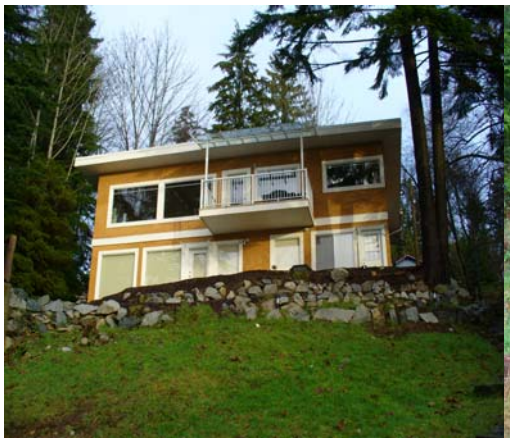
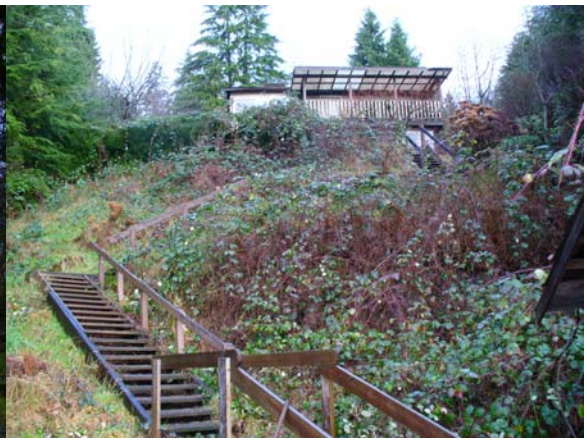
HOME

Phase 1 Environmental Site Investigation

3707, 3715, and 3739 Dollarton Highway
North Vancouver, BC





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PGL File: 3190-01.01

January 2008

PGL

Executive Summary

Pottinger Gaherty Environmental Consultants Ltd. (PGL) conducted a Phase 1 Environmental Site Investigation – Site History and Inspection of 3707, 3715, and 3739 Dollarton Highway, North Vancouver, BC (the Site). To look for risk of environmental contamination on the subject Site, we reviewed the history of the Site and area, visited the Site on January 11, 2008, and interviewed people familiar with it.

The Site is a residential property on the south side of Dollarton Highway, west of the intersection with Roche Point Drive. The local topography slopes steeply down to the south and Burrard Inlet. There are three residences which occupy about 10% of the property. All of the houses are two-storey wood-frame structures. Less than 10% of the property is paved parking and driveways; the remaining 80% is vegetated/landscaped.

The Site was first developed in 1952 with the cottage on 3715 Dollarton Highway. In 1954 and 1970 the houses at 3707 Dollarton Highway and 3739 Dollarton Highway were constructed. We saw no evidence of wharves or docks in any of the historical aerial photographs.

Two shipyard properties east of the Site were the first properties in the area to be developed, in the 1930s. By 1949 Dollarton Highway was constructed and properties northeast of the Site were developed for residential use. By 1963 residential properties were north of the Site. With the exception of the shipyards, the area has remained residential. The property west of the Site has never been developed.

Our historical review and site visit identified two areas of potential environmental concern (APECs):

- Possible onsite heating oil underground storage tanks (USTs) associated with domestic use; and
- Regulated building materials.

Based on the information reviewed for this assessment, PGL concludes that a soil and groundwater investigation prior to redevelopment is unlikely to be cost effective. Further investigation now is not recommended.

It is possible that one or more heating oil USTs remains onsite. A qualified environmental consultant should be on call during Site redevelopment should a tank be identified.

Because asbestos, polychlorinated biphenyls (PCBs), and other regulated building materials may be present, a regulated building materials survey must be completed prior to any demolition.

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List of Acronyms

APEC	-	area of potential environmental concern
AST	-	aboveground fuel storage tank
MOE	-	BC Ministry of Environment
PCBs	-	polychlorinated biphenyls
PGL	-	Pottinger Gaherty Environmental Consultants Ltd.
SHFS	-	Site History Fact Sheet
UST	-	underground fuel storage tank

1.0 INTRODUCTION

Pottinger Gaherty Environmental Consultants Ltd. (PGL) is pleased to provide our Phase 1 Environmental Site Investigation – Site History and Inspection of 3707, 3715, and 3739 Dollarton Highway, North Vancouver, BC (the Site, Figure 1). This Phase 1 was conducted to assess the likelihood of environmental contamination originating on the subject property as well as the potential for contamination originating from adjacent properties to migrate to the Site. The report describes the Site and area uses and history, discusses areas of potential environmental concern (environmental contamination risks), and outlines conclusions/recommendations.

1.1 Purpose

We understand that this report will be used in connection with redevelopment of the property. We understand that the property will be subdivided and the residences at 3715 and 3739 Dollarton Highway will be demolished.

This report can be relied upon by your lender. This Phase 1 investigation has been completed in accordance with Canadian Standards Association (CSA) Z768-01 and pertinent BC legislation including the Environmental Management Act (July 2004) and Contaminated Sites Regulation. Please consult the attached Site History Fact Sheet (SHFS) – Phase 1 Site Investigation Scope Outline in Appendix 2for further detail on our scope of work.

This report may not include sufficient documentation for regulatory review. Regulatory reports are more technical than what is typically required for financing purposes and are therefore more costly to prepare. If regulatory submission is ever necessary, we can augment this report. Please consult the SHFS – Phase 1 Site Investigation Scope Outline for further information.

2.0 RECORDS REVIEW

This assessment was based on our review of the records listed below:

1. Business directories;
2. Historical aerial photographs of the area;
3. Municipal Internet sites; and
4. Ministry of Environment Site Registry Search.

For this report, a historical title search and fire insurance maps were not reviewed. Fire insurance maps have not been prepared for this area. The absence of this information is not considered a significant limitation to this investigation, as sufficient information was obtained from reviewed sources.

3.0 SITE DESCRIPTION

The Site is a residential property on the south side of Dollarton Highway, west of the intersection with Roche Point Drive. There are three residences which occupy about 10% of the property. All of the houses are two-storey wood-frame structures with the bottom storey at ground level along the south side of the house and below ground along the north side of the house. Less than 10% of the property is paved parking and driveways; the remaining 80% is vegetated/landscaped. Each of the houses is heated by natural gas.

The local topography slopes steeply down to the south and Burrard Inlet. Geological maps and company data indicate surficial soils in the area consist of Vashon Drift and Capilano Sediments. The stratigraphy consists of glacial drift including lodgement and minor flow till, lenses and interbeds of substratified glaciofluvial sand to gravel, and lenses and interbeds of glaciolacustrine laminated stony silt. These deposits are up to 25m thick, but in most places less than 8m thick and overlain by glaciomarine and marine deposits normally less than 3m thick, but in places up to 10m thick. The inferred water table in the area is approximately 3m to 5m below ground surface.

Table A: Site Identification Information

Civic Address	3707, 3715, and 3739 Dollarton Highway, North Vancouver, BC
Land Use	Residential
PID*	3707: 010-290-826, 3715: 010-291-741, 3739: 010-291-938
Legal Description*	3707: THAT PART OF LOT 1 LYING WEST OF A LINE DRAWN PARALLEL TO THE WEST BOUNDARY THEREOF AND WHICH LINE BISECTS THE NORTH BOUNDARY OF SAID LOT BLOCK K DISTRICT LOT 230 PLAN 7990 3715: LOT 1, EXCEPT THAT PART LYING WEST OF LINE DRAWN PARALLEL TO THE WEST BOUNDARY THEREOF AND WHICH LINE BISECTS THE NORTH BOUNDARY OF SAID LOT BLOCK K DISTRICT LOT 230 PLAN 7990 3739: LOT 2 BLOCK K DISTRICT LOT 230 PLAN 7990
Latitude	49° 18' 13.2" North
Longitude	121° 58' 7" West
Site Area*	3707: 1986.45 sq m, 3715: 1933.25 sq m, 3739: 2930.1 sq m (Total 6849.8 sq m)
MOE Site #	Not applicable

* Source: District of North Vancouver GIS Geoweb (http://www.geoweb.dnv.org/website/parcelexplorer/default.htm)

3.1 Site History

Based on our review of historical aerial photographs, business directories, and the District of North Vancouver Geoweb, the Site was first developed in 1952 with the cottage on the central lot at 3715 Dollarton Highway. By 1954 the house on the western lot was present (3707 Dollarton Highway), and by 1970 the house at 3739 Dollarton Highway was constructed.

We did observe three buildings in a 1949 aerial photograph, but they were removed by the early 1950s. The buildings were along the high water mark along the western half of the southern property boundary. It appears that the buildings were not on the Site but on the beach. We saw no access road leading to these buildings, although the aerial photograph had poor resolution. We conclude that these were likely boat storage buildings.

There are currently two sheds along the high water mark that do not appear to be on the Site. They were mostly empty at the time of our inspection. These buildings are similar in size and configuration to the buildings seen in the 1949 aerial photograph. These buildings do not pose an environmental risk to the Site.

We saw no evidence of any wharves or docks in any of the historical aerial photographs.

3.2 Surrounding Site History

Two shipyard properties east of the Site were the first properties in the area to be developed, in the 1930s. By 1949 Dollarton Highway was constructed and properties northeast of the Site were developed for residential use. By 1963 residential properties were north of the Site. With the exception of the shipyard, the area has remained residential. The property west of the Site has never been developed.

The shipyard properties, operated by Noble Towing and McKenzie Barge, are downgradient or cross-gradient from the Site and therefore do not pose a risk of environmental contamination to the Site.

3.3 Ministry of Environment Site Registry Search

PGL conducted a BC Ministry of Environment (MOE) Site Registry search of identified contaminated sites. Our search identified one property on file within a 0.5km radius of the subject site (Appendix 1). The site is listed as 3919 Dollarton Highway, which corresponds to the McKenzie Barge shipyard site. As discussed previously, this property is not an environmental risk to the Site.

3.4 Previous Environmental Reports

PGL is not aware of any environmental reports previously prepared for the Site.

4.0 INTERVIEWS

PGL interviewed Mr. Nick Ebrahim, property owner, about the history of the Site. Interviews were not conducted with the tenants of 3739 or 3715 Dollarton Highway. This is not considered a limitation to our investigation since the Site has always been used for residential purposes.

5.0 SITE VISIT

PGL inspected the subject property and area on January 11, 2008. There were no significant limitations to our Site visit. The interiors of the houses were not inspected.

Our Site visit included:

- Carrying out a reconnaissance of the neighbouring properties;
- Reviewing physical factors that may affect Site contamination such as topography, groundwater, and soils; and
- Inspecting the Site and improvements for indications of environmentally significant materials such as those listed in the following sections.

5.1 Surface Water

A stream runs along the western property boundary. We understand that you are in current negotiations regarding an appropriate stream setback for development.

5.2 Fill

The Site is at a similar elevation to adjacent properties and no fill is evident. A geotechnical report has not yet been conducted for the Site; however, the geotechnical consultant for the Site confirms that fill is very unlikely. No further investigation of fill is warranted.

We did not observe any indications of buried streams.

5.3 Storage Tanks

We saw no evidence of aboveground storage tanks (ASTs) and we saw no evidence of vent or fill pipes that would indicate an underground storage tank (UST) is currently onsite. The property owner indicated that, to his knowledge, there were no USTs or ASTs onsite. However, USTs cannot be entirely ruled out in this case. Given the ages of the houses (1952, 1954, and 1979) they likely did not always have natural gas service. It is possible the houses were heated with oil in the past.

If heating oil USTs are present, in our experience they are generally best dealt with during excavation or site preparation, if encountered. Further investigation in the absence of indicators is not cost effective. A qualified environmental consultant should be on call during Site redevelopment should a tank be identified. For further information please consult the attached SHFS – Aboveground Storage Tanks for Domestic Heating and SHFS – Underground Storage Tanks for Domestic Heating.

The presence of a domestic heating oil tank is not a Schedule 2 Use under the BC Contaminated Sites Regulations and so does not trigger the need for regulatory approvals for redevelopment.

5.4 Hazardous Materials

Aside from one automotive battery stored on concrete in the car port of 3739 Dollarton Highway, we saw no hazardous materials. The battery does not pose a significant risk of Site contamination.

5.5 Waste Streams

Aside from domestic garbage, there are no waste streams.

5.6 Stains, Odours, and Stressed Vegetation

No stains or stressed vegetation (a potential indicator of contamination) were observed. We saw no evidence of environmental impacts along the waterfront south of the Site.

5.7 Regulated Building Materials

Due to the ages of the buildings (between 1952 and 1970), building components that are regulated in some circumstances, such as asbestos, lead paint, and polychlorinated biphenyls (PCBs) (in light ballasts) may be present. Typical asbestos-containing materials in residences include drywall joint compound, pipe lagging, ceiling tiles, and vinyl flooring. If there are fluorescent light fixtures, these could have PCB-containing ballasts.

These items are common in buildings of this age and are not a hazard unless disturbed, as in renovation or demolition. If regulated building materials are present, building owners have certain obligations to protect workers under the BC Workers Compensation Act. More information is presented in the attached SHFS – Asbestos, SHFS – Lead Paint and Other Non-Asbestos/PCB Building Hazards, and SHFS – PCBs.

5.8 Potable Water and Sewage

The Site is supplied with municipal drinking water and sewage systems.

5.9 Heating and Cooling Systems

All three houses are heated with natural gas. We did not observe any air conditioning units.

5.10 Neighbouring Property Use

The surrounding area is primarily residential with two industrial properties further east. Surrounding property uses include:

- North – Dollarton Highway and residential properties.
- East – Two residential properties, one of which is undergoing residential redevelopment. Two shipyard sites are further east.
- South – Burrard Inlet.
- West – Undeveloped property.

We did not observe any operating service stations, dry cleaners, or other operations that might pose a risk to the Site through migration of contamination.

6.0 CONCLUSIONS

We reviewed the Site for environmental issues normally assessed in a Phase 1 investigation. Our historical review and site visit identified two areas of potential environmental concern (APECs):

- Possible onsite heating oil UST(s); and
- Regulated building materials.

Based on the information reviewed for this assessment, PGL concludes that a soil and groundwater investigation prior to redevelopment is unlikely to be cost effective. Further investigation now is not recommended.

It is possible that one or more heating oil USTs remain onsite. A qualified environmental consultant should be on call during Site redevelopment should a tank be identified.

Because asbestos, PCBs, and other regulated building materials may be present, a regulated building materials survey must be completed prior to any demolition.

7.0 STANDARD LIMITATIONS

PGL prepared this report for our client, Nick Ebrahim, his agents and lender exclusively. PGL accepts no responsibility for any damages that may be suffered by third parties as a result of decisions or actions based on this report.

The purpose of this report is to provide an assessment of the potential for environmental contamination on the subject property. Our investigation identified reasonably foreseeable risks that can be detected by normal archival research and a single untimed site visit with no sampling or testing. Our conclusions rely on there having been complete and accurate disclosure of conditions by the client and our sources. As with all environmental investigations, potential remains for unknown, unidentified, or unforeseen contamination. Environmental investigations are limited by both practical limitations in scope and inherent limitations in technique.

The findings and conclusions are site-specific and were developed in a manner consistent with that level of care and skill normally exercised by environmental professionals currently practicing under similar conditions in the area. Conclusions and costs are time sensitive, so this report is for use now. The report should not be used after that without PGL review/approval. Use of this report should recognize that the rapid pace of change in the environmental field and regulations means that environmental investigations and their conclusions can quickly become dated.

The project has been conducted according to our instructions and work program. Additional conditions and limitations on our liability are set forth in our work program/contract. This report is neither an endorsement nor a condemnation of the subject property. No warranty, express or implied, is made.

We trust this meets your needs. If you have any questions or require clarification, please contact Kathy Minehan or Duncan Macdonald at 604-895-7622 and 604-895-7639, respectively.

Respectfully submitted,

POTTINGER GAHERTY ENVIRONMENTAL CONSULTANTS LTD.
Per:

Kathleen P. Minehan, M.Sc., P.Geo., CEA
Senior Geologist

Duncan Macdonald, B.Sc., P.Eng.
Environmental Engineer

KPM/DGM/kmp
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Bibliography

Aerial photographs of the area:

Year	Serial No.	Photo No.	Notes
2004	SRS 6929	120	Site and area appear the same as at Site inspection. Residential properties to north and east. Undeveloped to west. There are no wharves associated with the Site.
1996	30BCC96081	125, 126	No obvious change from 2004.
1992	30BCB18	10, 11	No obvious change from 1996.
1984	A26511	98, 99	No obvious change from 1992.
1979	30BC79047	71, 722	No obvious change from 1984.
1974	BC5573	226, 227	No significant changes from 1979. Fewer trees onsite.
1963	BC5059	242, 243	Few residences in area. House on eastern Site lot is not present.
1954	BC1672	7	Only the small cottage on the central Site lot is present.
1949	BC728	104, 105	There appear to be three buildings along the high water mark on the two westernmost Site lots, but still no evidence of any wharves associated with the Site. The buildings are possible boat sheds as no access roads to the buildings are visible.

Business Directories:

- Dollarton Highway,: 2001, 1995/1996, 1990, 1985, 1980, 1974, 1970, 1960, 1965 and1954.

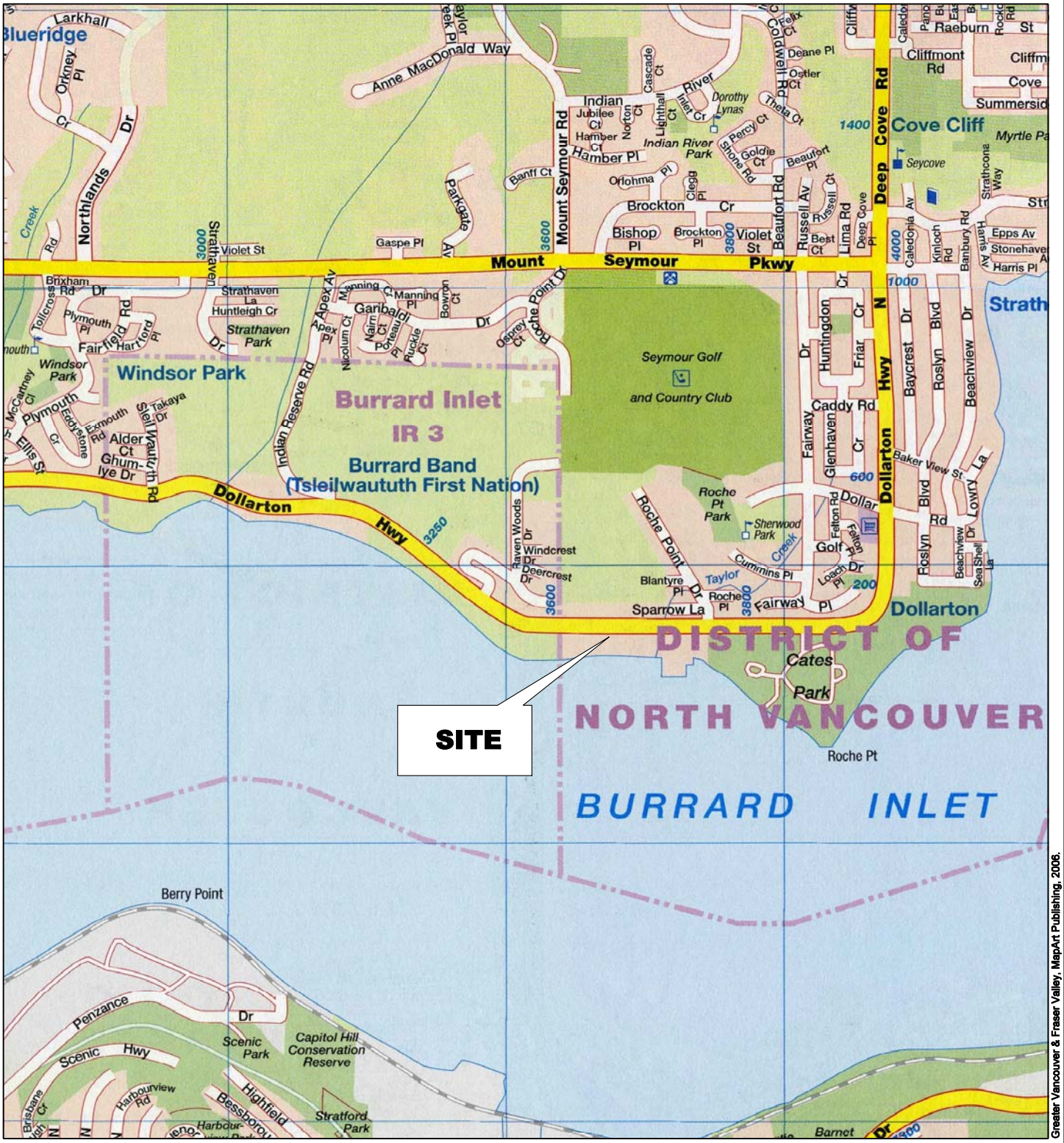
Surficial Geology of New Westminster, Map 1484A, Geological Survey of Canada, 1976 and 1977

Geological Map of the Vancouver Metropolitan Area – Geological Survey of Canada Open File 3511, 1998

BC Online Site Registry: 0.5km radius area search

http://www.geoweb.dnv.org

Figure



SITE LOCATION

3707-3739 Dollarton Highway, North Vancouver, BC

NICK EBRAHIM

N

File No.: 3190-01.01
Date: JANUARY 2008
Dwg No.: S1
Drawn by.: HLI

PGL | Pottinger Gaherty ENVIRONMENTAL CONSULTANTS

FIGURE 1

ORIGINAL IN COLOUR

Appendix 1

Ministry of Environment Site Registry Search

As Of: JAN 13, 2008 BC Online: Site Registry 08/01/16
For: PC42187 POTTINGER GAHERTY ENVIRON. CONSULTA 12:29:17
Folio: 3190-01.01 Page 1

1 records selected for 0.5 km from latitude 49 deg, 18 min, 13.2 sec
and Longitude 122 deg, 58 min, 7 sec

Site Id	Lastupd	Address / City
0003412	01MAR09	3919 DOLLARTON HIGHWAY NORTH VANCOUVER

Appendix 2

Site History Fact Sheets

SHFS – Phase 1 Site Investigation Scope Outline
SHFS – Asbestos
SHFS – Aboveground Storage Tanks for Domestic Heating
SHFS – Underground Storage Tanks for Domestic Heating
SHFS – Lead Paint and Other Non-Asbestos/PCB Building Hazards
SHFS – PCBs

SITE HISTORY FACT SHEET

PHASE 1 SITE INVESTIGATION SCOPE OUTLINE

What a Phase 1 Environmental Site Investigation covers and the qualifications of the preparer that bear on its usefulness and credibility.

Coverage

The Phase 1 investigation assesses, based on archival review, interviews, and a visual inspection, only risks that are likely to have contaminated the site or building from use up to the present. It does not evaluate compliance of operations or the risk that an ongoing operation might contaminate the site; these would be evaluated in an operations or compliance audit. The topics we cover in a Phase 1 investigation to assess contamination risk include:

- Present activities at the site and adjacent sites
- Past activities at the site and adjacent sites
- Environmental certificates, permits, and orders (presence/absence only)
- Regulatory history and concerns
- Fill, spills, and waste disposal onsite (visible indicators, records)
- Fuel/chemical storage facilities and past use
  - Aboveground storage tanks
  - Underground storage tanks
  - Fixed hydraulic equipment
  - Chemicals and hazardous substances
- PCB materials/equipment
- Asbestos materials
  - Visual scan only
  - No testing except in extraordinary circumstances
- Lead paint
  - Unusual hazardous condition only
- Pesticides/herbicides
- Radon/methane gas
  - Identified hazard areas only

We review those risks that are identified by our sources or that are visible and readily inspected. No destructive investigation or testing is ordinarily conducted.

Issues are discussed in the report if our investigation or experience indicates they have reasonable potential to contaminate the subject site; issues that are not a concern or not applicable are not normally documented in PGL's reports, but are documented in our files.

PGL Qualifications

PGL is well qualified to conduct Phase 1 investigations. PGL has conducted over 1,300 Phase 1 investigations since 1991, for over 2,000 clients. We have also conducted hundreds of Phase 2 and many Phase 3 investigations and so have the benefit of that experience. The firm has over 40 specialist professionals in engineering, geoscience, and soil science involved full-time in environmental site investigations/site audits/business audits.

Our Phase 1 investigation protocols and checklists are based on industry standards and meet the requirements of the Canadian Mortgage and Housing Corporation and of banks, credit unions, and other lenders, as well as CSA Standard Z768-01. PGL involves senior staff on all projects to ensure a high level of service to our clients. All reports are reviewed by a senior project manager or a principal of the firm. PGL is covered by professional errors and omissions insurance.

SITE HISTORY FACT SHEET

ASBESTOS

Asbestos is a fibrous silicate mineral that was once widely used in building materials. Most uses were phased out about 1980, but some products were available into the early 1990s. Materials at risk of containing asbestos include spray-on fire-proofing and insulation, acoustic tiles and plaster, texture coat plaster, vinyl flooring, roof felt and patch compound, cement siding and pipe, pipe insulation and drywall joint compound. Asbestos hazard arises from inhaling the fibres. The most dangerous forms of asbestos are “friable,” meaning that the fibres can become airborne if disturbed. Exposed, friable asbestos has been identified and managed in most situations where occupational exposures are likely, but have been less examined in either single or multi-family residential buildings.

The BC Occupational Health and Safety regulations (Section 6) deal with workplace exposure to asbestos. The regulations specify that “if a worker is or may be exposed to potentially harmful levels of asbestos, the employer must develop and implement an exposure control program meeting the requirements of Section 5.44.” (Section 6.3.1) Identification programs are designed to reduce the likelihood that demolition, renovation, or maintenance workers will be inadvertently exposed to asbestos while working with materials they may not be aware are asbestos containing. Asbestos can be positively identified only by laboratory analysis.

Most buildings built prior to 1980 have some asbestos-containing materials. Asbestos in a building has implications to owners and occupants. Where buildings contain friable asbestos, it generally must be removed, often at high cost. Non-friable asbestos is very common and usually less of a problem. It is dealt with by identification and a management system to notify potentially exposed workers. At demolition or renovation, asbestos materials must be removed and disposed of under strict health and safety controls. The cost can be closely estimated by asbestos consultants and contractors. In the case of demolition, asbestos management costs are generally manageable (especially in the context of overall redevelopment costs), but make some renovation projects economically impractical.

Non-friable asbestos in buildings is not generally a risk to lenders, but does create Workers Compensation risks for building owners if maintenance or renovation exposes maintenance staff or contractors. Building owners can reduce risk by training staff in asbestos risk management (assume hazard and test or take precautions when doing minor projects) or by a testing and management program.

Asbestos surveys typically cost $1,500–$5,000, depending on the building. Full asbestos surveys are destructive and so complete surveys are normally only done prior to demolition. Sampling of roofing membranes, for example, risks roof integrity and so may invalidate insurance.

SITE HISTORY FACT SHEET

ABOVEGROUND STORAGE TANKS FOR DOMESTIC HEATING

Aboveground storage tanks (ASTs) were widely used in BC urban areas from the 1930s to the early 1960s to store domestic heating oil and are common in locations not serviced with natural gas. For single-family houses, most ASTs were 1,100L (250-gallon) capacity. Often, homeowners who converted to natural gas would simply abandon ASTs with heating oil remaining inside.

The risks from ASTs are associated with the heating fuel that they contain. If spills or leaks occur or have occurred in the past from the tank, there is a risk of soil and groundwater contamination. Stormwater may become contaminated and affect fish. Larger spillages on the ground surface tend to spread laterally and not seep deeply into the ground, and as such they are easy to dig up when remediation is undertaken.

There are no specific environmental standards or criteria for the design of ASTs for domestic heating (under 2,200L). The BC Fire Code specifies a CSA standard (CAN/CSA B139-M "Installation Code for Oil Burning Equipment") regarding the specifications for tank construction, design, and installation. PGL recommends that new systems be constructed with secondary containment in accordance with the Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground Storage Tanks Systems Containing Petroleum Products (August 1994). Existing operational ASTs as a minimum protective measure should be placed on an impermeable surface such as concrete or asphalt to prevent spillage from entering the soil, and should have the fuel piping protected from mechanical damage. Abandoned ASTs should have the residual fuel pumped out and the tank should be disposed of or recycled by a qualified contractor.

SITE HISTORY FACT SHEET

UNDERGROUND STORAGE TANKS FOR DOMESTIC HEATING

Unidentified underground storage tanks (USTs) for domestic heating oil are a risk at your site. USTs were widely used in BC urban areas from the 1930s to the early 1960s to store domestic heating oil. USTs were less common in suburban areas because space was available for aboveground storage tanks (ASTs). These USTs were typically 1,350–2,280L (300–500 gallon) capacity for single-family houses and larger for apartment buildings. Most were left in place, partly full of oil, when heat was switched to natural gas.

During site inspections, PGL always searches for evidence of USTs. Visible indicators such as a fill spout, vent pipe, concrete pad, or fuel lines in the furnace room are strong evidence that a UST may be present. Indicators may be absent after renovation because they were removed/covered for aesthetic reasons, although indicators in furnace rooms are rarely removed. Terasen records are another indicator that may lead us to suspect the presence of an UST. Terasen records tell us that an alternate fuel source (such as USTs, ASTs, coal, wood, sawdust, etc.) was used on a site. If we suspect that an UST was present on the site at one time, the only way we can confirm it was removed is by a formal or anecdotal report by someone who was involved with the removal.

Heating-oil USTs, if present, may leak and cause contamination, or corrode and collapse, but their size and the nature of heating oil means effects will normally be confined to the immediate area around the UST. Remedial costs seldom exceed $10,000. This limits what should reasonably be spent on assessing the presence of suspected USTs.

Former residential properties that have been redeveloped are a low risk of having USTs. If USTs were present, they were likely removed without any record of removal. It is not worthwhile to investigate for USTs in this circumstance unless there is some anecdotal or formal report describing contamination.

It is possible to search for USTs by conducting a geophysical survey, at a cost of roughly $1,500. Unfortunately, these tests can easily give a false negative, for example, if the UST is under a building or close to a steel fence. Tanks under or close to buildings are difficult and expensive to evaluate, and often impossible to remove. In most cases we recommend that this risk be dealt with during site redevelopment or at the time of demolition, not by investigation.

Circumstances occasionally warrant further investigation. Larger parking lots or cleared undeveloped parcels that may have had several residential buildings have a higher risk of abandoned USTs. PGL may recommend investigating these sites prior to commencement of construction, where the cost of delays caused by managing USTs can exceed the $1,500 geophysical survey cost.

SITE HISTORY FACT SHEET

LEAD PAINT AND OTHER NON-ASBESTOS/PCB BUILDING HAZARDS

In addition to PCBs and asbestos, other hazardous or potentially hazardous materials have been or are used in building materials. These risks may sometimes require management. Risks include lead paint, mercury-containing electrical equipment, and contaminants deposited in a structure by historical activities (principally metal working industries including auto body, foundries, plating, electric motor rebuilding etc.). Currently, Occupational Health and Safety Regulations (Section 20.112) state that, prior to demolition or salvage of machinery, equipment, buildings, or structures, *"the employer or owner must:*

(a) inspect the site to identify any asbestos, lead or other heavy metal or toxic, flammable, or explosive materials that may be handled disturbed or removed

(b) have the inspections available onsite

(c) ensure that any hazardous materials are safely contained or removed

(d) if hazardous materials are discovered during demolition that were not found in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed."

Paint

Paint can contain hazardous metals, most commonly lead and, to a lesser extent, mercury and others. Most solid-colour paints manufactured before 1970 contained percent quantities of lead. Banned in Canada in 1973, full phase-out of lead probably did not occur until the mid-1970s. Most buildings built prior to 1970 contain some lead paint. Mercury was used as an anti-mildew agent (interior and exterior) and other metals were used as pigments (primarily exterior paints).

Lead paint hazard management depends on the situation. Lead paint management at demolition, to the extent it occurs in BC, is done for worker protection reasons. Lead paint in existing buildings is mostly a concern in multi-family residential buildings where exposure to children is possible, or in renovations where workers are exposed during paint stripping. Testing of paint chips for lead is inexpensive and *in situ* testing can be done using qualitative swabs that react with lead in paint. Control measures for paint are stripping (costly), covering (costly), or sealing with special paints (limited effectiveness). Lead paint in demolition debris is not now formally regulated in BC. If it were, it would add substantially to demolition costs.

Other Metals

Activities that generate dust or fumes containing heavy metals can leave residues that are high in toxic metals. If disturbed, these residues can become airborne and cause a hazard if breathed. Even careful housekeeping may be insufficient to prevent the accumulation of this hazard. Dust can filter into wall cavities, down through floors and up into ceiling spaces, settle onto structural members, and be ground into all types of flooring. Fumes can deposit on walls, ceilings, and floor surfaces. Removal of these residues can be expensive, as partition removal may be required. Fumes may need to be removed by chemical washes or surface removal. This risk may not significantly affect buildings that will continue to be used for similar purposes, but major renovation, or alteration to more sensitive uses, may require major decontamination efforts to protect renovation workers or future occupants.

SITE HISTORY FACT SHEET

PCBS

Polychlorinated biphenyls (PCBs) are a stable dielectric oil or wax that was used mostly in electrical equipment, high-stress hydraulic fluid and lubricants, and plasticizers in plastic and rubber manufacture. PCBs are persistent in the environment and considered toxic, and were therefore banned from production in about 1980 in the US and Canada. However, they are still commonly found in old transformers and capacitors, particularly in fluorescent light ballasts. Although they were normally used at high concentration, many non-PCB oils and dielectric fluids were inadvertently contaminated and so PCBs have become widespread in the environment.

Fluorescent lighting installed prior to 1980 is likely to have PCB-containing ballasts, although some ballasts will likely have failed and therefore have been replaced. PCB-containing ballasts can be identified by examination of the model and date codes.

In BC, a PCB-containing apparatus is considered to be a Hazardous Waste when it is taken out of service and is governed under Section 17.1 of the Hazardous Waste Regulation. If PCB wastes are generated and stored in amounts exceeding 1kg of PCBs, 100L of PCB liquid or 100kg of PCB solids, a short-term storage facility is required. PCBs of 500g or more require shipping manifests. The weight and volume measurements apply to the entire apparatus. In a fluorescent light ballast, for example, the actual capacitor containing the PCB may be only two grams, yet the ballast in which the capacitor is imbedded may weigh 500 grams, all of which counts to the quantity limit.

Canada has two licensed PCB incineration facilities. Storage in sealed 205L (45-gallon) drums within a “registered short-term storage facility” on the subject property or another site deemed acceptable by the BC Ministry of Environment is allowed but is no longer an attractive option.

The cost to set up a PCB storage facility is in the order of $2,500–$5,000. Disposal costs in Alberta are roughly $2,000 per drum, which can hold up to about 100 ballasts. Some cost savings are possible by bulking drums together.

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