Services Ltd.
- Att. 8: Drawing of 13740 Westminster Highway – Watercourse, Unauthorized Watercourse Crossing and Decorative Wall

CITY OF RICHMOND



WATERCOURSE PROTECTION AND CROSSING BYLAW

BYLAW NO. 8441

EFFECTIVE DATE – May 9, 2011

CONSOLIDATED FOR CONVENIENCE ONLY

This is a consolidation of the bylaws below. The amendment bylaws have been combined with the original bylaw for convenience only. This consolidation is not a legal document. Certified copies of the original bylaws should be consulted for all interpretations and applications of the bylaws on this subject.

AMENDMENT BYLAW

Bylaw No. 9882

DATE OF ADOPTION

September 4, 2018

EFFECTIVE DATE

(If different from Date of Adoption)

November 5, 2018

**WATERCOURSE PROTECTION AND
CROSSING BYLAW**

BYLAW NO. 8441

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CITY OF RICHMOND
WATERCOURSE PROTECTION AND
CROSSING BYLAW NO. 8441

The Council of the City of Richmond enacts as follows:

PART ONE: INTERPRETATION

1.0 Interpretation

1.1 In this bylaw, unless the context otherwise requires:

AGREEMENT	means an agreement in the City's prescribed form.
APPLICANT	means an owner or a utility company , as the case may be, that makes an application .
APPLICATION	means the request to the City for a permit in the prescribed form.
APPLICATION FEE	means the fee in the amount set from time to time in the Consolidated Fees Bylaw No. 8636 required when submitting an application .
CITY	means the City of Richmond as a corporate entity.
CITY DESIGN DRAWINGS	means design drawings prepared by the City .
CITY DESIGN OPTION FEE	means the fee in the amount set from time to time in the Consolidated Fees Bylaw No. 8636 required when the City design drawings are requested.
CITY LAND	means land owned or in the control of the City .
CITY REPRESENTATIVE	means any one of the following: the City's General Manager of Engineering and Public Works, the City's Director, Engineering or the City's Director, Public Works.
CONSTRUCTION AND MAINTENANCE REQUIREMENTS	means all federal, provincial and municipal laws, bylaws, regulations, policies, codes, ordinances, guidelines and standards, including, without limiting the generality of the foregoing, in accordance with the City's bylaw entitled <i>To Regulate the Provision of Works and Services Upon Subdivision of Land Bylaw No. 6530</i> as the same may be amended or replaced from time to time.

DEVELOPMENT	means “development” as defined in section 4.20 of the Zoning Bylaw.
DRAINAGE SYSTEM	means all storm sewer works and appurtenances owned, controlled, maintained and operated by the City , including, without limitation, storm sewers, watercourses , storm service connections, detention facilities, pumping stations and outfalls located on or in City land .
ENHANCEMENT	means “enhancement” as defined in the Zoning Bylaw.
ENVIRONMENT	means air, land, water and all other external conditions or influences under which humans, animals and plants live or are developed.
INSPECTION FEE	means the fee in the amount set from time to time in the Consolidated Fees Bylaw No. 8636 required when submitting an application for a permit .
OWNER	means a person who is the registered owner of a parcel .
PARCEL	means a lot, block, or other area in which land is held, or into which land is legally subdivided.
PERMIT	means permission or authorization in writing from the City representative under this bylaw to construct and use a watercourse crossing regulated by this bylaw.
PERSON	means the City , a government body, a utility company , an individual, corporation, partnership or other legal entity.
POLLUTION	means any substance, whether liquid or solid, that damages or is capable of damaging the environment and includes any substance or combination that does not conform to the British Columbia Water Quality Guidelines for the Protection of Aquatic Life and/or the Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Aquatic Life.
PROFESSIONAL ENGINEER	means a person who is registered or licensed as a professional engineer pursuant to the <i>Engineers and Geoscientists Act</i> , R.S.B.C. 1996, c. 116.

QUALIFIED ENVIRONMENTAL PROFESSIONAL	means a registered professional biologist, geoscientist, engineer, forester and/or agrologist registered in British Columbia, with demonstrated education, expertise, accreditation, and knowledge relevant to sensitive environments, ecosystems and/or riparian management.
RIPARIAN AREA REGULATION	means <i>Riparian Area Regulation</i> , B.C. Reg. 376/2004, as may be amended or replaced.
RIPARIAN MANAGEMENT AREA	means "riparian management area" as defined in the Zoning Bylaw.
RIPARIAN VEGETATION GUIDELINES	means the Riparian Area Regulation re-vegetation guidelines, as amended and replaced from time to time.
SECURITY DEPOSIT	means the sum of \$5000.00.
UTILITY COMPANY	means a public or private utility company which makes an application .
WATERCOURSE	means a natural or man-made channel through which water flows at any time of the year and includes a ditch, slough, brook, river, stream, creek, lake, pond and any other body of water running through or situated partially or fully on City land .
WATERCOURSE CROSSING	means any bridge, culvert including all appurtenances or any other construction spanning a watercourse located on City land .
WATERCOURSE CROSSING OWNER	means a person who owns a watercourse crossing .
ZONING BYLAW	means <i>Richmond Zoning Bylaw 8900</i> , as may be amended or replaced."

PART 2: APPLICATION AND AGREEMENT

2.0 Application and Agreement

No **person** shall:

- (a) pollute, obstruct or impede the flow of any **watercourse** or waterworks (including drain or sewer) in the **City**; or
- (b) place any fill, concrete, timber or any other structure or material into a **watercourse** in the **City**, except as set out in subsection 2.2.

- 2.2 No **person** shall construct or cause to be constructed or use any **watercourse crossing** unless the following requirements are met:
- (a) the **applicant** submits an **application** to the **General Manager** as set out in subsection 2.3;
 - (b) the **applicant** has paid the City the **application fee**, the **inspection fee**, and, if applicable, the **City design option fee**, and provided to the **City** the **security deposit**;
 - (c) the **applicant** enters into an **agreement** with the **City** regarding the proposed **watercourse crossing**; and
 - (d) the **applicant** has obtained a **permit** to construct and use the proposed **watercourse crossing**.
- 2.3 The **application** referred to in subsection 2.2(a) shall include:
- (a) either of the following:
 - i. design drawings prepared for the **applicant**; or
 - ii. **City design drawings** prepared for the **applicant**; and
 - (b) any supporting documentation requested by the **City** in connection with the **application**.
- 2.4 The **City representative** is authorized to execute **agreements** on behalf of the **City** if the **City representative** is satisfied that the requirements of this bylaw have been met and that no reason exists why the **City** should not enter into an **agreement**.

PART THREE: PERMIT

3.0 Permit

- 3.2 The **City representative** is authorized to execute **permits** on behalf of the **City** if the **City representative** is satisfied that the **application** has been approved, an **agreement** has been entered into, and all required fees have been paid and the **security deposit** has been provided.

PART FOUR: CONSTRUCTION OF WATERCOURSE CROSSING, SECURITY DEPOSIT AND INSURANCE

4.0 Construction of Watercourse Crossing, Security Deposit and Insurance

- 4.1 The **applicant** must construct the **watercourse crossing**:
- (a) as contemplated by this bylaw and the **application**;

- (b) in accordance with the design approved by the **City**;
 - (c) in accordance with **construction and maintenance requirements**;
 - (d) so that it does not materially interfere with the **City's drainage system** or any **City land**;
 - (e) so as to protect water quality within the **watercourse** from sediment and other potential **pollution**, and to minimize the impact on **watercourse** and riparian ecology; and
 - (f) only after receiving all other regulatory permits and approvals required to undertake the work, including wildlife salvage for aquatic species performed by a **Qualified Environmental Professional**.
- 4.2 After completion of construction of the **watercourse crossing**, the **applicant** must:
- (a) in accordance with **construction and maintenance requirements**, clean and restore any portion of **City land** affected by the construction of the **watercourse crossing** to the condition in which it existed prior to the construction of such **watercourse crossing**, as determined by the **City**;
 - (b) re-instate all legal survey monuments and property pins removed or displaced by the construction of the **watercourse crossing**;
 - (c) re-instate any disturbed **watercourse** bank or riparian areas such that sediment erosion is controlled and plantings provide equal or better riparian protection as existed prior to construction to the satisfaction the **City** and (if applicable) Fisheries and Oceans Canada;
 - (d) complete As-Constructed drawings; and
 - (e) if the **application** is for the construction of a bridge, after completion of construction of the bridge, provide a certification letter signed and sealed by a **professional engineer** stating that a **professional engineer** has inspected the bridge, that the bridge was constructed in accordance with the design forming part of the **application**, and that the bridge can service the **parcel** without any detrimental impact to other nearby **parcels**, properties and/or the **City's drainage system**.
- 4.3 As security for the performance of the **applicant's** obligations in sections 4.1 and 4.2, the **applicant** must provide the **City** with a **security deposit**.
- 4.4 The **City** may utilize all or any portion of the **security deposit** if the **applicant** breaches its obligations contained in sections 4.1 and 4.2. If the **City**, without obligation to do so, remedies any breach of this bylaw and the cost of such undertaking exceeds the amount of the **security deposit**, the **applicant** shall pay to the **City** any amount exceeding the amount secured.
- 4.5 During the course of construction of the **watercourse crossing**, the **applicant** must maintain, and provide to the **City** evidence of, comprehensive general liability insurance with a limit of not less than \$5,000,000.00 inclusive per occurrence for bodily injury and property damage. The insurance must be endorsed to add the **City** as an additional

insured and contain a provision requiring that at least 30 days' notice be given to the **City** prior to cancellation or expiry.

PART FIVE: OWNERSHIP OF WATERCOURSE CROSSING

5.0 Ownership of Watercourse Crossing

- 5.1 Subject to section 5.2, despite the **watercourse crossing** being on **City land**, the **owner** of the **parcel** fronting the **watercourse crossing** shall be deemed to be the **watercourse crossing owner**.
- 5.2 If the **applicant** for the **permit** is a **utility company**, the **utility company** shall be deemed to be the **watercourse crossing owner**.
- 5.3 The **watercourse crossing owner** must provide to any prospective owner of the **watercourse crossing** a copy of the **permit** relating to the **watercourse crossing**.

PART SIX: MAINTENANCE OF WATERCOURSE CROSSING

6.0 Maintenance of Watercourse Crossing

- 6.1 During the lifetime of the **watercourse crossing**, the **watercourse crossing owner** must, to the **City's** satisfaction, maintain, repair and replace the **watercourse crossing** as necessary to ensure that it is in a safe condition for all purposes, does not hinder, impede or interfere with the **drainage system**, does not cause undue damage to the **watercourse** ecology or cause the introduction of **pollution** to the **watercourse**, and, without limiting the generality of the foregoing, ensure that the **watercourse crossing** complies with **construction and maintenance requirements**.
- 6.2 The **watercourse crossing owner** must notify the **City** in writing five (5) business days in advance of any work described in section 6.1 which the **watercourse crossing owner** intends to perform.
- 6.3 If the **watercourse crossing** is within an area designated as a **Riparian Management Area**, written approval from Fisheries and Oceans Canada and the **City** must be received prior to maintenance or modification of the **watercourse crossing** or the **watercourse**.

PART SEVEN: REMEDIAL ACTION

7.0 Remedial action

- 7.1 If a **watercourse crossing** is:
- (a) not in accordance with this bylaw, the **application** and/or the **permit**;
 - (b) causing a detrimental impact to other **parcels**, properties, the **drainage system**, or structures;
 - (c) causing a detrimental impact to the aquatic environment or causing the introduction of **pollution** to the **watercourse**;

- (d) affecting public safety; or
- (e) not permitting adequate drainage,

the **City representative** may require the **watercourse crossing owner** at its own expense to remove, repair or replace a **watercourse crossing** in accordance with **construction and maintenance requirements** and clean and restore any portion of **City land** affected by the construction of the **watercourse crossing** to the condition in which it existed prior to the construction of such **watercourse crossing**, as determined by the **City** and to the satisfaction of Fisheries and Oceans Canada (if applicable).

7.2 If an event referred to in section 7.1 has occurred, the **City representative** shall notify the **watercourse crossing owner** in writing, specifying:

- (a) the work to be undertaken; and
- (b) the period of time within which the work must be completed.

7.3 Where the **City** has determined that the **watercourse crossing owner** has failed to construct, install, remove, repair or replace a **watercourse crossing** in accordance with **construction and maintenance requirements** and/or clean and restore any portion of **City land** affected by the construction of the **watercourse crossing** to the condition in which it existed prior to the construction of such **watercourse crossing** within a reasonable period of time, all as determined by the **City**, the **City** may take whatever action the **City** considers necessary to remedy the situation without the necessity of full compliance with the provisions of this bylaw at the time it is undertaken. The **watercourse crossing owner** will pay to the **City**, on demand by the **City**, all expenses incurred by the **City** exercising its rights pursuant to this section 7.3.

7.4 Where the **City** has determined that there has been a possible contravention of this bylaw which poses a possible threat to the **environment** or the health or safety of individuals, and immediate action is required to remedy the situation, the **City** may immediately take whatever action the **City** considers necessary to remedy the situation without the necessity of full compliance with the provisions of this bylaw at the time it is undertaken. The **watercourse crossing owner** will pay to the **City**, on demand by the **City**, all expenses incurred by the **City** exercising its rights pursuant to this section 7.4.

7.5 If the **watercourse crossing owner** has failed to pay the costs incurred by the **City** in exercising its rights pursuant to section 7.3 and/or section 7.4 before the 31st day of December in the year that the corrective action was taken, the **City's** costs may, at the **City's** discretion, be added to and from part of the taxes payable in connection with the **parcel** fronting the **watercourse crossing** as taxes in arrears.

PART EIGHT: PROTECTION OF RIPARIAN MANAGEMENT AREAS

8.0 Riparian Management Areas

8.1 No person shall commence or conduct, or cause to be commenced or conducted, any **development** on land situated in a **riparian management area**, unless:

- (a) it is for the purposes of **enhancement**, satisfactory to the **City representative**; or

- (b) is authorized by a **City** permit and is in accordance with the **Riparian Area Regulation**, and any other applicable Federal or Provincial legislation and **City** bylaw.

8.2 A person who applies, under the **City's Building Regulation Bylaw No. 7230**, for a permit to authorize the construction of, demolition of, or addition to a single or two family dwelling, accessory building and/or structure, and/or any ancillary **development** (such as services permitted by the City) on property that contains all or a portion of a **riparian management area**, must include in, or submit with, the application:

- (a) a survey of the property and delineation of the **riparian management area** on all site plans and site surveys;
- (b) a description of how fill will be contained outside of the **riparian management area**, including but not limited to, showing the location of a retaining wall on the building site plan, and/or providing a site level grading plan showing proposed and existing elevations;
- (c) inclusion of the following **riparian management area** site note on all site plans and site surveys:

"City of Richmond Riparian Management Area (RMA)

- *The RMA must not be altered except in accordance with a City approved permit, or authorized enhancement. No tree, shrub or ground cover removal; no storage of materials; no building, structure or surface construction including retaining walls can occur in an RMA.*
- *A brightly coloured, temporary fence of a minimum height of 1.2 m must be erected at least 2 m outside of the RMA. An erosion and sediment control fence must be installed on the property side of the brightly coloured fence. All additional RMA protection measures, as defined by the City must also be installed/completed.*
- *All protective fencing and erosion and sediment control measures must be in place before development begins, and remain in place until development is complete and final approval received.*
- *The landowner is responsible to restore to the satisfaction of the City any unauthorized development within the RMA."*

- (d) a **riparian management area** building permit application review fee above in the amount set out from time to time in the *Consolidated Fees Bylaw No. 8636*.

8.3 The **City representative** is authorized to enter on property at any time to:

- (a) determine whether or requirements of this or any applicable **City** bylaw, or Federal and Provincial statutes or regulations, are being met and
- (b) undertake an inspection to determine the work and measures required to restore the **riparian management area** affected by such contravention, in accordance with **riparian vegetation guidelines** and all applicable best management practices;

- 8.4 If **development** occurs in a **riparian management area** in contravention of Section 8.1 above, the **City representative**:
- (a) may order in writing the owner and/or occupant of the property to, at their sole expense, restore any portion of **riparian management area** on or adjacent to the property affected by such contravention, and may require such restoration work and measures to be overseen by a **Qualified Environmental Professional**, and may require such restoration work and measures to be completed within a specified period of time. Upon receipt, the owner and/or occupant shall take whatever action is specified in the order within the time period specified therein; and
 - (b) may require additional inspections to confirm the undertaking and completion of restoration work and measures ordered pursuant to subsection (a) above, and compliance with **City** bylaws, and Federal and Provincial statutes and regulations.
- 8.5 The owner of the property must pay the non-refundable **riparian management area** inspection fees for the inspections referred to in sections 8.3 and 8.4 above in the amount set out from time to time in the *Consolidated Fees Bylaw No. 8636*.

PART NINE: TERMINATION

9.0 Termination

- 9.1 The **City representative** may terminate a **permit** at any time and for any reason upon providing the **watercourse crossing owner** with a written notice of the same. If the **watercourse crossing owner** receives such a notice, the **watercourse crossing owner** shall at its own expense remove the **watercourse crossing** and restore the **City land** affected by such removal within the time specified in the notice and to the satisfaction of the **City** and Fisheries and Oceans Canada (if applicable), and in accordance with **construction and maintenance requirements**, clean and restore any portion of **City land** affected by the construction of the **watercourse crossing** to the condition in which it existed prior to the construction of such **watercourse crossing**, as determined by the **City**.

PART TEN: LOCAL AREA SERVICES PROGRAM

10.0 Local Area Services Program

- 10.1 A **watercourse crossing** is not a permanent component of any **drainage system**. If a Local Area Services Program becomes effective in the area in which a **parcel** fronting the **watercourse crossing** is located, the **City** will remove the **watercourse crossing** as part of the Local Area Services Program and the **owner** will be required to pay the **owner's** portion of the Local Area Services Program fees.

PART ELEVEN: VIOLATIONS AND PENALTIES

11.0 Offences and Penalties

- 11.1 (a) A violation of any of the provisions identified in this bylaw shall result in liability for penalties and late payment amounts established in Schedule A of the *Notice of Bylaw Violation Dispute Adjudication Bylaw No. 8122*; and

- (b) A violation of any of the provisions identified in this bylaw shall be subject to the procedures, restrictions, limits, obligations and rights established in the *Notice of Bylaw Violation Dispute Adjudication Bylaw No. 8122* in accordance with the *Local Government Bylaw Notice Enforcement Act*, SBC 2003, c. 60.

- 11.2 Every **person** who contravenes any provision of this bylaw is considered to have committed an offence against this bylaw and is liable on summary conviction, to the penalties provided for in the *Offence Act*, RSBC 1996, c. 338, and each day that such violation is caused, or allowed to continue, constitutes a separate offence.

PART TWELVE: PREVIOUS BYLAW REPEAL

12.0 Previous Bylaw Repeal

- 12.1 *Ditch and Watercourse Protection and Regulation Bylaw No. 7285* (adopted December 17, 2001) is repealed.

PART THIRTEEN: SEVERABILITY AND CITATION

13.0 Severability and Citation

- 13.1 If any part, section, sub-section, clause, or sub-clause of this bylaw is, for any reason, held to be invalid by the decision of a Court of competent jurisdiction, such decision does not affect the validity of the remaining portions of this bylaw.
- 13.2 This bylaw is cited as “**Watercourse Protection and Crossing Bylaw No. 8441.**”

Excerpts out of the Richmond Zoning Bylaw No. 8500

4.20 Riparian Management Area Protection *[Bylaw 9871, Sep 4/18]*

- 4.20.1 All lands, lots and sites containing all or a portion of a riparian management area, are subject to the regulations set out in this Section 4.20, except for: *[Bylaw 9871, Sep 4/18]*
- a) those lands and uses permitted in the Agricultural Land Reserve that are exempt from the Riparian Area Regulation; *[Bylaw 9871, Sep 4/18]*
 - b) those lands within City rights-of-way and unopened roads used for the construction, maintenance or operation of municipal works and services that are not ancillary to commercial, industrial or residential development activity. *[Bylaw 9871, Sep 4/18]*
- 4.20.2 For the purposes of this Section 4.20, "development" is defined to mean any of the following activities associated with or resulting from residential, commercial or industrial activities or ancillary activities: *[Bylaw 9871, Sep 4/18]*
- a) removal, alteration, disruption or destruction of vegetation; *[Bylaw 9871, Sep 4/18]*
 - b) disturbance of soils; *[Bylaw 9871, Sep 4/18]*
 - c) construction, erection, modification, conversion, enlargement, reconstruction, alteration, placement, or addition of buildings and structures; *[Bylaw 9871, Sep 4/18]*
 - d) creation of non-structural impervious or semi-impervious surfaces, including hardsurfacing; *[Bylaw 9871, Sep 4/18]*
 - e) flood protection works; *[Bylaw 9871, Sep 4/18]*
 - f) construction of roads, trails, docks, wharves and bridges; *[Bylaw 9871, Sep 4/18]*
 - g) provision and maintenance of sewer and water services; *[Bylaw 9871, Sep 4/18]*
 - h) development of drainage systems; *[Bylaw 9871, Sep 4/18]*
 - i) development of utility corridors (including urban services, major utilities, and minor utilities); and/or *[Bylaw 9871, Sep 4/18]*
 - j) subdivision. *[Bylaw 9871, Sep 4/18]*
- 4.20.3 No development is permitted within a riparian management area, unless: *[Bylaw 9871, Sep 4/18]*
- a) it is for the purposes of enhancement; or *[Bylaw 9871, Sep 4/18]*
 - b) is authorized by a City permit and is in accordance with the Riparian Area Regulation, and any other applicable Federal or Provincial legislation and City bylaw, and *[Bylaw 9871, Sep 4/18]*
- is in accordance with any applicable best management practices. *[Bylaw 9871, Sep 4/18]*
- 4.20.4 Notwithstanding the setbacks specified elsewhere in this bylaw, including any zone: *[Bylaw 9871, Sep 4/18]*
- a) for a lot containing or adjacent to a minor designated stream, the setback is 5.0 m measured perpendicular from the top of bank; *[Bylaw 9871, Sep 4/18]*
 - b) for a lot containing or adjacent to a major designated stream, the setback is 15.0 m measured perpendicular from the top of bank; and *[Bylaw 9871, Sep 4/18]*
 - c) for a lot abutting a road where a minor or major designated stream is adjacent to the far side of the abutting road, the setback is measured perpendicular from the crown of the road rather than the top of bank, *[Bylaw 9871, Sep 4/18]*
- unless the setbacks applicable to that lot from any lot line would result in a larger setback, in which case the zone's lot line setbacks would apply. *[Bylaw 9871, Sep 4/18]*

Engineering Design Specifications	Current Unauthorized Conditions
Minimum pipe size for culverts: 600 mm	300 mm
Minimum pipe grade: 0.05%	Unknown
Pipe joints: all joints shall be gasketed and water tight	No coupling or manhole present at the connection to the 600 mm pipe to the east
Manhole: at every change in pipe size	Not present
Inspection chamber: invert elevation shall be calculated so that the furthest point on the lot must be capable of being drained	Rim of the inspection chamber sits higher than the surrounding surface
Service connection: to be installed perpendicular to the main	Includes a 90-degree vertical bend, preventing future maintenance on the inspection chamber and any blockages in the lateral will be unreachable

Photos



March 18, 2020 – CCTV unable to inspect unauthorized crossing due to missing manhole



January 24, 2020 – Rim of inspection chamber located above surrounding ground elevation



January 24, 2020 – failing decorative wall on property line adjacent to infill



January 24, 2020 – 90-degree vertical bend service connection



January 24, 2020 - Localized ponding



January 24, 2020 – Localized ponding



May 2, 2017 - RMA non-compliance prior to unauthorized ditch infill



January 24, 2020 – Unauthorized Watercourse Crossing

Excerpts of the *Community Charter*

Municipal action at defaulter's expense

17 (1)The authority of a council under this or another Act to require that something be done includes the authority to direct that, if a person subject to the requirement fails to take the required action, the municipality may

- (a)fulfill the requirement at the expense of the person, and
- (b)recover the costs incurred from that person as a debt.

(2)Division 14 [*Recovery of Special Fees*] of Part 7 [*Municipal Revenue*] applies to an amount recoverable under subsection (1) that is incurred for work done or services provided in relation to land or improvements.

Division 12 – Remedial Action Requirements

Council may impose remedial action requirements

72 (1)A council may impose remedial action requirements in relation to

- (a)matters or things referred to in section 73 [*hazardous conditions*],
- (b)matters or things referred to in section 74 [*declared nuisances*], or
- (c)circumstances referred to in section 75 [*harm to drainage or dike*].

(2)In the case of matters or things referred to in section 73 or 74, a remedial action requirement

- (a)may be imposed on one or more of
 - (i)the owner or lessee of the matter or thing, and
 - (ii)the owner or occupier of the land on which it is located, and
- (b)may require the person to
 - (i)remove or demolish the matter or thing,
 - (ii)fill it in, cover it over or alter it,
 - (iii)bring it up to a standard specified by bylaw, or

(iv) otherwise deal with it in accordance with the directions of council or a person authorized by council.

(3) In the case of circumstances referred to in section 75, a remedial action requirement

(a) may be imposed on the person referred to in that section, and

(b) may require the person to undertake restoration work in accordance with the directions of council or a person authorized by council.

Hazardous conditions

73 (1) Subject to subsection (2), a council may impose a remedial action requirement in relation to any of the following:

(a) a building or other structure, an erection of any kind, or a similar matter or thing;

(b) a natural or artificial opening in the ground, or a similar matter or thing;

(c) a tree;

(d) wires, cables, or similar matters or things, that are on, in, over, under or along a highway;

(e) matters or things that are attached to a structure, erection or other matter or thing referred to in paragraph

(a) that is on, in, over, under or along a highway.

(2) A council may only impose the remedial action requirement if

(a) the council considers that the matter or thing is in or creates an unsafe condition, or

(b) the matter or thing contravenes the Provincial building regulations or a bylaw under section 8 (3) (l) [*spheres of authority — buildings and other structures*] or Division 8 [*Building Regulation*] of this Part.

Declared nuisances

74 (1) A council may declare that any of the following is a nuisance and may impose a remedial action requirement in relation to the declared nuisance:

- (a) a building or other structure, an erection of any kind, or a similar matter or thing;
- (b) a natural or artificial opening in the ground, or a similar matter or thing;
- (c) a drain, ditch, watercourse, pond, surface water, or a similar matter or thing;
- (d) a matter or thing that is in or about any matter or thing referred to in paragraphs (a) to (c).

(2) Subsection (1) also applies in relation to a thing that council considers is so dilapidated or unclean as to be offensive to the community.

Harm to drainage or dike

75 A council may impose a remedial action requirement if a person has

- (a) obstructed, filled up or damaged a ditch, drain, creek or watercourse that was constructed or improved under this Act or the *Local Government Act*, or
- (b) damaged or destroyed a dike or other drainage or reclamation work connected with it.

Time limit for compliance

76 (1) The resolution imposing a remedial action requirement must specify the time by which the required action must be completed.

(2) Subject to section 79 [*shorter time limits in urgent circumstances*], the time specified under subsection (1) must not be earlier than 30 days after notice under section 77 (1) [*notice to affected persons*] is sent to the person subject to the remedial action requirement.

(3) The council may extend the time for completing the required action even though the time limit previously established has expired.

Notice to affected persons

77 (1) Notice of a remedial action requirement must be given by personal service or by registered mail to

- (a) the person subject to the requirement, and
- (b) the owner of the land where the required action is to be carried out.

(2) In addition, notice of the remedial action requirement must be mailed to

- (a) each holder of a registered charge in relation to the property whose name is included on the assessment roll, at the address set out in that assessment roll and to any later address known to the corporate officer, and
- (b) any other person who is an occupier of that land.

(3) A notice under this section must advise

- (a) that the person subject to the requirement, or the owner of the land where the required action is to be carried out, may request a reconsideration by council in accordance with section 78 [*person affected may request reconsideration*], and
- (b) that, if the action required by the remedial action requirement is not completed by the date specified for compliance, the municipality may take action in accordance with section 17 [*municipal action at defaulter's expense*] at the expense of the person subject to the requirement.

Person affected may request reconsideration by council

78 (1) A person who is required to be given notice under section 77 (1) [*notice to affected persons*] may request that the council reconsider the remedial action requirement.

(2) Subject to section 79 [*shorter time limits in urgent circumstances*], a request under subsection (1) must be made by written notice provided within 14 days of the date on which the notice under section 77 (1) was sent or a longer period permitted by council.

(3) If the council receives a notice that complies with subsection (2), it must provide the person with an opportunity to make representations to the council.

(4) After providing the opportunity referred to in subsection (3), the council may confirm, amend or cancel the remedial action requirement.

(5) Notice of a decision under subsection (4) must be provided in accordance with section 77 (1) and (2) [*notice to affected persons*].

Shorter time limits in urgent circumstances

79 If the council considers that there is a significant risk to health or safety if action is not taken earlier, the resolution imposing the remedial action requirement may

- (a) set a time limit under section 76 [*time limit for compliance*] that is shorter than the minimum otherwise applicable under subsection (2) of that section, and
- (b) set a time limit for giving notice under section 78 [*persons affected may request reconsideration*] that is shorter than the limit otherwise applicable under subsection (2) of that section.

Recovery of municipal costs through sale of property

80 (1) This section applies to remedial action requirements in relation to the following:

- (a) matters or things referred to in section 73 (1)
 - (a) [*unsafe and non-complying structures*];
- (b) matters or things referred to in section 74 (1)
 - (a) [*nuisances in relation to structures*];
- (c) matters or things referred to in section 74 (1)
 - (d) [*nuisances in relation to things in or near structures*] that are in or about a matter or thing referred to in section 74 (1) (a).

(2) Subject to this section, if a remedial action requirement has not been satisfied by the date specified for compliance, the municipality may sell the matter or thing in relation to which the requirement was imposed or any part or material of it.

(3) The earliest date on which the municipality may sell property referred to in subsection (2) is the later of

- (a) the date specified for compliance, and
- (b) 60 days after the notice under section 77 (1) [*notice to affected persons*] is given.

(4) If a municipality sells property under this section, it

- (a) may retain from the proceeds
 - (i) the costs incurred by the municipality in carrying out the sale, and
 - (ii) if applicable, the costs incurred by the municipality in exercising its power under section 17 [*municipal actions at defaulter's expense*] that have not yet been paid by the person subject to the requirement, and

(b) must pay the remainder of the proceeds to the owner or other person lawfully entitled.

(5) For certainty, the authority under this section is in addition to that provided by section 17 [*municipal action at defaulter's expense*].



Contact the City's Engineering Planning department (Corrine Haer at 604-276-2026) to confirm exact scope. Scope will include, but not be limited to the following and may include additional measures as directed by the General Manager, Engineering and Public Works, to restore the ditch to its previous condition.

- All work outlined below must be overseen and inspected by a Qualified Environmental Professional
- Upon completion of restoration back to RMA Watercourse, a report that documents all restoration activities is required. The report needs to contain a chronological break down of all activities and describe compliance to the various measures.
- A restoration monitoring schedule will need to be created including invasive species removal and management provisions, watering schedule, and a post-planting monitoring period.
- A pre-construction meeting must be held at the property with the Qualified Environmental Professional, any contractors involved and City staff
- All material removal must be sent to a permitted site under the guidance of the QEP and in accordance with all applicable Acts, statutes, regulations, and decisions and orders of any person or body having jurisdiction over the Lands
- Remove existing decorative wall that encroaches into the RMA buffer zone
- Remove existing culvert and reinstate RMA ditch with proper grading and 1:1 ditch bank slope
- Construct mini lock block headwall on west side of ditch
- Reconstruct retaining wall on the east side of the ditch (if required)
- Renew existing culvert under driveway (if required)
- Staff recommend using a hydro vac or manual excavation near the submerged retaining wall
- Re-vegetate and stabilize the RMA per the planting plan as explained in Appendix A of the Construction Environmental Management Plan for 13740 Westminster Hwy, dated October 2, 2018 by Madrone Environmental Services Ltd. for the private property impacts
- Unplanted areas should be seeded with the City's preferred 100% native riparian seed mix supplied by Premier Pacific Seeds and covered with coconut matting.

For more information on the appropriate seed mix for a project please contact Environmental Sustainability.

100% Native Grass Seed Mix Roadside Riparian Coastal Seed Mix			
Supplier	Premier Pacific Seeds Ltd		
Application type	Coastal roadside riparian		
Functions and Features	<ul style="list-style-type: none"> erosion and sediment control pollinator attractant mitigate invasive plant growth in disturbed soils low growth height 		
Sowing time	Fall and spring		
Sowing rate	40 – 50 kg/ha		
Cost	\$35/kg		
Notes	This is the preferred mix to be used in the City's Riparian Management areas as it is comprised of all native grasses and will support habitat functions in these areas.		
Seed Mix	% by weight	Seeds/lb	% by Seed Count
<i>Agrostis exarata</i> , Spike Bentgrass*	1.00	6,000,000	21.30
<i>Bromus sitchensis</i> , Alaska (Sitka) Brome*	40.00	100,000	14.20
<i>Deschampsia cespitosa</i> , Tufted Hairgrass*	3.00	2,100,000	22.36
<i>Festuca rubra</i> , Native Red Fescue*	15.00	600,000	31.95
<i>Hordeum brachyantherum</i> , Meadow Barley*	41	70,000	10.19
* native to coastal British Columbia	100.00		100.00

Attachment 7



**CONSTRUCTION ENVIRONMENTAL MANAGEMENT
PLAN**

13740 Westminster Highway

FOR:

**Swam Panesar
2380 Shell Road
Richmond, BC V6X 2P1**

GP REVISION BY:

Stephen Ostensen, ASCT

October 2, 2018

Madrone Environmental Services Ltd.

DESIGN: 18-0362

MADRONE ENVIRONMENTAL SERVICES LTD.



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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

13740 Westminster Highway

1 Introduction

The purpose of this report is to provide the property owner of 13740 Westminster Highway, Richmond BC with a revised Construction Environmental Management Plan (CEMP) to address non-compliant work conducted within the City of Richmond (City) Riparian Management Area (RMA). Non-compliant works associated with construction of a large single family home in 2018 include:

- A septic tank system installed within the RMA, and;
- A retaining wall installed below the top of bank, and above the highwater mark (HWM) within the RMA.

The approved Building Permit indicated that a retaining wall was to be installed outside of the RMA setback and the RMA was to be restored to its native condition per the approved Construction Environmental Management Plan (CEMP) and Restoration Plan created by prepared by Madrone Environmental Services Ltd. (Madrone 2017). The septic tanks system was designed and installed under supervision of Cleartech Consulting Ltd. (Cleartech) within the RMA in 2018. The septic tank system has since been accepted by the City and is to remain in the current location. However, the retaining wall installed by the owner has not been approved, and the City requires it to be removed.

2 Background

Madrone provided the City and Swarn Panesar (owner) a CEMP on January 27, 2017 to accompany a building permit application for proposed development of a new single family home at 13740 Westminster Highway. As part of the building permit review, City staff conducted a site inspection of the works permitted under Building Permit 16-753783-B7 on April 12, 2017. The City determined that vegetation had been removed and

soils disturbed within the RMA at 13740 Westminster Highway in advance of permit approval, and that no measures recommended by Madrone to protect the RMA had been implemented. The owner was issued a letter of Non-compliance and notice of Unauthorized Impacts to the City's RMA on April 12, 2017. The property owner was ordered by the City to install temporary measures in accordance with info-bulletin 23 to mitigate further impacts to the watercourse and to hire a QEP to prepare a revised CEMP and Restoration and Planting Plan to restore the RMA to its natural state.

In support of the building permit application, Madrone provided the City and the owner a revised CEMP and Remediation Plan on May 17, 2017. The CEMP and Remediation Plan outlined measures to restore the slope and stability of the top of bank and re-vegetate the RMA. In addition Madrone coordinated with Joss Design Inc. (architect) to include the 5 metre RMA setback and 2 m RMA buffer boundaries on the approved site plan.

On September 13 2017, City of Richmond staff conducted a site inspection of the works permitted under Building Permit 16-753783-B7. The City determined that no RMA Restoration work had been completed. Further non-compliance included a newly installed septic tank system and a retaining wall within the 5 metre RMA setback without City approval. To achieve compliance with the City approved building permit, the Watercourse Protection Bylaw No. 8441, the Provincial Riparian Area Regulation (RAR) re-vegetation Guidelines, and this revised and updated 2018 CEMP and Restoration and Planting Plan; the RMA is required to be stabilized, restored and re-vegetated and the retaining wall pushed back to re-establish as much of the RMA while ensuring the structural integrity of the septic tank system is maintained.

A revised site plan reflecting the septic tank system dimension and location within the RMA has been prepared by Cleartech Consulting Ltd. and is included in Appendix II.

An updated RMA Restoration and Planting Plan has been prepared by Madrone and is included in Appendix I. All septic tank system dimensions, location, stability recommendations, and re-location of the retaining wall specification are per Cleartech Consulting Ltd. design.

After the City of Richmond's approval of this CEMP and RMA Restoration and Planting Plan to ensure compliance with Bylaw requirements, all RMA Restoration and protection measures outlined in this report must be in place prior to any work being started and must be inspected by a QEP prior to construction and remain installed and maintained until construction is complete. A pre-construction meeting must be held at the property with Madrone and any contractors involved in the Restoration activities covered in this report.

2.1 Site Location

The subject property covers an area of 0.1 (ha) and is situated in the Agricultural Land Reserve (ALR). It is located in south Richmond along Westminster Highway, near the corner of No.6 Road, and is bounded by single family homes to the west and south, a church and parking lot to the east and Westminster Highway to the north (Figure 1). The parcel is zoned AG1.



FIGURE 1 OVERVIEW MAP OF SUBJECT PROPERTY, 13740 WESTMINSTER HIGHWAY, RICHMOND, BFISHERIES VALUES

The recent development is adjacent to a watercourse which runs along the north property line on the south side of Westminster Highway. The watercourse along Westminster Highway is a protected watercourse under the Provincial Riparian Area Regulation. The City has designated a 5m setback RMA along this watercourse to protect the integrity of the riparian area.

The watercourse is an unnamed, un-gazetted roadside ditch historically channelized for irrigation and flood control purposes. The water levels are managed by the City through an upstream and downstream system of valves and pumps. The watercourse flows east underneath the owner's driveway along the north property boundary on City property. The RMA affects approximately 15 m of the property frontage.

The watercourse is not identified by any government mapping tools (i.e. iMapBC, Habitat Wizard) and there is no fish inventory data documented in the Ministry of Environment (MoE) / Fisheries and Oceans Canada (DFO) Fisheries Information Summary System (FISS) database. This watercourse is connected to the channelized stream network via a fish passable culvert along the south of Westminster Highway. This network of channelized streams and ditches are reported to support threespine stickleback (*Gasterosteus aculeatus*).

Salmonid fish presence at the subject property is unlikely due to downstream in-stream obstructions (long, narrow culverts) and flood control infrastructure. In addition, the water is apparently very high in Iron (Fe) and low in dissolved oxygen, which further limits suitability for fish and ability to sustain aquatic life.

The watercourse has a bankfull width of 5 m. The bankfull depth is 1.3 m and wetted depth was 15 cm. The streambed consists of mud (80%), sand (15%) and gravel (5%). The gradient is 1%. A retaining wall has been constructed below the top bank and above the HWM. This watercourse is considered a fish-bearing stream under the Riparian Area Regulation.

2.2 Vegetation

Vegetation within and adjacent to the RMA up to the property line has been completely cleared and grubbed since April 2017. Vegetation within RMA upstream and downstream of the site consists of Himalayan blackberry (*Rubus armeniacus*), Indian Plum (*Oemleria cerasiformis*) shrub, and reed canary grass (*Phalaris arundinacea*). Streamside vegetation within Right of Way (ROW) of the watercourse consisted of mowed grass.

3 Measures to Protect and Maintain the RMA

The watercourse fronting 13740 Westminster Highway is part of the City's drainage infrastructure and has a designated RMA setback that measures horizontally 5 meters from top of watercourse bank. This RMA setback has been subject to non-compliant development resulting in complete removal of vegetation, disturbance of soil and installation of a septic tank system and retaining wall. The Following Restoration measures must be implemented to achieve compliance with the approved building permit.

1. Install erosion and sediment control measures.
2. Remove and re-locate the retaining wall per Cleartech specification.

3. Re-grade the RMA and prepare soil for planting.
4. Re-vegetate and stabilize the RMA per the RMA Restoration and Planting Plan.
5. Remove ESC measures.

All work will be conducted above the HWM, and below the top of bank.

All design, planning and recommendations related to the relocation of the retaining wall and stability of the septic tank system has been provided by Cleartech. Retaining wall relocation and installation details are provided Section 3.0 of this report.

Erosion and sediment control (ESC), RMA soil stabilization measures and planting details are provided in the RMA Restoration and Planting Plan prepared by Madrone in Appendix I.

No deleterious foreign substances should be placed in the RMA (e.g., grass clippings, garbage, soil, excess fertilizer). No further removal, alteration, disruption or destruction of vegetation and soils, or installation of non-structural impervious surfaces are permitted inside the RMA.

3.1 Encroachment

Restoration work will be conducted within the RMA. Once the RMA is restored, there will be no further encroachment into the RMA. Septic tank maintenance and associated permitting will be the responsibility of the owner. A brightly-coloured, temporary fence of a minimum height of 1.2m will be erected at least 7 m outside of the RMA where possible. In addition, a sediment fence must be installed on the property side of the brightly-coloured fence during Restoration works to protect the RMA (Figure 2).

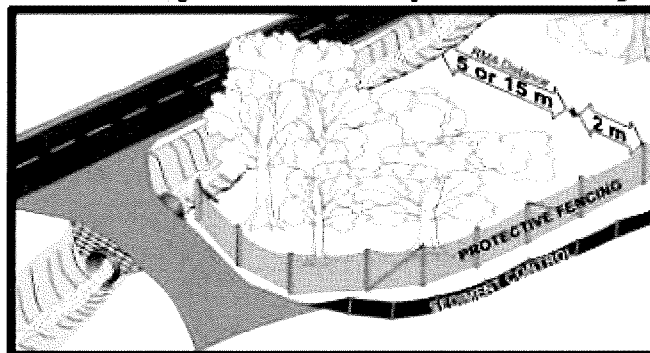


FIGURE 2. MINIMUM RMA PROTECTION MEASURES (COPIED FROM CITY OF RICHMOND WEBSITE).

All further activities must be conducted outside of the 5 m RMA protection area and additional 2 m buffer zone.

All RMA encroachment protection measures are required to be inspected by the QEP prior to commencement of restoration activities. All fencing and sediment control must remain intact and in place throughout the entire restoration works period.

3.2 Sediment and Erosion Control

Because the RMA area has been altered, cleared and the soils disturbed, risks involved with erosion and sediment transportation into the watercourse are high. Excavation activities associated with removing and relocating the retaining wall have the potential of increasing risk bank erosion and subsequent sediment transportation. Appropriate Erosion and Sediment Control (ESC) mitigation measures will be implemented prior to any site restoration activity to prevent sediment transportation. All works will be conducted under supervision of a QEP Environmental Monitor (EM) and in a manner that will prevent the release of sediment or sediment laden waters to watercourses, ditches and swales draining to fish habitat.

For erosion and sediment control to be effective on this site, it is important that the following erosion and sediment control measures be deployed in order to meet or exceed the standards outlined in the DFO "Land Development Guidelines for the protection of Aquatic Habitat".

Current Provincial Water Quality Guidelines for discharge of sediment, sediment-laden water, and turbid water are as follows:

- Water quality should not exceed 8 NTU of background in 24 hours when background is less than or equal to 8 NTU
- Water quality should not exceed 5 NTU when background is between 8 and 30 NTU
- Water quality should not exceed 10% when background is greater than or equal to 50 NTU

The following ESC measures will be deployed during the Restoration process:

- All ESC measures will be implemented under supervision and direction of an Environmental Monitor provided by Madrone.

- Sufficient quantities of sediment fence, straw bales, and grass seed mix, necessary to stabilize disturbed ground must be onsite, or readily available for inspection and installation prior to implementing the Restoration plan.
- Prior to removing the retaining wall, the contractor must coordinate with Denbow to have the Filtrexx® Filter50xx™ pre-filled with Certified Filtrexx® Filtermedia on site and installed by a Certified Filtrexx® Installer or under supervision by the QEP per product specification, the RMA Restoration and Planting Plan, and above the HWM.
- Sediment fencing will be installed from the top of bank and around the perimeter of the orange protective fencing.
- All disturbed slopes, watercourse banks, and ground surfaces that may contribute sediment-laden water into sensitive fish habitats during precipitation events will be stabilized with a Coastal Re-vegetation Seed Mix and protected with a hand spread layer of straw.
- ESC measures will be inspected by the EM regularly during the course of the Restoration work. Necessary repairs will be made by the contractor immediately if any damage occurs such that erosion and sediment control is compromised.
- All efforts will be made to leave undisturbed vegetation where possible.
- Work will be pursued to completion as quickly as possible once started.
- All work which involves heavy machinery that is disturbing earth material must be suspended during significant rainfall (> 25 mm of rain in a 24/hr. period). Significant rainfall will be determined by review of adjacent rain gauge stations.
- No debris is to remain below the high water mark or placed into the watercourse. All existing structure debris will be disposed of by the contractor.

3.2.1 Sediment Fencing

Due to the disturbed condition of the RMA and buffer area proper installation of sediment fencing is mandatory. As much of the RMA buffer area has been developed, sediment fencing will be placed where possible at least 7 m from the top of bank and outside of the protective buffer fencing.

- The lower edge of the fence fabric must be dug into the ground and back-filled to prevent turbid water from potentially flowing underneath the fence. The fence must also be securely fixed to strong wooden stakes. Figure 3 below illustrates the proper installation of a sediment fence:

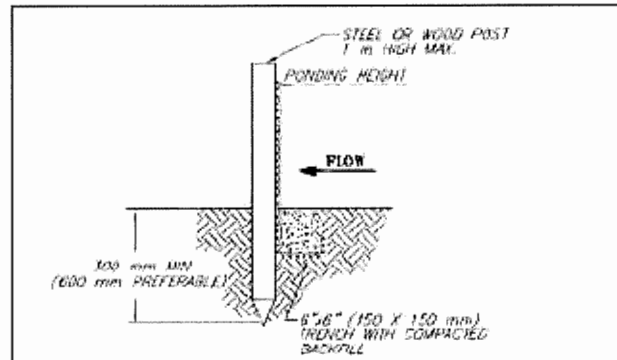


FIGURE 3. DIAGRAM OF HOW TO PROPERLY INSTALL SEDIMENT FENCING

3.2.2 Slope Stability

The soil within the RMA has been disturbed and the bank is at risk of having stability issues. All unauthorized work within the RMA was identified by the City to have occurred above the high watermark of the watercourse. Per the Restoration plan and approved building permit; the loading or hydrology of the slopes contained in the channel banks will be restored to pre-disturbed condition. The top of bank of the RMA will be stabilized with willow stakes, Filtrexx® Filtersoxx and Filtermedia sediment control measures, and re-vegetated per the Planting Plan. All activities will be above the high water mark.

4 Septic Tank Stability and Retaining Wall Relocation

The septic tank system and revised site plan was designed and installed by Cleartech. All details regarding stability and structural integrity of the septic system and retaining wall relocation have been provided by a Certified Professional from Cleartech.

By order of the City, the retaining wall must be removed from its current location and relocated while ensuring stability of the installed septic tank system. In order to provide adequate soil pressure on the side wall of the tanks, and prevent soils from being eroded away between the tanks and ditch, Cleartech recommends a retaining wall be installed

2.0m to the north of the tanks with the top of the wall being at least 1.0m below the top of the tanks (Figure 4).

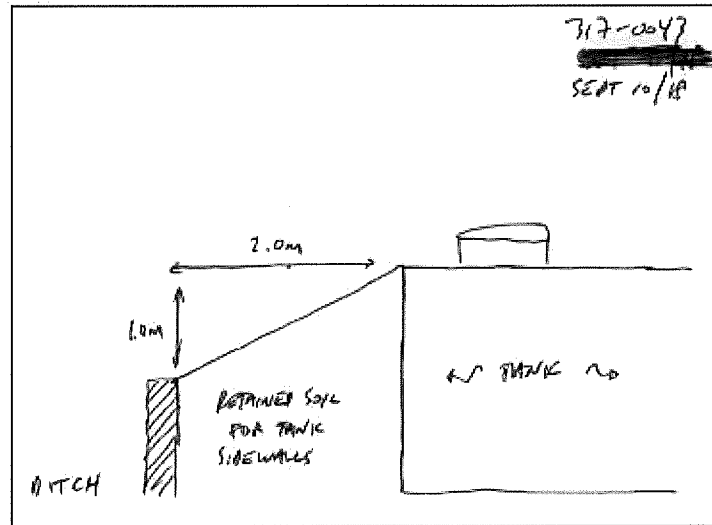


FIGURE 4. RETAINING WALL RELOCATION DESIGN DRAWING PROVIDED BY CLEARTECH.

4.1 Storm and Waste Water Management

Construction of impermeable surfaces (e.g. rooftops) generally increases the amount of storm water leaving a site in comparison to pre-development conditions. Infiltration capacity is reduced, and short-term surface run-off associated with rain events increases.

Elevated storm water run-off can have negative impacts on watercourses and groundwater resources, including a potential increase in short-lived peak flow events and a decrease in the long-term supply of water to a system, which can result in lower water levels (both surface and ground) in the summer months. The goal of storm water management is to capture storm flow and return it to natural hydrological pathways.

There are no instream works associated with this project.

4.2 Fuel spill mitigation measures

- Oil, grease, or any other substance deleterious to aquatic life will be prevented from entering into any watercourse, ditch or stormsewer
- Appropriate measures must be taken to prevent fuels, lubricants, or construction wastes, from entering watercourses.

- The contractor must keep emergency spill kit onsite; it is mandatory, will be inspected and will be required to be onsite each day the contractor's crew is working on the site
- Operators will be held responsible to ensure that oil, grease or other deleterious substances do not enter any environmentally sensitive areas.
- There is to be no machine refueling within 30 m of flowing watercourses.

The Contractor will have a spill kit capable of absorbing a 255 litre spill kit that would include:

- o 150 Absorbent Pads
 - o 8 - 3" x 8' Absorbent Socks (Oil, Gas & Diesel)
 - o 1-15 lb. Pail Oil Sponge
 - o 1 Nitrile Rubber Drain Mat
 - o 1 Pair Nitrile Gloves
 - o 4 Disposal Bags
- Any spill of a substance toxic to aquatic life of reportable quantities will be immediately reported to the Provincial Emergency Program 24 hour phone line at 1-800-663-3456.

5 Environmental Monitoring

An Environmental Monitor (EM) will be onsite to monitor restoration activities to ensure the Contractor is in compliance with mitigation measures outlined in this report, the Restoration and Planting Plan, and Provincial, Federal and the City regulations.

Specific Actions Required:

- Reviewing the revised CEMP and Restoration Plan and ensuring its approval prior to any development activity;
- Completion of on-site monitoring visits throughout the restoration works period to ensure the measures are being implemented properly; and
- Completion of a final site visit to ensure that all measures were implemented as required.

Monitoring Schedule:

- An initial pre-construction meeting will be held to discuss the Restoration plans, RMA protection measures, and RMA remediation procedures. It is expected that an open

dialogue will be maintained between the QEP and the developer prior to any work occurring within the RMA;

- The site will be visited during the mid-point of the restoration process;
- A final site visit will be completed at the end of each phase (ESC installation, excavation, retaining wall re-location, re-grading, site preparation, and re-vegetation) to ensure that all measures were followed.

Communication Plan:

- The developer will maintain open communication with the QEP prior to restoration activities occurring within or adjacent to the RMA. This will allow for site visits to be made throughout the restoration process and for modifications to be made, where necessary; and
- Upon completion of each restoration phase, the developer will contact the QEP to allow for the final site inspection to be carried out.

Post Construction Report:

As part of the monitoring process, a report that documents all restoration activities is required. The report would contain a chronological break down of all development activities and describe compliance to the various measures.

7 Conclusion

As a qualified environmental professional, I hereby provide my professional opinion that if the Riparian Management Area identified in this report is protected from the development and the measures identified in this report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is currently active.

Prepared by:

A handwritten signature in cursive script, appearing to read "S. Ostensen", is written over a circular professional seal. The seal contains the text "33740", "Swi 1984 2012", "210 of 2006/08", and "2018". The outer ring of the seal contains the text "PROFESSIONAL ENGINEERS & TECHNOLOGISTS OF BRITAIN".

Stephen Ostensen, AScT
Madrone Environmental Services Ltd.



APPENDIX I

RMA Restoration and Planting Plan Prepared by Madrone Environmental Services Ltd

DOSSIER: 18.0388

MADRONE ENVIRONMENTAL SERVICES LTD.

6511999

GP - 275

ENVIRONMENTAL NOTES

The primary purpose of this Riparian Management Area (RMA) remediation and planting plan is to address the installation of a retaining wall that is not in compliance with the City of Richmond (City) approved Building Permit, the Richmond Watercourse Protection Bylaw No. 8441, and the Provincial Riparian Area's Protection Act and Regulation. The City has designated the watercourse fronting the property with a 5 metre RMA. In order to achieve building permit compliance, the City requires that as much area as returned to the RMA as possible while ensuring the structural integrity of the septic tank system is maintained. This planting plan is part of the revised CBMP prepared by Madrone Environmental Services Ltd., dated May 2017, revised September 2018. Remediation works consists of:

1. Removing the existing retaining wall, and installing a new retaining wall per Cleartech Consulting Ltd (Cleartech) specification.
2. Re-grading the RMA to the Top of Bank (TOB) and stabilizing the soil by installing erosion and sediment control (ESC) measures as specified in the RMA Remediation and Planting plan (Madrone, 2018).
3. Restoration planting within the RMA in accordance with the Riparian Areas Regulation Re-vegetation Guidelines (2012) and the approved Conservation Environmental Management Plan (Madrone, 2018).

All planting, ESC and stability measures will be conducted and implemented above the normal high water mark (HWM).

Planting Location:

- The re-vegetation area within the RMA is approximately 15 m long x 5 m wide and is located at 13740 Westminster Highway, Richmond BC. Installation of septic tanks within the RMA have reduced the restoration planting area from 70 m² to an approximately 50 m² riparian strip along the south bank of a channelized stream; south of Westminster Highway.
- Retaining Wall Relocation
- To provide adequate soil pressure on the side wall of the tanks, and to prevent soils from being eroded away between the tanks and ditch, the existing retaining wall must be removed and relocated 2.0 m north and 1.0 m below the top of the tanks (Cleartech).
- Once the approved retaining wall structure has been installed, the RMA will be regraded with soil and prepared by decompaction and scarification to provide an appropriate growth medium for re-vegetation.
- To promote native plant survival, the soil should be grubbed to a minimum depth of 0.5 m.
- Soil preparation will include manual or mechanical separation of existing vegetation, grasses, and non-native invasive species. The soils at this planting location are typically moist. Madrone recommends that microclimates such as hummocks, mounds, and pits be created during soil preparation to create varying moisture, shade and nutrient regimes favoured by certain plant species.

Erosion and Sediment Control

- Removal of the non-compliant retaining wall and re-grading the RMA will impact the stability of stream bank.
- To ensure compliance and final remediation of the RMA, Madrone recommends that the primary source of sediment control consist of a Filtracool Filtracool™ pre-filled with a Certified Filtracool Flowlocks™, and installed by a Filtracool Certified™ Installer per product specification, this design and above the HWM.
- The sediment control is a permanent, biodegradable measure that will improve slope stability and filtration capacity once vegetation is established.
- After construction and re-vegetation activities are complete, the sediment control will be left in place and seeded with a Coastal Re-vegetation Seed mix. This will reduce the erodible potential of surface run-off during the Fall/Winter months and eventually permanently stabilize the stream bank.

Planting Criteria

- A Qualified Environmental Professional (QEP) will be onsite during planting activities, and will provide the City a post-construction report outlining the works.
- All newly stems will be planted 1m above the High Water Mark (HWM) as to not impact maintenance requirements by the COR. No significant trees that could destabilize channel banks at maturity will be planted below the HWM.
- All trees will be planted in accordance with COR Replacement Tree Guidelines requirements and in compliance with the COR Tree Protection Bylaw 8057.
- All plants must have been grown for a length of time necessary to permit the roots to fill and hold soil within the container as required by the Canadian Nursery and Landscapes Associated Standards for nursery stock.
- The contractor will ensure that plants are banded with the growing medium and that plant growth above the top of bank is trained to project outward over the channel bank to assist in shading out moisture tolerant invasive species re-vegetation along the bank slope.
- Shrubs will be planted on 2 m centres with bucket growing shrubs and willow shrubs planted on 0.5 m centres.
- Trees will be planted on 3 m centres.

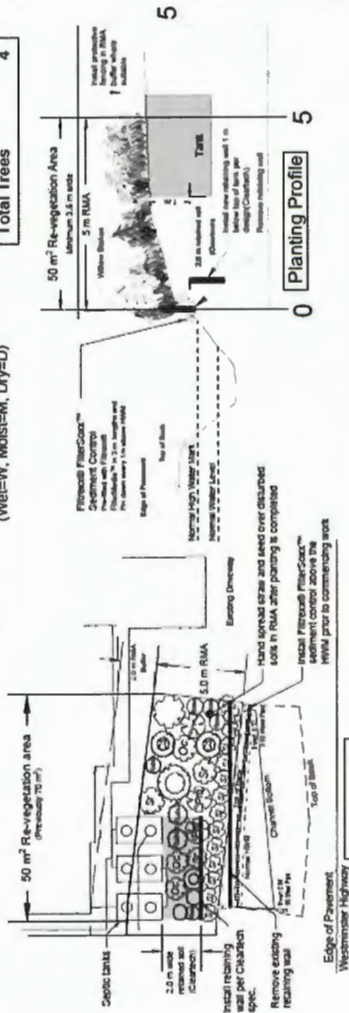
Plant Survival

- The target survival will be 80% for shrubs and 90% for trees.
- Invasive plant control maintenance is required to be conducted every 4 - 6 weeks, and a weeding program will be instituted through the dry summer months (May - September) in the first year after planting.
- A detailed monitoring plan is included in the CBMP, 2018.

RIPARIAN MANAGEMENT AREA RE-VEGETATION SPECIES LIST

SYMBOL	COMMON NAME	LATIN NAME	MICROSITE CONDITION	POT SIZE	SPACING	NUMBER
(S)	Pacific willow	<i>Salix lasandra</i>	W	Slakes	0.5 m	14
(R)	Nootka rose	<i>Rosa nutkana</i>	D,M	#1 Pot	1.0 m	4
(A)	Salmonberry	<i>Rubus spectabilis</i>	M,W	#1 Pot	1.0 m	4
(B)	Red osier dogwood	<i>Cornus sericea</i>	M	#1 Pot	2.0 m	3
(S)	Red elderberry	<i>Sambucus racemosa</i>	M	#1 Pot	2.0 m	3
(P)	Sword fern	<i>Polystichum munitum</i>	D,M	#1 Pot	2.0 m	2
(O)	Indian Plum	<i>Oemleria cerasiformis</i>	D,M	#1 Pot	2.0 m	3
Total Shrubs						33
(C)	Western red cedar	<i>Thuja plicata</i>	M,W	#3 Pot	3.0 m	1
(R)	Red alder	<i>Alnus rubra</i>	M	#2 Pot	3.0 m	2
(C)	Bitter cherry	<i>Prunus emarginata</i>	M	#2 Pot	3.0 m	1
Total Trees						4

(Well=W, Moist=M, Dry=D)



Planting Plan

- City of Richmond Riparian Management Area (RMA)**
- The RMA must not be altered except in accordance with a City approved permit and Construction Environmental Management Plan prepared by a Qualified Environmental Professional (QEP). Any ground cover removal, no storage of materials, no building, structure or surface construction including retaining walls can occur in an RMA.
 - A utility concern, temporary fence of a minimum height of 1.2 m must be erected at least 2 m outside of the RMA. An erosion and sediment control fence must be installed on the property side of the utility concern fence. All additional RMA protection measures, as approved by the City, must be installed and maintained throughout the construction period.
 - All trees will be planted in accordance with COR Replacement Tree Guidelines requirements and in compliance with the COR Tree Protection Bylaw 8057.
 - All plants must have been grown for a length of time necessary to permit the roots to fill and hold soil within the container as required by the Canadian Nursery and Landscapes Associated Standards for nursery stock.
 - The contractor will ensure that plants are banded with the growing medium and that plant growth above the top of bank is trained to project outward over the channel bank to assist in shading out moisture tolerant invasive species re-vegetation along the bank slope.
 - Shrubs will be planted on 2 m centres with bucket growing shrubs and willow shrubs planted on 0.5 m centres.
 - Trees will be planted on 3 m centres.
- The landowner is responsible to ensure the satisfaction of the City any unauthorized developments within the RMA.

RMA RESTORATION AND PLANTING PLAN

CITY OF RICHMOND
13740 Westminster Hwy

MADRONE
MADRONE ENVIRONMENTAL SERVICES LTD.

DATE 18/09/25
SHEET 1 of 1
DWG. No. 18.0366

DRAWN S.O
DESIGNED S.O
CHECKED L.K
APPROVED L.K
SCALE AS SHOWN



APPENDIX II

Site Plan Prepared by Cleartech Consulting Ltd.

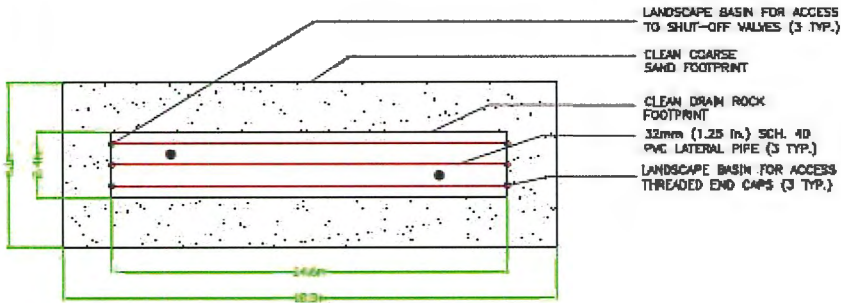
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MADRONE ENVIRONMENTAL SERVICES LTD.

LOADING RATE INFORMATION

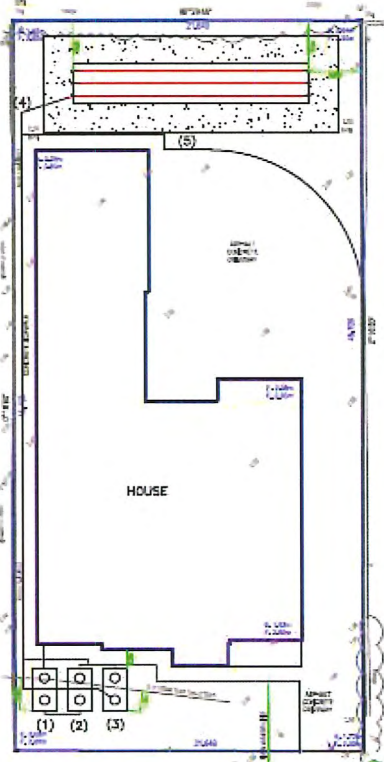
- LOADED BASAL AREA = 112 sq.m. = 1200 sq.ft.
- LOADED BASAL AREA LR = 27.8 L/sq.m/d = 0.8 gal/sq.ft./d
- SYSTEM DESIGNED FOR:
- 4 BEDROOM RESIDENCE MAX. 505 sq.m. (5435 sq.ft.)
- 2 BEDROOM SUITE MAX. 78 sq.m. (834 sq.ft.)
- PEAK FLOW = SPM TABLE II-B = 3123 L/d = 888 lppd
- AVERAGE FLOW = 1562 L/d = 344 lppd

- NOTE CLEARTECH DOES NOT CONDUCT ELECTRICAL INSPECTION OR CONFIRM COMPLIANCE WITH ANY ELECTRICAL CODES. CLEARTECH WILL TEST FOR ELECTRICAL FUNCTION ONLY.
- NO CARBURATOR OR WATER SOFTENER DISCHARGE ALLOWED



LEGEND

- PROPERTY LINE
- DISTRIBUTION LATERAL
- (1) SINGLE CHAMBER CONCRETE 1000 lgal TRASH TANK
- (2) SINGLE CHAMBER CONCRETE ECOPOD E100T3 TREATMENT PLANT
- (3) 1000 lgal CONCRETE PUMP CHAMBER WITH UV, MYERS MCXF PUMP (120/1/80), AQUAWORK TRANSDUCER/CONTROL PANEL
- (4) 38mm (1.5 in.) SCH. 40 PVC TRANSPORT LINE TO DISPOSAL FIELD
- (5) SAND MOUND DISPOSAL FIELD:
 BASAL AREA (TOTAL SAND FOOTPRINT) = 18.3m (80 ft.) x 8.1m (26 ft.)
 INFILTRATION AREA = 14.6m (48 ft.) x 2.4m (8 ft.) x 150mm (6 in.) CLEAN DRAIN ROCK, MIN. 610mm (24 in.) CLEAN COARSE SAND UNDER BED WITH 3 x 14.6m (48 ft.) L280 x 32mm (1.25 in.) Ø SCH. 40 PVC LATERALS, EACH LATERAL WITH 18 x 3mm (1/8 in.) Ø ORIFICES AT 813mm (32 in.) SPACING.



13740 WESTMINSTER HIGHWAY, RICHMOND, BC
L 2, BLK 4N, PLAN 12900, SEC B, RSM, LD 36

CLEARTECH CONSULTING LTD.		PH CONTRACTORS	
1341 W. ARBY CIRCLE, VANCOUVER, BC V6L 5K4 Tel: 604-273-1111 Fax: 604-273-1112 www.cleartechconsulting.com		13740 WESTMINSTER HIGHWAY, RICHMOND, BC L 2, BLK 4N, PLAN 12900, SEC B, RSM, LD 36	
PROJECT	13740 WESTMINSTER HIGHWAY, RICHMOND, BC	DATE	1 OF 1
TITLE	ON-SITE SEWAGE DISPOSAL SYSTEM - CONSTRUCTION RECORD DRAWING	DATE	JUN 2016
SCALE	AS SHOWN	DATE	
REVISION		DATE	

13740
WESTMINSTER
HIGHWAY

