

28 February, 2017

Reference No. 1114360082-158-L-Rev0

BC Ministry of Environment
Land Remediation Section
PO Box 9342 Stn Prov Govt
Victoria, BC
V8W 9M1

PERFORMANCE VERIFICATION PLAN – COC 1: 8211, 8220 AND 8261 FRASER REACH COURT, 5250 AND 5279 (PORTION) RIVERBEND DRIVE, AND PORTIONS OF 8340, 8351, 8371 AND 8381 FRASER REACH COURT, BURNABY, BC (SITE ID: 2199, 2223)

On behalf of 8360 Wiggins Holdings Inc. (Wiggins), Golder Associates Ltd. (Golder) has prepared a Performance Verification Plan (PVP) in support of an application for Certificates of Compliance (CoC) on the property located at 8211, 8220 and 8261 Fraser reach court, 5250 Riverbend Drive, and portions of 8340, 8351, 8371 and 8381 Fraser Reach Court, Burnaby, BC (the Site; Figure 1).

1.0 INTRODUCTION

Golder understands that Wiggins overall objectives for the Site are to redevelop the property for light industrial land use.

To facilitate the development of the property, the Site was divided such that four regulatory instruments would be obtained from the BC Ministry of Environment (MoE). Multiple Certificates of Compliance (CoC) were required to satisfy other project stakeholders, including the City of Burnaby. The areas associated with CoC's 1, 2 and 3 were subject to both remediation to numerical standards, and risk based remediation. The remainder of the Site has also been subject to numerical and risk based remediation, but requires an Approval in Principle (AiP) as some limited further remediation verification of groundwater and soil vapour quality is required. The PVP outline presented in this letter applies to the area represented by CoC 1 as shown on Figure 1. Monitoring requirements to convert AiP/CoC4 are discussed under a separate cover.

2.0 BACKGROUND

Development of the Site was initiated in 1957 and paperboard mill operations started circa 1960. A box plant was built circa 1965. The last owner previous to Wiggins, Norampac, a division of Cascades Canada Inc., owned the property and ran operations from 2000 to December 2011, at which time the paperboard mill and box plant operations ceased.



Golder has conducted environmental investigations and remediation activities on the Site since 2011, first as part of due diligence for Wiggins and then to obtain CoCs for Site development. In December 2011, the Site was purchased by Wiggins from Norampac and preparation for redevelopment of the Site began. As a condition of purchase, Norampac was responsible for decommissioning the Site, including demolition of the paperboard mill and box plant, from December 2011 until December 2012.

Golder has completed Site-wide Preliminary and Detailed Site Investigations (Golder Associates Ltd. *"Detailed Site Investigation, 8255 and 8360 Wiggins Street and 5279 Riverbend Drive, Burnaby, BC"*, dated March 27, 2015). Additional investigations including a supplemental site investigation (Golder 2017a), independent remediation (excavation and off-Site disposal of landfill materials and soils identified as unsuitable for risk-based remediation), confirmation of remediation (Golder 2017b), and human health and environmental risk assessment (Golder 2017c) for the upland Site and an off-Site sediments investigation in the Fraser River. The scope of the remediation was to remove accessible contaminated material to substantially improve environmental conditions on the Site, using risk assessment to address residual contamination. Site investigations and confirmation of remediation for areas requiring soil removal for the four CoCs are substantially complete. Remaining tasks include a seasonal sampling round of groundwater and soil vapour for AiP/CoC 4 in early 2017. Shoreline monitoring wells targeted as part of AiP/CoC 4 are shown in Figure 2.

A former landfill is being closed as part of the CoC submission (CoC 1), and monitoring requirements formerly included under permit PR-05936 (under Part 2 of the Environmental Management Act [EMA]) are now included in the current PVP (under Part 4 of the EMA).

A human health and environmental risk assessment was conducted to address residual contamination in the upland portion of the Site. Results of the risk assessment indicate that risks to human and ecological receptors are acceptable for the current interim construction scenario and future proposed development scenario. The Site is currently an active construction area with at least one metre of fill placement to raise Site elevation for flood protection requirements, eliminating potential risks via direct contact with surface soils. The Site is being developed into an industrial park with the majority of the Site area consisting of buildings, pavement (e.g., for roads and parking) and minimal landscaped areas. The Site is not considered valuable terrestrial habitat now or under the future development scenario. Residual soil contamination remains in place at depths greater than 1 metre below ground surface. Vapour concentrations (attenuated) meet numerical standards, under both current and future conditions. Delineation of groundwater contamination has been completed and contaminants of potential concern are not expected to migrate off-Site or towards an aquatic receiving environment at concentrations above applicable CSR standards.

3.0 PERFORMANCE VERIFICATION PLAN

The draft performance verification plan (anticipated risk controls and actions) described below pertains to the lot subject to application for CoC 1. The lots subject to application for CoCs 2 and 3 do not require formal PVPs, as the risk controls for these lots (risk controls 2, 3, and 4 below) will be included directly on the CoCs.

3.1 Risk Control Type

The Site is considered to be 'Remediation Type 2' based on the requirement of institutional controls, and a lack of imminent risks in the event that controls are not implemented or rendered ineffective.

3.2 Required risk controls and Actions for Implementation

The risk controls anticipated for the Site, and actions required to implement them, are outlined below.

Risk Control 1 – Groundwater Monitoring under Permit PR-05936

A permitted landfill (PR-05936; permit attached) was located on the northwest portion of the Site and was used for deposition of waste materials from the pulping process. Approximately 289,500 m³ of landfill and cover soil was excavated, and 239,500 m³ of waste was disposed of off-Site at permitted landfills. The remaining 50,000 m³ making up cover and interlayer soil layers of the landfill were left in the landfill after testing and screening of material. This historical landfill is being closed as part of the CoC submission (CoC 1), and monitoring requirements formerly included under permit PR-05936 (under Part 2 of the Environmental Management Act [EMA]) are now included in the current PVP (under Part 4 of the EMA).

Monitoring requirements include:

- Sampling monitoring wells MW16-05, MW16-06, MW16-15, and MW13-16 twice annually. Monitoring wells are shown on Figure 2 and are located downgradient of the former landfill. Groundwater samples should be analyzed for dissolved metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and sulphides.

Monitoring results should be reviewed annually by a qualified professional. Monitoring should continue for three years at which time the monitoring program should be re-evaluated by a qualified professional.

In accordance with the Certificate of Compliance, records of performance verification actions and results must be maintained by the responsible persons or their agent. The records must be available for inspection by the Director, on request. The Director must be notified promptly by the persons responsible for the site if performance verification actions indicate that any institutional and engineering controls required in the Certificate of Compliance are not being met. The following information must be submitted to the Director with the notification, or as soon as practicable thereafter:

- (a) The time period over which institutional and engineering controls did not meet the requirements of Schedule B;
- (b) The nature of the excursions;
- (c) The temporary or permanent corrective measures implemented or to be implemented;
- (d) An implementation schedule; and
- (e) Supporting documentation.

If requested by the Director, a report signed by an Approved Professional must be submitted for review to the Director and must include the following:

- (a) An evaluation of the performance of the institutional and engineering controls;
- (b) Recommendations for modification of any plans referenced above, along with supporting rationale;
- (c) Interpretation of current and cumulative results of the performance verification actions undertaken according to the plan; and
- (d) Supporting documentation.

Risk Control 2 - Groundwater from the Site will not be used as drinking water

Groundwater concentrations remain above the applicable drinking water standards at the Site and is therefore not suitable for drinking water purposes. A qualified professional should be consulted prior to installation of any water supply wells on the Site.

Risk Control 3 – A one metre thick soil cap must be maintained on the Site.

Soil contamination remains in place at depths greater than one metre in some areas. The Site is currently covered with a soil cap of at least one metre of clean fill. This soil cap should remain in place to prevent exposure of people and wildlife to deeper contamination.

Risk Control 4 – Prior to planting deep rooting plants, consultation with an Approved Professional is required

Soil contamination remains in place at depth in some areas of the Site. If future landscaping plans include deep rooting plants (e.g., greater than metres), an Approved Professional should be consulted.

4.0 LIMITATIONS

The performance verification plan is based on data and information collected during the investigations conducted by Golder Associates Ltd. and is based solely on the conditions at the Site and surrounding areas at the time of the field investigations, supplemented by historical information and data obtained by Golder Associates Ltd.

The findings and conclusions documented in this letter 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 practising under similar conditions in the jurisdiction. Golder makes no other warranty, expressed or implied.

The BC Ministry of Environment and Members of the Contaminated Sites Approved Professionals Society may rely on this document. 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 part as a result of decisions made or action based on this report.

Golder makes no other representation whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation. These interpretations may change over time.

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 letter and to provide amendments, as required, prior to any reliance upon the information presented herein.

5.0 CLOSURE

We look forward to discussing our request with you at your earliest opportunity.

Yours very truly,

GOLDER ASSOCIATES LTD.

Trish Miller, MSc, RPBio, CSAP
Principal, Senior Environmental Scientist

Robert McLenehan, PEng
Principal, Senior Environmental Engineer

TM/RM/asd

Attachments: Figure 1 – Site Plan
Figure 2 – Monitoring Wells
Landfill Permit

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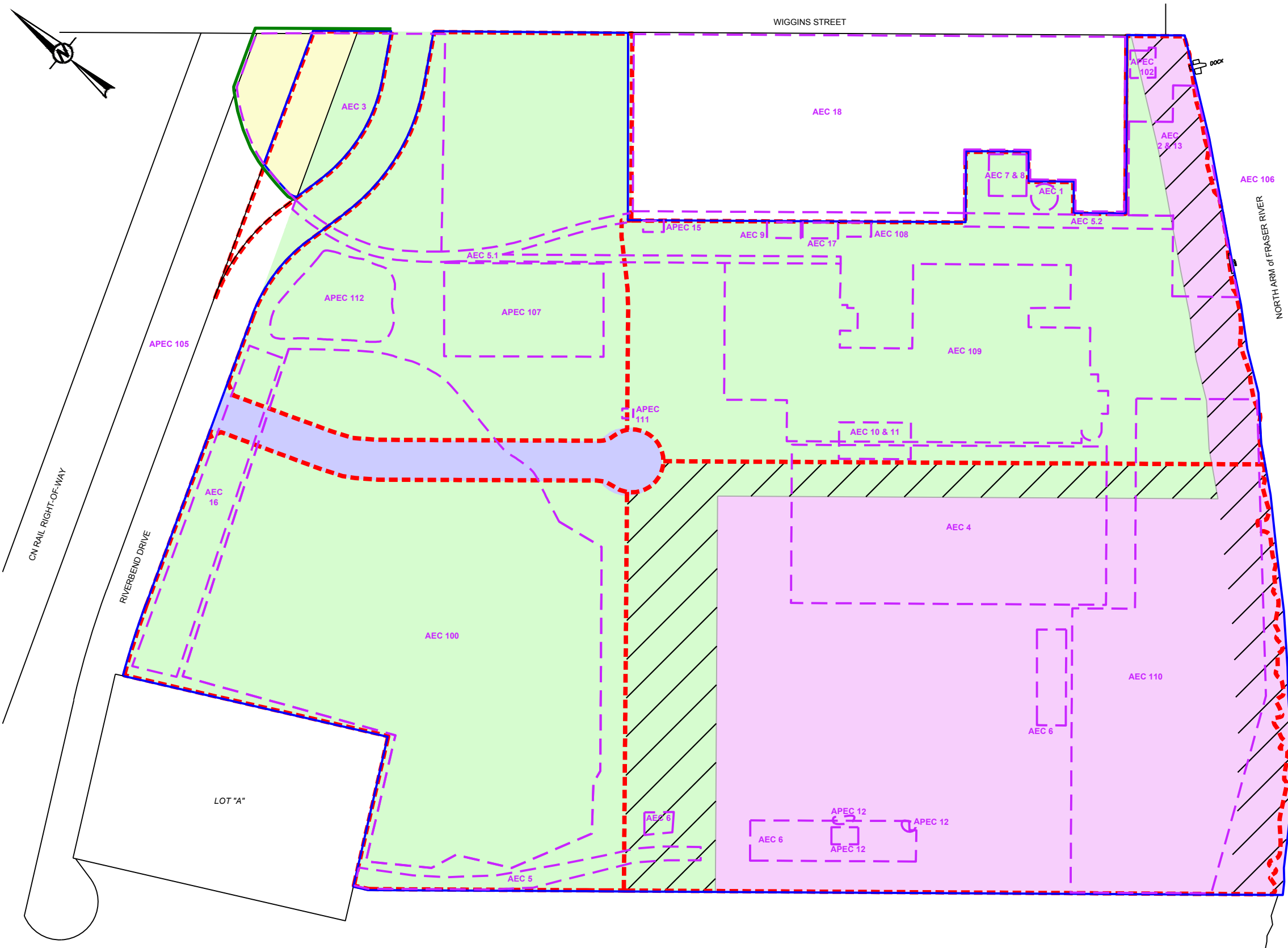
6.0 REFERENCES

Golder (Golder Associates Ltd). 2017a. Supplemental Site Investigation – Riverbend Business Park (formerly 8255 and 8360 Wiggins Street and 5279 Riverbend Drive), Burnaby, BC. Dated February 6, 2017.

Golder. 2017b. Confirmation of Remediation Report - Riverbend Business Park, Burnaby, BC (Formerly 8255 and 8360 Wiggins Street; 5279 Riverbend Drive). Dated February 14, 2017.

Golder. 2017c. Human and Ecological Risk Assessment – Riverbend Business Park, Burnaby, BC (Formerly 8255 and 8360 Wiggins Street and 5279 Riverbend Drive), Burnaby, BC. Dated February 28, 2017.

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LEGEND

- SITE BOUNDARY
- PROPOSED SUBDIVISION AND DEVELOPMENT PLAN AS OF JUNE 10, 2015
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- 100 ID FOR APEC / AEC
- COC 1: WIGGINS HOLDING INC.
- COC 1: METES AND BOUNDS
- COC 2: CITY OF BURNABY
- COC 3: CITY OF BURNABY
- AIP/COC 4: WIGGINS HOLDING INC.
- AIP/COC 4: METES AND BOUNDS (PARKLAND)

NOTES
APEC 14 IS NOT AREA SPECIFIC.

APEC/AEC #	AEC / APEC Description
AEC 1	Bunker Fuel Tank
AEC 2	Grit Storage Area
AEC 3	Non-permitted Landfill (Roofing Landfill)
AEC 4	Paper Mill Landfill
AEC 6	Box Packaging Plant Septic Field
AEC 7	UST South of Steam Plant
AEC 8	Spill From Portable Diesel Compressor
AEC 9	Former Diesel UST (Diesel Spill #3)
AEC 10	Paper Mill Lubricant System
AEC 11	Waste Oil Storage AST
APEC 12	Box Packaging USTs
AEC 13	Roofing Material Storage Area
APEC 15	Oil/Water Separator
AEC 16	Ammonia Spill
AEC 17	Equipment Maintenance Shop
AEC 100	Permitted landfill
APEC 102	PCB Equipment Storage Room
APEC 108	Former Diesel UST
AEC 109	Paper Mill Building
AEC 110	Waste Water Treatment Plant
APEC 111	North Diesel Tank (1500L)
AEC 5 (Site-wide)	Rail-Spur Ballast
APEC 14 (Site-wide)	Historical Site Wide Fill
AEC 18 (off-Site)	BC Roofing Plant
AEC 106 (off-Site)	Fraser River Sediment Quality

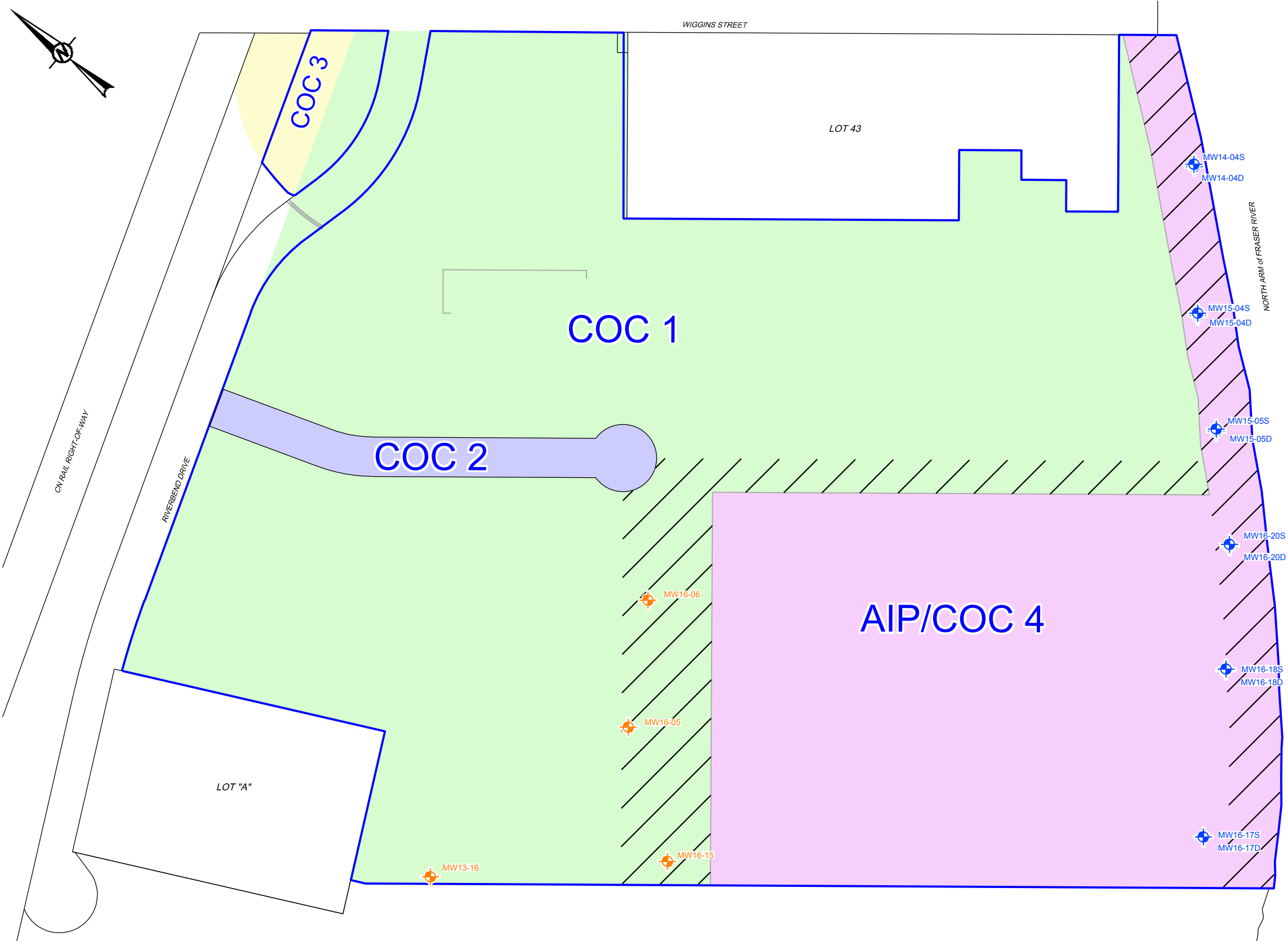
REFERENCE
BASE PLAN AND SURVEY DATA PROVIDED BY SOUTH FRASER LAND SURVEYING LTD.
DATE SURVEYED: FEBRUARY 16, 2011.
CAD FILE NAME: 11692ELV-UTM.dwg



2016-02-06	DRAFT REPORT	AV	AW		
REV	DATE	DES	CADD	CHK	RVV
PROJECT					
8360 WIGGINS HOLDINGS INC. PERFORMANCE VERIFICATION PLAN RIVERBEND BUSINESS PARK, BURNABY, B.C.					
TITLE					
SITE PLAN CERTIFICATES OF COMPLIANCE					
PROJECT No.114360082-5000-5351		FILE No.	Performance_Site_Plan		
SCALE		AS SHOWN			
FIGURE		1			



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LEGEND

	SITE BOUNDARY
	MONITORING WELL LOCATIONS APPROVED IN PRINCIPAL
	MONITORING WELL LOCATIONS PERFORMANCE VERIFICATION PLAN
	COC 1: WIGGINS HOLDING INC.
	COC 1: METES AND BOUNDS
	COC 2: CITY OF BURNABY
	COC 3: CITY OF BURNABY
	AIP/COC 4: WIGGINS HOLDING INC.
	AIP/COC 4: METES AND BOUNDS (PARKLAND)

- REFERENCE**
1. BASE PLAN AND SURVEY DATA PROVIDED BY SOUTH FRASER LAND SURVEYING LTD.
DATE SURVEYED: FEBRUARY 16, 2011. CAD FILE NAME: 11692ELV-UTM.dwg.
 2. SURVEY DATA PROVIDED BY BUTLER, SUNDVICK
DATE SURVEYED: SEPTEMBER 26, 2016.
CAD FILE NAME: 4292-Wells(Golder UTM-Grid)-(2016-09-26).dwg



REV	DATE	ISSUED FOR REVIEW	AV	JY	DES	CADD	CHK	RVV
PROJECT								
8360 WIGGINS HOLDINGS INC. PERFORMANCE VERIFICATION PLAN RIVERBEND BUSINESS PARK, BURNABY, B.C.								
TITLE								
PROPOSED MONITORING WELLS								
PROJECT No.114360082-5000-5351			FILE No.		Performance_Plan			
SCALE			AS SHOWN					
FIGURE								
					2			



February 2, 2014

Tracking Number: 307664
Authorization Number: 5936

REGISTERED MAIL

8360 WIGGINS HOLDINGS INC.
doing business as OXFORD PROPERTIES GROUP
PO BOX 10424, Pacific Centre
1300 - 777 Dunsmuir Street
Vancouver BC V7Y 1K2

Dear Permittee:

Enclosed is Amended Permit 5936 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the permit. An annual fee will be determined according to the *Permit Fees Regulation*.

This permit does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the Permittee. This permit is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the Permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this permit will be carried out by staff from the South Coast Region. Plans, data and reports pertinent to the permit are to be submitted to the Regional Director, Environmental Protection, at Ministry of Environment, Regional Operations, South Coast Region, 2nd Floor, 10470 - 152 Street, Surrey, BC V3R 0Y3.

Yours truly,

Shelley Metcalfe, P.Ag.

for Director, *Environmental Management Act*
South Coast Region

Enclosure

cc: Environment Canada

Robert Wheler, Oxford Properties Group/8360 Wiggins Holdings Inc.
Royal Bank Plaza, North Tower, Suite 900, 200 Bay Street, Toronto, ON M5J 2J2



**MINISTRY OF
ENVIRONMENT**

PERMIT

5936

Under the Provisions of the Environmental Management Act

8360 WIGGINS HOLDINGS INC.

doing business as
OXFORD PROPERTIES GROUP
P.O. Box 10424, Pacific Centre
1300 - 777 Dunsmuir Street
Vancouver BC
V7Y 1K2

is authorized to discharge refuse to the land from a former paperboard mill site located at 8255 Wiggins Street, Burnaby, British Columbia, and immediate vicinity, subject to the terms and conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may lead to prosecution.

This permit supersedes and amends all previous versions of Permit PR-05936 issued under Part 2, Section 14 of the *Environmental Management Act*.

1. AUTHORIZED DISCHARGE

1.1 Authorized Source

This section applies to the discharge of refuse from a former PAPERBOARD MILL SITE and immediate vicinity. The site reference number for this discharge is E243458.

- 1.1.1 The maximum authorized quantity of waste discharged from the date of this permit amendment until landfill closure is a total of 36 000 dry tonnes.
- 1.1.2 The authorized discharge period is 24 hours/day, 7 days/week.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)

A handwritten signature in cursive script that reads "Shelley Metcalfe".

Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

- 1.1.3 The characteristics of the waste discharged from the date of this permit amendment until landfill closure must be those of waste soil with metal contaminant levels equivalent to or less than 8 IL, including Arsenic which must not exceed the following level:

Arsenic, Maximum: 160 mg/kg.

- 1.1.4 The authorized works are a landfill operation as directed in this permit, any other facilities/measures necessary to prevent landfill leachate or pollution and related appurtenances approximately located as shown on Site Plan A.
- 1.1.5 The authorized works must be complete and in operation on and from the date of this permit amendment.
- 1.1.6 The location of the facilities from which the discharge originates is Lot 48 Except: Firstly, Parcel "A" (Bylaw Plan 70015); Secondly: Part Subdivided by Plan 72187; District Lot 167 Group 1 New Westminster District Plan 48061 (PID: 002-508-214) and immediate vicinity.

The location of the point of discharge is Lot 48 Except: Firstly, Parcel "A" (Bylaw Plan 70015); Secondly: Part Subdivided by Plan 72187; District Lot 167 Group 1 New Westminster District Plan 48061 (PID: 002-508-214).

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

2. GENERAL REQUIREMENTS

2.1 Definitions

In this permit,

"**5 IL**" means 5.0 times the applicable IL (Industrial) soil standard specified in the *Environmental Management Act Contaminated Sites Regulation*;

"**8 IL**" means 8.0 times the applicable IL (Industrial) soil standard specified in the *Environmental Management Act Contaminated Sites Regulation*;

"**AW_{fm}**" means the applicable AW (Aquatic Life) water standard to protect freshwater or marine/estuarine aquatic life, whichever is more stringent, specified in the *Environmental Management Act Contaminated Sites Regulation*;

"**Qualified Professional**" means

- 1) An applied scientist or technologist specializing in a particular applied science or technology, including agrology, biology, chemistry, engineering, geology or hydrogeology,
 - a) who is registered in British Columbia with the professional organization responsible for his or her area of expertise, acting under that professional association's code of ethics and subject to disciplinary action by that association, and
 - b) who, through suitable education, experience, accreditation and knowledge, may be reasonably relied on to provide advice within his or her area of expertise as it relates to this regulation; or
- 2) An "**Approved Professional**" who is a member, in good standing, of the Society of Contaminated Sites Approved Professionals of British Columbia and is named on a roster established under Section 42 (2) of the *Environmental Management Act*.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

2.2 **Maintenance of Works and Emergency Procedures**

The authorized works must be inspected regularly and maintained in good working order. In the event of an emergency or condition beyond the control of the Permittee including, but not limited to, unauthorized fires arising from spontaneous combustion or other causes, or detection of leachate on the property; the Permittee must take appropriate remedial action and notify the Director immediately. The Director may reduce or suspend operations to protect the environment until the authorized works has been restored, and/or corrective steps taken to prevent unauthorized discharges.

2.3 **Process Modifications**

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, permitted levels must not be exceeded.

2.4 **Bypasses**

Any bypass of the authorized works is prohibited unless the approval of the Director is obtained and confirmed in writing.

2.5 **Notification**

The Director must be notified of a change in ownership of the works authorized in this permit within 10 days of an ownership change.

2.6 **Hazardous waste**

The discharge of hazardous waste is prohibited.

2.7 **Final Landfill Height**

The final maximum elevation of waste soil in the landfill must not exceed 4.1 masl (metres above sea level) geodetic or 1.1 metres above the original ground surface, whichever is lower. It is the responsibility of the Permittee to comply with any requirements of the local municipal authority with respect to the maximum elevation of the final cover of the landfill.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

2.8 Leachate Collection and Treatment

The Permittee must take all measures necessary to prevent leachate generation and pollution. This includes, but is not limited to, collecting and treating any potential leachate or contaminated stormwater from the landfill and discharging the effluent via the outfall authorized by *Environmental Management Act* Effluent Permit 17 in compliance with the permitted discharge limits until:

- a) The discharge of waste soil has ceased,
- b) Measures have been implemented to prevent infiltration of stormwater into the landfill including installing a minimum 1.0 metre thick final landfill cover over all waste, implementing other measures necessary to prevent water infiltration into the landfill and implementing stormwater management measures to prevent infiltration/ingress of water into the landfill and
- c) A Qualified Professional has conducted an assessment and determined that adequate measures have been implemented to prevent leachate generation and pollution.

With respect to Section 2.8b above, the Permittee may decrease the thickness of the final landfill cover to a minimum of 0.50 metres if a Qualified Professional has conducted an assessment and determined that the design of the final cover, along with other measures to prevent infiltration of water into the landfill, is adequate to prevent leachate generation and pollution.

Prior to reducing the thickness of the final landfill cover or removing or modifying the on-site leachate collection and treatment facilities, the Permittee must submit, to the Director, an assessment report by a Qualified Professional.

2.9 Landfill Operating Plan

The waste soil must be discharged in accordance with the landfill operation procedures specified in the report prepared by a Qualified Professional titled:

SUPPORTING INFORMATION FOR MINOR PERMIT AMENDMENT TO PERMIT PR-05936 AT 8255 WIGGINS STREET, BURNABY, BC, dated January 28, 2014.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

Where there is a conflict between the report and this permit, the requirements of this permit take precedence. Whenever there are any changes to the landfill operation, the Permittee must immediately submit, to the Director, updated landfill operating procedures prepared by a Qualified Professional.

Unless otherwise specified by the Director, the Permittee must discharge waste soil into the landfill in accordance with the most recent update of the landfill operating procedures.

2.10 Landfill Operation

- a) The landfill must be designed, constructed, operated and monitored under the supervision of a Qualified Professional in a manner that prevents leachate generation or pollution;
- b) A minimum of 1.0 % to 3.0 % by volume of Portland cement must be added to all waste soil with metal contaminant levels between 5 IL and 8 IL, inclusive, [including all waste soil with Arsenic levels between 100 mg/kg and 160 mg/kg, inclusive] under the supervision of a Qualified Professional to form a homogeneous mixture;
- c) No waste soil must be discharged or situated, including after settlement, below 2.2 masl geodetic or less than 1.0 metres above the highest seasonal water table elevation or, whichever is higher; and
- d) If any leachate is generated, pollution occurs or any groundwater monitoring results exceed AW_{fm} , the Permittee must immediately notify the Director and take all corrective measures necessary to prevent pollution.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

2.11 Landfill Closure Plan

Within 90 days of ceasing the discharge of waste soil, the Permittee must submit, to the Director, a landfill closure plan prepared by a Qualified Professional. The closure plan must include, but not limited to, a monitoring program, measures to prevent leachate generation and pollution and protect human health and safety, engineering drawings showing the design of the closed landfill and a landfill closure implementation schedule.

Unless otherwise specified by the Director, the Permittee must close the landfill in accordance with the closure plan under the supervision of a Qualified Professional. Once landfill closure is completed, the Permittee must immediately submit, to the Director, a report prepared by a Qualified Professional including details of the landfill closure and confirmation that proper landfill closure measures have been implemented to prevent leachate generation and pollution and protect human health and safety.

Unless otherwise specified by the Director,

- a) The Permittee is exempt from the above requirement to submit and implement a landfill closure plan if an application for an Approval in Principle or Certificate of Compliance under the *Contaminated Sites Regulation* with respect to the landfill area has been submitted to the Director, along with the recommendations of an Approved Professional, within one year of ceasing discharge of waste soil and
- b) If a Certificate of Compliance with respect to the landfill area has not been issued within 2.5 years of ceasing discharge of waste soil, the Permittee must immediately submit a landfill closure plan and comply with all closure plan requirements specified above.

2.12 Fugitive Particulate Emissions

It is the responsibility of the Permittee to control dust emissions in accordance with the requirements of the Metro Vancouver Regional District.

3. MONITORING AND REPORTING REQUIREMENTS

The Permittee must conduct the following monitoring program. Based on the monitoring results or other relevant information, the Director may modify the monitoring program.

Date issued: November 2, 1982
Date amended: February 2, 2014
(most recent)



Shelley Metcalfe, P.Ag.
for Director, *Environmental Management Act*
South Coast Region

3.1 Discharge Monitoring

3.1.1 Quantity Measurement

The Permittee must record once per day the quantity of waste soil discharged over a 24-hour period (dry tonnes/day).

3.1.2 Quality Monitoring

For each batch of waste soil that is discharged into the landfill, the Permittee must ensure that a Qualified Professional:

- a) Samples and characterizes the waste soil in accordance with the BC Ministry of Environment TECHNICAL GUIDANCE ON CONTAMINATED SITES 1 titled "Site Characterization and Confirmation Testing", January 2009, or other methods acceptable to the Director;
- b) Conducts testing to determine the leachate potential of the waste soil in accordance with the "USEPA Method 1312: Synthetic Precipitation Leaching Procedure (SPLP)" or other methods acceptable to the Director; and
- c) Assesses the test results to ensure that the waste soil will not cause leachate generation and/or pollution.

3.1.3 Waste Soil Analyses

Obtain analyses of the waste soil samples for the following:

- pH, pH units;
- Total metals (including Antimony, Arsenic, Cadmium, Copper, Lead and Zinc), mg/kg;
- Any other parameters or substances of potential concern as determined by a Qualified Professional.

Analyses must be conducted using methods specified in a Director's protocol or alternate methods acceptable to the Director.

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(most recent)



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3.2 Environmental Impact Monitoring

3.2.1 Grab Sampling

The Permittee must maintain suitable sampling facilities and obtain grab samples from the sampling facilities specified in Section 3.2.2 for analyses as specified in Section 3.2.3. Proper care must be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2.2 Sampling Locations

The Permittee must ensure that a Qualified Professional installs and maintains the following sampling facilities:

a) Groundwater Monitoring Wells

Well Nos. MW11-07S, MW11-07D, MW11-22, MW13-11, MW13-12, MW13-16 [and an upgradient monitoring well (MW14-xx) to be installed by a Qualified Professional in 2014 to replace destroyed wells] as shown on the attached Site Plan A and specified in a report, prepared by a Qualified Professional, titled "APPENDIX C – TECHNICAL SUPPORT FOR MINOR AMENDMENT APPLICATION TO PERMIT PR-05936", dated September 13, 2013;

b) Sampling Facility for Monitoring Stormwater from the Landfill Area that contains contaminants from the waste soil.

3.2.3 Analysis

Obtain measurements/analyses of the samples as follows:

<u>Parameter</u>	<u>Frequency</u>
Groundwater surface elevation (masl)	quarterly
pH (pH units)	quarterly
Total hardness as CaCO ₃ (mg/L)	quarterly
Dissolved metals (mg/L)	quarterly.

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As a minimum, the parameters listed below must be monitored as specified in the report prepared by a Qualified Professional titled "APPENDIX C – TECHNICAL SUPPORT FOR MINOR AMENDMENT APPLICATION TO PERMIT PR-05936", dated September 13, 2013:

Conductivity (uS/cm),
Redox potential (mV),
Ammonia nitrogen (mg/L),
Nitrate nitrogen (mg/L),
Chloride (mg/L),
Sulphide (mg/L),
Resin and Fatty Acids (mg/L).

3.3 Monitoring Procedures

3.3.1 Sampling Procedures

Sampling is to be carried out in accordance with the procedures described in the "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2003 Edition (Permittee)", or most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual is available on the Ministry web page at www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html.

3.3.2 Analytical Procedures

Analyses are to be carried out in accordance with procedures described in the "British Columbia Laboratory Manual (2009 Permittee Edition)", or the most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual is available on the Ministry web page at www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html.

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3.3.3 Quality Assurance

All data of analyses required to be submitted by the Permittee must be conducted by a laboratory acceptable to the Director.

At the request of the Director, the Permittee must submit all relevant quality assurance information from the on-site or contracted laboratory.

3.4 Annual Report

An Annual Report must be prepared by a Qualified Professional and submitted to the Director. The report must include, but is not limited to, the following items:

- a) A description of any non-compliance with permit requirements including the dates and details of each non-compliance, the cause of each non-compliance and the measures taken or recommended to restore permit compliance. If all discharges were in compliance with all permit requirements, a statement to that effect must be included;
- b) Total accumulated quantity (dry tonnes) of waste discharged since the date of this permit amendment of the following:
 - i) All waste soil discharged,
 - ii) Waste soil discharged with metal contaminated levels between 5 IL and 8 IL, inclusive,
 - iii) Waste soil discharged with metal contaminated levels less than 5 IL;
- c) A description and a tabulated summary of maximum waste soil contaminant levels [expressed as mg/kg and multiples of the applicable IL for total metals (including Antimony, Arsenic, Cadmium, Copper, Lead and Zinc)] and other contaminants of potential concern;
- d) A description of the method of treatment applied to the waste soil including the percentage by volume of Portland cement that was added to and homogeneously mixed into waste soils with metal contaminated levels between 5 IL and 8 IL, inclusive;

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- e) A summary of monitoring data obtained during the reporting period and interpretation/assessment of whether the landfill is causing groundwater quality to exceed AW_{fm} , leachate generation and/or pollution. A graphical analysis with suitable interpretation of any trends in monitoring results must be included where appropriate.

Recommendations on corrective actions that are necessary must be provided if groundwater monitoring results exceed AW_{fm} , leachate is being generated and/or pollution is being caused;

- f) Recommendations on any changes that should be made to the monitoring program.

Whenever appropriate, the applicable permit limits, ministry standards and/or criteria must be included with the tabulated monitoring data to facilitate comparison.

Unless otherwise specified by the Director, the Permittee must immediately implement the recommendations of the Qualified Professional.

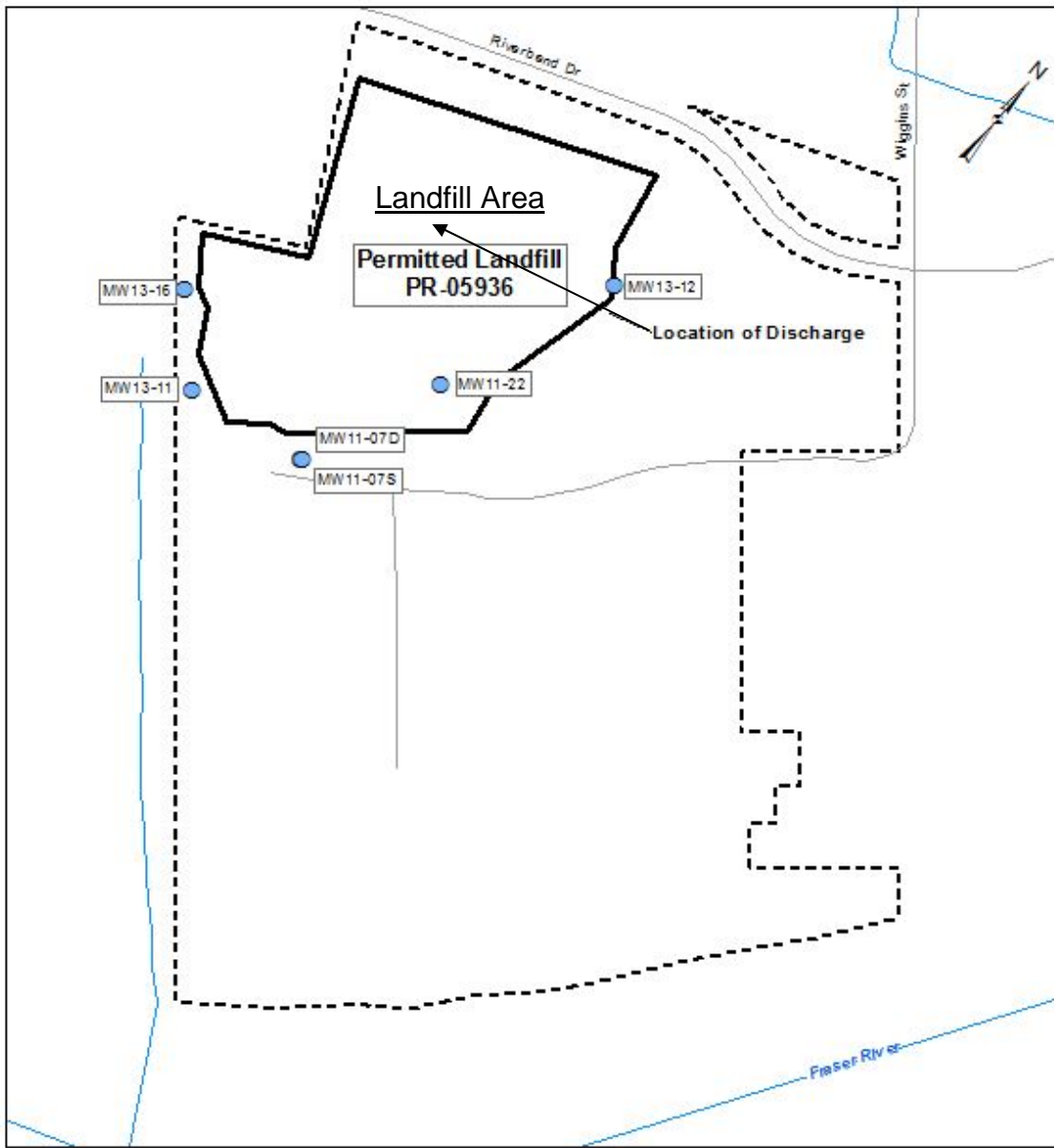
Annual Reports are due on February 28th of each year for the period January 1st to December 31st of the previous year. The first report must be submitted by February 28, 2015.

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Site Plan A



LEGEND
Site Boundary (approx.)

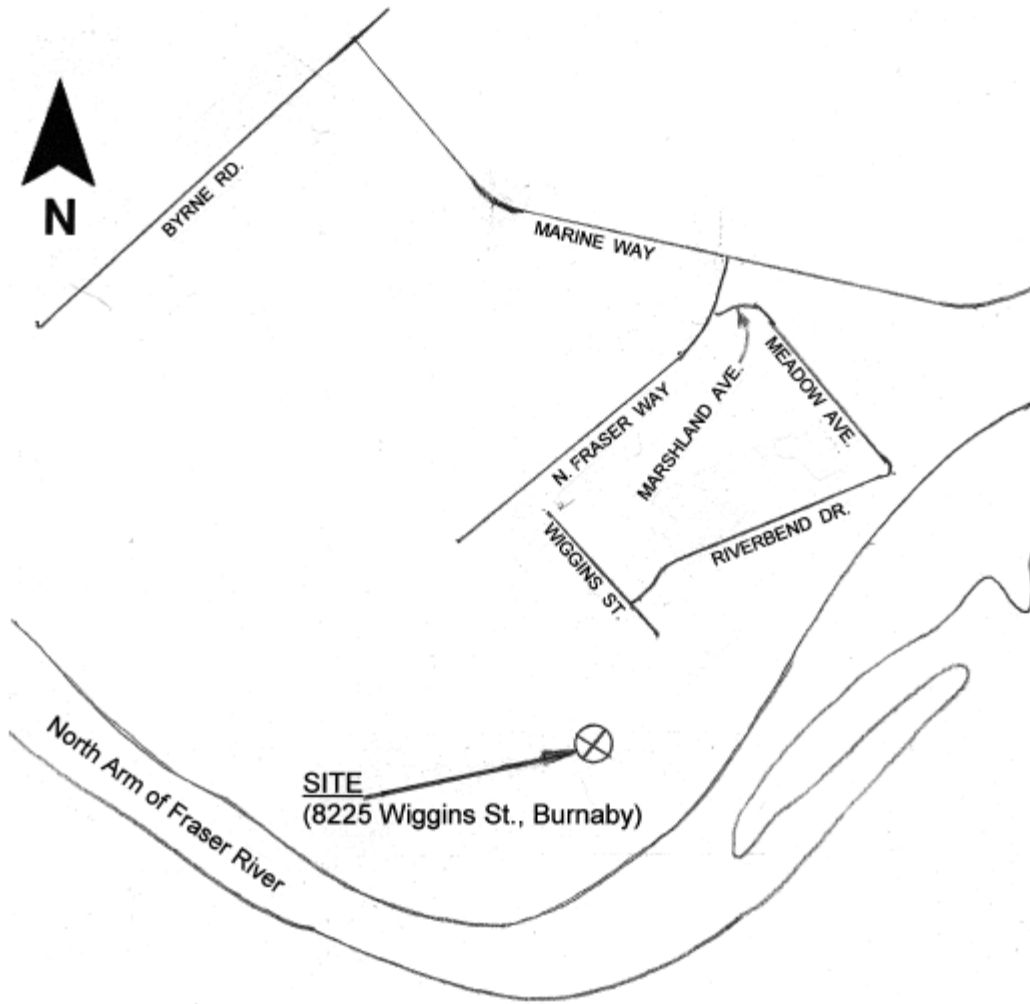


— BOUNDARY OF LANDFILL AREA

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Location Map



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