



September 7, 2011
File: EE11-1743-00

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VANCOUVER BOARD OF PARKS AND RECREATION
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To whom it may concern:

Construction Materials
Building Science
Geotechnical
Metallurgy and Corrosion
Environmental
Physical Testing

**Re: Jericho Wharf Demolition Project: Creosote Monitoring
3941 Point Grey Road, Vancouver, BC**

Levelton Consultants Ltd. (Levelton) was commissioned by Vancouver Board of Parks and Recreation (VPB) to conduct air monitoring for creosote (coal tar pitch volatiles) at Jericho Wharf in Vancouver, BC. As part of VPB's Jericho Marginal Wharf Demolition Project, the beachside concrete slab and laminate decking and timber piles are being removed.

It is Levelton's understanding that employees of Vancouver Pile Driving (the demolition contractor) are protected from potential hazardous exposures and are conducting work in compliance with WorkSafeBC regulations. The objective of this assessment was to characterize exposure concentrations in the vicinity, at various distances away from the removal work, to assess the potential risk of exposure to passer-bys and park users in the community. Levelton employed standard occupational hygiene methods and techniques to determine the concentration of creosote found in the air.

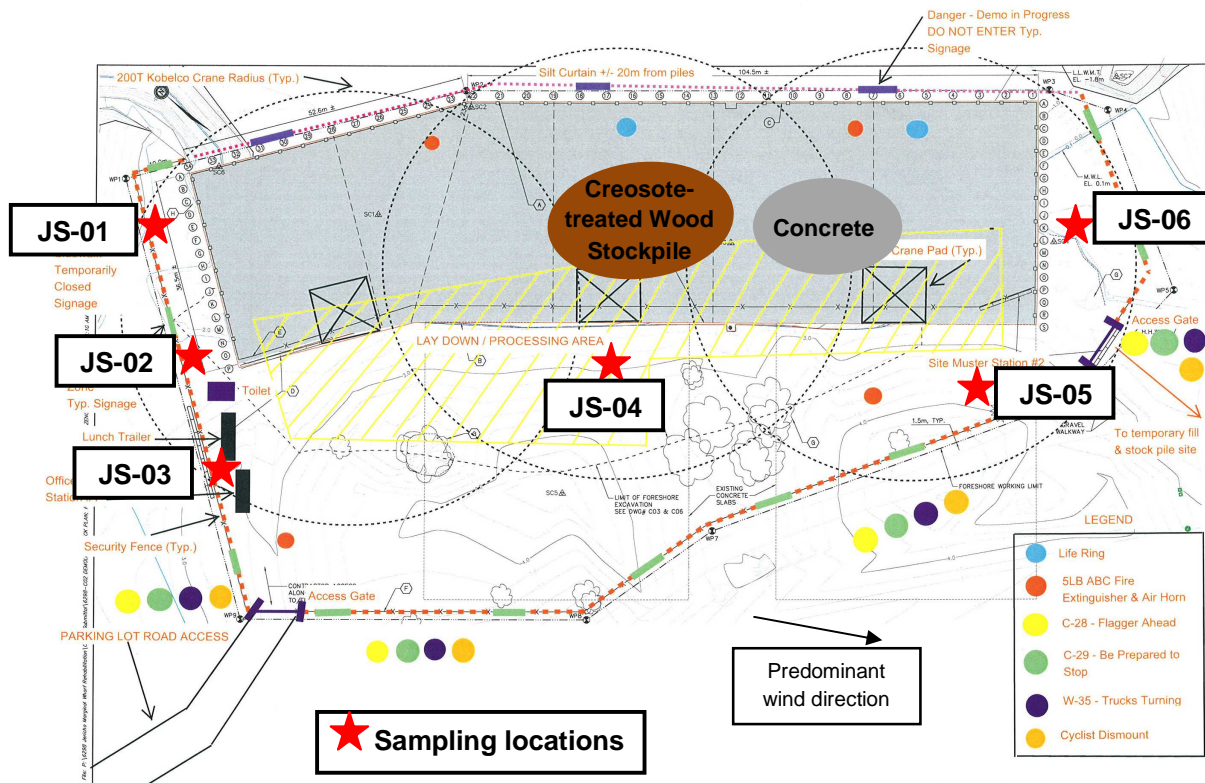
METHODOLOGY:

Samples were collected in accordance with Occupational Safety and Health Administration (OSHA) Standard Method 58 for Coal Tar Pitch Volatiles. This method involves collection of 960 L of air on a glass fiber filter, and is a standard method accepted by WorkSafeBC for sampling creosote.



Six ambient locations were monitored, 1 blank was collected for a total of 7 samples submitted to the laboratory on August 17th, 2011.

The ambient samples were collected at 5 locations along the perimeter of the construction area barricade throughout the day; these samples represent maximum worst-case exposure levels as these positions are the closest the public can get to the source of the creosote. One sample was collected as close as possible to the piles within the barricade. Sample locations are shown in Figure 1 below.



VPDL - SITE MANAGEMENT PLAN

Figure 1: Sampling Locations for Creosote Monitoring



OBSERVATIONS:

The weather was hot and dry on the day of sampling. Wind direction was NW from 8 am to 9 am but was observed to be predominantly SE for the rest of the day. Sampling characteristics related to flow rates, sampling time and total volume collected for all samples are presented in Table 1 below.

Table 1: Sampling Flow Characteristics and Final Volume in Litres (L) August 17th 2011

Sample ID	Sample Location	Sample Type	Pre Air Flow (L/min)	Post Air Flow (L/min)	Avg Air Flow (L/min)	Total Sample Time (min)	Total Sample Volume (L)
JS-01*	West barricade; closest to water	Area	2.018	2.021	2.020	387*	781.7
JS-02	West barricade; centre	Area	2.050	2.023	2.037	389	792.4
JS-03	West barricade; closet to site access gate	Area	2.017	2.030	2.024	393	795.4
JS-04	Area closest to timber pile	Area	2.022	2.044	2.033	403	819.3
JS-05	South-east side barricade	Area	2.020	2.027	2.024	395	799.5
JS-06	South-east side of pile; at barricade closest to beach area	Area	2.029	2.028	2.029	393	797.4
JS-07	-	Blank	-	-	-	-	-

*At about 1:30 pm, the west barricade collapsed inward towards the work area; this tipped over one sampling station (JS-01). The sampler was on the ground until approximately 2:15 pm at which it was repositioned upright.



RESULTS & CONCLUSIONS:

Assuming that for the rest of the workday the demolition tasks were similar to those performed during the sampled duration, the results presented in Table 2 below are representative samples of potential exposures on the date collected (August 17th 2011).

Table 2: Summary of Measured Coal Tar Pitch Volatiles Concentrations

Sample Location	Sample Type	Measured Concentration (mg/m ³)
West barricade; closest to water	Area	<0.077
West barricade; centre	Area	<0.076
West barricade; closet to site access gate	Area	<0.075
Area closest to timber pile	Area	<0.073
South-east side barricade	Area	<0.075
South-east side of pile; at barricade closest to beach area	Area	<0.075
N/A	Blank	-

WorkSafeBC's occupational exposure limit requires that workers are not exposed to an 8-hour average of more than 0.2 mg/m³. This value is consistent with 8-hour exposure limits published by the American Conference for Governmental Industrial Hygienists (ACGIH) as well as OSHA. National Institute for Occupational Safety and Health (NIOSH) uses a recommended exposure limit of 0.1 mg/m³. Based on the measurements presented above all samples were below the exposure limit. There is currently no other community-based public health guidance level that is applicable to creosote exposure.

Based on the above results it is unlikely that park users in the vicinity at or outside the barricade will be exposed to hazardous levels of creosote / coal tar pitch volatiles. This is likely because the work is conducted in the outdoors where there is maximal natural dilution ventilation. Aside from the dose (amount of creosote), the duration of exposure is also an important factor that determines the extent of health effects, if any. The sample results collected were likely the worst-case levels as the public is not expected to be positioned at the barricade for the entire work shift.



This report has been prepared by Levelton Consultants Ltd. exclusively for the Vancouver Board of Parks and Recreation (VPB) in accordance with standard occupational hygiene protocols. No other warrantee, expressed or implied is made. Standard Limitations are attached.

Any use of this report by third parties, or reliance on decisions made, or actions taken based on it by third parties are the responsibility of such third parties. Levelton does not accept responsibility for damages suffered, if any, by a third party as a result of their use of this report.

The conclusions contained in this report are based on information obtained from a limited timeframe with workers performing a unique set of tasks at specific locations. While conditions may vary due to day-to-day changes in individual work rates, work practices and weather effects, actual exposures in nearby areas may vary.

Yours truly,

Levelton Consultants Ltd.

STANDARD LIMITATIONS

1. The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practicing under similar conditions in the area.
2. The findings of this report are based solely on the data collected during the investigation and on the conditions of the site during the work completion. Levelton has relied on good faith and on information provided by individuals and sources noted in the report. No other warranty, expressed or implied, is made.
3. If new information is developed in future work that affects the conclusions of this report, Levelton should be contacted to re-evaluate the conclusions of this report and provide amendments as required.
4. The service provided by Levelton, in completing this assessment, is intended to assist the client in making a business decision. The liability of the site is not transferred to Levelton as a result of such services, and Levelton does not make recommendation regarding the purchase, sale, or investment in the property.