



September 11, 2017

Mr. Adam Donnelly
Beedie Construction Ltd.
3030 Gilmore Diversion
Burnaby, BC V5G 3B4

Dear Mr. Donnelly:

**Re: Performance Verification Plan for Certificate of Compliance
1845, 1855 and 1925 Kingsway Avenue, Port Coquitlam, BC
Project No. 12868**

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 property located at 1845, 1855 and 1925 Kingsway Avenue, Port Coquitlam, BC (herein referred to as the "Site").

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 Site to ensure that the Site 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 Keystone Environmental (2017) report titled *Report of Findings – Human Health and Ecological Risk Assessment, 1845, 1855 and 1925 Kingsway Avenue, Port Coquitlam, BC*.

DETERMINATION OF REMEDIATION TYPE

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

Under a Remediation Type 2 (Case 2) scenario, MOE (2015) indicates that a PVP is required and that an operations and maintenance plan may be required. A contingency plan is not required.

REQUIRED RISK CONTROLS

The principal risk controls which must be maintained at the Site include the following items:

- Contaminated soils must remain at depths greater than 1.0 metres below surface grade unless covered by a permanent barrier (i.e., pavement, buildings);
- Deep rooting vegetation (i.e., that which roots deeper than 1.0 m) must not be planted, unless contained by mechanisms preventing roots from contacting contaminated soil and/or groundwater, such as planter boxes or by a geotextile fabric suitable to restrict root penetration;
- Site groundwater must not be used as a source of drinking water; and
- The hydraulic barrier wall located at 1745 Kingsway Avenue must continue to function as designed.

REQUIRED ACTIONS TO IMPLEMENT THE REQUIRED RISK CONTROLS

The following actions are required to implement the risk controls:

- Mandatory notification provided to the Site owner/operator that soil contamination is to remain at depths greater than 1 mbg or beneath paved surfaces;
- Mandatory notification provided to the Site owner/operator that deep rooting trees are not to be planted on the Site unless contained by mechanisms preventing roots from contacting contaminated soil and/or groundwater, such as planter boxes or by a geotextile fabric suitable to restrict root penetration;
- Mandatory notification provided to the owner/operator of the Site that no drinking water wells are to be installed on Site and that groundwater is not to be used for drinking water or domestic purposes; and
- Mandatory notification provided to the owner/operator of the Site that the hydraulic barrier wall located on the 1745 Kingsway Avenue property must remain functional as designed, and annual monitoring of groundwater quality at groundwater monitoring well EWM126 for dissolved molybdenum and non-chlorinated phenols (total) until it can be demonstrated that the groundwater contaminant plume is stable or receding without the aid of the barrier wall.

Records of these actions should be maintained by the Site owner/operator 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 Site 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

SUMMARY RATIONALE

Soil contamination exceeding the CSR Schedule 4 or 5 industrial land use (IL) soil standards relevant to human and ecological soil contact are present at depths greater than 1 mbg or beneath existing paved surfaces across a substantial portion of the Site. The risk assessment assumed that human and terrestrial ecological contact with such soils will not occur due to its depth or the presence of the paved surface. Ensuring such soil contamination is maintained at depths greater than 1 mbg or beneath paved surfaces is needed to prevent potential risk to humans via contact, inhalation, and ingestion and to terrestrial ecological receptors via direct contact.

The risk assessment indicated a potential for risk to deep rooting trees that come in contact with contamination in Site soil and groundwater present at depths from 1 m to 3 mbg. As such, a preclusion of deep rooting trees is needed to prevent risk to deep rooting trees via direct contact.

Groundwater contamination exceeding the CSR Schedule 6 drinking water (DW) standards is present at the Site. A drinking water use preclusion on groundwater use is needed to prevent future human consumption and potential risk.

Groundwater contamination exceeding the CSR Schedule 6 aquatic life (AW) and drinking water (DW) standards is present at the Site. The dissolved groundwater plume terminates prior to a hydraulic barrier system, which is located along the property boundary between 1745 Kingsway Avenue (the Recochem Property) and the neighboring right-of-way adjacent to 1711 Kingsway Avenue. The barrier system is currently preventing further migration of the identified groundwater contamination. Annual groundwater sampling downgradient of the hydraulic barrier wall is required to confirm that the hydraulic barrier system continues to remain functional as designed. Ongoing Inspection and maintenance of the hydraulic barrier is the responsibility of the 1745 Kingsway Avenue (Recochem) property owner as per the conditions of a previously issued Certificate of Compliance for the 1745 Kingsway Avenue property

CONCLUSION

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

GENERAL LIMITATIONS AND CONFIDENTIALITY

The findings presented in this report are based upon the field work conducted by Keystone Environmental for Beedie Development Group 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 Beedie Development Group Ltd. and the review by the BC Ministry of Environment (MOE), pursuant to the agreement between Keystone Environmental and Beedie Development Group Ltd. By using this report, Beedie Development Group Ltd. and the BC MOE agree(s) to review this report in its entirety. Keystone Environmental accepts no responsibility, and denies any liability whatsoever, to parties other than Beedie Development Group Ltd. and the BC MOE, 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.

If you have any questions, please do not hesitate to contact the signatory below.

Sincerely,

Keystone Environmental Ltd.



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

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

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ATTACHMENT:

- References

REFERENCES

REFERENCES

British Columbia Ministry of Environment. Environmental Protection Division. 2015. *Administrative Guidance 14 on Contaminated Sites: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans*. (Version 3.0). Retrieved from <http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/administrative-guidance/ag14.pdf>

Keystone Environmental Ltd. (2017). *Report of Findings – Human Health and Ecological Risk Assessment, 1845, 1855 and 1925 Kingsway Avenue, Port Coquitlam, BC*. Burnaby, BC: Keystone Environmental Ltd.