

STAFF REPORT: ENGINEERING & PUBLIC WORKS SOLID WASTE DIVISION



REPORT TO: Infrastructure & Recreation Committee
MEETING DATE: January 12, 2010
REPORT NO.: EPW.10.003
SUBJECT: Solid Waste Disposal Site
 Annual Report 2008
PREPARED BY: Jeffery Fletcher, Manager of Solid Waste and
 Environmental Initiatives

A. Recommendations

THAT Council receives Staff Report EPW.10.003 entitled "Solid Waste Disposal Site Annual Report 2008" for their information.

B. Background

The Town is required to complete an Annual Report on the Solid Waste Disposal Site for submission to the Ministry of Environment District (MOE) Office. The 2008 Annual Report was provided to the MOE on April 15, 2009. This report included information on type and quantity of all wastes received and transferred, discussion of negative impacts discovered during inspections, operating procedures, detailed results of leachate, surface and ground water monitoring, site capacity and compliance, and a discussion of recycling programs.

The above information was provided in four documents:

1. Annual Solid Waste Report;
2. Annual Water Monitoring Report;
3. Water-Quality Assessment of Indian Brook (every 5 years); and
4. Closure and Post-Closure Care Cost Estimates.

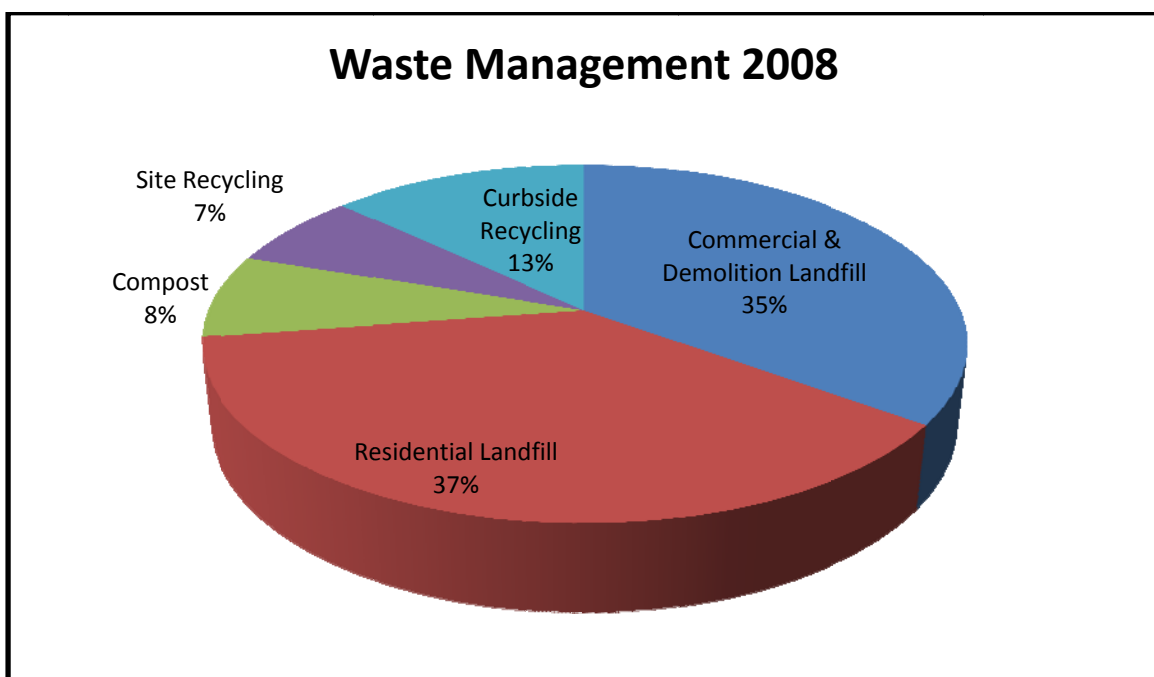
The Town retained Golder Associates Limited (Golder) to prepare all of the above reports, except the Water-Quality Assessment which was prepared by Tarandus Associates Limited. The reports include detailed information of waste managed at the site as provided by Town Staff and the Water Monitoring and Quality Reports provide an assessment of Site boundary compliance and an evaluation of future Site monitoring requirements and the health of the Indian Brook.

Annual Solid Waste Report

The list below is some of the notable conclusions and recommendations that were provided by Golder based on the findings of the Annual Solid Waste Report for the period ending December 31, 2008.

1. An estimated landfill capacity of 11,200m³ was consumed in 2008. This rate of landfill capacity consumption results in a remaining Site life of approximately 3.5 years.
2. A majority of the conditions of the Certificate of Approval have been met. Outstanding items currently being addressed include illegal access to the Site, improvements to daily covering practices and development of a new hazardous waste receiving and storage area.
3. The Landfill has resulted in slight impacts to the local groundwater, primarily to the east of the closed Thornbury Landfill. Water quality in Indian Brook does not appear to be impacted by the Landfill operations and impact to the upper and lower aquifers is consistent with previous years.
4. Several initiatives, including recycling, composting and using chipped wood products and interim cover, have successfully increased the waste diversion of the Town and have extended the Site life.
5. Records indicate that the total diversion rate including Site activities and curbside recycling was 28% for 2008.
6. A vegetative cover should be established on all areas that previously received final cover to prevent erosion of the cover material.
7. The active area of the Landfill should be minimized to facilitate compaction and covering operations.
8. The Town should continue to address litter control issues and ensure adequate covering of waste on a daily basis.
9. The illegal access points to the Landfill should continue to be addressed, such that vehicular access to the Landfill be limited to the gate only.
10. The Town should continue the on-going training of the Landfill operators.

The graph below represents percentages of waste managed under the five general areas as indicated beside the pie chart.



Annual Water Monitoring Report

The list below is some of the notable conclusions and recommendations that were provided by Golder based on the findings of the Annual Water Monitoring Report. Attachment #1 shows the location of monitoring wells (BH-boreholes) and inferred direction of ground water flow among other perimeters. See Attachment #1 to reference the location of the monitoring wells as discussed below:

1. The ground water under the Landfill includes two aquifer units referred to as the Upper and Lower Aquifers. Flow in the Upper Aquifer generally radiates from the central Landfill areas.
2. Water levels measured in both the Upper and Lower Aquifers in November of 2008 typically increased 0.33 m and 1.86 m in comparison to those recorded in November 2007.
3. The impacted groundwater from the Landfill Site is migrating eastward in the Upper Aquifer on off-site lands, as characterized by sulphate exceeding the Reasonable Use Criteria (RUC) at BH (borehole)19 (1,400 mg/L). Impacts, as defined by low to moderate concentrations of chloride (less than 50mg/L), are also observed under off-site lands to the north and west in the Upper Aquifer, at BH22 and BH21#1 and in the Lower Aquifer, at BH7 and BH8.
4. The RUC for nitrate is exceeded at BH12 and BH24. These nitrate exceedances are considered to be most likely from agricultural inputs, however landfill source for BH12 cannot be entirely ruled out.
5. Private wells and/or residences located to the north and west are located at least 500 m from the licensed fill area of the Landfill. Based upon the observed extent and migration path of the existing contamination, the private wells will not likely be impacted by the Landfill in the near future.
6. A Contamination Attenuation Zone (CAZ) is required in the area east of the Landfill Site. Similarly, a CAZ may ultimately be required to the south and west of the Site.

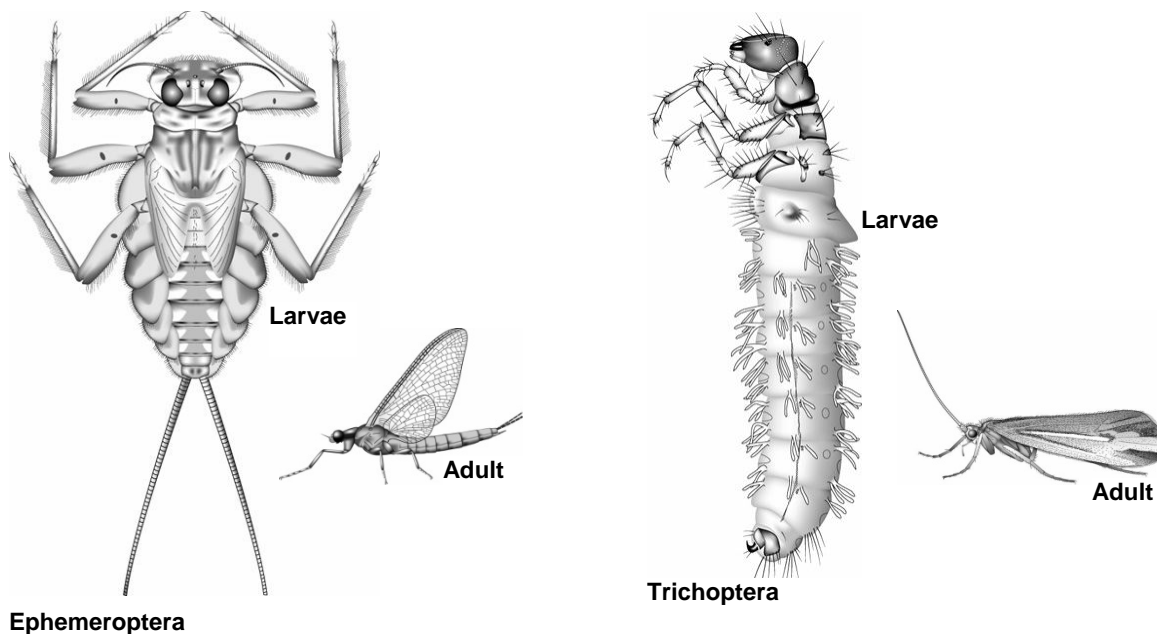
Water Quality Assessment Report

The list below is some of the notable conclusions that were provided by Tarandus Associates Limited based on the findings of the Water Quality Assessment conducted on upstream and downstream location from the Landfill.

1. Analysis at both stream sampling locations suggests unimpaired water quality. Because of the relatively small sample size (21 individual organisms) collected at station 2, the Water Quality Index (indication of water quality based on type of species present) should not be considered definitive.
2. Macro organism densities at both stations in 2008 were lower than or similar to those of previous years. However the trends in species richness are not attributable to the Disposal Site.

3. Biological metrics indicated similar water-quality conditions at the upstream and downstream stations, demonstrating no impairment attributable to the Landfill Site. Differences between upstream and downstream metrics were small and likely the result of normal sampling variation or differences in site characteristics.
4. Examination of historical chemical water-quality data collected during 19 surveys dating from 1981 reveals no discernable trend for any parameter. With the exception of outliers virtually all water-quality results upstream and downstream are within relevant provincial and national guidelines.
5. There is no indication that the Town's Landfill Site is affecting any of the water-quality parameters monitored during the study period.

The existence of stream invertebrates in the Indian Brook is invaluable. They are a constant and vigilant observer providing an indication of the rivers chemistry and health. The current combination of biomass and diversity shown by the study are indicating good stream health. Below are two examples of stream invertebrates. These insects are found in the river bed in the larvae stage of life.



Closure and Post-Closure Care Cost Estimates

This portion of the annual reporting updates closure and post closure care of the existing Disposal Site. The analysis considers required capping and current construction costs. Using a potential closure year of 2012 and adding an appropriate amount of inflation the total required closure amount is \$1,354,700. In addition post closure operational costs will require \$18,000 annually in perpetuity for site monitoring and maintenance.

This closure calculation is based on 2.5 years of existing approved disposal capacity. In recognition of the approaching capacity constraint, Staff with hired Engineering firm Golder is moving through an Environmental Screening process for an expansion of the Site's disposal capacity. The planned completion date for the Environmental Screening phase is May 2010. The next phase of approval involves permitting a detailed design and operations plan and the associated Certificate of Approval. Staff will be bringing forward to Committee a detailed report on the status of the Environmental Screening, timelines and financial considerations.

C. The Blue Mountains' Strategic Plan

This activity in part satisfies Town Strategic Goal 2. "Addressing the Town's municipal infrastructure needs", and contributes to Strategic Action 2.5 "Develop a waste management strategy to meet diversion targets and address landfill capacity".

D. Environmental Impacts

This activity of study and monitoring is the basis for our understanding of the impacts of the Site on the adjacent natural environment and the success of the Site's related waste diversion programs.

E. Budget Impact

None.

F. Attached

1. The Blue Mountains Disposal Site - Upper Aquifer 2008

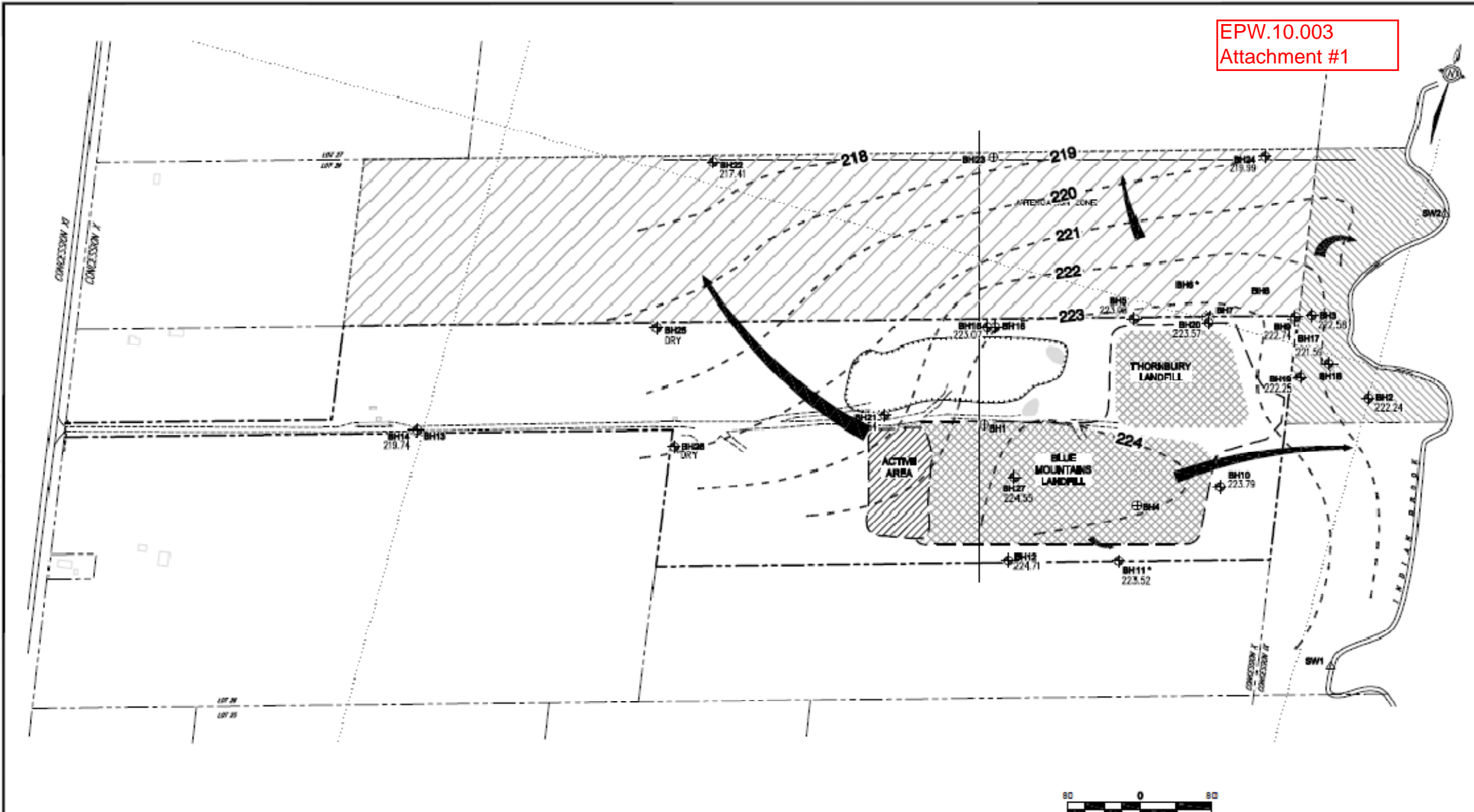
Respectfully submitted,

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LEGEND:

- SITE BOUNDARY
- APPROX. LIMIT OF LANDFILL
- ATTENUATION BOUNDARY
- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- SCREEN CONSTRUCTED IN UPPER SAND TILL

- 219.74 STATIC WATER ELEVATION NOV 2008 (masl)
- 219 EQUIPOTENTIAL LINE (masl)
- INFERRED DIRECTION OF GROUNDWATER FLOW



PLOT DATE: March 11, 2009
 FILENAME: T:\Projects\2007\07-1170-0035 (Blue Mountains LF 2007)\CA-Water\08\0711700035CACH.dwg [PS]

 Golden Associates Barrie, Ontario, Canada	SCALE: 1:4000	POTENTIOMETRIC SURFACE UPPER AQUIFER 2008	TOWN OF THE BLUE MOUNTAINS LANDFILL 2008 ANNUAL WATER MONITORING REPORT	PAGE 5
	DATE: 10 MAR 2009			
FILE No: 0711700035CACH.dwg	DESIGN: JDR	CHECK: LJ		
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