



Report to: General Committee

Date Report Authored: March 18, 2011

SUBJECT: Former Sabiston Landfill Site – Information & Status Update
PREPARED BY: Robert Penner, ext. 4550
Prathapan Kumar, ext. 2989

RECOMMENDATION:

- 1) THAT the report entitled “Former Sabiston Landfill Site – Information & Status Update” be received;
- 2) AND THAT the CAO be authorized to enter into necessary agreements with the National Spiritual Assembly of Baha’i of Canada and the Bayview Golf and Country Club for the purpose of carrying out investigation work on their properties, to the satisfaction of the CAO;
- 3) AND THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.

EXECUTIVE SUMMARY:

N/A

PURPOSE:

The purpose of this report is to provide Council with background information on the Former Sabiston Landfill Site within Settlers Park, the continuing management program for the site and the need for an agreement with the National Spiritual Assembly of Baha’i of Canada and the Bayview Golf and Country Club for the purpose of carrying out investigation work on their properties.

BACKGROUND:

Site Location and History

Settlers Park is approximately 26 hectares of passive parkland located south of John St., west of Don Mills Road and north of the Leslie Street extension at Steeles Avenue (Figure 1).

Previous land uses at the site included aggregate extraction and a private landfill operation. Extraction of sand began in the 1940’s. Landfill operations by James Sabiston Ltd. (Sabiston) began in the 1960’s and ended in 1975.

Staff gave a presentation to the General Committee on March 23, 2009 on Former Sabiston Landfill Site status and was authorized to host a public information meeting on the remedial options and to report back to the General Committee with the results. The public information meeting was not held as staff worked with the Ministry of the Environment (MOE) to obtain an update to the Certification of Authorization (CofA - Air) and to prepare an Operations Procedures and Maintenance Manual for the site. These tasks were completed in 2009.

Gas Collection System and Monitoring

After the landfill was completed and closed in 1975, the Ministry of the Environment (MOE) ordered Sabiston to install gas collection wells along the north and west boundaries of the landfill to prevent methane gas from migrating onto the abutting residential properties via subsurface deposits. Sabiston installed the gas collection system in 1983 and the Town took over operation of the system in 1984 when the Town took ownership of the property.

The gas monitoring network includes gas probes along the western and northern boundaries of the landfill site (See Figure 2). Since December 2005 there have been ten (10) instances when methane levels along the landfill property border have been above the compliance level of 2.5 vol %. Each occurrence has been mitigated and no exceedance has occurred since March 2010. Asset Management continues to operate and monitor the gas collection system which was overhauled and/or repaired in 2001, 2009 and in 2010.

The landfill is estimated to produce 1,000 to 2,000 tonnes of methane gas per year, based on preliminary gas emission modeling and Environment Canada landfill surveys. This is equivalent to 20,000 to 40,000 tonnes of carbon dioxide emissions per year.

Environmental System and Monitoring

Asset Management manages an environmental monitoring program at the site which includes measurements of ground water and creek water quality and specifically tests for a number of substances which are defined as leachate indicators. Figure 3 shows the components of the environmental monitoring system. Leachate is generated from liquids existing in the waste as it enters a landfill or from rainwater that passes through the waste within the facility.

Two aquifers exist beneath Settlers Park. The upper aquifer is located immediately below the landfill and groundwater in this aquifer flows to the south, parallel to German Mills Creek. The lower aquifer is located in a deep bedrock valley beneath the park and was formerly used to supply water by wells for the Town in the 1940's to 1970's.

The water quality in German Mills Creek has been monitored annually since 2002. Water samples were collected upstream and downstream of the landfill. Comparison of the upstream and downstream water samples indicates that the landfill leachate does not cause a significant impact to German Mills Creek. This is largely due to the fact that the flow in the stream is several hundred times greater than the groundwater flow beneath the landfill.

The 2011/2012 management program includes a feasibility study to further evaluate leachate generation and migration at the site and to determine the need, costs and benefits of a leachate collection system. The results of this study will be presented to the Council at a future date when it is completed.

Landfill Site Management by Asset Management

In 2009 Asset Management updated the Ministry of the Environment (MOE) Certificate of Approval (C of Air) and produced an Operating Procedures and Maintenance Manual defining the operating and maintenance procedures for the gas collection and environmental monitoring systems. An Environmental Consultant is retained annually to carry out the gas and

environmental sampling, inspect the site and to recommend remedial works required to the system components.

In the summer of 2010, extensive series of repairs/upgrades were completed on the gas collection and the environmental monitoring systems. This included the addition of two new gas probes at areas of the property boundary that were not being monitored (GP1-10 and GP2-10 on Figure 2) and four additional groundwater wells to increase the ground water testing capabilities and to better identify the migration of any leachate (Figure 3).

Methane Gas Concentrations Assessment

On September 10, 2010 Gas probe GP2-10 was installed at the south property boundary of the site and tested for high concentrations of methane. The readings are shown below:

Sept 26, 2010	36.3 vol%
Oct 1, 2010	0.0 vol%
Oct 8, 2010	33.8 vol%
Oct 15, 2010	37.3 vol%
Oct 22, 2010	8.6 vol%
Dec 3, 2010	0.0 vol%
Dec 7, 2010	0.0 vol%
March 9, 2011	17.7 vol%

According to the Operating Procedures & Maintenance Manual for this landfill site, the appropriate process to address a condition of methane readings above the trigger criteria includes the following actions:

Step 1: Verification and Notification to the Ministry of the Environment (MOE)

Step 2: Assessment

Step 3: Evaluation

Step 4: Implementation

Immediately south of the site at the location of GP2-10, is a parcel of land owned by the National Spiritual Assembly of the Baha'i of Canada and further south is the Bayview Golf and Country Club golf course land with four buildings (Figure 4).

The Town has informed the MOE and the adjacent landowners in writing of the high methane detection at this location. The Town is committed to mitigate instances of high methane and to notify the MOE. As a proactive measure the Town carried out indoor air monitoring inside the golf course buildings which indicated no detectable methane.

OPTIONS/ DISCUSSION:

Site Management - continuation of the current procedures and technology (anaerobic)

The organic waste in landfills typically takes over 100 years to fully decompose. Decomposition of the waste material will proceed slowly under anaerobic (no oxygen) conditions. The land will be left in its existing natural state without disturbance to the wildlife habitat. Over the last three years management and operation costs have averaged approximately \$112,000 per year funded from Capital Accounts Rehabilitation of the Gas System at Sabiston Landfill #750-101-5399-8282 and Settlers Park Landfill # 058-6150-8529-005. Continuing future monitoring/

maintenance/ rehabilitation costs using current management procedures and for additional mitigation and leachate management activities is estimated to be \$170,000 per year. The Town's lifecycle reserves include these amounts.

Mitigation of high methane concentrations at the southern boundary

The Town is committed to mitigate instances of high methane within the landfill site. In order to determine the most appropriate remedial measures to eliminate the high methane concentrations at the southern boundary, it is necessary to delineate the extent of the landfill within the adjacent properties and to install two gas probes within the golf course lands at the limits of the landfill. Bayview Golf and Country Club and the National Spiritual Assembly of Baha'i of Canada have no objection to the Town carrying out the exploratory works within their properties. The Town needs to enter into agreements with the Bayview Golf and Country Club and the National Spiritual Assembly of Baha'i of Canada prior to the exploratory investigation works.

Future Council Reports

Staff is currently reviewing the following two issues and will update Council in the near future:

- (a) Potential aerobic test program on a small scale (100 x 150m) within the Landfill site:

The organic waste in landfills typically takes over 100 years to fully decompose. Decomposition of the waste material will proceed slowly under anaerobic (no oxygen) conditions. Aerobic process achieves much more rapid stabilization of the waste than anaerobic process and will shorten the waste decomposition process by decades and in the long run will reduce the maintenance cost to the Town. The staff is working with Seneca College and a Consultant and will provide more details of the aerobic process at a later date.

- (b) MOE Compliance Requirement:

In March 2011, the Ministry of the Environment (MOE) directed the Town to submit a more stringent and expanded plan to monitor methane gas concentrations at the residences bordering the north and west boundaries of the landfill site. The staff is in the process of developing a plan and will request Council approval on the proposed plan at a later date.

FINANCIAL CONSIDERATIONS AND TEMPLATE: (external link)

Not Applicable

HUMAN RESOURCES CONSIDERATIONS:

Not Applicable

ALIGNMENT WITH STRATEGIC PRIORITIES:

Not Applicable

BUSINESS UNITS CONSULTED AND AFFECTED:

The Legal Department was consulted and provided input to the report.

RECOMMENDED

BY: _____
Gary Adamkowski, P. Eng.
Director, Asset Management

BY: _____
Brenda Librecz
Commissioner, Community & Fire Services

ATTACHMENTS:

- Figure 1 – Site Location
- Figure 2 – Components of Gas Monitoring System
- Figure 3 – Components of Environmental Monitoring System
- Figure 4 – Gas Probe GP2-10

q:\commission share\operations and asset management\reports\asset management\2011\sabiston landfill\former sabiston landfill site - information status update south boundary.doc