



December 9, 2011
File: 285-042.03

Ministry of Transportation and Infrastructure
4B -- 940 Blanshard Street
Victoria, BC V8W 3E6

Attn: Paul Savinkoff, Senior Geoscientist

Dear Mr. Savinkoff,

Re: Report on Hazardous Materials Assessment – 504 Clarke Road, Coquitlam, BC

Hemmera is pleased to present the results of the Hazardous Materials Assessment (HMA) conducted at 504 Clarke Road, Coquitlam, BC. The Site is a single-storey multi-tenant commercial building, comprised of two units, 504A and 504B.

The HMA field work was conducted on October 28, 2011, lead by Mr. Tom Farrell of Astech Consultants Ltd. ("Astech"). Photographs of the commercial building are attached as **Appendix A**. A total of 31 bulk samples of potential asbestos-containing material were collected and analyzed. Three potential lead-containing bulk samples were also collected and analyzed from the building. No destructive sampling of roof materials was conducted due to the possibility of future tenants occupying the building.

The complete Astech report on the HMA is attached as **Appendix B**. Estimated Contractor Budget figures for the removal and disposal of the hazardous building materials were provided to the BC Ministry of Transportation and Infrastructure (MOT) under separate cover.

The following summarizes the results of the HMA (refer to the attached report for details):

- a) **Asbestos** – asbestos-containing materials were observed throughout the interior of unit 504A, specifically in paper-backed sheet flooring and associated residue, and floor tile adhesive. Asbestos-containing firestop putty was also observed in the Telus cabinet penetrations in the electrical room for the building. Asbestos-containing caulking was observed associated with the exterior walls, windows, and glass doors of the building. As well, there are potential asbestos-containing materials comprising the rooftop (no destructive sampling conducted).
- b) **Lead** – found in the paints on the exterior finishes/mouldings of the building as well as interior structural steel components. Lead roof vents and caps are located on the roof, and there are lead sleeves at the toilets.

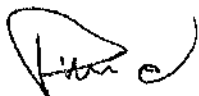
Hemmera Envirochem Inc.
Suite 250, 1380 Blanshard Street
Vancouver, BC V6Z 2H3

Telephone: 604.669.0424
Facsimile: 604.669.0430
www.hemmera.com

- c) Mercury – two wall-mounted thermostats containing liquid mercury were observed in the building, as well as numerous fluorescent and other light bulbs containing mercury.
- d) Polychlorinated Biphenyls (PCBs) – numerous fluorescent light fixtures with ballasts suspected of containing PCBs were observed in the building and associated with the exterior canopy.
- e) Stored chemicals and other hazardous materials – a few containers of cleaners, a fire extinguisher and suppressant system, compressors suspected of containing chlorofluorocarbons (CFCs), natural gas piping leading to heating equipment, several areas of mould, rodent droppings, and rodent carcasses were observed in and around the building.
- f) Non-asbestos gypsum board – gypsum board with non-asbestos filling compound was observed throughout both units of the building. Non-asbestos gypsum board is a provincially-regulated construction waste which must be handled accordingly.
- g) Non-asbestos insulation – non-asbestos fibreglass and/or rock wool insulation was observed in the wall cavities and some ceiling spaces in the building; this construction waste must be handled according to municipal regulations.

We trust that this summary is satisfactory. Should you have any questions, please do not hesitate to contact either of the undersigned at 604.669.0424.

Yours truly,
Hemmera



Peter Howard, B.Sc.
Assistant Project Manager



Diane Zorn, P.Eng.
Project Director

STATEMENT OF LIMITATIONS

This report was prepared by Hemmera, based on fieldwork conducted by Hemmera, for the sole benefit and exclusive use of the BC Ministry of Transportation and Infrastructure (MOT). The material in it reflects Hemmera's best judgment in light of the information available to it at the time of preparing this Report. Any use that a third party makes of this Report, or any reliance on or decision made based on it, is the responsibility of such third parties. Hemmera accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Report.

Hemmera has performed the work as described above and made the findings and conclusions set out in this Report in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession practicing under similar conditions at the time the work was performed.

This Report represents a reasonable review of the information available to Hemmera within the established Scope, work schedule and budgetary constraints. It is possible that the levels of contamination or hazardous materials may vary across the Site, and hence currently unrecognised contamination or potentially hazardous materials may exist at the Site. No warranty, expressed or implied, is given concerning the presence or level of contamination on the Site, except as specifically noted in this Report. The conclusions and recommendations contained in this Report are based upon applicable legislation existing at the time the Report was drafted. Any changes in the legislation may alter the conclusions and/or recommendations contained in the Report. Regulatory implications discussed in this Report were based on the applicable legislation existing at the time this Report was written.

In preparing this Report, Hemmera has relied in good faith on information provided by others as noted in this Report, and has assumed that the information provided by those individuals is both factual and accurate. Hemmera accepts no responsibility for any deficiency, misstatement or inaccuracy in this Report resulting from the information provided by those individuals.

The liability of Hemmera to BC MOT shall be limited to injury or loss caused by the negligent acts of Hemmera. The total aggregate liability of Hemmera related to this agreement shall not exceed the lesser of the actual damages incurred, or the total fee of Hemmera for services rendered on this project.

APPENDIX A

Photographs



Photo 1: View to the east of the commercial building at 504 Clarke Road, Coquitlam, BC
(October 28, 2011)

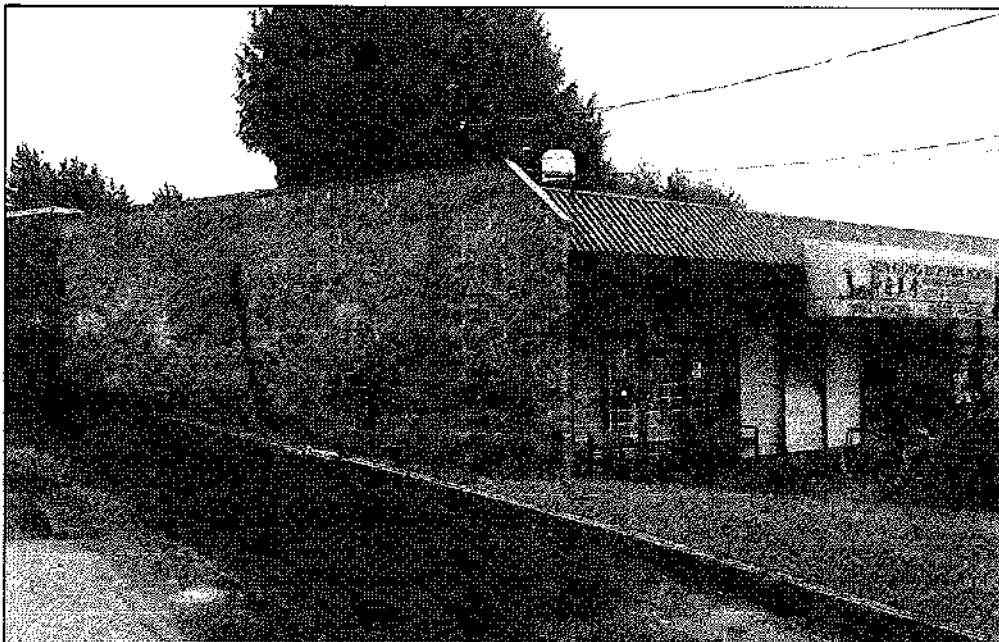


Photo 2: View to the southeast of the commercial building at 504 Clarke Road (October 28, 2011)



Photo 3: View inside the electrical room of the commercial building at 504 Clarke Road (October 28, 2011)



Photo 4: View of some of the mould inside unit 504A of the commercial building at 504 Clarke Road (October 28, 2011)

APPENDIX B

Astech Report

November 8, 2011



HEMMERA ENVIROCHEM INC.

Suite 250, 1380 Burrard Street
Vancouver, BC V6Z 2H3

Attention: Ms. Diane Zorn, P.Eng., Senior Environmental Engineer

**Ref: CONTRACTOR VERSION - PRE-DEMOLITION HAZARDOUS BUILDING MATERIALS SURVEY OF THE
MULTI-TENANT COMMERCIAL BUILDING LOCATED AT 504A AND 504B CLARKE ROAD,
COQUITLAM, BC**

1.0 INTRODUCTION

Astech Consultants were retained by Hemmera Envirochem Inc. to conduct a Pre-Demolition Hazardous Building Materials Survey and compile a detailed report on the presence and location of asbestos containing building materials, PCB containing ballasts, lead, mercury, and stored chemicals in the Multi-Tenant Commercial Building located at 504A and 504B Clarke Road, Coquitlam, BC.

Astech Consultants Ltd. survey and report format is designed specifically to satisfy the current applicable regulation from the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation 20.112 regarding hazardous building material assessments, which is listed below.

PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION

Hazardous materials 20.112 Before work begins on the 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 inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances,
- (c) ensure that any hazardous materials found are safely contained or removed, and
- (d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

This survey was conducted on October 28, 2011 by Tom Farrell and Cassandra Marshall of Astech Consultants. It must be emphasized that this survey was concerned exclusively with the subject building. Areas such as inaccessible floor cavities, wall cavities, and ceiling cavities which would require dismantling portions of the building in order to gain access were not investigated. No attempt was made to investigate underground services, or the surrounding property.

2.0 METHODOLOGY

2.1 ASBESTOS CONTAINING MATERIALS

A visual inspection was undertaken in order to determine the type and location of asbestos containing building materials located within the subject building. During this inspection, thirty-one (31) bulk samples of potential asbestos containing materials were collected from specific locations of the subject building. The samples collected were submitted for laboratory analysis in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, utilizing polarized light microscopy, and dispersion staining techniques. Results of laboratory analysis of samples collected during this survey are attached.

2.2 LEAD PAINTS

A visual inspection was undertaken in order to determine the type and location of paints suspected of containing lead at the building. During this inspection, three (3) bulk samples of potential lead paints were collected from the subject building. The samples collected were submitted for laboratory analysis in accordance with US EPA methods and the requirements of the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. Results of laboratory analysis of samples collected during this survey are attached.

2.3 PCB CONTAINING MATERIALS, LEAD, MERCURY, AND STORED CHEMICALS

A visual inspection was undertaken in order to determine the presence of:

- fluorescent light fixtures & HID light fixtures suspected of containing PCB ballasts or capacitors,
- construction materials suspected of containing lead and other heavy metals,
- thermostats and associated equipment suspected of containing mercury, and
- stored chemicals suspected of being toxic, flammable, or explosive.

3.0 INSPECTION RESULTS

3.1 ASBESTOS CONTAINING MATERIALS

MAIN FLOOR

504A - Entire Seating Area,

504A - Office/Storage Room (at Northeast Corner),

504A - Washroom and adjoining Hallway (2 Rooms),

504A - Entire Kitchen Area including Servery and Hot Water Tank Closet, and

504A - Washroom

- Asbestos containing paper backed sheet flooring, asbestos paper back sheet flooring residue, and contaminated floor tile adhesive (some concealed beneath a layer of non-asbestos floor tiles, wood, partition walls, walk-in cooler, and other building materials).

504A - Walk-In Cooler, and

504A - Floor Cavities, Wall Cavities, and Ceiling Spaces

- No asbestos materials observed.

504B - Entire Store Front,

504B - Electrical/Hot Water Tank Closet,

- 504B - Two adjoining Washrooms,
- 504B - Hallway adjacent Washrooms, and
- 504B - Floor Cavities, Wall Cavities, and Ceiling Spaces
- No asbestos materials observed.

504A and 504B - Electrical Room (Exterior Access)

- Asbestos containing firestop putty at Telus Cabinet penetrations.

EXTERIOR

Walls, Windows, and Glass Doors

- Asbestos containing caulking at and around windows and glass doors (some abutting wood, concrete and other building materials and some concealed).

Rooftops

- Potential asbestos containing roofing membranes, papers, felts, mastics, and/or patching compounds. Not sampled at this time (destructive testing required), and will require sampling by Astech Consultants prior to project start.
- Potential asbestos containing caulking, sealants, and mastics at rooftop flashings, mounted equipment & pads, and/or roof penetrations. Not sampled at this time (destructive testing required), and will require sampling by Astech Consultants prior to project start.

3.2 PCB CONTAINING MATERIALS

The visual inspection determined that there are approximately forty-four (44) fluorescent light fixtures in the building that are both old and new, including some at exterior canopy. The older light fixtures are suspected of having PCB containing ballasts. PCB ballast identification requires the disassembly of the light fixture in order to locate the manufacturer's identification code.

3.3 LEAD

The visual inspection and a laboratory analytical result determined that paints containing lead were used on exterior mouldings and finishes of the building and on structural steel components inside the building. There are lead sleeves at the toilets, and lead roof vents and caps located on the rooftop of the building.

3.4 LIQUID MERCURY

The visual inspection determined that there are two (2) wall mounted thermostats in the building that contain mercury. As well, there are numerous fluorescent and other light bulbs in the building that contain mercury.

3.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

The following list of materials were present in and around the building at time of inspection:

- a few containers of cleaners,
- a fire extinguisher and a fire suppression system at the kitchen fume hood,
- compressor with suspect ozone depleting substances (CFC's) in a freezer,
- compressor with suspect ozone depleting substances (CFC's) at walk-in cooler,
- compressors with suspect ozone depleting substances (CFC's) in rooftop air handling units,
- a few areas with rodent droppings and carcasses,
- several areas with small amounts of mould in the building, and
- piping containing natural gas leading to heating equipment.

3.6 NON-ASBESTOS GYPSUM BOARD

The visual inspection and analytical results determined that there is gypsum board with non-asbestos filling compound throughout the building.

3.7 NON-ASBESTOS FIBREGLASS INSULATION

The visual inspection determined that there is non-asbestos fibreglass and/or rock wool insulations in the wall cavities and some ceiling spaces of the building.

4.0 RECOMMENDATIONS

4.1 ASBESTOS CONTAINING MATERIALS

Prior to demolition of a building, asbestos containing materials must first be removed by a qualified hazardous materials abatement contractor in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. The Workers' Compensation Board is concerned primarily with the safety of the workers that are actually performing the asbestos abatement work. Disposal of asbestos containing materials must be performed in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.2 POLYCHLORINATED BIPHENYL (PCB) CONTAINING BALLASTS

It is recommended that the identification of PCB ballasts be performed by qualified personnel prior to or in conjunction with the demolition of the building, at a time when it becomes feasible to isolate electrical power and disassemble/disconnect the light fixtures. The ballasts that are identified as PCB containing must be removed in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, and disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.3 LEAD BUILDING MATERIALS AND HEAVY METAL BASED PAINTS

To satisfy the requirements of the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, the lead containing paints and primers should be removed intact by the demolition contractor, in accordance with normal demolition work procedures which includes the continuous use of a fire hose equipped with a fog nozzle to control dust at the source. The heavy equipment operator, and workers in close proximity to the work being performed, should be protected with half-mask HEPA filtered respirators. Lead containing paints and primers which remain attached to building materials such as wood, metal, ceramic tiles, concrete block, etc., may be disposed of in a manner applicable to normal demolition waste. If the lead paints are to be separated or removed from the building materials by means of sanding, abrading, blasting, etc., more stringent work procedures would apply. The removed lead paints, depending on lead concentrations, may become a Hazardous Waste and therefore must be disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

Prior to demolition of a building, lead sleeves at toilets and lead roof jacks must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.4 MERCURY

Prior to demolition of a building, the mercury in thermostats and light bulbs must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

Stored Chemicals

Prior to demolition of a building, stored chemicals and ozone depleting substances within refrigeration equipment must first be removed, and be recycled, or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

Rodent Droppings and Carcasses

Rodent droppings and carcasses which can cause infectious disease and/or respiratory disease in humans should be removed as biohazardous waste by a qualified abatement contractor in accordance with the Workers' Compensation Board of BC Occupational Health and Safety Regulation, prior to unprotected trades performing work in or conducting selective demolition of the building. In lieu of removing droppings and carcasses, workers shall wear respirators and protective clothing while in contaminated areas of the building, and while conducting selective demolition of the building.

Mould

The differing types of moulds and/or fungi which can cause infectious disease and/or respiratory disease in humans should be removed as biohazardous waste by a qualified abatement contractor in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, prior to unprotected trades performing work in the building. In lieu of removing moulds and fungi, workers shall wear respirators and protective clothing while in contaminated areas of the building.

Prior to the demolition of a building, mould which is attached to gypsum board to be recycled, should be removed by a qualified abatement contractor in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. During the removal process and prior to the gypsum board being transported to the recycling facility, the gypsum board and mould must be treated with an approved bleaching agent to destroy the mould. Mould which remains attached to building materials such as wood, metal and concrete may be disposed of in a manner applicable to normal demolition waste. Workers demolishing the building shall wear respirators and protective clothing while in contaminated areas of the building.

Natural Gas

The natural gas that is contained in some piping must be shut off and purged by Fortis BC (formerly Terasen Gas) or a qualified trades person prior to work that would affect the gas, and prior to building demolition.

4.6 NON-ASBESTOS GYPSUM BOARD

Prior to demolition of a building, the gypsum board with no asbestos finishes is a provincially regulated construction waste that must first be removed by a qualified contractor, and be recycled or disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation. Landfills are issued operational certificates from the BC Ministry of Environment, and for local landfills and others their certificate specifies that gypsum board cannot be accepted for disposal, and therefore local depots offer recycling services.

4.7 NON-ASBESTOS FIBREGLASS INSULATIONS

Prior to demolition of a building, the non-asbestos fibreglass is a City of Vancouver Landfill regulated construction waste that, dependent on quantity (percentage) as it relates to wood waste percentage, may require to be separated from the normal demolition/construction waste, and be recycled or disposed of at local depots that accept fibreglass waste. Example: City of Vancouver Demolition and Construction requirements list, amongst other things, that waste disposal loads must be a minimum of 80% wood, and not more than 2% for residual quantities of soft construction waste by volume.

5.0 OWNER'S RESPONSIBILITIES

For the remediation of hazardous building materials, contract specifications, quality control, and final acceptance of the work remain the responsibility of the Owner. In order to ensure that the Owner has acted in a responsible manner, and to ensure regulatory board compliance, it is recommended that the work and project air monitoring be performed by a qualified and insured (with asbestos inclusion rider) Hazardous Materials Abatement Contractor. As well, the hazmat abatement contractor upon completing the work should provide the Owner with a Letter of Completion and Project Documentation. The Project Documentation should include, but not necessarily be limited to, a Notice of Project for work involving Asbestos, Risk Assessment and Site Specific Work Procedures, Worker Respirator Fit Test Forms/Logs and Training Acknowledgement Forms, Certification of DOP Testing of HEPA Filtered Equipment used on site, Material Safety Data Sheets (MSDS) for products used on site, and Waste Manifest Forms.

We hope you have found the above information useful. If you have any questions, or require clarification please contact this office.

Sincerely,

Tom Farrell
Astech Consultants Ltd.
Ref: 10328NHE01C.CM



BULK SAMPLE REPORT

Date: November 8, 2011
Client: HEMMERA ENVIROCHEM INC.
Location: Multi-Tenant Commercial Building
504A & 504B Clarke Road
Coquitlam, BC

Comments: 1) Analysed as per NIOSH 9002.
2) WCB defines asbestos containing material as 1% or more asbestos.
3) Quantitation limit for asbestos analysis is 1%.
4) Samples will be disposed of after 90 days, unless the client requests otherwise.

Sample(s) Collected on October 28, 2011

Sample	Location	Description	Layer: Colour	Non-Asbestos	Asbestos
				% Type	% Type
10328N BS01	504B - Store Front	Paint Gypsum Board Filling Compound (West Wall)	1: Black 2: Off-White	100% Non-Fibrous	None Detected
10328N BS02	504B - Store Front	Paint Gypsum Board Filling Compound (Column Wall)	1: Black 2: White	100% Non-Fibrous	None Detected
10328N BS03	504B - Store Front	2' X 4' Ceiling Tile (Small Fissures)	1: Beige	65% Cellulose 25% Glass 10% Non-Fibrous	None Detected
10328N BS04	504B - Store Front	2' X 4' Ceiling Tile (Large Fissures)	1: Beige	65% Cellulose 25% Glass 10% Non-Fibrous	None Detected
10328N BS05	504B - Electrical/Hot Water Tank Closet	12" Floor Tile	1: White & Grey	100% Non-Fibrous	None Detected
10328N BS06	504B - Electrical/Hot Water Tank Closet	Floor Tile Adhesive	2: Black	2% Cellulose 98% Non-Fibrous	None Detected
10328N BS07	504B - Electrical/Hot Water Tank Closet	Paint Gypsum Board Filling Compound (Wall)	1: Beige 2: White	100% Non-Fibrous	None Detected
10328N BS08	504B - Store Front	Window Caulking	1: Off-White	100% Non-Fibrous	None Detected
10328N BS09	504A - Seating Area	12" Floor Tile (looks more like Sticky Backed Sheet Flooring)	1: Grey	100% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos	Asbestos
				% Type	% Type
10328N BS10	504A - Seating Area	Paint Gypsum Board Filling Compound (North Wall)	1: Beige 2: White	100% Non-Fibrous	None Detected
10328N BS11	504A - Seating Area	2' X 4' Ceiling Tile (Smooth)	1: Beige	65% Cellulose 25% Glass 10% Non-Fibrous	None Detected
10328N BS12	504A - Seating Area	2' X 4' Ceiling Tile (Medium Fissures)	1: Brown	100% Cellulose	None Detected
10328N BS13	504A - Office/Storage Room (at Northeast Corner)	Paper Backed Sheet Flooring	1: Beige	65% Non-Fibrous	35% Chrysotile
10328N BS14	504A - Office/Storage Room (at Northeast Corner)	Paint Gypsum Board Filling Compound (West Wall)	1: Green 2: White	100% Non-Fibrous	None Detected
10328N BS15	504A - Washroom	Paper Backed Sheet Flooring Residue	1: Beige	20% Non-Fibrous	80% Chrysotile
10328N BS16	504A - Office/Storage Room (at Northeast Corner)	2' X 4' Ceiling Tile (Large Fissures)	1: Beige	60% Cellulose 30% Glass 10% Non-Fibrous	None Detected
10328N BS17	504A - Seating Area	Paper Backed Sheet Flooring Residue	1: Beige	20% Non-Fibrous	80% Chrysotile
10328N BS18	504A - Washroom	Paint Gypsum Board Filling Compound (Wall)	1: Green 2: White	100% Non-Fibrous	None Detected
10328N BS19	504A - Kitchen Area	12" Floor Tile	1: Grey	100% Non-Fibrous	None Detected
10328N BS20	504A - Kitchen Area	Floor Tile Adhesive	2: Black	2% Cellulose 2% Glass 96% Non-Fibrous	None Detected
10328N BS21	504A - Kitchen Area	Paper Backed Sheet Flooring Residue	3: Beige	15% Non-Fibrous	85% Chrysotile
10328N BS22	504A - Kitchen Area	Ceramic Tile Mortar	1: Off-White	100% Non-Fibrous	None Detected
10328N BS23	504A - Kitchen Area	Paint Gypsum Board Filling Compound (West Wall)	1: White 2: White	100% Non-Fibrous	None Detected
10328N BS24	504A - Kitchen Area	Gypsum Board Filling Compound (Wall Bulkhead)	1: Beige 2: White	100% Non-Fibrous	None Detected
10328N BS25	504A - Washroom	12" Floor Tile	1: Cream	100% Non-Fibrous	None Detected
10328N BS26	504A - Washroom	Floor Tile Adhesive	2: Black	98% Non-Fibrous	2% Chrysotile
10328N BS27	504A - Washroom	Paper Backed Sheet Flooring Residue	3: Beige	20% Non-Fibrous	80% Chrysotile
10328N BS28	Exterior	Window Caulking	1: Brown & Grey	97% Non-Fibrous	3% Chrysotile
10328N BS29	Electrical Room (Exterior Access)	Gypsum Board Filling Compound (Wall)	1: White	100% Non-Fibrous	None Detected
10328N BS30	Electrical Room (Exterior Access)	Firestop Putty (at Telephone Cabinet Penetration)	1: Olive	85% Non-Fibrous	15% Chrysotile

Sample	Location	Description	Layer: Colour	Non-Asbestos	Asbestos
				% Type	% Type
10328N BS31	Exterior	Firestop Putty (on Plastic Drainpipe)	1: Black	5% Cellulose 95% Non-Fibrous	None Detected

Analyst(s): Brittany Ford, Jesse James, Scott Price



American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)
Astech Consultants Ltd. Laboratory Participant ID# 200542



LEAD BULK SAMPLE REPORT

Date: November 8, 2011
Client: HEMMERA ENVIROCHEM INC.
Location: Multi-Tenant Commercial Building
504A & 504B Clarke Road
Coquitlam, BC

Comments: 1) Submitted samples were digested in accordance with EPA Analytical Method 3051 modified and analyzed in accordance with EPA Analytical Method 200.15.
2) BC Ministry of Environment defines lead containing material as 100 $\mu\text{g}/\text{dry g}$ or more lead.
3) Sample results report lead only.
4) Sample will be disposed of after 30 days, unless the client requests otherwise.

Samples Collected on October 28, 2011

Bulk Sample # 10328N LS01 : 504B - North Washroom
Sample Type : Paint (Cream) (on Concrete Block Wall)
Result : 2.2 $\mu\text{g}/\text{dry g}$

Bulk Sample # 10328N LS02 : 504A - Seating Area
Sample Type : Paint (Cream) (on Wood Wall)
Result : 0.7 $\mu\text{g}/\text{dry g}$

Bulk Sample # 10328N LS03 : Exterior - North Wall
Sample Type : Paint (Brown) (on Concrete Block Wall)
Result : 17000 $\mu\text{g}/\text{dry g}$

August 19, 2011

EVERGREEN RAPID TRANSIT LINE ENVIRONMENTAL INVESTIGATIONS

Phase I Environmental Site Assessment 504 Clarke Road, Coquitlam, BC

Submitted to:
Ministry of Transportation and Infrastructure
4C - 940 Blanshard Street
Victoria, BC
V8W 3E6

REPORT


A world of
capabilities
delivered locally

Report Number: 10-1436-0048/21,000

Distribution:

3 Copies – BC MoT

2 Copies - Golder Associates Ltd. (Burnaby)



Executive Summary

Golder Associates Ltd. (Golder) was retained by the BC Ministry of Transportation and Infrastructure (BC MoT) to conduct a Phase I Environmental Site Assessment (Phase I ESA) at 504 Clarke Road, in Coquitlam, BC. The legal lot is irregular in shape and is located to the east of Clarke Road between Smith Avenue and Cottonwood Avenue. Authorization to proceed with the Phase I ESA was provided by Ms. Lori White/Mr. Paul Savinkoff of the Ministry of Transportation and Infrastructure. On December 3, 2010, Ms Lori White indicated that the Site was planned to be a permanent property acquisition. As such, Golder understands that BC MoT requires the Phase I ESA to assess the potential for environmental risks and liabilities at the Site prior to land acquisition and construction activities.

Scope of Work

The Phase I ESA provides a preliminary assessment of potential environmental concerns associated with present and historical activities at the Site and its immediate surroundings. The assessment consisted of a regulatory and historical review of the Site, a Site visit and a review of publicly accessible information.

A formal hazardous building materials survey was not included as part of the scope of work. In addition, Golder did not include a health and safety, engineering or structural evaluation of the Site. No soil, water, liquid, gas, product or chemical sampling and testing was conducted on or in the vicinity of the Site as part of the Phase I ESA. The assessment included cursory observations of the neighbouring land uses, but did not constitute a rigorous evaluation of the neighbouring properties.

Summary and Conclusions

The information obtained and reviewed as part of the Phase I ESA indicated the following:

- The Site is an irregularly shaped property, approximately 590 m², located to the east of Clarke Road between Smith Avenue and Cottonwood Avenue;
- Commercial development of the Site took place prior to 1949. Construction of the current building on the Site took place between 1976 and 1987;
- Various commercial businesses were identified as operating on the Site from 1956/57 to present. However, none of the businesses identified are considered to be a concern;
- No areas of environmental concern were identified on the Site during the Site Reconnaissance;
- Dry cleaning operations were identified immediately to the south of the Site from 1971 to present at 503 Cottonwood Avenue. Evidence reported under separate cover (Golder Associates, October 2010) indicates that current and historic on-site dry cleaning has been conducted on this property; and,
- Historic dry cleaning operations were identified in 1971, inferred to be located immediately to the east of the Site at 511 Cottonwood Avenue.

PHASE I ESA 504 CLARKE ROAD, COQUITLAM, BC

Areas of Potential Environmental Concern

The findings of the review of historical information for the Site and surrounding areas have been evaluated to determine the APECs and potential contaminants of concern (PCOCs) for the Site. No APECs were identified on the subject Site. Two APECs were identified on adjacent off-Site properties. The following table presents a summary of the APECs and PCOCs.

Reference	Area of Potential Environmental Concern	Potential Contaminants of Concern (PCOCs)
APEC 1	Dry cleaning operations were identified immediately to the south of the Site, from 1971 to present.	Groundwater: VOCs Soil Vapour: VOCs
APEC 2	Historic dry cleaning operations were identified in 1971, located immediately to the east of the Site.	Groundwater: VOCs Soil Vapour: VOCs

This Phase I ESA has identified potential environmental risks and liabilities from properties surrounding the Site; therefore, it may be warranted to conduct a Phase II ESA to assess the quality of the groundwater and/or soil vapour at the Site to increase the understanding of the potential risks to the Evergreen Rapid Transit Line Project.

Study Limitations

This report was prepared for the exclusive use of the Ministry of Transportation and Infrastructure and is intended to provide a preliminary site assessment of potential environmental concerns associated with the subject Site. The inferences concerning the Site conditions contained in this report are based on information obtained during the environmental site assessment conducted by Golder personnel, and are based solely on the condition of the property at the time of the Site reconnaissance, supplemented by historical information obtained by Golder, as described in this report. No soil, sediment, water, gas, building material, or other chemical sampling and testing was conducted by Golder as part of this assessment. Therefore, the potential remains for the presence of unknown, unidentified or unforeseen surface or subsurface contamination.

This report was prepared, based in part, on information obtained from historic information sources and interviews. In evaluating the subject Site, Golder has relied in good faith on information provided. We accept no responsibility for any deficiency or inaccuracy contained in this report as a result of our reliance on the aforementioned information.

The findings and conclusions documented in this report have been prepared for the 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 jurisdiction. Golder makes no other warranty, expressed or implied.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or action based on this report.

If new information is discovered during future work, including excavations, soil boring, or other investigations, Golder should be requested to re-evaluate the conclusions of this report and to provide amendments, as required, prior to any reliance upon the information presented herein.

This report requires supplemental information prior to submission to BC MoE in application for regulatory instrument(s) under the BC Contaminated Sites Regulation and BC Environmental Management Act.

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by the BC Ministry of Transportation and Infrastructure (BC MoT) to conduct a Phase I Environmental Site Assessment (Phase I ESA) at 504 Clarke Road, in Coquitlam, BC (herein referred to as the "Site"; Figure 1 and 2). The legal lot is irregular in shape and is located to the east of Clarke Road between Smith Avenue and Cottonwood Avenue. Authorization to proceed with the Phase I ESA was provided by Ms. Lori White/Mr. Paul Savinkoff of the Ministry of Transportation and Infrastructure. On December 3, 2010, Ms Lori White indicated that the Site was planned to be a permanent property acquisition. As such, Golder understands that BC MoT requires the Phase I ESA to assess the potential for environmental risks and liabilities at the Site prior to land acquisition and construction activities.

2.0 OBJECTIVES AND SCOPE OF WORK

The Phase I ESA provides a preliminary assessment of potential environmental concerns associated with present and historical activities at the Site and its immediate surroundings. The assessment consisted of a regulatory and historical review of the Site, a Site visit and a review of publicly accessible information. The scope of the Phase I ESA is sufficient only to identify environmental liabilities which are apparent based on visual examination of surface features at the Site, or from available sources of historical information reviewed during this assessment.

The scope of the Phase I ESA was conducted in general accordance with MoE's "Technical Guidance on Contaminated Sites; Checklist for Reviewing a Preliminary Site Investigation (PSI), Guidance Document #10," with the purpose of identifying actual and potential Site contamination. In addition, the Phase I ESA was conducted in general accordance with Canadian Standards Association document "Phase I Environmental Site Assessment" Z768-01 (Reaffirmed 2006). While this report has been prepared in an approach generally consistent with the requirements for Stage 1 Preliminary Site Investigations outlined in British Columbia's Contaminated Sites Regulations ("CSR", BC Reg. 375/96 O.C. 1480/96, including amendments up to BC Reg 112/2010, May 1, 2010) under the *Environmental Management Act*, it is not intended for regulatory submission.

A formal hazardous building materials survey was not included as part of the scope of work. In addition, Golder did not include a health and safety, engineering or structural evaluation of the Site. No soil, water, liquid, gas, product or chemical sampling and testing was conducted on or in the vicinity of the Site as part of the Phase I ESA. The assessment included cursory observations of the neighbouring land uses, but did not constitute a rigorous evaluation of the neighbouring properties.

2.1 Task 1 – Site History, Background Data Collection and Evaluation

The first task of the Phase I ESA included a review of regulatory and historical information to:

- Investigate historical uses of the Site and properties immediately surrounding the Site; and,
- Identify areas of potential environmental concern (APECs) at the Site and in the immediate surroundings.

2.2 Task 2 -- Site Reconnaissance

The second task of the Phase I ESA was to conduct a reconnaissance of the Site to corroborate indications of potential environmental concern identified during the review of historical information. Golder also gathered visual evidence of other potential environmental issues that may exist at the Site and, where applicable, on accessible adjacent properties.

2.3 Task 3 -- Report Preparation

The final task of the Phase I ESA was the preparation of a report documenting the results and summarizing the Areas of Potential Environmental Concern (APECs) identified in the Phase I ESA.

3.0 SITE DESCRIPTION

The Site is comprised of the property located at 504 Clarke Road in Coquitlam, BC. According to City of Coquitlam online mapping, municipal water, sanitary and storm sewer services are available to the property. Table 1 provides key Site information.

Table 1: Key Site Information

Civic Address	504 Clarke Road, Coquitlam, BC
Current Occupants	<ul style="list-style-type: none"> ■ 504 A: Sun Gong Wonton House; and, ■ 504 B: Vacant (former bicycle shop).
Current Legal Descriptions	Lot 1, Except: Parcel "A" (Reference Plan 34065), DL 7, Group 1, New Westminster District Plan 7728
PID	005-573-602
Current Title Holder	Shao Yue Ma and Ya Fen Ma
Latitude/Longitude	49°15'33.44"N / 122°53'32.56"W
Site Dimensions/Area	590 m ²
Elevation	Approximately 100 m above sea level
Zoning	C-2 - General Commercial

The property is surrounded by commercial land use in the adjacent properties to the north, east and south (Figure 3). Residential land use surrounds the property to the west and further to the south and east. Commercial land use continues to the north along Clarke Road. Clarke Road bounds the Site to the west, and adjacent properties bound the Site to the north, east and south.

4.0 INFORMATION REVIEW

The information sources used and reviewed (where available) in completing the Phase I ESA included:

- Surficial geology, and topography maps and references;
- Previous investigation reports;
- Groundwater and surface water-use records;
- Land title history;
- Historical aerial photographs;
- City directory listings; and,
- Regulatory agency data from agencies including MoE and the Federal Contaminated Site Inventory.

4.1 Geographical and Geological Setting

The Site is located in the lower portion of the Fraser River valley. The bedrock geology of the Site is sedimentary rock of the Kitsilano Formation which is Upper Cretaceous to Tertiary in age and consists of conglomerate, sandstone, shale with thin lignite, lesser basalt flows and sills with minor pyroclastics. (BC Integrated Land Management Bureau, LRDW iMapBC).

Surficial sediments on Site are composed of Vashon Drift glacial drift sediments including lodgement and minor flow tills with lenses and interbeds of substratified glacio-fluvial sands to gravels and glacio-lacustrine laminated stony silt. The Vashon Drift sediments range in thickness from less than 8 m to 25 m. This is overlain by the Capilano Sediments consisting of glacio-marine and marine deposits ranging from less than 3 m to 10 m in thickness (Hemmera, 2010).

A borehole (BOH00-10) was completed approximately 40 m south of the Site as part of geotechnical work conducted by Golder for the Evergreen Line Rapid Transit Project (Golder Associates, February 2010). Sands with varying silt and gravel content were encountered from below the asphalt pavement to the maximum reached depth of 19.3 metres below ground surface (m bgs).

According to City of Coquitlam online mapping, the topography of the Site is relatively flat while the general area slopes gently down to the west. The topography of the area slopes to the west towards Stoney Creek (BC Integrated Land Management Bureau, LRDW iMapBC). Based on the regional topography, and the location of Stoney Creek to the west of the Site, groundwater at the Site is inferred to flow in a westerly direction. Based on prior knowledge of the local area, groundwater at the Site is inferred to be shallow (2 to 5 m bgs).

During geotechnical work groundwater was monitored at BOH00-10 and the groundwater table was at approximately 16.8 m bgs with a screened interval of 16.3 to 19.3 m bgs (Golder Associates, February 2010).

The climate in this area is generally characterized by cool, wet winters and warm, dry summers. The nearest Environment Canada weather station to the Site is the Burnaby Simon Fraser U station, climate ID: 1101158 (Environment Canada). The Burnaby Simon Fraser U station has been recording weather data since 1971. The average daily temperature in the area ranges from 2.8 degrees Celsius (°C) in December and January, to 17°C in August. Average annual precipitation in this general area totals 2019.5 millimetres (mm), including 104 mm of snow fall.

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An on-line search of the BC Water Resources Atlas (BC Ministry of Environment) was conducted. The search indicated that there is one registered water well within 300m of the Site. Well tag number (WTN) 16664 is located approximately 70 m southwest of the Site and was drilled to a depth of 28 m below ground surface (m bgs) and is completed in interbedded sand, gravel and silt (Appendix A). Based on an inferred groundwater flow to the west, the well is considered to be down-gradient or crossgradient from the Site.

4.2 Previous Investigation Reports

4.2.1 Screening Level Contaminated Sites Assessment

A Screening Level Contaminated Sites Assessment (Hemmera 2010) was completed along the reference alignment of the Evergreen Line Rapid Transit Project, which included the property comprising the Site. The assessment was completed to evaluate the potential of encountering soil and/or groundwater contamination. The report utilized topographic and surface geology maps, a review of historic streams, aerial photographs, street directories, the BC MoE Site Registry database, the Federal Contaminated Sites Inventory, fire insurance and land use maps, previous reports and a site visit. Tier rankings (Low, Moderate and High) were assigned to sites based on the potential for contamination.

The Hemmera report did not identify the subject Site as potential issue of environmental concern.

Five Tier 1 properties (High Probability of Contamination), one Tier 2 property (Moderate Probability of Contamination) and one Tier 3 property (Low Probability of Contamination) were identified in the surrounding area that could be considered potential issues of environmental concern. Properties identified by the Hemmera report are summarized below:

Location	Ranking	Use	Distance from Site
687 North Road (504 Cottonwood Avenue), Coquitlam	Tier 1	Historic auto repair and bulk fuel (Cottonwood Gulf Service, Northway Service Station)	50 m south (crossgradient)
500 B Cottonwood Avenue (503 Cottonwood Avenue), Coquitlam	Tier 1	Historic/current dry cleaning (Norgetown Dry Cleaners)	Adjacent to south (crossgradient)
506 Cottonwood Avenue, Coquitlam	Tier 1	Historic auto repair (Chapple Enterprises Auto Transmission)	50 m south (crossgradient)
515 Cottonwood Avenue (511 Cottonwood Avenue), Coquitlam	Tier 1	Historic dry cleaning (North Road One Hour Martinizing)	Adjacent to east (upgradient or crossgradient)
509 Clarke Road, Coquitlam	Tier 1	Historic boat sales (Sea Fun Marina Boats)	25 m northwest (crossgradient)
518 Clarke Road, Coquitlam	Tier 2	Historic/current auto repair (Overend Automotive, Braconniers Tires Ltd.)	50 m north (crossgradient)
525 Clarke Road, Coquitlam	Tier 3	Historic paint (Colour Your World Paints - likely retail), current auto parts retailer (Lordco Parts)	115 m north (crossgradient)

Based on Golder's review of the city directories (Section 4.5), a number of the historic civic addresses listed in the Hemmera report can be more accurately located with respect to the current civic addresses:

- The Hemmera report identified 687 North Road and 509 Clarke Road as being the same property; however these are inferred to be different properties. In addition, 687 North Road is inferred to have the current civic address of 504 Cottonwood Avenue;
- The property identified by Hemmera at 500 B Cottonwood Avenue is inferred to be located at the current civic address of 503 Cottonwood Avenue; and,
- 515 Cottonwood Avenue is inferred to be located at the current civic address of 511 Cottonwood Avenue.

Based on a review by Golder of the property rankings, location and inferred groundwater flow direction, five of these properties were not considered to be a concern:

- 504 Cottonwood Avenue (687 North Road) and 506 Cottonwood Avenue: these properties are not considered to be a concern due to their location 50 metres and crossgradient from the Site;
- 509 Clarke Road: this property is not considered a concern due to the nature of the expected operations and its location 25 metres, and crossgradient, from the Site;
- 518 Clarke Road: due to the expected nature of the operations conducted at this property and its location 50 metres and crossgradient from the Site, it is not considered a concern; and,
- 525 Clarke Road: this property is not considered a concern due to its location 115 metres and crossgradient from the Site, and the expected nature of the operations.

The remaining two properties are considered to be potential issues of environmental concern: 503 Cottonwood Avenue (500 B Cottonwood Avenue) and 511 Cottonwood Avenue (515 Cottonwood Avenue).

4.2.2 Evergreen Line Rapid Transit Project Surface Alignment Factual Geotechnical Report (DRAFT)

Between 1999 and 2009 Golder conducted a geotechnical investigation along the reference alignment of the Evergreen Line Rapid Transit Project (Golder Associates, February 2010). Borehole BOH00-10 was advanced approximately 40 m south of the subject Site in Cottonwood Avenue. A brief summary of the soil lithology and groundwater table elevation is included in Section 4.1, above.

4.3 Land Title Information

A Title Search from the New Westminster Land Title Office was provided by BC MoT. The title indicated Shao Yue Ma and Ya Fen Ma were the registered owners in fee simple. A copy of the title search results is provided in Appendix B.

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4.4 Historical Aerial Photograph Review

Historical aerial photographs for the Site and adjacent properties were obtained from the University of British Columbia, Geographic Information Centre. Aerial photographs from 1949 to 2004 were available for review. Table 2 presents a summary of the aerial photograph interpretation.

Table 2: Aerial Photograph Review

Aerial Photo	Site Description	Surrounding Area Description
1949 BC728:46 – 48	Commercial building with small parking lot apparent.	Agricultural and undeveloped land use to the west and north. Mix of agricultural and residential land use to the east and south.
1954 BC1675: 82	No significant changes.	Increased residential land use to the west and north on previously undeveloped and agricultural land.
1963 BC5061: 122 & 123	No significant changes.	Burquitlam Plaza is now located to the north. Increased residential development in the area surrounding Site.
1969 BCC5323:77 & 78	No significant changes.	Further residential and commercial development to the west, north and east, including apartment complexes to the east.
1976 BC 5720: 151 - 153	No significant changes.	Current commercial buildings located immediately to the north, east and south of Site now apparent. Following two properties to the east remain residential land use. Further commercial development to the north. Further residential development to the west. Many residential apartment buildings are located to the east and south.
1984 A25666: 14 & 15	Current commercial building now apparent, with larger parking lot.	Increased residential and commercial development in surrounding area.
1987 FF8727: 94 & 95	No significant changes.	No significant changes.
1994 FCC Vancouver 94 230 & 231	No significant changes.	No significant changes.
1999 SRS 6064: 216 & 217	No significant changes.	No significant changes.
2004 SRS6929: 90	No significant changes.	No significant changes.

Based on the aerial photographs, the Site appears to have been developed commercially before 1949. The current building on Site appears to have been constructed between 1976 and 1987.

The surrounding area was largely residential and agricultural prior to 1954. After 1954 extensive commercial development to the north occurred, including development of the Burquitlam Plaza mall. Residential apartment complexes were developed to the south and east after 1963.

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4.5 Directory Search

A historical City Directories search for the City of Coquitlam and the City of Burnaby was conducted by InfoAction Information and Research Centre at the Vancouver Public Library in Vancouver, BC (Appendix C). Areas searched included North Road, Farrow Street, Clarke Road, Smith Avenue, Cottonwood Avenue, Whiting Way, Lyndhurst Street and Claymore Place. The search covered from the earliest available directories in Burnaby (1925) and Coquitlam (1956/57) to the most current and last published directory (2001). Table 3 provides listings from the directory search for the Site and surrounding properties.

Table 3: City Directory Search Results

Address	Occupant	Years	Approximate Location from Site
Clarke Road			
500 B	Norgetown Coin-operated Dry Cleaners & Laundromat	1971, 1981	Adjacent to south (crossgradient)
	Norgetown Coin-operated Laundromat	1991	
	Norgetown Laundry & Dry Cleaning	2001	
504	Evans Hardware	1956/57	Site
	Clarke Rd Market Grocery	1956/57	
	Huddleston Radio & TV	1961	
	Del Rio Sporting Goods	1971	
504 A	Gallery One Arcade	1981	
	Sun Gong	2001	
504 B	Horizons Drop In Centre	1991	
	Advanced Electronic Repair Services	2001	
509	Sea Fun Marina (Boats) Ltd	1981, 1971, 1981, 1991	25 m northwest (crossgradient)
518	Braconnier Tires Ltd	1971, 1991	50 m north (crossgradient)
	Overend Automotive / Coquitlam Big O Tire Store	1981	
	Braconnier's CSC Tirecraft	2001	
525	Colour Your World (retail paint sales)	1971, 1981, 1991, 2001	115 m north (crossgradient)
Cottonwood Avenue			
504† (687 North Road)	Northway B A Service Garage	1961	50 m south (crossgradient)
	Cottonwood Gulf Service Station	1971	
506*	Chapple A Enterprises automatic transmissions	1971	50 m south (crossgradient)
515 B*	Maxwell M Enterprises Dry Cleaners / North Road One Hour Martinizing	1971	Adjacent to east (up- or crossgradient)
North Road			
2849 #102	Coquitlam Photo Studio Ltd.	1981, 1991, 2001	70 m south and west (downgradient)
2869†	Copping Mrs M. Grocery and Service Station	1940	120 m south and west (crossgradient)

NOTES:

† location and current civic address are inferred based on location in city directory relative to cross streets.

* civic address no longer in use; location is approximated based on current adjacent civic addresses and aerial photograph review.

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Various commercial businesses were identified on the Site from 1956/57 to 2001; however none of them are considered to represent potential issues of concern.

Off-site properties that may represent a concern to the Site are those located within 100 m of the Site and in an upgradient or proximally crossgradient location based on the inferred groundwater flow to the west. Based on a review of the directories, the following off-Site properties are considered to be potential issues of concern:

- 500 B Clarke Road (503 Cottonwood Avenue): Historic dry cleaning operations were identified from 1971 to 2001. Based on the location of 500 Clarke Road in the city directories relative to cross streets, this civic address is inferred to be located at the current 503 Cottonwood Avenue; and,
- 515 B Cottonwood Avenue (511 Cottonwood Avenue): Historic dry cleaning operations were identified in 1971. Inferred to be located immediately east of the Site at the current 511 Cottonwood Avenue based on the aerial photograph review. As the dry cleaner (North Road One Hour Martinizing) appears to have offered one-hour service, dry cleaning is considered to have been conducted on the property. This business was listed with a different phone number than the Norgetown Dry Cleaners and is considered to be a separate business.

4.6 BC Ministry of Environment Site Registry

A search of the BC OnLine Site Registry database was conducted on December 8, 2010. The search process identified those properties in the database located within a 0.5 km radius of the search coordinates: 49°15'33.44" North and 122°53'32.56" West, which included the Site and surrounding area. The complete results of the Site Registry search are included in Appendix D. Identified properties on the Site Registry are listed in Table 4.

Table 4: MoE Site Registry Results

Site ID Number	Civic Address	Approximate Location from Site
147	590 Clarke Road	480 m north and east (crossgradient)
4592	556 Clarke Road	310 m north and east (crossgradient)
7383	525 to 572 Clarke Road	130 m north (crossgradient)
11891	640 Aspen Street	440 m south and east (crossgradient)
12648	604 & 606 Como Lake Avenue	550 m north and east (crossgradient)

The subject Site was not identified on the Site Registry. All off-Site properties identified were in a crossgradient location from the Site, based on the inferred groundwater flow direction to the west, and located at least 130 m from the Site. Therefore, impacts to the Site were considered unlikely.

5.0 INTERVIEWS

An interview was conducted between Mr. Trevor Hawkins of Golder and Mr. Chi Hung Wong of Sun Gong Wonton House on January 11, 2011. Information obtained from the interview is included in the Site Reconnaissance section below.

6.0 SITE RECONNAISSANCE

Mr. Trevor Hawkins of Golder conducted a reconnaissance of the Site on January 11, 2011. Selected photographs of the Site, taken during the Site reconnaissance, are presented in Appendix E.

During the Site reconnaissance no soil, surface water or groundwater samples were collected.

6.1 Site

At the time of the Site Reconnaissance, the eastern portion of the Site contained a single-level commercial building with two units. One unit housed the Sun Gong Wonton House and the other was vacant. The building extends to the Site boundary at the north, east and south property lines.

To the west of the building is a paved asphalt parking area. An approximately circular asphalt patch was noted in the centre of the parking lot.

A storm drain was observed in the western portion of the parking lot and a natural gas meter was located near the north Site boundary. Overhead power and/or communication lines were observed near the north boundary of the Site.

6.1.1 Sun Gong Wonton House (504 A)

Mr. Wong is an operator of the Sun Gong Wonton House restaurant, which has been located on Site since approximately 1998. According to Mr. Wong, the previous tenant also operated a restaurant business.

During the Site Reconnaissance, operations at Sun Gong Wonton House were as expected of a restaurant, with a small seating area for customers and a kitchen containing a walk-in fridge/freezer and natural gas powered stoves.

6.1.2 Vacant Unit (504 B)

This unit was vacant at the time of the Site reconnaissance. According to the signage, this unit previously housed a bicycle shop. Small quantities of debris and bicycle parts were observed inside the unit.

6.1.3 Waste Management and Handling

One garbage dumpster was located north of the parking lot.

6.1.4 Pesticides and Fertilizers

At the time of the Site reconnaissance, there were strips of landscaping observed along the western edge of the Site between the sidewalk and the parking lot. It is unknown if there has been recent pesticide or fertilizer use at the Site.

6.1.5 Storage Tanks

At the time of the Site reconnaissance no above ground storage tanks (ASTs) were observed on the Site.

An approximately circular asphalt patch was noted in the centre of the parking lot. Sometimes an asphalt patch can be an indication of an existing or formerly existing UST; however, for a number of reasons, this area is not believed to represent a potential UST. Firstly, the building has a natural gas connection and the building was constructed between 1976 and 1987, based on the aerial photograph review. Therefore, it is expected that the building has had a natural gas connection since construction. Secondly, it is unlikely that a UST would be located in the centre of the parking lot, and not to one of the sides. In addition, no evidence of piping (i.e., fill, supply or vent pipes) were observed at the Site.

No other evidence of underground storage tanks (USTs) was observed on the Site.

6.1.6 Chemical and Fuel Storage

During the Site reconnaissance, small quantities of bottled cleaners and other chemicals were observed in the Sun Gong Wonton House.

6.1.7 Discharges, Releases, Odours and Staining

No sources of discharges, releases or odours were observed at the Site. Minor oil-like sheen was observed on the asphalt parking areas, presumably from leaking vehicles.

6.1.8 Natural Environmental Receptors

No natural environmental receptors were observed in the vicinity of the Site.

6.2 Surrounding Land Use

The surrounding properties are a mix of commercial and residential land use (Figure 3). To the north are commercial businesses, followed by Clarke Road and then more commercial businesses. To the east are commercial businesses, followed by a series of residential apartment complexes. To the south, are commercial businesses, followed by Cottonwood Avenue, an office building, and then residential apartment complexes. To the west, across North Road, are residential homes.

7.0 SUMMARY AND CONCLUSIONS

The information obtained and reviewed as part of the Phase I ESA indicated the following:

- The Site is an irregularly shaped property, approximately 590 m², located to the east of Clarke Road between Smith Avenue and Cottonwood Avenue;
- Commercial development of the Site took place prior to 1949. Construction of the current building on the Site took place between 1976 and 1987;
- Various commercial businesses were identified as operating on the Site from 1956/57 to present. However, none of the businesses identified are considered to be a concern;
- No areas of environmental concern were identified on the Site during the Site Reconnaissance;
- Dry cleaning operations were identified immediately to the south of the Site from 1971 to present at 503 Cottonwood Avenue. Evidence reported under separate cover (Golder Associates, October 2010) indicates that current and historic on-site dry cleaning has been conducted on this property; and,
- Historic dry cleaning operations were identified in 1971, inferred to be located immediately to the east of the Site at 511 Cottonwood Avenue.

7.1 Areas of Potential Environmental Concern

The findings of the review of historical information for the Site and surrounding areas have been evaluated to determine the APECs and potential contaminants of concern (PCOCs) for the Site. No APECs were identified on the subject Site. Two APECs were identified on adjacent off-Site properties. The locations of the APECs are shown on Figure 4. The following table presents a summary of the APECs and PCOCs.

Reference	Area of Potential Environmental Concern	Potential Contaminants of Concern (PCOCs)
APEC 1	Dry cleaning operations were identified immediately to the south of the Site, from 1971 to present.	Groundwater: VOCs Soil Vapour: VOCs
APEC 2	Historic dry cleaning operations were identified in 1971, located immediately to the east of the Site.	Groundwater: VOCs Soil Vapour: VOCs

This Phase I ESA has identified potential environmental risks and liabilities from properties surrounding the Site; therefore, it may be warranted to conduct a Phase II ESA to assess the quality of the groundwater and/or soil vapour at the Site to increase the understanding of the potential risks to the Evergreen Rapid Transit Line Project.

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8.0 CLOSURE

We trust this information in this draft report is sufficient for your needs at this time. Should you have any questions or concerns, please do not hesitate to contact the undersigned at 604-296-4200.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

Trevor Hawkins, B.Sc.
Junior Environmental Scientist

TH/DMF/mrw

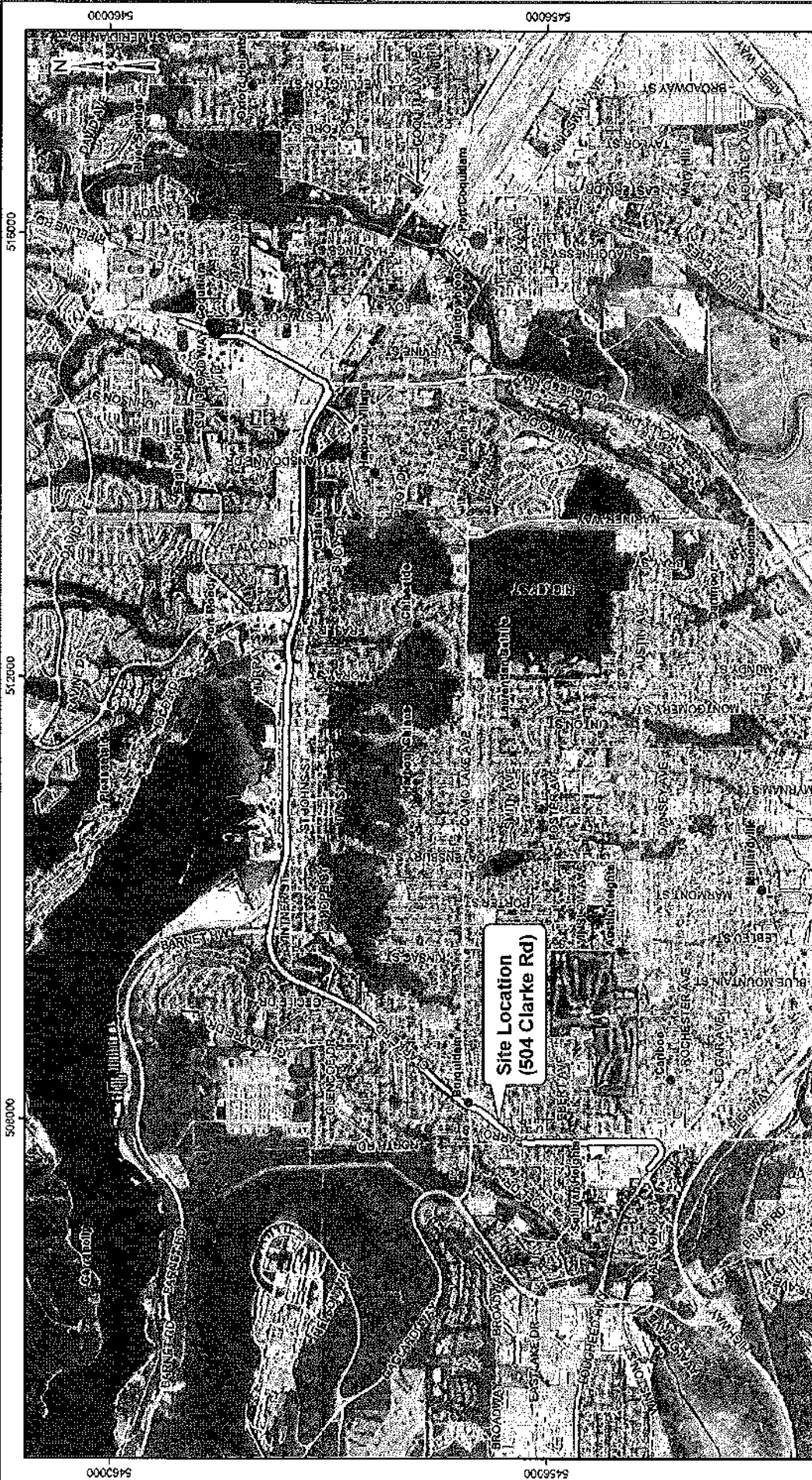
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ORIGINAL SIGNED

Dawn Flotten, P.Eng.
Associate

9.0 REFERENCES

- BC Integrated Land Management Bureau, Land and Resource Data Warehouse. Online IMapBC <<http://webmaps.gov.bc.ca/imfx/imf.jsp?site=imapbc>> (visited November 3, 2010).
- BC Ministry of Environment, BC Water Resources Atlas. <http://www.env.gov.bc.ca/wsd/data_searches/wrbc/index.html> (visited December 8, 2010).
- City of Coquitlam. Online mapping. <<http://qthemap.coquitlam.ca/external/app/>> (visited December 8, 2010).
- Environment Canada. Canadian Climate Normals, 1971-2000 for Burnaby Simon Fraser U station (climate ID: 1101158). <http://climat.meteo.gc.ca/climate_normals/index_e.html> (visited July 23, 2010).
- Golder Associates. Evergreen Line Rapid Transit Project Surface Alignment Factual Geotechnical Report (DRAFT), Golder Associates. February 2010.
- Golder Associates. Evergreen Rapid Transit Line Environmental Investigations - Phase I Environmental Site Assessment 503 Cottonwood Avenue, Coquitlam, BC (DRAFT), Golder Associates. October 2010.
- Hemmera. Evergreen Line Rapid Transit Project Environmental Assessment Certificate Application, Section 11: Screening Level Contaminated Sites Assessment, Hemmera. April 2010.




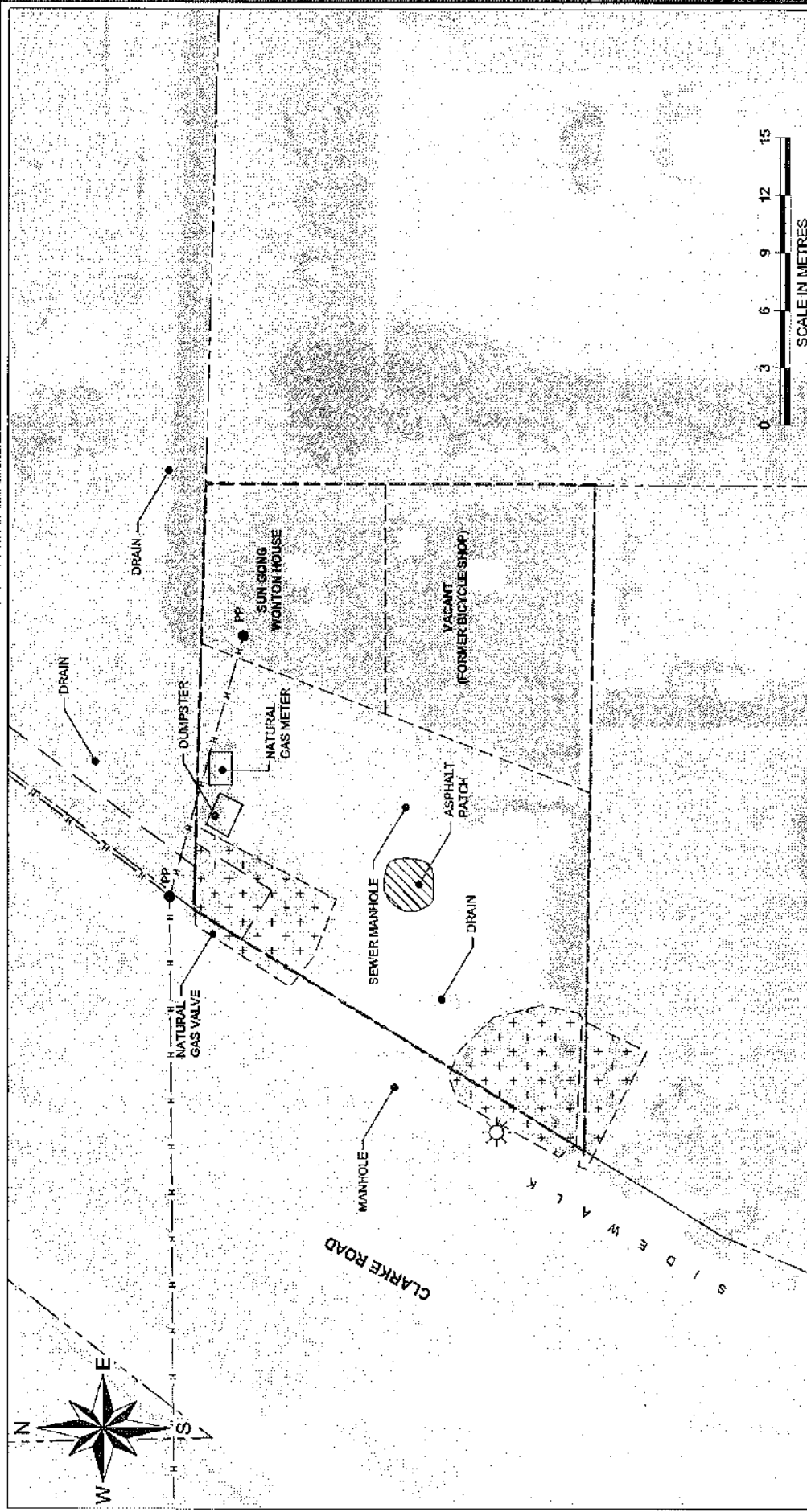
LEGEND

- Evergreen Line Rapid Transit Project Area

REFERENCE

1. Orthophoto: Bing Maps.
 2. Project alignment: H-V_Align_RFP.dwg
- Projection: UTM Zone 10 Datum: NAD 83

PROJECT		BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE	
		EVERGREEN LINE RAPID TRANSIT PROJECT	
TITLE		COQUITLAM, PORT MOODY, B.C.	
		KEY PLAN (504 CLARKE ROAD)	
		 Golden Associates Greater Vancouver Office, B.C.	
PROJECT NO.	10-435-0046	PHASE NO.	21000
DESIGN	DF	DATE	08/27/10
CHECK	TH	DATE	14/JAN/11
REVIEW	DF	DATE	19/AUG/11
		SCALE AS SHOWN	
		SCALE: 1:50,000	
		1:000 0 1:000 METRES	
		FIGURE: 1	



LEGEND

—	SITE BOUNDARY	●	PP	POWER POLE
- - -	PROPERTY LINE	⊗	⊗	CATCH BASIN
—	OVERHEAD HYDRO UTILITY LINE	☀	☀	LAMP STANDARD
[+]	LANDSCAPED AREA			

NOTES

1. ALL SHOWN FEATURES ARE APPROXIMATELY LOCATED.

REFERENCES

1. PROPERTY LINES: COQUITLAM LINE CADASTRAL REV2.DWG
2. ORTHOPHOTO: 507_5455_10.JPG

PROJECT
BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
EVERGREEN LINE RAPID TRANSIT PROJECT
COQUITLAM, PORT MOODY, B.C.

TITLE

SITE PLAN (504 CLARKE ROAD)

PROJECT No: 103-1048 (1000)		FILE No. 101360048_21000_2
DESIGN	DF 14JAN11	SCALE 1:200
CADD	CC 14JAN11	REV. 0
CHECK	TH 17AUG11	
REVIEW	DF 17AUG11	

FIGURE: 2



LEGEND

- SITE BOUNDARY
- PROPERTY LINE
- GENERALIZED LAND USE BOUNDARY

REFERENCES

1. PROPERTY LINES: COQUITLAM LINE CADASTRAL-REV2.DWG
2. ORTHOPHOTO: 507_5455_LO.JPG.

PROJECT

BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
EVERGREEN LINE RAPID TRANSIT PROJECT
COQUITLAM, PORT MOODY, B.C.

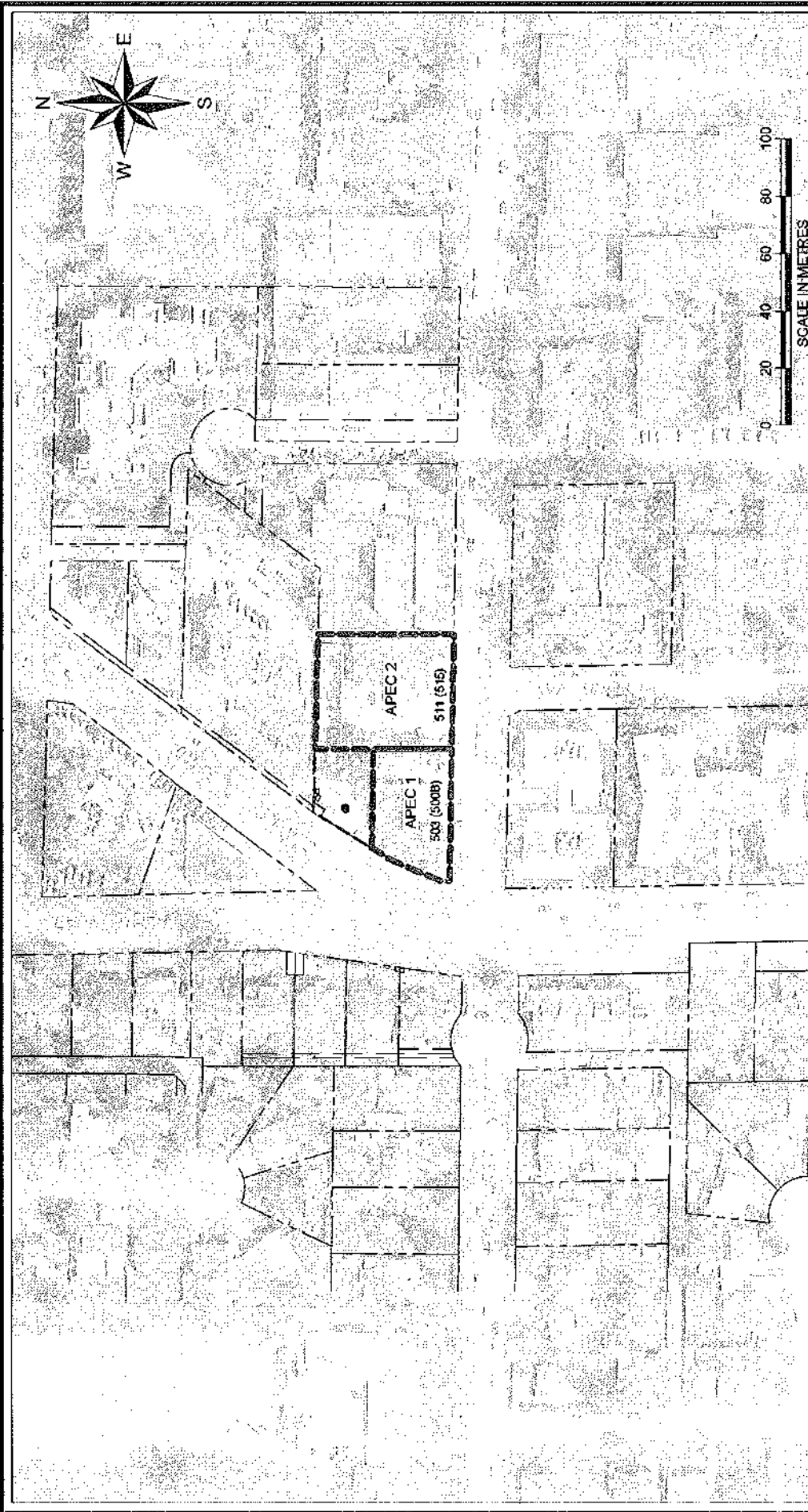
TITLE

SURROUNDING LAND USE (504 CLARKE ROAD)



PROJECT	NO-1436-0048 (21000)	FILE No	1014360048_21000.dwg
DESIGN	DE 14JAN11	SCALE	1:3,000 REV. 0
CADD	CC 14JAN11		
CHECK	CH 17AUG11		
REVIEW	DR 17AUG11		

FIGURE: 3



LEGEND

- SITE BOUNDARY
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APECs
- APEC 1: CURRENT AND HISTORIC DRY CLEANING OPERATIONS.
- APEC 2: HISTORIC DRY CLEANING OPERATIONS.

REFERENCES

1. ORTHOPHOTOS: 510_5457_LO.JPG, 511_5457_LO.JPG.
2. PROPERTY LINES: COQUITLAM LINE CADASTRAL-REV12.DWG.

PROJECT

BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
EVERGREEN LINE RAPID TRANSIT PROJECT
COQUITLAM, PORT MOODY, B.C.

TITLE

SUMMARY OF APECs (504 CLARKE ROAD)



PROJECT	1436-10-1436-0048 (21000)	FILE No.	1014360048_21000_4.dwg
DESIGN	DF	SCALE	1:2,000 RLV
CADD	CG	DATE	14-JAN-11
CHECK	TH	DATE	17-AUG-11
REVIEW	DF	DATE	17-AUG-11

FIGURE: 4



APPENDIX A

Water Well Records



Report 1 - Detailed Well Record

<p>Well Tag Number: 16664</p> <p>Owner: VICTOR FUNG</p> <p>Address: 2849 NORTH ROAD</p> <p>Area: BURQUITLAM</p> <p>WELL LOCATION:</p> <p>NEW WESTMINSTER Land District</p> <p>District Lot: 8 Plan: 48351 Lot: 129</p> <p>Township: Section: Range:</p> <p>Indian Reserve: Meridian: Block:</p> <p>Quarter:</p> <p>Island:</p> <p>BCGS Number (NAD 27): 092G026411 Well: 1</p> <p>Class of Well:</p> <p>Subclass of Well:</p> <p>Orientation of Well:</p> <p>Status of Well: New</p> <p>Well Use: Unknown Well Use</p> <p>Observation Well Number:</p> <p>Observation Well Status:</p> <p>Construction Method: Drilled</p> <p>Diameter: 12.0 inches</p> <p>Casing drive shoe:</p> <p>Well Depth: 93 feet</p> <p>Elevation: 0 feet (ASL)</p> <p>Final Casing Stick Up: inches</p> <p>Well Cap Type:</p> <p>Bedrock Depth: feet</p> <p>Lithology Info Flag:</p> <p>File Info Flag:</p> <p>Sieve Info Flag:</p> <p>Screen Info Flag:</p> <p>Site Info Details:</p> <p>Other Info Flag:</p> <p>Other Info Details:</p>	<p>Construction Date: 1960-11-01 00:00:00.0</p> <p>Driller: Albert Aikens & Forrester</p> <p>Well Identification Plate Number:</p> <p>Plate Attached By:</p> <p>Where Plate Attached:</p> <p>PRODUCTION DATA AT TIME OF DRILLING:</p> <p>Well Yield: 0 (Driller's Estimate)</p> <p>Development Method:</p> <p>Pump Test Info Flag:</p> <p>Artesian Flow:</p> <p>Artesian Pressure (ft):</p> <p>Static Level:</p> <p>WATER QUALITY:</p> <p>Character:</p> <p>Colour:</p> <p>Odour:</p> <p>Well Disinfected: N</p> <p>EMS ID:</p> <p>Water Chemistry Info Flag:</p> <p>Field Chemistry Info Flag:</p> <p>Site Info (SEAM):</p> <p>Water Utility:</p> <p>Water Supply System Name:</p> <p>Water Supply System Well Name:</p> <p>SURFACE SEAL:</p> <p>Flag:</p> <p>Material:</p> <p>Method:</p> <p>Depth (ft): 0 feet</p> <p>Thickness (in):</p> <p>Liner from To: feet</p> <p>WELL CLOSURE INFORMATION:</p> <p>Reason For Closure:</p> <p>Method of Closure:</p> <p>Closure Sealant Material:</p> <p>Closure Backfill Material:</p> <p>Details of Closure:</p>
--	---

Screen from	to feet	Type	Slot Size
0	0		0
0	0		0
0	0		0
0	0		0

Casing from	to feet	Diameter	Material	Drive Shoe
0	0	0	null	null

GENERAL REMARKS:

ANODE WELL, MAY NOW BE UNDER NORTH ROAD ALLOWANCE

LITHOLOGY INFORMATION:

From	0 to	49 Ft.	Till
From	49 to	83 Ft.	Interbedded sand, gravel and silt
From	0 to	0 Ft.	W.B. 58 - 83'
From	83 to	93 Ft.	Blue clay

- [Return to Main](#)
- [Return to Search Options](#)
- [Return to Search Criteria](#)

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APPENDIX B

Title Search

Pages 45 through 46 redacted for the following reasons:

S3

APPENDIX C

City Directory Search



INFOACTION

Thursday, October 28, 2010

Dear Trevor,

RE: Burnaby/Coquitlam city directory search (Project #10-1436-0048)

As per your request, please find enclosed photocopies of the entries in the city directories for the following **Burnaby** streets/blocks:

- o Claymore Place ~ all
- o Lyndhurst St ~ 9900
- o North Rd ~ 2600-2900

for the following years:

- o 2001 (the most current and last ever to be published)
- o 1991
- o 1981
- o 1971
- o 1961
- o 1951
- o 1940 (1941 was not available)
- o 1930
- o 1925 (the oldest city directory to include street listings for Burnaby)

AND

As per your request, please find enclosed photocopies of the entries in the city directories for the following **Coquitlam** streets/blocks:

- o Cottonwood Ave ~ 500
- o Clarke Rd ~ 500
- o Farrow St ~ 700
- o North Rd ~ 600-700
- o Smith Ave ~ 500
- o Whiting Way ~ 800

for the following years:

- o 2001 (the most current and last ever to be published)
- o 1991
- o 1981
- o 1971
- o 1961
- o 1956/57 (the oldest directory to include street listings for Coquitlam)



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Vancouver Public Library, Level 5
350 West Georgia Street, Vancouver, BC V6B 6B1
Phone: 604-331-3613 Fax: 604-331-3611
infoact@vpl.ca www.infoaction.ca



Please note the following:

Burnaby Streets:

Claymore Place:

As of 1971 there was no longer any listing for this street.

Lyndhurst Street:

In 1951 there was nothing listed on this street and the city directory stated that the street's former name had been Hamilton, so the entries for Hamilton have been included for you. Please note that in 1958 Burnaby radically changed its street numbering system. What had been the 9900 block was in 1957 and earlier years the 100 block. As of 1930 there was no longer anything listed on Hamilton and as of 1925 there was no longer any listing for the street.

North Road:

In 1961 and earlier years this street was listed as North Avenue. As a result of the 1958 Burnaby street numbering change the 2600-2900 blocks were in 1957 and earlier years the 600 block. As of 1930 there was no longer anything listed on North Avenue and as of 1925 there was no longer any listing for the street.

Cocquiham Avenue:

Whiting Way:

As of 1961 there was no longer any listing for this street.

The total cost of this search and accompanying documentation came to \$159.25 plus HST. Our Accounting department will shortly be invoicing your firm for this amount.

As always, please don't hesitate to contact us if you have any questions or concerns regarding this search or if we can be of any further assistance.

Sincerely,



Vancouver Public Library

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Phone: 604-331-3813 Fax: 604-331-3811
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Page 049 to/à Page 115

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APPENDIX D

Site Registry Search

As Of: DEC 05, 2010 BC Online: Site Registry 10/12/08
For: PA59614 GOLDER ASSOCIATES LTD. (BURNABY) 12:07:41
Folio: 101436004821000 Page 1

5 records selected for 0.5 km from latitude 49 deg, 15 min, 33.4 sec
and Longitude 122 deg, 53 min, 32.5 sec

Site Id	Lastupd	Address / City
0000147	08MAY23	590 CLARKE ROAD COQUITLAM
0004592	04APR01	556 CLARKE ROAD COQUITLAM
0007383	09DEC04	525 TO 572 CLARKE ROAD COQUITLAM
0011891		640 ASPEN STREET COQUITLAM
0012648		604 & 606 COMO LAKE AVENUE COQUITLAM



APPENDIX E

Photographs

APPENDIX E Photographs



Photograph 1: Site Viewed from the North.

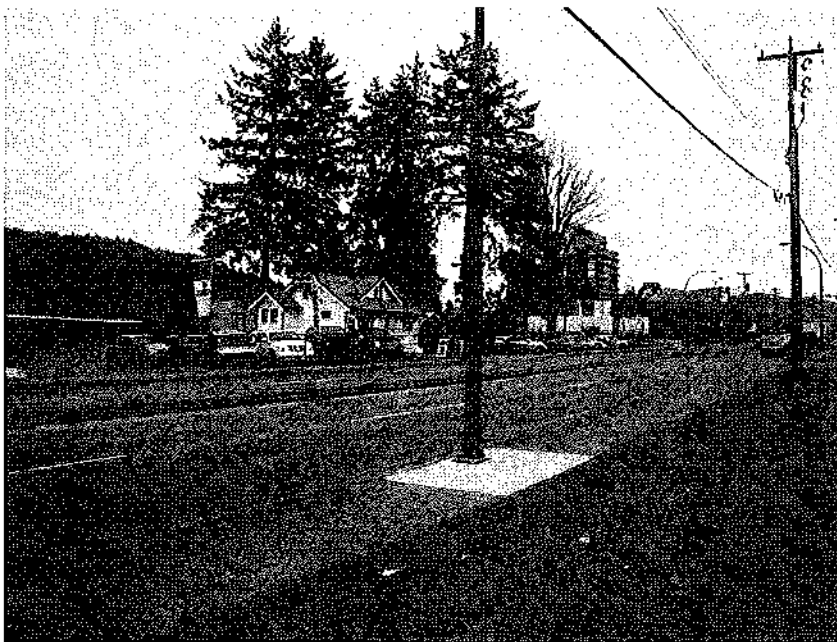


Photograph 2: Site Viewed from the South.

APPENDIX E Photographs

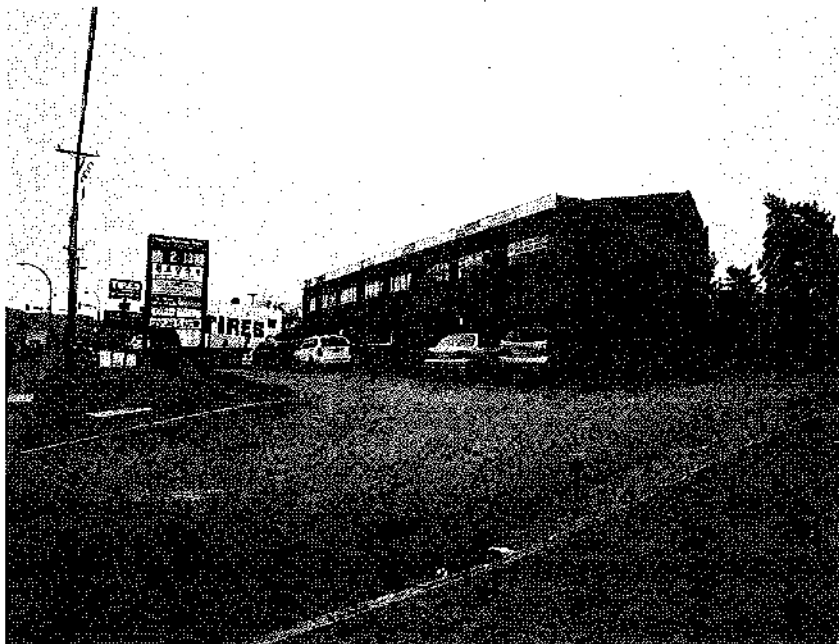


Photograph 3: Site Viewed from the West.

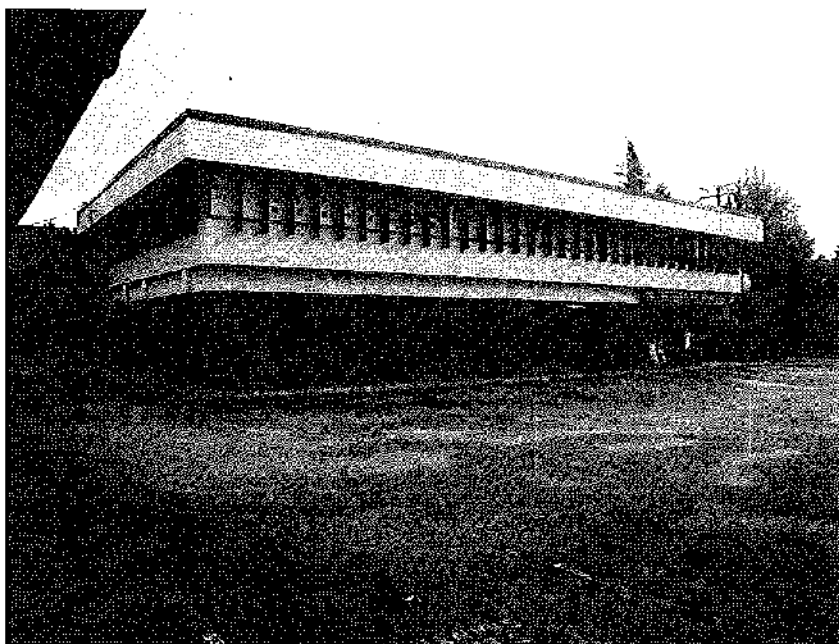


Photograph 4: Neighbouring Properties to the Northwest.

APPENDIX E Photographs



Photograph 5: Neighbouring Property to the North.

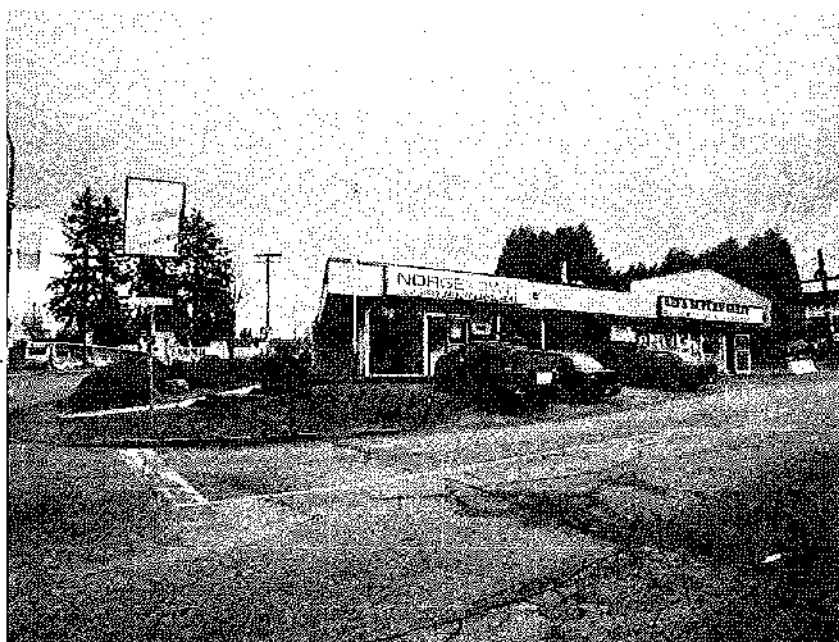


Photograph 6: Neighbouring Property to the East (1).

APPENDIX E Photographs



Photograph 7: Neighbouring Property to the East (2).



Photograph 8: Neighbouring Property to the South (Dry Cleaner).

APPENDIX E

Photographs

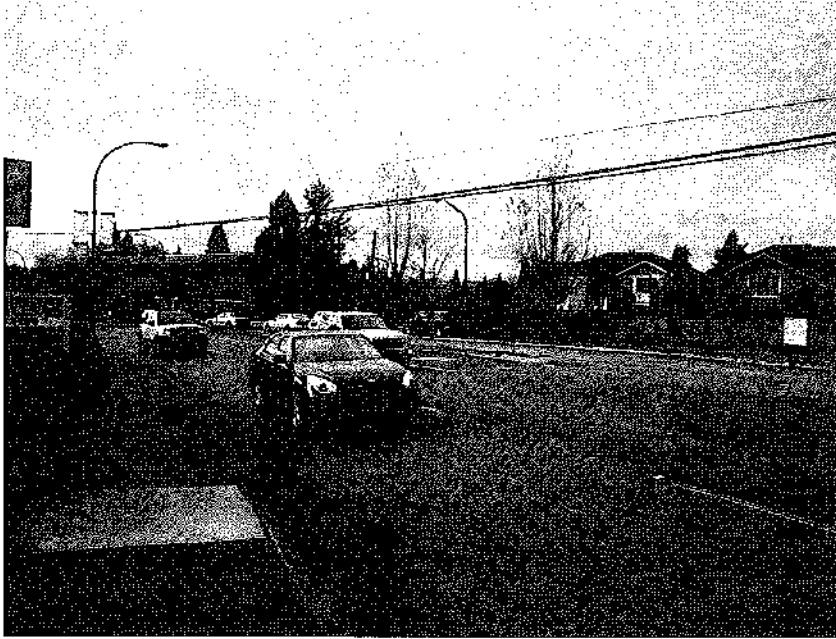


Figure 9: Neighbouring Properties to the Southwest.

\\bur1-s-files\2\final\2010\143610-1436-0048\phase 21000\rep 0819_11 phase I asa - 504 clarke coquitlam final\app e - photos\app e - photos.docx

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