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EcoNomics™

CITY OF NEW WESTMINSTER

Detailed Site Investigation

224 Front Street, New Westminister, BC

09216

9 December 2011

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EXECUTIVE SUMMARY

Introduction

WorleyParsons Canada Services Ltd. (WorleyParsons) was retained by the City of New Westminster (the CoNW) to conduct a Detailed Site Investigation (DSI) of the property located at 224 Front Street (previously known as 610 Front Street) in the City of New Westminster, British Columbia (BC) (the Site). The area of the Site is approximately 3.8 hectares comprising a land lot (approximately 1 hectare) and a water lot (approximately 2.8 hectares). The Site was purchased by the CoNW in 2009 and the intention is to improve the Site with the development of an urban park.

The CoNW requested the completion of the DSI based on results of historical investigations completed by others and recommendations provided in the Stage 1 Preliminary Site Investigation (PSI). The CoNW requires the DSI to investigate and delineate the extent of the potentially contaminated media (soil, groundwater and nearshore groundwater, soil vapour, and/or sediments) as part of redevelopment of the Site into a urban park. The DSI covers the entire Site although only a portion is being developed during this first phase.

This report represents a combined Stage 2 PSI and DSI, and investigations were combined to allow the work to be completed within the Site's redevelopment schedule. In addition, remedial work was carried out by Worley Parsons concurrently to the Stage 2 PSI and DSI investigations. As a result, information gathered during remediation was used for select Areas of Potential Environmental Concern (APECs) to help develop sampling rationale and to help complete delineation of Areas of Environmental Concern (AECs).

PROJECT 09216 - DETAILED SITE INVESTIGATION

FILE LOC.: BURNABY

REV	DESCRIPTION	ORIG	REVIEW	WORLEY- PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
0	Issued as final	E MacLanders	T Todoruk	R Bracken	09-Dec-11		



Site History

Historically the Site was used as an industrial area predominately as a shipping terminal, for freight storage, rail use, and for other related activities. Historical activities included warehouses, wharves, rail lines, coal storage, machine shops, freight sheds, underground storage tanks (USTs), above ground storage tanks (ASTs), manufacturing plant and a helipad between the 1880's and the early 1990's.

The major activities on properties surrounding the Site included mainly commercial and/or industrial including rail lines, printing, wool mill, junk yard, automotive shops, dry cleaners, radiator shops, auto wreckers, fertilizer manufacturing, sheet metal works, marine service stations, tire companies, feed plant, used car dealers, battery dealer and service, demolition, and a medical laboratory.

Geology and Hydrogeology

The stratigraphy can be generalized as a 3 to 14 m thick upper sand and gravel (Unit 1) with an average thickness of 7 m, separated from a 4 to 13 m thick lower sand and gravel (Unit 3) by a 1 to 7 m thick fine silty sand (Unit 2). The lower sand and gravel is underlain by silty clay and clay (Unit 4). Previous investigations indicated that Unit 4 is at least 8 m thick, but this was not confirmed.

Hydraulic conductivity testing showed up to two orders of magnitude difference between monitoring wells screened within the upper sand and gravel (3.4×10^{-4} m/s) and the upper confining unit (3.6×10^{-6} m/s), with the lower sand and gravel tests yielding intermediate results (4.6×10^{-5} m/s).

The Site is tidally influenced. Within Unit 1, local and transient groundwater flow reversals should be expected as a result of tidal variations. Evidence suggests the presence of a saline wedge related to the Fraser River estuary extends as far upriver as the site during certain times of the year.

Quality Assurance/Quality Control (QA/QC)

The DSI report contains a section summarizing the results of QA/QC evaluation with laboratory reports included as appendices to the report.

Based on a review of the data quality indicators, it is concluded that the data quality objectives for the soil, groundwater, soil vapour, and sediment sampling have been substantially achieved. For those samples that have not met the data quality objectives, specifically a relative percent difference (RPD) greater than the required level of precision, it was concluded in cases that the increased variability would not affect the classification of those samples with respect to the applicable Contaminated Sites Regulation (CSR) soil, groundwater, soil vapour, or sediment standard.

Findings

The DSI investigated the 21 APECs outlined in the Stage 1 PSI (WorleyParsons, 2011a). The APECs were investigated through drilling, testpitting, surface sampling, groundwater sampling, soil vapour sampling, and/or sediment sampling. Contamination identified was delineated both laterally and vertically through additional investigations. As a result of the investigations nine (9) AECs were identified and are summarized below:

- Historical material storage and shipping activities on site have resulted in metals and PAH contamination of soils and sediments in isolated areas (AECs 1 and 2);
- Historical metal working activities has resulted in deposition of scrap metals in the sediments in one area (AEC 4);
- An underground storage tank should be removed and the adjacent soils tested (AEC 7);
- A buried railway line with creosoted ties that runs through the site and a stockpile of soil and railway ties will be removed as part of park development. The underlying soils should be tested for PAHs (AECs 11 and 13);
- The deposition of contaminated fill material as part of historical land reclamation has resulted in the presence of PAHs in groundwater in isolated areas (AEC 16);
- Historical discharge of water from three outfalls has resulted in PAH and PCB contamination of sediments in isolated areas (AEC 17); and
- A spill of solvents along the northern site boundary has resulted in PCE and TCE contamination of soils and groundwater in one area (AEC 22). Although no soil vapour exceedances associated with the solvents were identified under current site conditions, it is recommended that possible future soil vapour risks be assessed and managed through mitigation, risk assessment and risk management.

Recommendations

Based on the results, the contamination identified through the AECs should be remediated through excavation or risk assessment and risk management.