

August 30, 2016

Mr. Thomas Land  
Ecowaste Industries Ltd.  
100-3031 Viking Way  
Richmond, BC V6V 1W1

Dear Mr. Land:

**Re: Water Use Determination, 15111 Williams Road, Richmond, BC**

The Ministry of Environment (Ministry) has reviewed the following letter reports prepared by PGL Environmental Consultants (PGL) and submitted in support of an application for a water use determination for 15111 Williams Road, Richmond, BC (the Site):

- *Site-Specific Determination of Water Use, Ecowaste Landfill, 15111 Williams Road, Richmond, BC (MOE Site 2404)*, dated August 4, 2016;
- *Addendum – Water Use Determination, Ecowaste Landfill (MOE Site 2404), 15111 Williams Road, Richmond, BC*, dated June 23, 2016; and
- *Water Use Determination, Ecowaste Landfill (MOE Site 2404), 15111 Williams Road, Richmond, BC*, dated May 3, 2016.

Section 12(5) of the Contaminated Sites Regulation (CSR) specifies the water uses that may apply at sites in BC, including aquatic life, drinking, irrigation and livestock watering water uses, as well as the factors a Director must consider in determining current and reasonable potential future water uses at a site. Protocol 21 provides criteria for determining current and reasonable potential future water uses at specific sites.

Where drinking water use has been determined to apply at a site under Protocol 21 and site circumstances indicate that it is unlikely or unreasonable to anticipate that water would be used for drinking, a site-specific water use determination may be sought from the Director. Protocol 21, Appendix 1 “*Director’s Decision Framework for Site-Specific Determinations of Water Use*” outlines a multiple-lines-of-evidence approach for seeking a Director’s determination of no drinking water use at a specific site.

The reports prepared by PGL provide the following rationale for why drinking water, irrigation water, and livestock watering uses should not apply at the Site:

- The Site has been used for industrial purposes for nearly 50 years. The area has been mined for peat since the 1940s. Since mining operations ceased, the Site and two neighbouring properties have been used as landfills;
- There is no current use of groundwater for drinking water within 500 m of the Site.

- There are no water licenses for surface water extraction from any of the ditches surrounding the Site.
- The Site is serviced by municipal water supply. The City of Richmond does not use groundwater as a source of drinking water. The existing water supply is sourced from freshwater reservoirs in North Vancouver.
- Land use of the Southern landfill and Panhandle will remain industrial in the future; the properties will be developed into an industrial park.
- The shallow unconfined aquifer at and surrounding the Site is comprised of both peat and surficial fill of poor quality and possible widespread contamination.
- The southernmost property line of the Site is located approximately 70 m from the Fraser River. The deeper aquifer is tidally influenced and groundwater flow alternates between away from and towards the river.
- Installation of a drinking water well within 120 m of a dumping ground is prohibited by the *BC Public Health Act*.
- Given that the Site is a permitted landfill and the downgradient property is a landfill, and there are no other downgradient users (based on groundwater flow in the deep aquifer), it is unreasonable to anticipate that groundwater in the area would be used for drinking water in the future.

Based on the information provided, irrigation water and livestock watering uses are deemed not to apply to the Site. However, on June 6, 2016, the Ministry requested several additional items of clarification to support the requested no drinking water use determination, namely: clarification regarding the industrial history of the Site and the degree and extent of contamination in the vicinity; a soil organic analysis to support the presence of peat onsite; tabulated total dissolved solids (TDS), sodium, and chloride concentrations for the deeper aquifer; evidence to support that the Fraser River is an estuarine environment in the vicinity of the Site; as well as a comment by a hydrogeologist regarding the presence of a saline wedge.

The June 23, 2016 addendum report from PGL provided the following information in response to the Ministry's request:

- The Site has historically been used for peat mining and landfilling. Ecowaste landfilling operations on the Panhandle and Southern Landfill have been permitted since 1979. The Fraser River Harbour Commission (FRHC) operated a landfill to the east and south of the Site since 1965. The FRHC landfill to the east has been redeveloped into an industrial park. The landfill to the south is closed;
- The mean percent total organic carbon (TOC) for soil samples from the Site was 56.7%, meeting the definition of an organic soil (>30% organic matter by weight);
- The silt and clay layer at the Site does not meet the minimum thickness for a natural confining unit of 5 m; however, PGL maintain that it acts as a hydraulic confining layer, with the groundwater above and below flowing in opposite directions. Soil samples collected from the unit meet applicable CSR standards;
- Salt water (sodium, chloride) intrusion has not been observed beneath the Site;

- TDS concentrations in monitoring wells within the deeper aquifer are below 4,000 mg/L; and
- References were provided indicating the Fraser River adjacent to the Site is an estuarine environment.

Arguments presented in the May and June 2016 PGL reports in support of the no drinking water use determination were found to be insufficient. The shallow aquifer at the Site is located within a fill/peat unit which fulfils criteria in Protocol 21 for no drinking water use based on unsuitable quality of groundwater contained within organic soils or muskeg. However, the shallow groundwater is underlain by the Fraser River sand aquifer, a potential drinking water source which is not protected by a sufficient natural confining unit to allow relief of the shallow aquifer from drinking water use (to be protective of the underlying drinking water resource). Thus, drinking water use and CSR drinking water standards are considered to apply to both the shallow and deeper aquifers on the Site.

Other supporting arguments, such as a long history of industrial land use were also found to be insufficient grounds to support a no drinking water use at the Site. The industrial land use history of the Site and surrounding area is well known and relatively recent (order of decades) and contaminant sources are largely traceable to individual land use activities and ownership rather than miscellaneous, non-attributable and widely distributed sources such as in the case of infill material in the False Creek flats area of Vancouver (along with other strong supporting rationale for a non-DW use).

PGL provided the further report entitled: “*Site-Specific Determination of Water Use, Ecowaste Landfill, 15111 Williams Road, Richmond, BC (MOE Site 2404)*” in support of their water use determination request on August 4, 2016. In this report, PGL presented the following lines of evidence to support their assertion that the use of groundwater at and in the vicinity of the Site for DW, IW and LW uses would be unlikely or unreasonable to anticipate:

- The *Public Health Act* prevents the installation of a drinking water well within 120 m of a cemetery or dumping ground. PGL states that based on regulations under the *Public Health Act*, it would be illegal to install a groundwater well for drinking purposes at or within 120 m of the Site.
- The Site is a permitted landfill and the downgradient property is a landfill. Under the *Environmental Management Act* Part 2 (14) (1), a permit authorizes the introduction of waste into the environment. Given that the Site and downgradient properties are landfills, there are no other downgradient users prior to groundwater discharge to the Fraser River.

The additional lines of evidence presented in the August 4, 2016 PGL report are also considered insufficient to support a determination of no drinking water use at the Site. With limited exceptions (such as wide areas of historical industrial use with multiple, miscellaneous sources and widespread non-attributed contamination), determinations of water use rely primarily on the

viability of the groundwater resource rather than land use considerations. Regulations for drinking water wells under the *Public Health Act* are to protect users from inadvertent and uncontrolled contamination. Permits issued under the *Environmental Management Act* are for the discharge of wastes in a manner that does not adversely impact human health or the environment, including impacts to viable groundwater resources. Determinations of water use under the Contaminated Sites Regulation are to protect water resources for current and future use both at and nearby a Site. In the case of Ecowaste's Richmond Landfill, while drinking water wells may not be constructed on the Site or former landfill to the east and south, it is considered reasonable that the Fraser River sand aquifer that underlies the Site and surrounding area could be used in the vicinity of the Site and should be protected to enable such use.

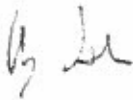
It should be noted that lands to the south and downgradient of the Site that lie alongside the Fraser River are exempt from drinking water use under the set-back criteria of Protocol 21 for estuarine receiving waters (500 m). Therefore, substances migrating in groundwater to the south of the Site would only be subject to the marine aquatic life water standards within 500 m distance from the Fraser River.

Therefore, on the basis on the Ministry's review of the May 3, 2016, June 23, 2016 and August 4, 2016 reports prepared by PGL, and reasons outlined above, I am unable to grant the requested determination of no drinking water use for the Ecowaste landfill site located at 15111 Williams Road in Richmond.

This decision is based on the most recent information available to the Ministry regarding the above-referenced site. The Ministry, however, makes no representation or warranty as to the accuracy or completeness of this information.

Please contact Amy Sloma at 250-387-6479 or Janet Barrett at 604-582-5262 if you require clarification regarding this letter.

Sincerely,



Amy Sloma  
For Director, *Environmental Management Branch*

Attachments: A – Site Location Figure

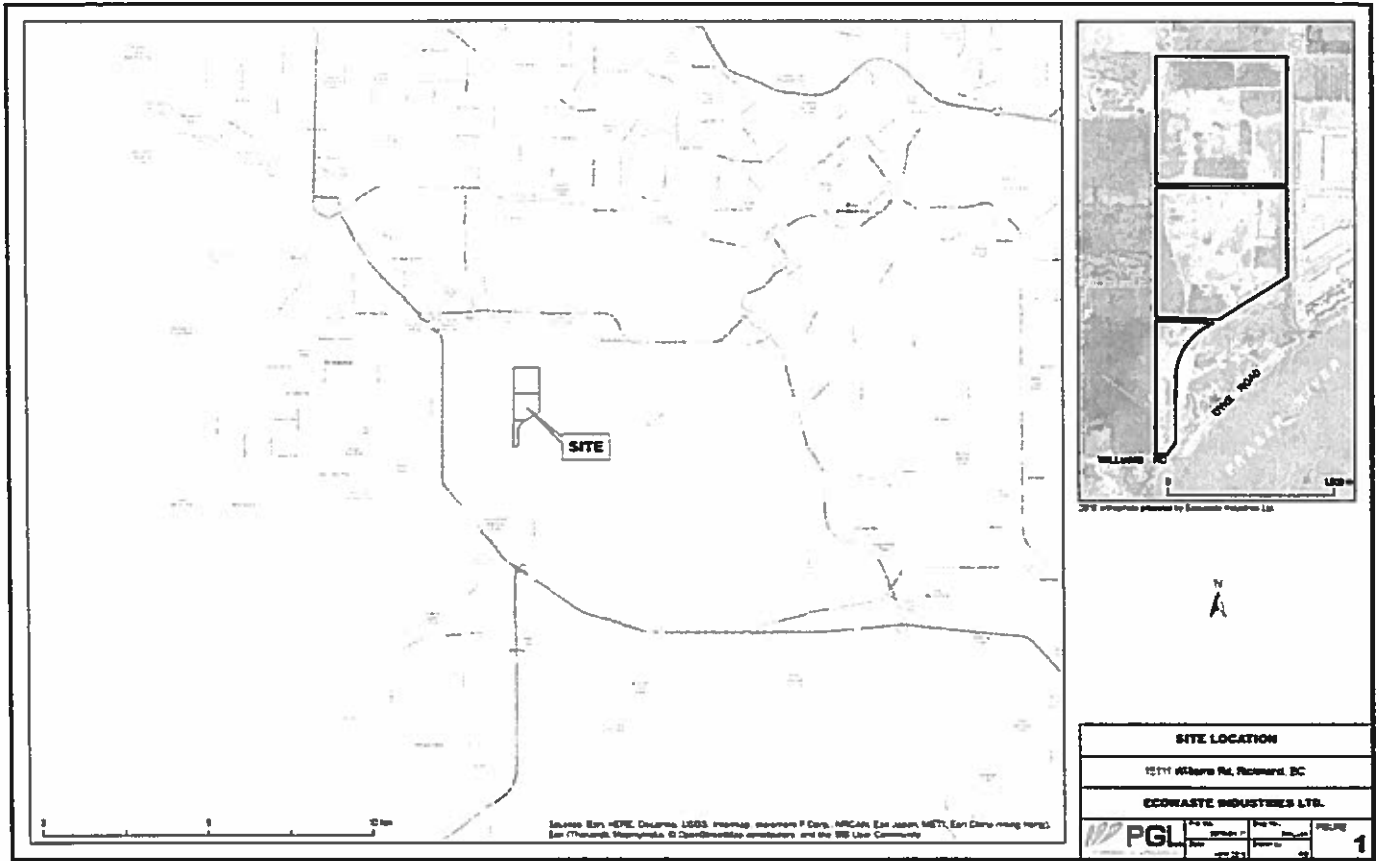
cc: Simone Mol, PGL Environmental Consultants  
Alan McCammon, Ministry of Environment, Surrey  
Janet Barrett, Ministry of Environment, Surrey

Lucy Hewlett, Ministry of Environment, Victoria  
Catherine Schachtel, CSAP Society, Vancouver

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### Attachment A

### Site Location Figure



(from PGL, May 3, 2016)