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March 8, 2007

Mirka Januszkiewicz, P.Eng  
Director of Waste Management Services  
The Regional Municipality of Durham, Works Department  
605 Rossland Road, P.O. 623  
Whitby, Ontario, L1N 6A3

**Re: Brock Township Landfill Site, January 30, 2007 Remedial Action Plan  
Provincial Officer's Order 0117-6SJR2, Item #1**

Dear Ms. Januszkiewicz

Thank you for your January 30, 2007 submission in response to the October 13, 2006 Provincial Officers Order (the 'order') issued to Region of Durham relating to the Brock Township landfill site.

I have reviewed the Remedial Action Plan (RAP) submitted on January 30, 2007, prepared by Conestoga Rovers & Associates (CRA). The order requirement is reproduced below:

*Prepare and submit to the undersigned Provincial Officer a Remedial Action Plan to address landfill leachate impacts at the Brock Township Landfill Site. This plan shall address leachate impacts to off-site groundwater north of the Site, leachate discharge to the pond north of the Site and leachate break-out and seeps associated with the inactive eastern portion of the Site. The Remedial Action Plan shall include at a minimum:*

- *an assessment of Site conditions contributing to off-site leachate migration and on-site leachate outbreaks, including the depth and extent of wastes, soils conditions, presence and extent of interim and final cover; measures to address existing leachate impacts to off-site groundwater and surface water and on-site seeps measures to prevent future leachate impacts, and*
- *a proposed schedule for the completion of remedial works.*

The RAP includes a site assessment and proposes five measures to address landfill leachate including; acquisition of property to the north, landfill grading and final contours, an engineered cover system, a stormwater management system and a leachate management system. I am in agreement with some of the elements proposed in the Remedial Action Plan and anticipate that other components of the RAP may be more fully developed, or relate more directly to the second order requirement for the Site Operations Report (SOR). I have provided further comments below for each RAP element and my recommendations. Please feel free to contact me if you are interested in meeting to discuss either this review or the upcoming SOR.

## 1.0 RAP Site Assessment

CRA have provided a review of local well records, geology and hydrogeology to describe site conditions. In support of this assessment, the consultants also completed a subsurface investigation and site survey during October 2006 and January 2007. In summary, CRA estimates that the site contains 500,000m<sup>3</sup> of wastes and landfilling currently occurs at a rate of 6000t/yr. To delineate the depth and extent of wastes, CRA completed 11 testpits, 2 boreholes and 3 monitoring wells. The presence and extent of interim and final cover are not described, however CRA describes general cover practices as the use 15cm of daily cover with 30cm waste lifts. CRA concluded that the low fill rate at the site results in the 'over-usage' of interim and daily cover. I request the following clarifications to the information provided in response to the order requirement:

- 1.1 CRA acknowledge that there is insufficient buffer available to the west of the site, but no testpitting or other work was completed in this area. The report suggests that this area is infilled with fine grained soils however, no information to support this conclusion is provided;
- 1.2 CRA state that there are more pervious soils at the base of the waste area – this statement does not appear to apply to the entire disposal area based on the borehole records provided and the statement should be clarified;
- 1.3 No borehole logs are provided for the boreholes and monitoring wells completed by CRA in 2006;
- 1.4 No information is provided about the site topographical survey provided in Drawing 1 (i.e. when completed, by whom, reference/benchmark used) nor is it discussed in the text of the RAP. Drawing 1 also includes reference to some parts of the property as 'disturbed' (south of active western lobe) and 'distressed' (east of inactive eastern lobe) however this is never discussed in the RAP.

## 2.0 Acquisition of Buffer Lands to the North

The RAP has proposed acquisition of property to the north as a buffer area and to allow the Region to complete 'repairs in a safe manner'. Section 3.3 states that a 100m buffer to the north is required in the 2<sup>nd</sup> paragraph, but states that 150m is required in the following paragraph. It is not clear in the RAP what purpose the buffer would serve – a change in ownership does not mitigate the off-site impacts and measures would still be required regardless of ownership to either register a Contaminant Attenuation Zone on the property title or undertake remedial actions. It is unclear if the 'repairs' alluded to in the RAP are specific to the off-site impacted area or refer to the on-site works including the perimeter ditch and access road. Nothing presented in the RAP addresses the leachate impacts to the north of the Brock LFS. The following concerns with this component of the RAP require clarification:

- 2.1 What will be accomplished through the acquisition of this property, and why is ownership of the property required given the previous cooperation of the property owners;
- 2.2 Would confirmatory wells be installed to monitor the edge of the proposed buffer area;
- 2.3 What actions will be taken on the property to address the current leachate impacts and groundwater flow towards the off-site pond (described in the RAP as the 'low-lying area that resembles a historical sand and gravel mining excavation').

## 3.0 Grading/Contouring

Section 4.0 of the RAP recommends positive grading at the site to minimize infiltration and reduce leachate generation. Site grading is a good operational practice, however, I wish to note that grading is unrelated to either fill rate, site capacity or final contours. Section 4.2 of the RAP states that additional

wastes are required to achieve a 'minimum safe condition' and again, I must reiterate that present site grades are independent of final contours and the latter are more appropriately discussed in the upcoming SOR. I agree that site grading should be undertaken to ensure there are no depressions or ponded water on the wastes. Final contours and fill rates should be discussed with supporting rationale in the upcoming SOR.

#### **4.0 Engineered Cover System**

Very little detail is presented in the RAP to describe either the construction or placement of cover. Drawing 5 provides significantly more information than the text about the proposed cover which will include 10cm of topsoil over a fill layer, geotextile, stone drainage layer, and a HDPE geomembrane liner between two geotextile cushion layers. It is not clear in the RAP if progressive cover installation is planned. If cover placement is related to the completion of filling activities it would be more appropriately discussed and supported in the SOR. I have the following comments relating to this component of the RAP:

- 4.1 The timing for this component is not provided. Are there immediate plans to install the cover system in the current inactive parts of the landfill?

#### **5.0 Stormwater Management System**

The RAP proposes a stormwater management system comprising a perimeter ditch/swale and stormwater retention pond with an outlet to the wetland. Again, very little detail is provided in the text of the report and Drawing 5 provides more descriptive figures which include a geotextile and geosynthetic clay liner for the stormwater pond and pond depths and overflow elevations. Based on the very preliminary information provided in the RAP, it appears that there will be no segregation of runoff in contact with the wastes which would be discharged to the wetland. I agree with the RAP recommendation that stormwater management at the site will help reduce leachate generation, however, I have the following comments on this part of the RAP proposal:

- 5.1 The stormwater works will require approval under S.53 of the Ontario Water Resources Act and this application will require much detailed information about the system design and effluent quality;
- 5.2 Section 4.0 of the RAP describes 'interim drainage works' and section 4.4 describes 'further recovery of leachate impacted lands as noted for interim works'. What are interim drainage works and do these constitute part of the stormwater management plan.

#### **6.0 Leachate Management System**

The final RAP element is a leachate collection system comprising a toe drain around the southern and eastern perimeter of the wastes and trucking the leachate to one of the Region's sewage plants. Leachate collection is the most significant element of the RAP and would likely achieve the greatest results to cut off leachate migration and alleviate leachate seeps. However, very little detail is provided in the RAP (Drawing 5 again has the most information) and I have a number of concerns with the proposal:

- 6.1 Given the acknowledgement of radial groundwater flow, off-site impacts to the north and the lack of information about western site conditions, why is leachate collection only proposed to the east and south?
- 6.2 The leachate collection system will also require a S.53 Ontario Water Resources Act Approval and this application should describe the system construction (i.e. Drawing 5 suggests that some parts of the toe drain will be constructed into the current waste footprint), system grading (the same drawing suggests the toe drain will be gravity drained) and receiver capacity at a minimum.

In general, I am in agreement that leachate collection, stormwater management and site grading will contribute to the remediation of current leachate impacts to the south and east. The RAP does not include a satisfactory proposal to address existing leachate impacts to the north and further information is needed. The final contours and cover system presented in the RAP should be examined as part of the upcoming SOR. I look forward to your response to my comments either under a separate cover or where appropriate, in the SOR report.

If you have any further questions, please contact me at (905) 427-5624 or electronically at [Andrea.J.Brown@Ontario.ca](mailto:Andrea.J.Brown@Ontario.ca)

Yours truly



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cc: M. Whitbread, Region of Durham  
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