Keystone Environmental
Knowledge-Driven Results

May 31, 2017

Mr. Joel Ello
Southern Railway of Vancouver Island Ltd.
2102 River Drive
New Westminster, BC V3M 6S3

Dear Mr. Ello:

Re: Performance Verification Plan for Certificate of Compliance
855 Centennial Road, Vancouver, BC (Off-Site)
Site ID: 15126
Project No. 13218

1. BACKGROUND

Keystone Environmental Ltd. (Keystone Environmental) has prepared this Performance Verification Plan (PVP) in support of an application for a risk-based Certificate of Compliance (CofC) for the off-site affected parcel adjacent to the property listed as 855 Centennial Road, Vancouver, BC (the "Site"), and defined by the attached metes and bounds. The off-site affected parcel is managed by the Vancouver Fraser Port Authority (VFPA), and will herein be referred to as the "VFPA off-Site Management Area".

The PVP presents the principal risk management measures (i.e., the Schedule B key risk management controls) that apply and must remain in place at the VFPA off-Site Management Area to ensure that the CofC remains valid. The PVP was prepared in accordance with BC Ministry of Environment (MOE) Administrative Guidance 14: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans (MOE, 2015). The PVP was based on the findings of the following:

- Keystone Environmental (2013). *Report of Findings – Human Health and Ecological Risk Assessment and Remedial Action Plan, 855 Centennial Road, Vancouver, BC*, dated July 2013.
- Keystone Environmental (2017a). Letter *Re: Blue Water Project, Burrard Inlet Pier, Amendment to Approval-in Principal (Site 15126), 855 Centennial Road, Vancouver, BC, Project No. 13218*, dated January 2017 (Letter to the BC Ministry of Environment [MOE]).

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- Keystone Environmental (2017b) report titled *Report of Findings – Stage 1 Preliminary Site Investigation Update and Confirmation of Remediation, 855 Centennial Road, Vancouver, BC*, dated May 2017.
- Keystone Environmental (2017c) report titled *Report of Findings – Addendum to Human Health and Ecological Risk Assessment, 855 Centennial Road, Vancouver, BC*, dated May 2017.

2. PERFORMANCE VERIFICATION PLAN

2.1 Determination of Remediation Type

Based on the risk management measures for the VFPA off-Site Management Area, the Remediation Type applicable is considered to be Type 2. Remediation Type 2 sites may require the use of engineering and institutional controls to mitigate/eliminate risks at the VFPA off-Site Management Area, but in the event that controls were either not implemented or were implemented but were rendered ineffective, there is a lack of imminent risks.

2.2 Required Risk Controls

The principal risk controls which must be maintained at the VFPA off-Site Management Area include the following items:

- Contaminated soils greater than applicable industrial land use standards must remain covered by pavement or buildings as outlined in the metes and bounds (see **attached Figure**);
- Security measures (fencing and signage) must be maintained to restrict public access;
- The existing engineered cap must have a minimum thickness of 0.3m must be maintained atop of sediments in Zone 1 as outlined in the metes and bounds (see **attached Figure**).

2.3 Required Actions to Implement the Required Risk Controls

The following actions are required to implement the risk controls:

- Mandatory notification provided to the VFPA that soil contamination with concentrations exceeding applicable standards relevant to human and ecological soil contact is to remain beneath existing pavement or buildings.
- Mandatory notification provided to the VFPA that public access restrictions must be maintained at the VFPA off-Site Management Area;
- Mandatory notification provided to the VFPA that a minimum 0.3 m cap maintained on sediments in Zone 1.

Records of these actions should be maintained by the owner of the Site and the VFPA and submitted to the MOE, if requested. Other reporting requirements for all performance verification records include the following:

- The Director must be notified promptly by the person(s) responsible for the VFPA off-Site Management Area if performance verification actions indicate that any of the required risk controls are not being met. The following information must be submitted to the Director with the notification, or as soon as practicable thereafter:
  - The time period over which risk controls were not in place or implemented
  - The nature of the excursion(s)
  - The temporary or permanent corrective measures implemented or to be implemented
  - An implementation schedule
  - Supporting documentation
- 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 (as applicable):
  - An evaluation of the performance of the institutional controls
  - Supporting documentation

2.4 Summary Rationale

Soil contamination exceeding the CSR Schedule 4 or 5 industrial land use (IL) soil standards relevant to human and ecological soil contact is present in soils at the VFPA off-Site Management Area. The risk assessment assumed that human and terrestrial ecological contact with such soils will not occur due to the presence of pavement or buildings atop the contaminated soils. Inspection of pavement and building ground covers atop of identified soil contamination following future building construction is needed to prevent future human and terrestrial ecological exposures to soil contaminants.

The risk assessment assumed that security measures would continue to restrict public access to the Site. Maintenance of security measures such as existing fencing and signage restricting use (e.g. no trespassing, no authorized entry) would be needed to prevent exposures to Site related contaminants by trespassers.

Sediment contamination exceeding the CSR Schedule 9 marine sediment criteria for typical sites (SedQC$_{TS}$) or risk-based standards relevant to aquatic ecological contact is present in sediment in Zone 1 of the VFPA off-Site Management Area. The engineered sediment cap requires a minimum thickness of 0.3m in Zone 1 to prevent benthic organisms from penetrating into the contaminated sediments present beneath the cover. Capping thickness was confirmed with bathymetric surveys in Zone 1. Furthermore, the engineered cap over Zone 1 is located within an area with low potential for prop-wash and is constructed with a rock mixture of sizes and existing rip rap that forms a stable sloped and permanent cap cover. In addition, the port

authority has indicated that the planned expansion of the Centerm will involve filling the area between 855 Centennial (Burrard Dock) and the Ballantyne Pier, which will further cap Zone 1 until it will no longer be considered aquatic habitat. Therefore, long-term inspection of the engineered cap in Zone 1 is not warranted.

2.5 Conclusion

It is our opinion that the actions identified in this report are sufficient to ensure performance verification of the risk controls required for the VFPA off-Site Management Area.

3. GENERAL LIMITATIONS AND CONFIDENTIALITY

The findings presented in this report are based upon the field work conducted by Keystone Environmental for Southern Railway of Vancouver Island Ltd. Keystone Environmental has prepared this document in good faith and has relied upon information provided by others. Keystone Environmental has assumed that the information provided by third parties is both complete and accurate.

This report was completed in a manner consistent with that level of care and skill normally exercised by other environmental professionals, practicing under similar circumstances in the same locale at the time of the performance of the work.

This report has been prepared solely for the internal use of Southern Railway of Vancouver Island Ltd. and the review by the BC Ministry of Environment, pursuant to the agreement between Keystone Environmental Ltd. and Southern Railway of Vancouver Island Ltd. By using this report, Southern Railway of Vancouver Island Ltd. and the BC Ministry of Environment agree(s) to review this report in its entirety. Keystone Environmental accepts no responsibility, and denies any liability whatsoever, to parties other than Southern Railway of Vancouver Island Ltd. and the BC Ministry of Environment, who may obtain access to this report for any injury, loss or damage suffered by such parties arising out of, reliance upon, or decisions or actions based on this report, except to the extent those parties have obtained a prior written consent of Keystone Environmental to use and rely upon this report and the information contained herein. Any use, reliance or decisions made based on this report by other parties without prior written approval by Keystone Environmental are the responsibility of such parties and Keystone Environmental accepts no responsibility for damages, if any, suffered by other parties as a result of decisions made or actions based on this report. The findings presented herein should be considered within the context of the scope of work and project terms of reference. The findings are time sensitive and are considered valid at the time this report was produced. The conclusions and recommendations contained in this report are based upon applicable guidelines, regulations, and legislation existing at the time this report was produced; consequently, any changes in the regulatory regime may alter the conclusions and/or recommendations.

4. CLOSURE

If you have any questions, please do not hesitate to contact the signatories of this report.

Sincerely,

Keystone Environmental Ltd.

Original signed by

Kevin Hall, B.Sc., R.P.Bio.
Risk Assessor

Original signed by

Adam Radlowski, M.Sc., R.P.Bio.
Senior Environmental Risk Assessor

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ATTACHMENTS:

- References
- Metes and Bounds Figure
- Metes and Bounds Description

REFERENCES

REFERENCES

BC MOE (2015) British Columbia Ministry of Environment. Environmental Protection Division. *Administrative Guidance 14 on Contaminated Sites: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans.* (Version 3.0). December 2015.

Keystone Environmental (2013). *Report of Findings – Human Health and Ecological Risk Assessment and Remedial Action Plan, 855 Centennial Road, Vancouver, BC*. Burnaby, BC: Keystone Environmental Ltd. July 2013.

Keystone Environmental (2017a). *Re: Blue Water Project, Burrard Inlet Pier, Amendment to Approval-in Principal (Site 15126), 855 Centennial Road, Vancouver, BC*. [Letter to the BC Ministry of Environment] Burnaby, BC: Keystone Environmental Ltd. January 2017.

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Keystone Environmental (2017c). *Report of Findings – Addendum to Human Health and Ecological Risk Assessment, 855 Centennial Road, Vancouver, BC*. Burnaby, BC: Keystone Environmental Ltd. May 2017.

METES AND BOUNDS FIGURES

Keystone Environmental
Knowledge-Driven Results

METES & BOUNDS OF OFF-SITE
CONTAMINATED SOIL AREA:

- STARTING AT THE SOUTHWEST CORNER OF LOT A, DISTRICT LOT 181, GROUP 1, NEW WESTMINSTER DISTRICT PLAN BCP40923:
- THENCE 1° 45' 05" FOR 40.241 METRES; TO THE POINT OF COMMENCEMENT.
- THENCE 297° 04' 31" FOR 16.418 METRES;
- THENCE 346° 52' 58" FOR 54.236 METRES;
- THENCE 60° 58' 44" FOR 33.470 METRES;
- THENCE 181° 45' 05" FOR 76.567 METRES;

RETURNING TO THE POINT OF COMMENCEMENT.

N

LOT B

LOT A

33.470
60°58'44"

76.567
181°45'05"

54.236
346°52'58"

40.241
1°45'05"

POINT OF
COMMENCEMENT

STARTING
POINT

CENTENNIAL RD.

C.P.R. R.O.W.

LEGEND

PROPERTY LINE

METES & BOUNDS OF OFF-SITE CONTAMINATED SOIL AREA

NOTES:
1. THIS DRAWING IS FOR GENERAL INFORMATION ONLY.
LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

No.	DATE	DESCRIPTION	BY	APPROVED
		REVISIONS		

Keystone Environmental

Keystone Environmental Ltd.
Ste. 320 4400 Dominion Street
Burnaby, British Columbia

855 Centennial Road

Vancouver, B C

DESIGN | APPROVED

DRAWN: H.L. | CHECKED

SCALE: 0m 50m
SCALE: 1:2000(approx.)

CLIENT: South Railway of Vancouver Island

Metes and Bounds of Off-Site Soil Contamination Area

DATE 5/16/17
SHEET No. 2 of 4
PROJECT No. 13218-15
REVISION No. 00
DRAWING No. 02

PLOT SCALE: 1:1

CADD FILE NO. I:\13200-13299\13218\Phase 00015 - AP Review\Schedule A\17-13218-02-R0.dwg

N

METES & BOUNDS OF OFF-SITE
CONTAMINATED SEDIMENT AREA:

- STARTING AT THE SOUTHWEST CORNER OF LOT A, DISTRICT LOT 181, GROUP 1, NEW WESTMINSTER DISTRICT PLAN BCP40923:
- THENCE 1° 45' 05" FOR 157.038 METRES; TO THE POINT OF COMMENCEMENT.
- THENCE 227° 03' 25" FOR 8.025 METRES;
- THENCE 192° 02' 49" FOR 9.879 METRES;
- THENCE 210° 45' 46" FOR 4.859 METRES;
- THENCE 286° 01' 34" FOR 7.568 METRES;
- THENCE 334° 06' 31" FOR 17.261 METRES;
- THENCE 294° 34' 03" FOR 18.735 METRES;
- THENCE 322° 06' 00" FOR 11.299 METRES;
- THENCE 175° 35' 11" FOR 26.633 METRES;
- THENCE 67° 45' 53" FOR 9.345 METRES;
- THENCE 266° 05' 12" FOR 18.103 METRES;
- THENCE 53° 31' 27" FOR 7.383 METRES;
- THENCE 30° 32' 44" FOR 18.478 METRES;
- THENCE 46° 11' 44" FOR 16.161 METRES;
- THENCE 181° 45' 05" FOR 77.780 METRES;
- THENCE 181° 45' 05" FOR 14.769 METRES;

RETURNING TO THE POINT OF COMMENCEMENT.

LOT B

16.161
46°11'44"

7.383
53°31'27"

18.103
266°05'12"

9.345
67°45'53"

18.478
30°32'44"

77.780
181°45'05"

26.633
175°35'11"

18.735
294°34'03"

11.299
322°06'00"

17.261
334°06'31"

POINT OF
COMMENCEMENT

8.025
227°03'25"

9.879
192°02'49"

4.859
210°45'46"

7.568
286°01'34"

157.038
1°45'05"

LOT A

STARTING
POINT

CENTENNIAL RD.

C.P.R. R.O.W.

LEGEND

PROPERTY LINE

METES & BOUNDS OFF-SITE CONTAMINATED SEDIMENT AREA

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		REVISIONS		

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Vancouver, B C

DESIGN | APPROVED

DRAWN: H.L. | CHECKED

SCALE: 0m 50m
SCALE: 1:2000(approx.)

CLIENT: South Railway of Vancouver Island

Metes and Bounds of Sediment Contamination Area

DATE 5/16/17
SHEET No. 4 of 4
PROJECT No. 13218-15
REVISION No. 00
DRAWING No. 04

PLOT SCALE: 1:1

CADD FILE NO. I:\13200-13299\13218\Phase 00015 - AP Review\Schedule A\17-13218-04-R0.dwg

METES AND BOUNDS DESCRIPTIONS

Keystone Environmental
Knowledge-Driven Results

METES & BOUNDS OF OFF-SITE CONTAMINATED SOIL AREA:

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