



APPROVAL IN PRINCIPLE

(Pursuant to Section 53 of the *Environmental Management Act*)

THIS IS TO CERTIFY that the remediation plan described herein submitted by the City of Nanaimo for the contaminated site identified in Schedule A of this document has been approved.

When implemented, the remediation plan must be implemented in accordance with the requirements and conditions specified in Schedule B.

The substances for which remediation will be conducted and for which this Approval in Principle is valid are specified in Schedule C.

I have issued this Approval in Principle based on a review of the documents listed in Schedule D. I, however, make no representation or warranty as to the accuracy or completeness of that information.

A Director may rescind this Approval in Principle if conditions imposed in the Approval in Principle are not complied with or any fees payable under Part 4 of the Act or regulations are outstanding.

This Approval in Principle should not be construed as an assurance that there are no hazards present at the site.

March 15, 2019
Date Issued


Lavinia Zanini, P.Geol.
For Director, *Environmental Management Act*

Schedule A

The site covered by this Approval in Principle is located at 2230 Boxwood Road & 2241 Bowen Road, Nanaimo, British Columbia which is more particularly known and described as:

Lot 2, Section 18, Range 7, Mountain District, Plan VIP63562,
PID: 023-477-741, 2230 Boxwood Road

Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562,
PID: 023-477-750, 2241 Bowen Road and,

Boxwood Road as dedicated on Plan VIP 63562

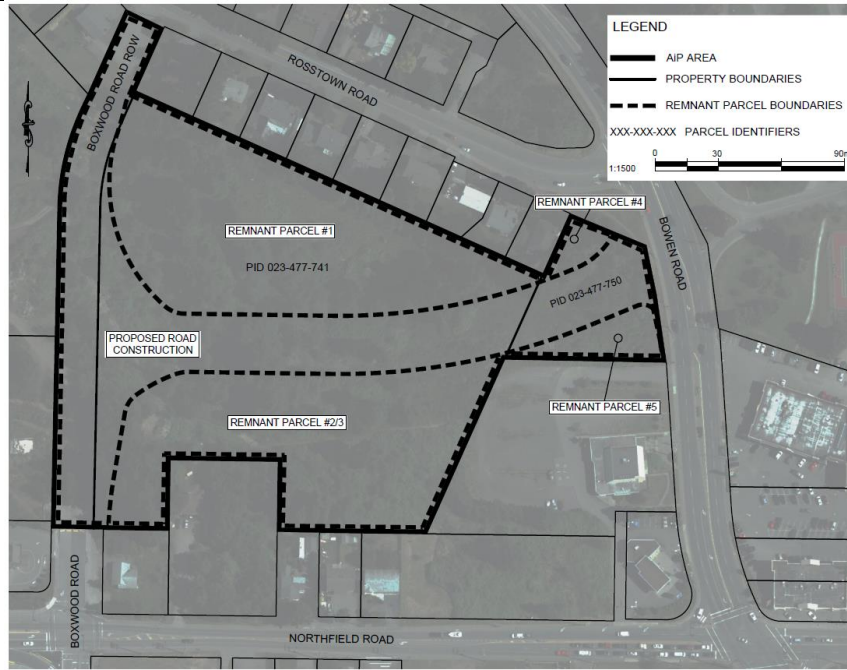
The approximate centre of the site using the NAD (North American Datum) 1983 convention is:

Latitude: 49° 11' 35.50"
Longitude: 123° 59' 41.20"

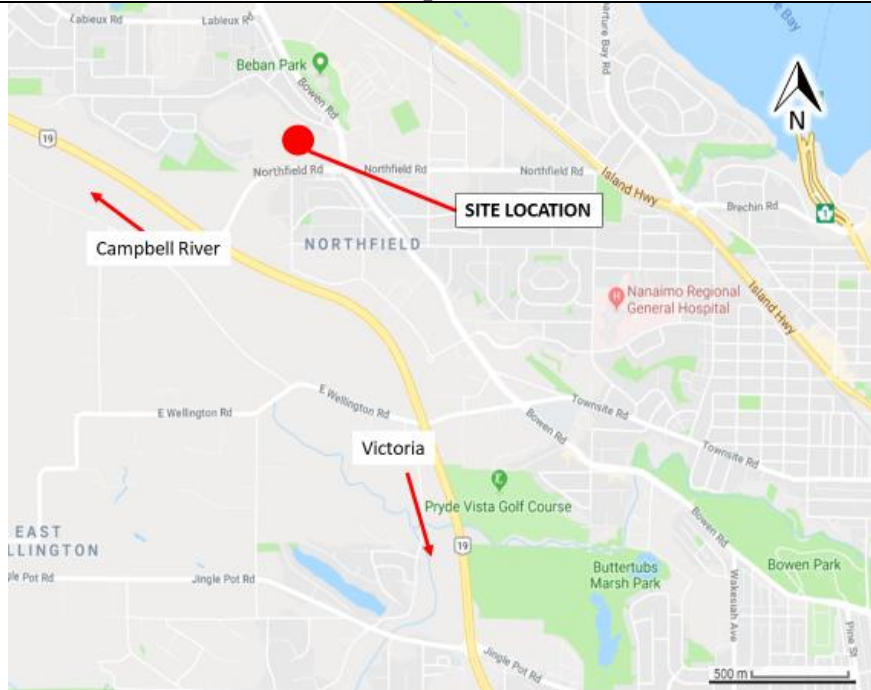
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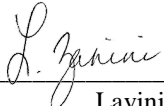
Site Plan, Nanaimo, BC



Location Map, Nanaimo, BC



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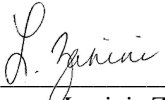

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Schedule B

Requirements and Conditions

1. Remediation, including monitoring, inspections and maintenance of any works, must be undertaken by the responsible person in the manner and schedule specified in the Remediation Plan listed in Schedule D and as summarized below or as specified in a modification of the plan approved by the Director.
 - (a) The maximum amount of soil that exceeds industrial land use to be managed in a temporary stockpile on site 3,575 m³. The temporary stockpile will include a base PVC liner and PVC cover for containment and will be located within Remnant Parcel #2/3 as shown in Schedule A;
 - (b) The soil temporarily stored in the stockpile will be discharged to the following areas:
 - i) Storm water detention pond berm beneath a soil cap and liner located within Remnant Parcel 1 as defined in Schedule A– 2,130 m³
 - ii) Road right-of way beneath initially pre-load and finally sub-base and asphalt located within Proposed Road Construction as defined in Schedule A– 1,445 m³
 - (c) Installation of sentinel well network comprising a minimum of 10 groundwater monitoring wells to be monitored twice a year seasonally over the period of the Approval in Principle as per the Remediation Schedule of the plan listed in Schedule D; and
 - (d) Groundwater samples to be analyzed for the substances to be remediated in water as listed in Schedule C and reported as per Condition 6.
 - (e) The works must be regularly inspected and maintained in good working order.
2. Any substantial modifications to the approved remediation plan, including substantial changes to the remediation schedule, conditions or circumstances described in the risk assessment upon which the remediation plan is based, or changes in land, vapour, water, or sediment use, must be promptly identified in a written submission by the responsible person to the Director. An application for an amendment or new Approval in Principle may be necessary.
3. Up-to-date records of monitoring, inspections and maintenance of any works must be maintained by the responsible person or their agent. The records must be available for inspection by the Director.
4. Remediation must be completed within five years of the date of issuance of this Approval in Principle.

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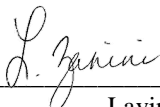

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5. Remediation must be confirmed in accordance with applicable legislation and ministry guidance. Within 90 days of completing remediation, a report summarizing confirmation of remediation must be prepared in accordance with section 49 (2) of the Contaminated Sites Regulation and submitted to the Director.
6. A statement signed by an Approved Professional must be submitted to the Director annually within 90 days of the anniversary of the date of issuance of this Approval in Principle. The statement must include the following:
 - (a) A summary of remedial activities undertaken during the reporting period; and
 - (b) An assessment comparing remediation progress to the actions and schedule set out in the plan referenced above. Refer to Condition 2 above if remedial progress differs substantially from the schedule set out in the approved plan.

If requested by the Director, a report signed by an Approved Professional must be submitted for review to the Director and must include the following:

- (a) A summary of remedial activities undertaken to date;
 - (b) An assessment comparing remediation progress to the actions and schedule set out in the plan referenced above. Refer to Condition 2 above if remedial progress differs substantially from the schedule set out in the approved plan;
 - (c) Interpretation of current and cumulative monitoring results from the groundwater monitoring program;
 - (d) Evaluation of the performance of the institutional controls; and
 - (e) Supporting documentation (e.g., analytical reports, records of inspection, maintenance of treatment works, etc.).
7. In the occurrence of non-compliance with the conditions of the Approval in Principle, the Director or designate must immediately be notified by email at SiteRemediation@gov.bc.ca or as otherwise instructed by the Director and take remedial action to remedy any effects of such non-compliance. A written report must be submitted within 30 days of the non-compliance to the Director that is satisfactory to the Director and includes, but is not necessarily limited to the following:
 - (a) An explanation of the most probable cause(s) of the non-compliance, and
 - (b) A description of remedial action planned and/or taken.
 8. Where current groundwater monitoring wells are required to be removed due to ground disturbance activities, wells to be decommissioned in compliance with BC Groundwater Protection Regulation.

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Schedule C

Substances and Uses

Part (Remnant Parcel #1 and #5 and Proposed Road Construction – Schedule A) of the site as per the following metes and bounds description:

Lot 2 and Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562 and Boxwood Road as dedicated on Plan VIP 63562, excluding the following metes and bounds description:

Commencing at the iron post marking the SW corner of Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562, heading southwesterly along the southeasterly boundary of Lot 2 for approximately 91.10 metres,

Thence westerly for approximately 71.33 metres,

Thence northerly for approximately 33.48 metres,

Thence westerly for approximately 51.50 metres,

Thence southerly for approximately 33.53 metres, Thence westerly to the intersection with the proposed road boundary, Thence northeasterly along the proposed road boundary,

Thence easterly along the proposed road boundary to the intersection with the boundary between Lot 2 and Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562,

Thence southwesterly back to the Point of Commencement.

Substances to be remediated in soil for industrial land soil use:

To meet risk-based remediation standards:

antimony	7440-36-0
arsenic	7440-38-2
barium	7440-39-3
benzene	71-43-2
cadmium	7440-43-9
chromium	7440-47-3
copper	7440-50-8
lead	7439-92-1
selenium	7782-49-2
toluene	108-88-3
xylenes	1330-20-7
zinc	7440-66-6

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Substances to be remediated in water for drinking water use:

To meet risk-based remediation standards:

arsenic	7440-38-2
benzo(a)pyrene	50-32-8
iron	7439-89-6
manganese	7439-96-5

Substances to be remediated in water for freshwater aquatic life water use:

sulfide (as H ₂ S)	7783-06-4
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To meet local background concentrations:

cobalt	7440-48-4
lithium	7439-93-2

Part (Remnant Parcel #2/3 – Schedule A) of the site as per the following metes and bounds:

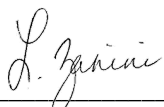
Commencing at the iron post marking the SW corner of Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562, heading southwesterly along the southeasterly boundary of Lot 2 for approximately 91.10 metres,
Thence westerly for approximately 71.33 metres,
Thence northerly for approximately 33.48 metres,
Thence westerly for approximately 51.50 metres,
Thence southerly for approximately 33.53 metres,
Thence westerly to the intersection with the proposed road boundary,
Thence northeasterly along the proposed road boundary,
Thence easterly along the proposed road boundary to the intersection with the boundary between Lot 2 and Lot 3, Section 18, Range 7, Mountain District, Plan VIP63562,
Thence southwesterly back to the Point of Commencement.

Substances to be remediated in soil for residential low density land soil use:

To meet risk-based remediation standards:

arsenic	7440-38-2
antimony	7440-36-0
copper	7440-50-8

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lead	7439-92-1
lithium	7439-93-2
naphthalene	91-20-3
molybdenum	7439-98-7
zinc	7440-66-6

Substances to be remediated in water for drinking water use:

To meet risk-based remediation standards:

arsenic	7440-38-2
benzo(a)pyrene	50-32-8
iron	7439-89-6
manganese	7439-96-5

To meet local background concentrations:

cobalt	7440-48-4
lithium	7439-93-2

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Schedule D

Documents

- *Summary of Site Condition*, Allan Morrison / Philip Lowery, McElhanney Consulting Services Ltd., November 13, 2018;
- *Remediation Plan, 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC*, Allison Waldick / Allan Morrison, McElhanney Consulting Services Ltd., November 13, 2018;
- *Human Health and Ecological Risk Assessment, 2230 Boxwood Road & 2241 Bowen Road, Nanaimo, BC*, Trillium Environmental Ltd., November 7, 2018;
- *Stage 2 Preliminary Site Investigation (PSI) / Detailed Site Investigation (DSI), 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC*, Allison Waldick / Allan Morrison, McElhanney Consulting Services Ltd., November 6, 2018;
- *Overview Environmental Assessment for 2230 Boxwood Rd., Nanaimo, BC*, Sandra Hemstock / Cindy Lipp, McElhanney Consulting Services Ltd., October 29, 2018;
- *Biological Uptake Assessment of Soil Contaminants in Tissues and Vegetative Health Assessment – Boxwood Connector Ground Improvements Project*, Sandra Hemstock / Allan Morrison, McElhanney Consulting Services Ltd. and Meagan Gourley, Trillium Environmental Ltd., October 24, 2018;
- *Stage 1 Preliminary Site Investigation (PSI), 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC*, Allison Waldick / Allan Morrison, McElhanney Consulting Services Ltd., August 30, 2018;
- *Hydrogeological Assessment and 2018 Pre-Risk Assessment Environmental Investigation – Boxwood Connector Ground Improvements Project*, Allison Waldick / Allan Morrison, McElhanney Consulting Services Ltd., June 19, 2018;
- *Boxwood Road Connector Site – Hydrogeological Assessment*, Chad Petersmeyer, Western Water Associates Ltd., May 7, 2018;
- *Supplemental Environmental Site Investigation – Boxwood Connector Ground Improvements Project*, Allison Waldick / Allan Morrison, McElhanney Consulting Services Ltd., July 7, 2017;
- *City of Nanaimo – Boxwood Connector Ground Improvements Project, Screening Level Risk Assessment Review*, Philip Lowery / Dan Clowater, McElhanney Consulting Services Ltd., June 29, 2017;
- *City of Nanaimo – Boxwood Connector Ground Improvements Project, Environmental Data Evaluation and Gap Analysis*, Becky MacInnis, McElhanney Consulting Services Ltd., May 30, 2017;
- *Phase I Environmental Site Assessment (ESA) located at 2230 Boxwood Rd, Nanaimo, BC*, Sandra Hemstock / Dan Clowater, McElhanney Consulting Services Ltd., May 30, 2017;

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- *Remediation Plan & Specifications, 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC, Martin Jarman / Bob Patrick, EBA, A Tetra Tech Company, January 30, 2012;*
- *Remediation Options Analysis Report, 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC, Martin Jarman / Bob Patrick, EBA, A Tetra Tech Company, January 17, 2012;*
- *Detailed Site Investigation, 2230 Boxwood Road and 2241 Bowen Road, Nanaimo, BC, Ben Barton / Martin Jarman, EBA, A Tetra Tech Company, January 9, 2012;*
- *Geotechnical Assessment Report, 2241 Bowen Road and 2230 Boxwood Road, Nanaimo, BC, Ryan Gustafson / Andrew Walker / Bob Patrick, EBA, A Tetra Tech Company, January 6, 2012;*
- *Stage 2 Preliminary Site, Proposed Boxwood Connector, Nanaimo, BC, Michael Gallo / Martin Jarman, EBA, A Tetra Tech Company, November 29, 2011;*
- *Interim Letter for Phase II Geotechnical Assessment, 2241 Bowen Road and 2230 Boxwood Road, Nanaimo, BC, Andrew Walker / Jerry Schmidt, EBA, A Tetra Tech Company, November 14, 2011;*
- *Preliminary Geotechnical Report, 2241 Bowen Road and 2230 Boxwood Road, Nanaimo, BC, Andrew Walker / Bob Patrick, EBA, A Tetra Tech Company, November 8, 2011;*
- *Limited Environmental Investigation and Risk Analysis, 2241 Bowen Road and 2230 Boxwood Road, Nanaimo, BC, Ben Barton / Martin Jarman, EBA Engineering Consultants Ltd., September 30, 2010;*
- *Review of Environmental and Geotechnical Site Conditions and Potential Impacts on Future Development, 2241 Bowen Road and 2230 Boxwood Road Sites, Nanaimo, BC, Martin Jarman / Bob Patrick, EBA Engineering Consultants Ltd., October 27, 2009; and,*
- *Stage 1 Preliminary Site Investigation, 2241 Bowen Road and 2230 Boxwood Road, Nanaimo, BC, Ben Barton / Martin Jarman, EBA Engineering Consultants Ltd., October 27, 2009.*

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