AECOM

**Clean Harbors Canada, Inc**

# Supporting Document No. 1 - Rationale for the Undertaking

Prepared by:

**AECOM Canada Ltd.**
300 – 300 Town Centre Boulevard, Markham, ON, Canada L3R 5Z6
T 905.477.8400 F 905.477.1456 www.aecom.com

Project Number:

111471

Date:

October, 2009

# Table of Contents



## List of Figures



## List of Tables

# 1. Introduction

Clean Harbors Canada, Inc. provides an efficient, vertically integrated suite of hazardous waste management services to its clients through its established business in Lambton County, the Province of Ontario and across North America. Clean Harbors' services at the Lambton Facility include hazardous waste testing and analysis, treatment and processing, incineration and landfill disposal. The Lambton Facility is located in St. Clair Township, Lambton County.

Clean Harbors provides contracted services for the collection, transportation, processing, recycling and disposal of hazardous wastes. These services are delivered through an integrated network of waste management programs and facilities throughout Ontario. Clean Harbors also operates many of these programs and facilities as part of a larger company-wide network in order to efficiently and effectively serve customers from across North America. It is the company's intention to continue to provide these services.

The Clean Harbors Lambton landfill is expected to reach its currently approved capacity by the end of 2012. Given the role of the landfill within the company's business operations and to waste generators within Ontario and North America, Clean Harbors intends to consider the future operating role of this facility.

This supporting document outlines Clean Harbors' analysis confirming the requirement for an expansion of the Lambton landfill disposal capacity as the proposed undertaking. Clean Harbors has initiated an EA to provide for the ongoing operation of the Lambton landfill.

During the preparation of the ToR for this EA, Clean Harbors consulted with stakeholders and the public on the rationale for the proposed undertaking. The comments received have been considered in the development of this supporting document.

The rationale for the proposed undertaking was identified by Clean Harbors based on an analysis of the problems and opportunities as described in the following sections.

# 2. Problem Assessment

Hazardous waste is largely a by-product of industrial and commercial activities and processes although it may also be generated through other sources including agriculture, household products and waste disposal. While significant reduction and recycling of hazardous materials occurs, a portion of this material will continue to be generated and require proper management through disposal.

## 2.1 Overview of the North American Hazardous Waste Market

Hazardous waste management in North America is integrated across the Canadian and United States border. Wastes are imported and exported between the two countries, reducing haul distances and the need for duplication of services and facilities. The two countries have had an agreement on the transboundary movement of hazardous waste since 1985. This internationally integrated approach to hazardous waste management is regulated in Canada by the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*, which came into effect on November 1, 2005. This regulation ensures that trans-boundary movement of hazardous waste and hazardous recyclable material is done in a manner that ensures public and environmental safety, and in particular that materials are transferred to authorized facilities.

The integration of the North American hazardous waste industry is demonstrated by the import and export of hazardous waste and hazardous recyclables across the Canada / United States border. Official published data are available only up to 2005. In 2005, it is estimated that 476,416 tonnes of hazardous waste and hazardous recyclable materials were imported into Canada, with over 99% of this material coming from the United States.[1] Approximately two-thirds of this imported material was hazardous waste with the remainder being hazardous recyclables. Export volumes of hazardous waste and hazardous recyclable materials from Canada in 2005 were 327,746 tonnes. Approximately one-third of the exports were hazardous waste sent for disposal or treatment.[2] Overall, Canada is a net importer of hazardous waste for pre-treatment and disposal, and a net exporter of hazardous recyclable materials. The majority of hazardous waste imported into Canada is sent for treatment and disposal in either Quebec or Ontario.

Approximately six million tonnes of hazardous wastes are generated in Canada as a by-product of industrial activities.[3] While some industries choose to develop facilities to manage their hazardous process waste on-site, other businesses and government agencies are reliant on the private sector for hazardous waste management services.

Although there is a wide range of hazardous waste treatment and transfer facilities across Canada, there are only a few hazardous waste landfill sites. The only commercially licensed hazardous waste landfill in Ontario is the Clean Harbors landfill in Lambton County. This has been the situation since the 1960's. There are three other commercial hazardous waste landfills in Canada; the Clean Harbors facility in Ryley, Alberta, the Pembina Area landfill in Alberta, and the Marsulex facility in Blaineville, Quebec. The Lambton, Ryley and Pembina sites are permitted to accept all hazardous wastes with the exception of explosives, PCBs (Lambton only), radioactive and pathological wastes. However, the Ryley and Pembina facilities are not permitted to accept imported hazardous waste for disposal. The Marsulex facility accepts inorganic hazardous waste and contaminated soils with limited levels of organics.

1. *"Backgrounder – Hazardous Waste and Hazardous Recyclable Material Management in Canada 2005 Annual Statistics on Exports and Imports", Statistics Canada, http://www.ec.gc.ca/drgd-wrmd/default.asp?lang=En&n=F345CA54-1*
2. *"Backgrounder – Hazardous Waste and Hazardous Recyclable Material Management in Canada 2005 Annual Statistics on Exports and Imports", Statistics Canada, http://www.ec.gc.ca/drgd-wrmd/default.asp?lang=En&n=F345CA54-1*
3. *"Waste Management; Canada – U.S.A. Agreement", Environment Canada, March, 2006. http://www.ec.gc.ca/drgd-wrmd/default.asp?lang=En&n=E31AE77A-1*

Within the Great Lakes region there are four hazardous waste landfills operating in the United States. These landfills include: the EQ Company facility in Belleville, Michigan; the Heritage Environmental facility in Roachdale, Indiana; the Peoria facility in Pottstown, Illinois; and, the Waste Management facility in Model City, New York. All of these landfills are permitted to accept a wide range of hazardous waste meeting the US land disposal restrictions.

## 2.2 Overview of the Ontario Hazardous Waste Marketplace

The Ontario Ministry of the Environment (MOE) has estimated that 40% of hazardous waste generated in Ontario is managed by the generator on-site, while the remaining 60% is transferred off-site to a commercial facility for treatment and/or disposal.[4] The MOE Hazardous Waste Database documents the transfer of hazardous and liquid industrial wastes from generators to receivers. Records indicate that in 2005, the 60% of hazardous waste transferred off-site for management was approximately 1.7 million tonnes, and was transferred to locations in Ontario, other provinces, and the United States.

The commercial hazardous waste management industry provides a range of services and treatment options that can be used to minimize or eliminate hazardous properties, stabilize the waste, or reduce the volume of waste, prior to final disposal. The MOE Hazardous Waste Database indicates that in 2005, approximately 1.6 million tonnes of hazardous and liquid industrial wastes were received for management by facilities in Ontario. These wastes came from sources in Ontario, other provinces, and the United States. The majority of hazardous and liquid industrial wastes received by facilities in Ontario are destined for water pollution control plants (36%), or to transfer stations to be sent for further processing (25%). The percentage of waste based on receiver type is shown in Table 1. Landfill in comparison only receives 8% of the hazardous waste stream in Ontario. In 2005, water pollution control plants received 693,497 tonnes of hazardous and liquid industrial waste transfers in Ontario, in comparison to landfill which received 144,629 tonnes.

**Table 1 Hazardous and Liquid Waste Transfers in Ontario by Receiving Facility Type[5]**

| Transfer | 1994 | 2000 | 2002 | 2004 | 2005 |
|---|---|---|---|---|---|
| Water pollution control plant | 36% | 30% | 35% | 37% | 36% |
| Transfer station - processing | 18% | 18% | 26% | 24% | 26% |
| Shipped out of province | Unknown | 12% | 13% | 14% | 15% |
| **Landfill** | **9%** | **13%** | **8%** | **8%** | **8%** |
| Reclaim | 9% | 7% | 7% | 7% | 7% |
| Transfer station | 19% | 14% | 6% | 5% | 5% |
| Incineration | 7% | 6% | 4% | 4% | 4% |
| Private landfill and sludge farms | 2% | 1% | 1% | 1% | 0% |

4. *Hazardous Waste in Ontario: Progress and Challenges; 2007 Status Report", Canadian Institute for Environmental Law and Policy, 2007.*
5. Calculated based upon information from *Hazardous Waste in Ontario: Progress and Challenges; 2007 Status Report", Canadian Institute for Environmental Law and Policy, 2007.*

The MOE estimates that the primary metals, petroleum refining, transportation equipment, fabricated metal products, and chemical and chemical products sectors account for approximately 75% of the hazardous waste that is being land disposed (i.e., landfilled) in Ontario, with the remainder coming from other sectors in the province.[6] These ongoing industrial activities in the region provide a baseline of demand for hazardous waste landfill disposal services. In addition to this baseline demand there is also "event based" business. Event based business is attributable to large scale contaminated site remediation projects where impacted soils are removed, transferred for treatment and/or disposal. These "one-off" events can cause significant variations in the waste received from year to year and can be influenced by such factors as economic conditions and the regulatory environment.

The Land Disposal Restrictions (LDR) Regulation (O. Reg. 461/05) became law in Ontario in 2005 and was phased in for characteristic inorganic wastes in September, 2007. The regulation for characteristic organic and mixed wastes will be effective January 1, 2010. Characteristic hazardous wastes are ignitable, corrosive, reactive and leachate toxic, but are considered suitable for landfill disposal once the characteristic is removed and the waste treated to the new standard. The LDR Regulation requires the pre-treatment of hazardous waste prior to landfill disposal similar to standards currently in place in the United States, reducing the risk of groundwater and other off-site contamination. Once the LDR regulation is fully implemented some impact on waste generation and management practices may be observed. Pre-treatment of hazardous waste will increase disposal costs and may result in a decrease of material being sent for landfill disposal. However, any volume decrease in waste generated is likely to be offset by the increased volume of the treated waste, due to the addition of reagent in the pre-treatment process.

## 2.3 Clean Harbors' Role within the Hazardous Waste Marketplace

Clean Harbors operates a series of integrated networks of hazardous material management facilities in North America. Localized satellite service centres collect hazardous materials where required by the marketplace for environmental services. Materials are then directed to regional transfer, storage, and disposal facilities (TSDF) that may offer services such as resource recovery, biological treatment, wastewater treatment, and recycling. Materials requiring specialized pre-treatment, such as incineration or disposal, are then transferred from the regional TSDFs to an ultimate disposal facility. This system has allowed Clean Harbors to develop internal operating standards and achieve a higher degree of operating efficiency while still remaining responsive to marketplace and regulatory changes. A specialized transportation network and linkage between facilities have allowed the company to provide a complete range of services to potential customers.

Clean Harbors intends to maintain the Lambton Facility as its central disposal facility, servicing the Great Lakes region. In addition to material received from the Clean Harbors network of service centres, the facility accepts waste from manufacturers, contaminated site remediation, and other generators. Specialized services at the facility include a laboratory for waste testing and analysis, an inorganic pre-treatment plant, an acid and alkali pre-treatment plant, a liquid waste injection incinerator and a landfill.

6. *"Fact Sheet: Pre-Treatment Rules for Hazardous Waste", Ministry of the Environment, 2005.*

The Lambton landfill plays a significant role in the Great Lakes region. It is estimated that approximately 40% of the hazardous waste landfilled at commercial sites annually in Canada is sent to the Lambton Facility. Southwestern Ontario is the most highly industrialized region in Canada, and the pre-treatment and disposal facilities in Lambton provide these regional industries with a local option for hazardous waste disposal. Clean Harbors estimate that approximately 70% of the average annual demand for landfill disposal at the Lambton facility is manufacturing process waste. The demand for the disposal of contaminated soils makes up the remainder of the landfilling requirement.

It is estimated that the Lambton landfill will reach its currently approved capacity by the end of 2012. The reduction in disposal capacity from the closure of this site would place significant pressure on other existing Canadian and American hazardous waste landfill sites. Hazardous waste generated by Ontario businesses and industries would require transfer to Quebec or the United States, increasing transfer and disposal costs. Efficiencies gained through the Clean Harbors network of regional facilities utilizing the Lambton landfill as a centralized disposal facility would be decreased.

Based on the above, it is evident that there is a need for Clean Harbors to continue providing hazardous waste landfill disposal capacity on an ongoing basis in Ontario.

# 3. Opportunity Assessment

The problems described in the preceding analysis confirm the opportunity for Clean Harbors to continue to provide landfill disposal services for hazardous wastes. The following sections describe the opportunity that is available for Clean Harbors.

## 3.1 Clean Harbors Integrated Waste Management System

Clean Harbors has a North American wide network of integrated waste management facilities that allows the company to offer a single point of service to all of its customers and a range of industries. Small waste generators have equal access to the complete set of Clean Harbors' services, through the network of local service centers. In addition, individual householders have the ability to participate in household hazardous waste programs sponsored by Clean Harbors or through their local municipality, who in turn utilize Clean Harbors' services. Clean Harbors also offers consultation services to its commercial and industrial clients to identify hazardous waste streams and develop plans to reduce, reuse, or recycle this material.

Various recycling facilities and technologies are available in Ontario through Clean Harbors' integrated system. Clean Harbors' Niagara transfer, recycling and processing facility is located in southern Ontario in the city of Thorold and has historically serviced Canada, the United States and Basel Signatory Countries. The facility has been utilized for pre-treatment and consolidation of laboratory pack and drummed wastes prior to final disposal, including neutralization, recycling, repackaging, and laboratory pack processing for

fuels blending. The Mississauga facility serves all areas of the Golden Horseshoe of Ontario, as well as adjacent areas of the United States. This facility is fully permitted to process and transfer a wide variety of regulated and non-regulated waste materials and specializes in fuels blending. Clean Harbors' Guelph transfer and processing facility services southern Ontario, particularly the Golden Horseshoe area and eastern United States. The facility is fully permitted to manage liquid industrial waste and some corrosives in bulk, and is utilized to cost effectively treat oily water and non-hazardous sludge.

Specialized services not available within the Canadian network are accessible to Clean Harbors' clients through the company's extended network of facilities across North America. Solvent recycling facilities in the United States are capable of recycling solvents to high quality specifications. Clean Harbors' Oil Recycling Services collects and processes oil and oil related materials for beneficial reuse including waste oil, oil - water mixtures, absorbent material, oil filters, and used antifreeze through a network of company owned and operated oil recycling and processing facilities. Waste streams that cannot be returned to their original state for reuse are prepared for different application, such as fuel blending to use as an alternative energy source for cement production. Clean Harbors endeavors to use recycled fuel such as waste oil, alternative fuels and comparable fuels within their own incineration processes whenever they are available. Recycling programs are also offered for other materials including paint, fluorescent tubes, fuels, batteries, waste electronic and electrical equipment, and a wide range of off-specification products. Specialized disposal services are also available in the United States such as PCB disposal and rotary kiln treatment for hazardous wastes that do not meet the Ontario Land Disposal Restrictions.

The Lambton landfill plays a significant role in the hazardous waste disposal infrastructure of eastern Canada and the northeastern United States. Through their integrated system, Clean Harbors offers their clients a full range of hazardous waste management options, such as collection, transportation processing, recycling, incineration and disposal. The Lambton landfill provides an important link in this network, providing disposal capacity for pre-treated solid wastes, as well as a secure method of disposal for ash from the on-site liquid hazardous waste incinerator.

In response to the Land Disposal Restrictions (LDR) Regulation, which came into effect for inorganic wastes in 2007, Clean Harbors has implemented stabilization and encapsulation processes, and has continued to receive these wastes at the Lambton facility in compliance with the regulations. LDR Regulations for characteristic organic and mixed wastes will be phased in by January 1, 2010. Pre-treatment technologies for organic wastes are now in development to meet the pending requirements for organic waste disposal. In the case of both organic and inorganic waste, if the pre-treatment technologies utilized at the Lambton facility are not adequate to meet the LDR, the waste may be exported, possibly to Clean Harbors facilities in Deer Park, Texas; El Dorado, Arkansas; Kimball, Nebraska or Aragonite, Utah, where rotary kiln and fluidized bed incinerators provide additional flexibility in the treatment of hazardous waste.

## 3.2 Clean Harbors Lambton Landfill

A review of the historic waste data for the Lambton landfill has shown that although waste quantities vary from year to year, the average annual quantity of waste received at the Lambton landfill has remained

consistent for more than twenty years. The landfill receives waste directly from customers, from Clean Harbors' own service centres and from brokers. The highly industrialized Great Lakes region provides a steady source of hazardous waste to the landfill and associated facilities. Clean Harbors estimates that 120,000 tonnes of manufacturing process waste is received at the landfill each year, accounting for approximately 70% of the annual waste disposal requirement.

Variations in waste receipt rates can be linked to event based business, which is primarily the acceptance of contaminated soils from major remediation projects. On average, Clean Harbors estimates that 50,000 tonnes of hazardous material will be generated annually from event based business, accounting for approximately 30% of the annual waste disposal requirement.

Imported waste from other provinces and the U.S. makes up a recurring portion of both the steady stream of manufacturing process hazardous wastes and the fluctuating stream of event based hazardous waste. Imported waste from the United States increased from 1998 to 2000, and in 2000 represented 43% of the hazardous waste landfilled in Ontario.[7] Annual hazardous waste imports to the Lambton landfill from the United States and other provinces have typically remained around 40% and 15% respectively since 2004.[8] The percentage of waste received at the landfill over the last five years, by generation location is shown in Table 2. The increase in imports from the U.S. in 2008 was due to a number of large remedial events.

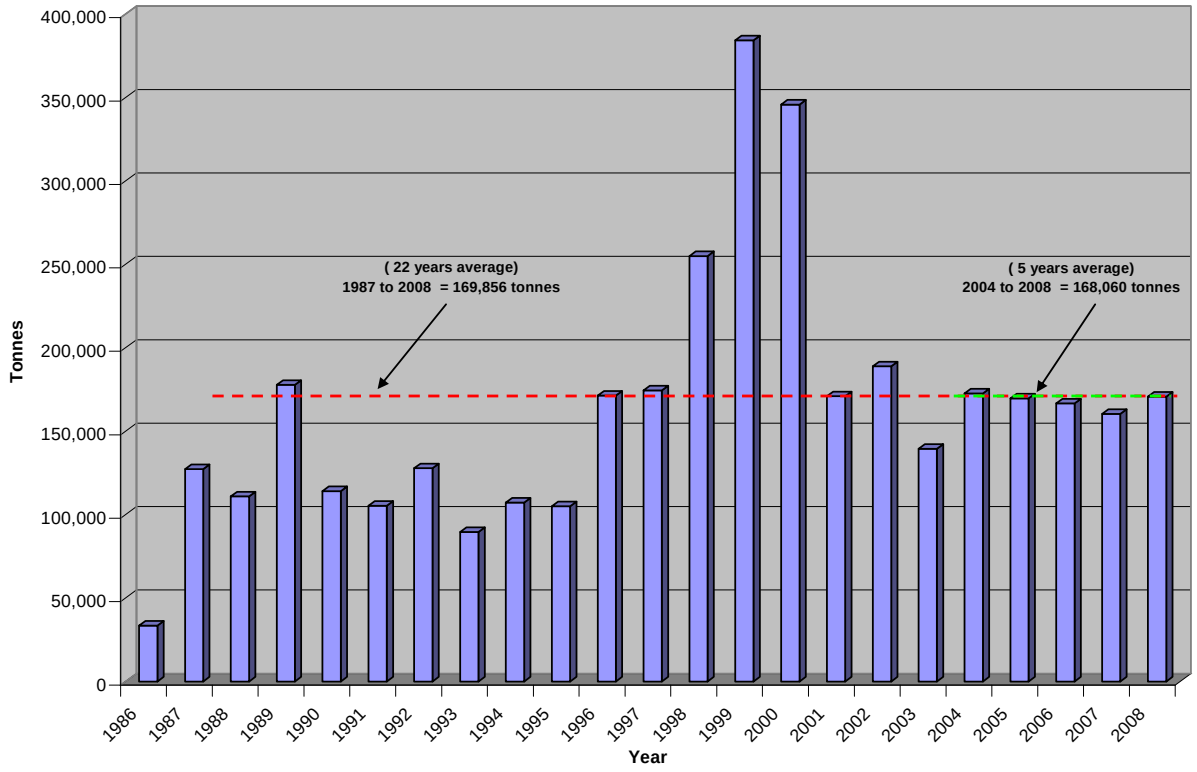
**Table 2 Waste Quantity by Generator Location**

| Year | Ontario | Other Provinces | United States |
|---|---|---|---|
| **2004** | 44% | 17% | 40% |
| **2005** | 48% | 14% | 37% |
| **2006** | 48% | 13% | 39% |
| **2007** | 44% | 13% | 43% |
| **2008** | 30% | 17% | 53% |
| ***Average*** | *43%* | *15%* | *42%* |

Despite these variations in waste quantities and market conditions, the average annual waste quantity received has remained steady. Over the past 22 years, the Lambton landfill has received an annual average of approximately 170,000 tonnes of hazardous waste. The historical waste quantity data are shown in Figure 1. Although overall industry hazardous waste imports were declining from 1999 to 2004 and began increasing in 2005, annual landfill tonnages remained relatively steady.[9] For the past five years annual quantities of waste received at the Lambton landfill have not varied significantly, with an annual average of approximately 170,000 tonnes.

7. *"Ontario: Open for Toxics; Hazardous waste disposal becomes a burning issue in Ontario", Canadian Institute for Environmental Law and Policy, March, 2003.*
8. *"2008 Lambton Landfill Report", Clean Harbors Environmental Services.*
9. *"Backgrounder – Hazardous Waste and Hazardous Recyclable Material Management in Canada 2005 Annual Statistics on Exports and Imports", Statistics Canada, http://www.ec.gc.ca/drgd-wrmd/default.asp?lang=En&n=F345CA54-1*

**Figure 1 Clean Harbors Lambton Landfill, Historical Waste Receipts 1986 through 2008**




It is anticipated that there will continue to be annual fluctuations in waste quantities due to event based business and longer cyclical variations due to market factors, but that average annual waste quantities over the 25 year planning period will remain consistent at approximately 170,000 tonnes per year. The total disposal capacity required for the 25 year planning period is approximately 4.25 million tonnes.

# 4. Conclusion

Clean Harbors wishes to maintain its current integrated business network designed to collect, process, recycle and dispose of hazardous wastes. The Lambton landfill provides an environmentally sound disposal option for hazardous waste generated in Ontario including waste generated through ongoing commercial and industrial operations, event based contaminated site remediation, and household hazardous waste collection. Additional economic activity is generated in the province through the import of hazardous waste from other provinces and the United States, which utilize not only the Lambton facility, but the network of Clean Harbors' facilities across Southern Ontario. The Lambton landfill is, and has been for many years, the only hazardous waste landfill in Ontario, providing a necessary and important element of the waste management infrastructure in Ontario.

Although annual waste quantities may fluctuate, Clean Harbors believes there is a long term sustainable market for the company to continue providing an average of 170,000 tonnes of landfill disposal capacity annually. When converted to volume over the 25 year planning period for the proposed undertaking, considering material bulking due to LDR waste pre-treatment processes, and including interim and final cover volumes, it is estimated that the Lambton landfill will be required to provide approximately 4.5 to 5.0 million cubic meters of landfill air space.