

BARENCO

Environmental Engineering
& Site Remediation Services

A Trow Global Company

March 14, 2011

Con-Drain Company (1983) Ltd.
30 Floral Parkway
Concord, Ontario
L4K 4R1

Attention: Mr. Grant HoranDear Sir:

Re: Response to Review of Environmental Impact Assessment Report
Northwest Corner of Rodick Road & Yorktech Road, Markham

A review of the Barenco report entitled *Environmental Impact Assessment, Northwest Corner of Rodick Road & Yorktech Road, Markham, Ontario* dated August 25, 2009 was conducted by the Town of Markham Asset Management Department. The purpose of this letter is to respond to the Town's comments and concerns. The following is a list of the Town's comments in italics with our response.

- 1) *The report discussed the environmental impacts of concrete crushing (i.e. dust) on the surrounding surface soil only. However, potential environmental impacts due to asphalt crushing (i.e. petroleum hydrocarbons) as well as the impacts of dust deposited on the stockpiles of crushed stones on the groundwater and surface water runoff have not been evaluated.*

Asphalt is primarily composed of the petroleum hydrocarbon (PHC) fraction F4. This fraction is non-volatile, in large part due to its high molecular weight. In order to have an impact on surface water or ground water, a substance must be soluble in water. The PHC fraction F4 is insoluble and cannot move in ground water. This holds true for PHC fraction F4 in surface water. As a result, no environmental concerns were identified in either surface water or ground water with respect to the crushing of asphalt at the subject property.

Surface water runoff potentially containing sediment from crushing activities is prevented from migrating off-site by the berm surrounding the subject property. A sediment interceptor has been installed at the entrance to prevent flow of sediment laden water onto the street. Specifically, the interceptor is a grate across the entrance that collects any water flowing off the property.

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- 2) *The study area approximately 650 meters along the Rouge River was demarcated as shown in figure 3, sample S-6 having exceedance in test results was considered as outside of the study area. Please provide rationale for the demarcation of the study area with supporting calculations that demonstrate dust plume settlement mechanism with average size of the particulate and wind velocity. Also, provide rationale for sending only 4 out of 10 samples to the laboratory for the selected metals testing.*

As discussed on Page 4 of the report, the study area was defined based on historical wind direction in the vicinity of the subject property. Based on this historical data, vector analysis was used to determine a conservative area to which wind-borne dust could reasonably travel from the subject property. Based on over 25 years of historical data, the mean wind direction was used to determine that sample S-6 was not within the study area. In other words, based on wind patterns, wind-borne dust from the subject property is highly unlikely to reach the area where S-6 was collected. Furthermore, the pH of S-6 was below 7 which is not consistent with the presence of concrete dust. If significant concrete dust were present, the soil would have an elevated pH (above 7).

Even so, elevated pH does not always have an adverse effect on the environment. On the contrary, some vegetation thrives in more basic soils. Soil pH can be affected by a number of different factors including rainfall and parent materials of the soil such as limestone which results in more basic soils. Limestone is a common form of bedrock and found widespread in Southern Ontario.

Four of ten samples were analyzed for metals to determine potential metal impacts via dust. If dust originating from concrete crushing at the subject property had impacted the study area, elevated pH was considered the best indicator since concrete has a pH of about 12 and no elevated pH levels were found. The four equally spaced samples taken along the Rouge River were analyzed for metals as a secondary indicator of potential dust impacts along the river. All samples were well within the Ontario Typical Range values.

- 3) *It is noted that, on-site runoff drains into a ditch in the west. However, neither the availability and functionality of water quality treatment system for the runoff and the sprinkler system at site have been discussed, nor the ultimate disposal of the ditch has been identified. It must be ensured that the runoff is being treated properly before discharged to the ditch on the west.*

Any runoff from the site is directed to a ditch to the west of the site. When there is flow, which is rare, the ditch leads to a storm water pond located north of the property. This pond was created to permit settling of sediment for runoff from the roads and surrounding properties including the plaza to the northwest. The recycling facility has been operating with the dust control and sediment control systems currently in place for seven years with no unresolved issues regarding dust, sediment or runoff.

- 4) *The site is located within sandy deposits; these soils have much higher hydraulic conductivity (Calculated as 4.37×10^{-5} cm/s). As such, on-site environmental concerns, which include petroleum distillates, solvents, lubricants etc., would be more likely to have the potential impacts on the groundwater.*

Sandy, surficial soil in the vicinity of the subject property was found to only about 5 centimetres below grade and is not indicative of native soil at the subject property. As indicated on Page 2 of the report, native soil at the subject property is mainly comprised of clayey silt. This type of soil has a lower hydraulic conductivity than sand and migration through the soil is much lower. Darcy's Law governs the flow of fluid through a porous medium. Using the estimated hydraulic conductivity of clayey silt, the calculated ground water velocity at the subject property is about 0.35 metres per year.

Use of petroleum distillates, solvents and lubricants is minimal at the subject property except for fueling of the equipment. The above ground storage tank for equipment fuel is fully compliant with the Technical Standards and Safety Authority requirements. If any petroleum distillates, solvents and/or lubricants were spilled on the subject property, the procedure is to immediately clean up the spill. In seven years of operation there have been no spills at the site. In addition, as noted on Page 2 of the report, risk management measures, such as a concrete barrier surrounding the above ground storage tank have been implemented to minimize the risk of spills.

- 5) *Please, provide the details of water system during crushing activity through sprinklers (calculations and drawings) and propose mitigation measures for erosion and sediment control demonstrate that the proposed drainage system should have no negative impact on the receiving storm sewer system.*

The dust control system consists of a set of spray nozzles positioned to spray water to wet the crushing area if and when dust is created. There is no requirement for any design calculations. In seven years of operation, there has been no evidence of dust or drainage control issues that have not been adequately addressed.

- 6) *Please, submit maintenance plan for cleaning a grit collection screen at entrance of the property, the ditch and the pond, when their capacity reduced to 50% due to sedimentation. Also, provide a mitigation plan to control the flooding of Rodick Road with untreated drainage water adjacent to entrance, including cleaning of the sediments at least 3 times a day.*

As noted above, after seven years of operation as a crushing facility, there are no outstanding issues with dust or sediment control. Flooding of Rodick Road by surface water from the site has never occurred and is unlikely to ever occur except in extreme rainfall events when flooding is widespread. In the event that widespread flooding occurred in the area, any grit-laden surface water would be moving quickly resulting in very minimal sedimentation in the area immediately surrounding area the site.

- 7) *Two Surface water samples (north and south of property) at Rouge River need to be investigated and compared with Ontario DWQO. Also, three on-site groundwater and soil samples needs to be investigated in order to verify the impacts on groundwater.*

Water in the Rouge River should not be compared to Ontario Drinking Water Quality Objectives which are specifically derived to protect water for human ingestion. The Rouge River is not used as a source of potable water. As noted on Page 4 of the report, based on tall vegetation on the banks of the Rouge River and the narrow width of exposed surface water, the direct settling of particulate matter into the river would not occur at an appreciable quantity. It should be noted that at the time of Barenco field work in July, a portion of the Rouge River was dry. Furthermore, sampling of a flowing body of water can result in highly variable samples (especially with rain events) and does not provide an accurate assessment of environmental conditions in the vicinity of the body of water. Plus, the upgradient water in the Rouge River is already impacted by many other sources, such as storm water runoff from roads and parking lots.

As discussed on Page 3 of the report, metals present in concrete dust and elevated pH are the only potential impacts associated with crushing concrete activities at the subject property. Metals are only found in trace quantities in the limestone parent bedrock in concrete and are also largely immobile in soil so do not present an environmental concern. Given their lack of solubility in water, the metals noted on Page 3 of the report would not leach into ground water from the soil. All samples from the study area were well within the Ontario Typical Range values.

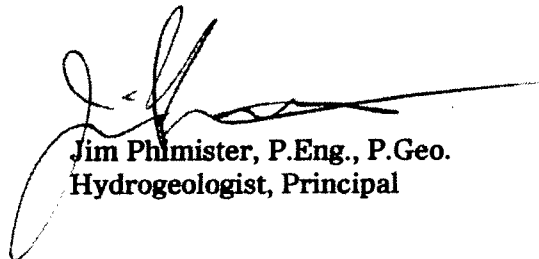
In summary, no concerns associated with the aggregates recycling facility and its potential impacts on the surrounding environment are identified. The report entitled *Environmental Impact Assessment, Northwest Corner of Rodick Road & Yorktech Road, Markham, Ontario* dated August 25, 2009 completed by Barenco Inc. adequately investigates all potential concerns associated with the subject property and concludes that no further environmental assessment or action is required.

I trust this accurately addresses all comments made in regards to the report. Please do not hesitate to contact me if you have any questions.

Yours very truly,
BARENCO INC.



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Environmental Scientist



Jim Phlmister, P.Eng., P.Geo.
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