



File #: 121-60548-00

June 2, 2017

LLW Holdings Ltd.  
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**Attention: Mr. Ming Nan Li**

**Project: Performance Verification Plan – 14807 Marine Drive and Adjoining “2.5m x 23.31m wide” strip of Oxford Street, White Rock, British Columbia  
ID# 5410 and ID#15102**

## 1. INTRODUCTION

WSP Canada Inc. (WSP) has prepared this Performance Verification Plan (PVP) in support of an application for a combined Certificate of Compliance (CofC) for 14807 Marine Drive, White Rock referred to as “Site” with Site ID 5410 and “2.5m x 23.31m wide” strip of Oxford Street adjoining the Site referred to as “Off-Site area” with Site ID 15102 in White Rock, BC. The Off-Site area is owned and managed by the City of White Rock. This PVP presents the principal risk controls that apply at the Site and the Off-Site area to ensure the CofC for the Site and Off-Site area remains valid (i.e., the key risk controls of Schedule B). The PVP was prepared in accordance with the MOE Procedure 12: Procedures for preparing and issuing contaminated sites legal instruments (2015a) and Administrative Guidance 14 Performance Verification Plans, Contingency Plans and Operations and maintenance Plans (2015b).

## 2. PRINCIPAL RISK CONTROLS

A Human Health and Ecological Risk Assessment (HHERA) was conducted for the Site and the Off-Site area and the results are presented in the WSP report, Human Health and Ecological Risk Assessment, 14807 Marine Drive, White Rock, BC, prepared by WSP Canada Inc. dated 2 June 2017. The HHERA was prepared based on the findings and conclusions presented in following reports.

- Stage 1 Preliminary Site Investigation – 14807 Marine Dr., White Rock, BC, dated 1 March 2011 by Trow Associates Inc.

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- Stage 2 Preliminary Site Investigation – 14807 Marine Drive, 1184 Oxford Street and 14818 Buena Vista, White Rock, dated 3 September 2012, by Levelton Consultants Ltd.
- Detailed Site Investigation – 14807 Marine Drive, 1184 Oxford Street and 14818 Buena Vista, White Rock, dated 29 March 2013, by Levelton Consultants Ltd.
- Confirmation of Remediation – 14807 Marine Drive, White Rock, BC, dated 20 March 2017, by WSP Canada Inc.
- Updated Stage 1 Preliminary Site Investigation – 14807 Marine Drive, White Rock, BC, dated 20 March 2017 by WSP Canada Inc.
- Addendum Environmental Report – 14807 Marine Drive, White Rock, BC, dated 31 May 2017 by WSP Canada Inc.
- Establishing Source of Arsenic and Molybdenum Impact in Peat at and around 14807 Marine Drive, White Rock, BC dated 31 May 2017.

The principal risk controls for the Site and Off-Site area on which WSP 2017 HHERA was based, as presented in Schedule B of the CofC, are as follows:

1. Groundwater at the Site and Off-Site area must not be used as a drinking water source.
2. Ambient air within the underground parkade must be tested once again in summer 2017 for substances remediated in vapour (i.e. VPHv, benzene, bromomethane, chloromethane, vinyl chloride).

### 3. DETERMINATION OF PROCEDURE 12 REMEDIATION TYPE

Based on the principal risk controls for the Site and off-Site area (i.e., the use of institutional controls to mitigate/eliminate risk at the Site and Off-Site area and lack of imminent risk in the event that controls were either not implemented or were rendered ineffective), the remediation Type applicable at the On-Site and Off-Site is considered to be Type 2.

Under a Remediation Type 2 scenario, MOE (2015a; 2015b) indicates that a PVP is required, while an operations and a maintenance plan may be required.

### 4. PERFORMANCE VERIFICATION PLAN

A PVP is required to ensure that the principal risk controls upon which the HHERA is based are being met at the Site and Off-Site area.

This includes the maintenance of up-to-date records of performance verification actions and result for the Site and Off-Site being maintained by the responsible person or their agents. If

requested by the Director, the responsible person (or their agents) will provide these records to the MOE. As well, if requested by the MOE, responsible person(s) will provide a signed statement on whether conditions set out in the Schedule B of the CofC are being met.

Performance Verification actions for the Site and off-Site area includes the following:

- Mandatory communication with the owner/operator that groundwater at the Site and Off-Site area must not be used for drinking water purposes. The current and future use of the Site is mixed commercial and residential use. The current and future use of the Off-site area includes sidewalk and some landscaped area. Groundwater at the Site and the Off-Site area is not to be used for drinking water purposes (including bathing/showering, cooking, gardening, drinking, etc.) and is not anticipated to be used for these purpose in the future, with drinking water supplied by municipal water distribution system sourced from municipal wells located more than 100m up-gradient of the Site. It is considered unlikely that the groundwater at the Site and Off-Site area will be used for drinking water purposes in the future.

Based on the above, an advisory that the groundwater at the Site and Off-Site area must not be used for drinking water purposes is considered appropriate to meet this risk control. The listing of this risk control in Schedule B of the CofC meets the requirement.

- Mandatory communication with the owner/operator that ambient air monitoring for volatile contaminants be conducted at least once again in summer 2017 by qualified professionals in the underground parking area at the Site to ensure the remediated contaminants meet the CSR Schedule 11 standards for Residential Land use and to evaluate the seasonal effects. Ambient air monitoring conducted in March 2017 evaluated the worst case scenario as painting and other construction activities were underway and heating, ventilation and air conditioning (HVAC) unit was switched off. It is very unlikely that second ambient air monitoring event would identify concentrations of remediated volatile COCs in excess of applicable standards as HVAC system should be operating under normal conditions. Furthermore, most of the identified detectable volatile parameters in the parkade ambient air were not included in our list of remediated volatile contaminants in soil and groundwater and were likely associated with ongoing construction activities within the underground parkade.

Based on the above, an advisory that the ambient air in the underground parkade at the Site must be monitored at least once more in summer of 2017 is considered appropriate to meet this risk control. If second monitoring event identifies concentrations of vapour COCs close to and/or above the CSR Residential Land use standards, it should be confirmed with additional monitoring and assessed with respect to human health risk and should be risk managed, if needed. Risk management measure could include increasing the ventilation rate within the parkade. The listing of this risk control in Schedule B of the CofC meets the requirement.



## 5. REFERENCES

- MOE, 2015a. Procedure 12: Procedures for preparing and issuing contaminated sites legal instruments, BC Ministry of Environment, Victoria, BC, December 2015.
- MOE. 2015b. Administrative Guidance 14. Performance Verification Plans, Contingency Plans and Operations and Maintenance Plans. BC Ministry of Environment, Victoria, BC, December 2015.
- Establishing Source of Arsenic and Molybdenum Impact in Peat at and around 14807 Marine Drive, White Rock, BC dated 31 May 2017
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- WSP Canada Inc. 2017. Human Health and Ecological Risk Assessment, 14807 Marine Drive, White Rock, BC dated 2 June 2017, by WSP Canada Inc.
- WSP Canada Inc. 2017. Updated Stage 1 Preliminary Site Investigation, 14807 Marine Drive, White Rock, BC dated 20 March 2017, by WSP Canada Inc.
- WSP Canada Inc. 2017. Confirmation of Remediation – 14807 Marine Dr., White Rock, BC, dated 20 March 2017, by WSP Canada Inc.
- Levelton Consultants Ltd. 2013. Detailed Site Investigation – 14807 Marine Drive, 1184 Oxford Street and 14818 Buena Vista, White Rock, dated 29 March 2013, by Levelton Consultants Ltd.
- Levelton Consultants Ltd. 2012. Stage 2 Preliminary Site Investigation – 14807 Marine Drive, 1184 Oxford Street and 14818 Buena Vista, White Rock, dated 3 September 2012, by Levelton Consultants Ltd.
- Trow Associates Inc. 2011. Stage 1 Preliminary Site Investigation – 14807 Marine Dr., White Rock, BC, dated 1 March 2011 by Trow Associates Inc.

## 6. CLOSURE

WSP has prepared this report exclusively for LLW Holdings Ltd. The BC Ministry of Environment and the project Approved Professional can rely on the report. The conclusions made in this PVP reflect WSP's best judgement in light of the information available at the time of preparation. No other warranty, expressed or implied, is made. Any use which a third party makes of this PVP, or any reliance on or decisions to be made or actions based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this PVP.

Respectfully submitted,

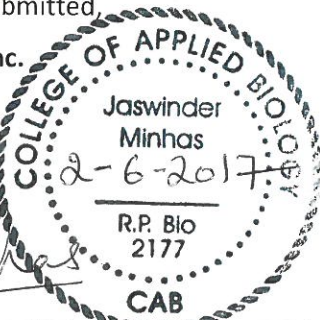
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