

Form 6 User Fee Information - 2013

Department	Utility Services
Division	Waste Management
Activity	

G/L Account Number	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
		User Fee Name and Description	Rationale for Fee (ie. Government mandated, recover all or part of cost to deliver service, recovery of admin charges, etc)	Unit Basis (Time/participant etc)	Current Rate Presently In Effect	HST Y or N	2012 Total Budgeted Rev from fee	Date of Rate Change for 2013 - if applicable	Proposed Rate as per 2013 Budget	2013 Total Budgeted Rev from fee
1014035310		Landfill Tipping Fee - Garbage includes shingles, construction & demolition material, contaminated soil	To partially recover operating costs of landfill site	per tonne	Garbage loads 100 kg or less are \$5 flat fee	N	\$3,628,500		Garbage loads 100 kg or less are \$5 flat fee	\$3,692,000
1014035310		Landfill Tipping Fee - Recyclables include drywall, green waste, scrap metal, and blue box materials	To partially recover operating costs of landfill site	per tonne	Garbage loads 101 kg or more are \$90/tonne.	N			Garbage loads 101 kg or more are \$90/tonne.	
				per tonne	Mixed recyclables loads 100 kg or less are free	N			Mixed recyclables loads 100 kg or less are free	
				per tonne	Mixed recyclable loads of 101 kg or more are \$45/tonne.	N			Mixed recyclable loads of 101 kg or more are \$45/tonne.	
1014035310		Landfill Tipping Fee - Contaminated Soils Approved for Fill	To partially recover operating costs of landfill site	per tonne	Contaminated soil approved for fill is \$20/tonne.	N			Contaminated soil approved for fill is \$20/tonne.	
1014035310		Landfill Tipping Fee - Asbestos	To partially recover operating costs of landfill site	per tonne	Asbestos is \$200/tonne.	N			Asbestos is \$200/tonne.	
1014035310		Landfill Tipping Fee - Freon-based appliances	To partially recover operating costs of landfill site	per unit	Freon-based appliances are \$15/unit	N			Freon-based appliances are \$15/unit	
1014055340		Compost and Wood Chips sold back to community	To partially recover operating costs of green waste processing	per cubic yard (picked up) or flat fee (delivery)	\$17/yard to pick-up at Harper Road; \$12/yard for large volume buyers; \$120 for 3.5 cubic yards delivered, sliding scale by quantity & distance	Y	\$65,000		\$17/yard to pick-up at Harper Road; \$12/yard for large volume buyers; \$120 for 3.5 cubic yards delivered, sliding scale by quantity & distance	\$50,000
1014115340		Large Article Collection	To partially recover operating costs of large article collection	per unit	\$15 for 1st item; \$5 each additional item	N	\$3,500		\$15 for 1st item; \$5 each additional item	\$3,500
101 4 165337		Blue boxes sold back to community	To partially recover the cost of blue boxes	per unit	\$4.42 per applicable unit	Y	\$5,500		\$4.42 per applicable unit	\$6,250
101 4165337		270 L Caddies sold back to the community	To recover the cost of recycling caddies supplied to apartments and businesses	per unit	\$66.37 per unit	Y	\$4,500		\$66.37 per unit	\$5,500
101 4055322		Backyard composters sold back to community	To partially recover the cost of backyard composters	per unit	\$30.00 per unit	Y	\$4,000		\$30.00 per unit	\$4,000
101 4095340		Commercial Fluorescent tubes	To recover the cost of commercially-generated fluorescent tubes at the HHW Depot, which are not covered by provincial funders	per unit	N/A	N		1-Jan-13	\$1.00/unit	\$2,500

April 26, 2013
UEM Project: 08-017



Mr. Wayne Jackson
City of Peterborough
500 George Street North
Peterborough, Ontario
K9H 3R9

Dear Mr. Jackson

**Re: Landfill Tipping Fee Study
Steps #2 and #3 – Identify Alternative Disposal and Transfer Options and Assess Potential Implications of Tipping Fee Changes**

Further to our letter of March 8, 2013 and subsequent discussions, the following presents the next steps in the analysis of potential economic impacts that would result from a change in current landfill tipping fees at the County/City of Peterborough Waste Management Facility (PCCWMF).

A. Review of Waste Quantities

The PCCWMF received 97,052 tonnes of waste, recyclables, contaminated soil, clean fill and alternate daily cover materials in 2012. A total of 60,082 tonnes of waste was disposed and 36,970 tonnes diverted. Based on an analysis of the waste quantities received, the waste that was diverted consisted mainly of soil used for cover material, with the remainder being mixed recyclables, electronics, tires, woodchips, etc. For the purpose of this analysis, only the waste that was disposed is considered to have the potential to be impacted by a change in the tipping fee. Of the 60,082 tonnes of waste disposed in 2012, 29,830 tonnes was municipally collected waste which Peterborough controls that would continue to be received at the PCCWMF. The remaining 30,252 tonnes of waste disposed was delivered by private sector haulers (28,045 tonnes) and residential self-haulers (2,207 tonnes). It was assumed that the 2,207 tonnes of residential self-hauled waste would continue to be received at the landfill, due to convenience of location and the relatively small loads. Therefore, the commercial/private waste is considered the source of material that could migrate from the PCCWMF. Of the 28,045 tonnes of waste disposed by commercial and private haulers in 2012, it was assumed that the large haulers would be most likely to seek lower cost options outside of Peterborough. It would likely not be economical for small self-haulers to travel beyond Peterborough for disposal services. It was estimated that approximately 23,167 tonnes of waste was received from large haulers in 2012 that could potentially migrate to other lower cost disposal options.

During this review, there was some consideration that private sector waste may already be directed for disposal outside of Peterborough. Upon review of waste disposal records for the past three years (2010 to 2012) it was concluded that there was no evidence that any substantial outmigration of waste for disposal was occurring. Peterborough waste management staff have indicated that large private waste haulers have suggested they will direct waste to facilities outside of Peterborough if tipping fees are not competitive. This does not appear to have occurred to date.

B. Alternative Disposal Options

A report prepared by RIS International Ltd., entitled "The Private Sector IC&I Waste Management System in Ontario" (January 2005) identified that there were 101 privately owned transfer stations in Ontario, of which 53 were private transfer stations in the GTA area (Toronto, Hamilton/Niagara, Durham, York, Peel/Halton). Since the RIS report was published, additional transfer stations have been established. For this study, UEM researched transfer stations and landfills in proximity to Peterborough to identify those most likely for private sector haulers to direct waste from Peterborough to. **Table A-1** (Attachment A) identifies the private waste transfer stations and landfills within proximity of Peterborough.

In collecting information on transfer stations and landfills, many operators were reluctant to provide information on tipping fee reductions based on larger quantities of waste delivered. Most provided their "gate fee", but indicated that discounts could be available for larger quantities disposed. As part of the process, UEM researched the location of facilities, and contacted the operators by telephone and email to determine tipping fees and if they were licensed to accept waste from Peterborough. Some private facilities were not licensed to accept waste from Peterborough.

Transfer Stations

Information was obtained for 17 private transfer stations. Of these, it was confirmed that nine were licensed to accept waste from Peterborough, three could not accept waste from Peterborough and five had not provided a response to date. The closest available transfer stations to Peterborough are the Waste Management Transfer Station in Courtice (Clarington), which is approximately 75 kms from the PCCWMF and the Miller Group Transfer Station in Whitby, which is approximately 85 kms from the PCCWMF. These two facilities also had the lowest tipping fees relative to all other transfer stations, including those that were farther away. The reported tipping fees were as follows:

- Waste Management T.S. \$82/tonne + \$7/load environmental fee
- Miller Group T.S. \$85/tonne

In consideration that the average load delivered by the larger private sector haulers to the PCCWMF was 6 tonnes, the Waste Management Transfer Station tipping fee, with the environmental fee is approximately \$83/tonne, which is slightly less than the Miller Group tipping fee. In addition, since the Waste Management Transfer Station is 10 km closer, the Waste Management Transfer Station is considered the most likely transfer station that would be used by large private sector haulers if waste was to be directed for disposal outside of Peterborough.

Landfills

Seven private landfills were identified for consideration in the evaluation. Of these, six are licensed to accept waste from Peterborough. However, relative to transfer stations, there are no private landfill sites in close proximity to Peterborough. The nearest landfill site is the Walker Industries Landfill in Niagara Falls which, at 260 km from the PCCWMF, is more than twice as far as the nearest transfer station in Courtice.

Therefore, it was concluded that the Waste Management Transfer Station located in Courtice was the nearest, most reasonable facility to consider for acceptance of waste from Peterborough at the lowest cost. This facility was used as the basis for the financial evaluation.

C. Waste Haul Cost Analysis

To determine the additional cost to haul to a facility outside of Peterborough, UEM examined a number of sources to determine a reasonable unit haul cost. This included input providing either an hourly cost to operate a waste collection vehicle or a per kilometer cost for travel distance:

- A report by the Province of British Columbia (2013) indicated that \$100/hour/waste collection vehicle is a reasonable haul cost estimate
- A study conducted by the University of Minnesota (2005) indicated that \$1.54/km is a reasonable current haul cost estimate
- Input from a Waste Management representative (March 2013) indicated that \$2.00/km is a reasonable haul cost estimate

Attachment B provides supporting information on the above haul cost estimates. Based on the above information, the additional cost for a waste collection vehicle to travel from Peterborough (PCCWMF) to the Waste Management Transfer Station in Coutice could range from \$30 to \$50 per tonne.

D. Tipping Fee

Using the Waste Management Transfer Station in Courtice as the most reasonable alternative, the cost for private haulers to migrate to the lowest cost alternative could range from **\$113/tonne to \$133/tonne** (\$30/tonne to \$50/tonne for haul costs + \$83/tonne for tipping fee costs). Although tipping fees alone are lower at the Courtice Transfer Station than tipping fees at the PCCWMF, because haulers are using collection vehicles and not transfer vehicles, the cost per tonne to haul to the Courtice Transfer Station rather than the PCCWMF is significant. There is approximately \$23 to \$43 difference between the current \$90 per tonne tipping fee and the estimated \$113 to \$133 per tonne cost to dispose at the WMI Transfer Station in Courtice. The difference between the current \$90 per tonne tipping fee at the PCCWMF and the \$113 low end cost to dispose at the Courtice Transfer Station represents the tipping fee window within which Peterborough should be able to increase tipping fees without a resulting out-migration of private sector waste.

The following table identifies the range of additional revenue that could be generated annually if tipping fees were increased from \$90 to as much as \$133 per tonne.

Tipping Fee Rate	Increase in Tipping Fee from 2013 Rate of \$90/tonne	Total Non- Municipal Waste Collected and Disposed in 2012 (Commercial and Residential Self-Haul)	Annual Increase in Revenue
\$90 (current tipping fee)	\$0	30,252 t	\$0
\$100	\$10	30,252 t	\$302,250
\$113 (low end of range where out-migration of waste could occur)	\$23	30,252 t	\$695,796
\$133 (high end of range where out-migration of waste could occur)	\$43	30,252t	\$1,300,836

An increase to a \$100/tonne tipping fee should result in an increase in annual tipping fee revenue of approximately \$302,250 based on 2012 disposal quantities. As the tipping fee approaches the low end of the range at which out-migration of waste from Peterborough could begin to occur (i.e. at

\$113/tonne), Peterborough could realize approximately \$696,000 in additional annual tipping fee revenue. If out-migration of waste for disposal did not begin until the upper range of the cost differential, Peterborough could realize approximately \$1.3 M in additional tipping fee revenue per year.

However, if at the lower end of the tipping fee range (i.e. \$113/tonne), out-migration of waste by the large private hauler was to occur, then Peterborough could see some or all the 23,167 tonnes of private hauler waste go to the Waste Management Transfer Station in Courtice. Rather than a \$696,000 increase in tipping fee revenue due to the increase from \$90/tonne to \$113/tonne, Peterborough would see a loss in revenue of 2.62 M from the large private waste haulers due to the outmigration of the 23,167 tonnes of private waste that was being received currently at \$113/tonne.

E. Sensitivity Analysis

As part of the consideration to the impacts of increasing the tipping fees at the PCCWMF, sensitivity analyses were undertaken to estimate the impacts of changing various assumptions made in the tipping fee analysis. The following sensitivity analyses were undertaken:

(i) Implications on the Establishment by the Private Sector of a New Transfer Station in Peterborough

This sensitivity analysis considered the scenario that the private sector establishes a new transfer station in Peterborough that competes for private haulers waste. There are currently no private sector transfer stations in Peterborough. Under this scenario it was assumed that all private sector waste, and residential self-hauled waste could go to this private sector facility if the tipping fee was below the Peterborough tipping fee. The rationale for this scenario was based on industry information that a “rule of thumb” for haul distance by curbside waste collection vehicles is approximately 25 to 35 km (one-way trip), before it is more economical to establish a transfer station. As the nearest, facility was determined to be the Waste Management Transfer Station in Courtice, which was 75 kms away, the industry “rule of thumb” suggests that private haulers would not direct haul to this facility. This is supported by the total cost estimate that was determined in the analysis, which significantly exceeded the current tipping fee at the PCCWMF.

Two approaches were considered to determine an anticipated tipping fee at a new private sector transfer station in Peterborough. The details of the analysis are included in **Attachment C**. The first approach considered that the Waste Management Transfer Station in Courtice represented a reasonable example of transfer station size, operation and tipping fee cost. The additional distance from Peterborough to disposal facilities was factored in relative to the Courtice facility location. The tipping fee at the Waste Management Transfer Station in Courtice is \$83/tonne. It was estimated that the longer haul distance to private sector landfills from Peterborough compared to Courtice represented approximately additional \$8 per tonne that could be expected for a transfer station located in Peterborough. Therefore, based on this, it was estimated that a tipping fee for a similar private sector facility in Peterborough would be in the \$91/tonne range.

The second approach was to cost construction and operation of a transfer station and the haul cost and disposal costs to service the transfer station. Based on this approach, it was estimated that the establishment and operation of a private transfer station in Peterborough would be in the range of \$78.50 to \$103.50 depending on the disposal facility selected and the negotiated tipping fee that could be arranged. The largest private waste collection contractor in Peterborough is BFI. If BFI established a transfer station, it is likely it would dispose of waste at a BFI landfill. This internalizes the cost within BFI, and they could have a competitive tipping fee relative to what was estimated in the first approach for a

facility similar to the Transfer Station in Courtice. BFI's nearest landfills are the Ridge Landfill near Chatham and the Seneca Meadows Landfill in upstate New York.

In summary, the sensitivity analyses that considered establishment and operation of a new transfer station in Peterborough by the private sector indicates that tipping fees could be in the \$78.50 to \$103.50 range to make this viable. The lower end of this range suggests that the current tipping fee at the PCCWMF could trigger the private sector beginning to seriously consider establishment of a private sector transfer station. If a private sector transfer station was established and it was a lower cost option for private waste collection and residential self-haul, Peterborough could realize a loss of approximately \$2.72 M in tipping fee income annually (30,252 tonnes at the current \$90/tonne).

(ii) Implication on Landfill Life of Decreased Disposal of Private Sector Waste at the PCCWMF

One consequence of a decrease in waste received for disposal from the private sector is that the total amount of waste disposed annually would decrease significantly resulting in an extension of the life of the PCCWMF. There are a number of advantages and disadvantages to this scenario. **Attachment C** includes an analysis of the advantages and disadvantage, summarized as follows:

Advantages

- Direct haul by larger private haulers to the Waste Management Transfer Station in Courtice would result in remaining landfill site life being extended by approximately 6.2 years (i.e. from about 13.1 years to 19.3 years to approximately 2032. This assumes that the existing PCCWMF has a remaining capacity of 1,450,000 m³ and that the landfill capacity consumed annually will decrease from 110,000 m³ (72,000 tpy of waste and contaminated soil – the tonnage currently used in annual reports to project remaining landfill site life) to 75,100 m³ (48,800 tpy of waste and contaminated soil – 72,000 less 23,200 tonnes that could be diverted with an increase in tipping fees).
- If a new private sector transfer station is established in Peterborough and all private sector and residential self-hauled waste is diverted from the PCCWMF (i.e. 30,252 tonnes), there remaining site life at the PCCWMF would be extended by 9.7 years (i.e. from about 13.1 years to 22.8 years to approximately 2036).
- Landfill capacity is a valuable resource and the extended capacity would be available to serve the municipal needs of Peterborough.
- Delays, but does not eliminate when capital expenditures are required at the PCCWMF.
- Delays when additional disposal capacity is required to replace the PCCWMF.
- Establishment of a new transfer station by the private sector results in additional jobs and new tax revenue for the municipality.

Disadvantages

- Loss in tipping fee revenue from the private sector.
- Tipping fee profit (i.e. difference between actual operating cost per tonne of landfill and tipping fee), which helps affect municipal taxes to operate site, would be lost, and would have to be made up by an increase in taxes.
- Administrative and operating costs for the landfill site would stay about the same, resulting in a per tonne operating cost increase which would have to be offset by the municipal tax base.

F. Conclusions

Based on the tipping fee analysis undertaken the following was concluded:

- Larger private haulers are most likely to seek alternative lower-cost disposal options outside of Peterborough. This accounts for approximately 23,167 tonnes of the total 30,252 tonnes of private sector and residential self-hauled waste disposed at the PCCWMF in 2012.
- The nearest, most reasonable, facility to consider as an alternative disposal location is the Waste Management Transfer Station, in Courtice, approximately 75 kms from the PCCWMF. The tipping fee at this facility is \$83/tonne. The cost to direct haul could range from \$30 to \$50/tonne, resulting in a total cost of \$113 to \$133/tonne. This suggests that there is a window of opportunity for Peterborough to raise its tipping fee to at least the low end of this range, without seeing an out-migration of private sector waste.
- A tipping fee increase to \$113/tonne, which is the lower end of the range where out-migration to the Waste Management Transfer Station in Courtice could occur, would result in additional annual tipping fee revenue of \$696,000. However, beyond this, if out-migration of waste from large private sector waste haulers was to occur, then Peterborough could see the 23,167 tonnes of large private hauler waste migrate from the PCCWMF resulting in a loss of annual tipping fee revenue of approximately \$2.62 M (i.e. 23,167 tonnes at \$113/tonne).
- A “rule of thumb” in the waste collection industry is that 25 to 35 km (one-way) is the maximum direct haul travel distance for a curbside collection vehicle before it becomes more economical to establish a transfer station. Therefore, it is more likely that the private sector would establish a new transfer station in Peterborough before direct hauling to the Waste Management Transfer Station in Courtice.
- The estimated cost to establish and operate a private sector transfer station in Peterborough and haul and dispose at a landfill is estimated to be in the range of \$78.50 to \$103.50/tonne. The lower end of this tipping fee is already \$11.50/tonne below Peterborough current \$90/tonne tipping fee. The upper range of \$103.50 suggests there is opportunity to increase the tipping fee up to \$13.50.
- Input from waste management company representatives indicate that the approximately 30,252 tonnes of private sector and residential self-hauled waste available in Peterborough is below or just on the minimum edge of what would be required for the private sector to establish and operate a transfer station.
- If waste from large private sector haulers was not received at the PCCWMF, this would significantly reduce the amount of waste disposed annually, resulting in an extension of the current landfill life. The PCCWMF is currently estimated to reach capacity by 2026. If larger private sector hauler waste is not received, then the site life would in 13.1 years be extended by about 6 years to 2032. If all private sector and residential self-hauled waste is not received at the PCCWF this site life would be extended by almost 10 years to 2036. In addition, landfill site capital expenditures and the process for replacing the PCCWMF when it reaches capacity would be delayed.
- Loss of approximately \$2.62 M to \$2.72 M in annual tipping fee revenue if out-migration of some or all private sector waste and residential self-hauled waste occurred.

- Tipping fee revenue and profit would have to be offset by an increase in the municipal tax rate to cover total operating costs of the site.
- Establishment of a new transfer station by the private sector would result in additional jobs and new tax revenue for Peterborough.

G. In Conclusion....

We trust this report assists the City and County of Peterborough with considerations with respect to a change in the tipping fee at PCCWMF. If you have any questions regarding the results of this study, please feel free to contact me at (905) 371-9764 ext. 225 or by email at gtaras@uemconsulting.com or Joe Ovcjak at (905) 212-9722 ext. 24 or by email at jovciak@uemconsulting.com.

Yours very truly,

URBAN & ENVIRONMENTAL MANAGEMENT INC.



Greg Taras, MCIP, RPP
General Manager

Attachment A
Private Transfer Stations and Landfill Sites That
Could Accept Waste From Peterborough

**Table A-1
Private Transfer Stations and Landfill Sites that Could Accept Waste from City and County of Peterborough**

Operator	Location	Contact Info	Licensed	Tipping Fee	One-way Distance and Travel Time from Bensfort Road Landfill
A. Private Transfer Stations					
Scaletta Group	50 Mineral Road Belleville, ON	613.962.7107	Yes	\$99/tonne \$95/tonne w/ credit app.	Approx. 1 hour, 20 minutes (114km)
Lafleche	197 Putman Industrial Drive Belleville, ON	613.962.7144	Yes	\$90/tonne \$95/tonne- Shingles	Approx. 1 hour, 25 minutes (118 km)
Waste Management	1 McKnight Road Courtice, ON (Clarington)	905.433.5077 Graham Wathen gwathen@wm.com	Yes	\$82/tonne + \$7 Environmental Fee/load	Approx. 55 minutes (75 km)
Waste Management	550 Bowes Road Concord, ON (Vaughan)	905.669.7166 John Murray 416.471.6119	Unknown	No response to date	Approx. 1 hour, 35 minutes (146 km)
Waste Management	20 Esander Drive Scarborough, ON (Toronto)	416.423.5555 (forwarded to Wentworth Office)	Unknown	No response to date	Approx. 1 hour, 31 minutes (132 km)
Waste Management	117 Wentworth Court Brampton, ON	905.595.3360	Unknown	No response to date	Approx. 1 hour, 42 minutes (160 km)
Waste Management	62 St. Remy Place Kingston, ON	800.267.7879	Unknown	No response to date	Approx. 2 hours (190 km)
Waste Management	1380 California Avenue Brockville, ON	613.342.1081 Bruce Martin bmartin7@wm.com	No	Not applicable as facility not licensed to accept waste from Peterborough	Not Applicable
Miller Group	1220 Squires Beach Road Pickering, ON	905.475.6356 alex.lubrinsky@miller group.ca	Yes	\$106.19/tonne \$79/tonne-Shingles \$90/tonne-Tires	Approx. 1 hour, 10 minutes (100 km)
Miller Group	2000 Wentworth Street Whitby, ON	alex.lubrinsky@miller group.ca	Yes	\$85/tonne \$79/tonne- Shingles	Approx. 1 hour (85 km)
Miller Group	300 Rodick Road Markham, ON	alex.lubrinsky@miller group.ca	Yes	\$102/tonne-Garbage \$80/tonne-Yard Waste	Approx. 1 hour, 30 minutes (130 km)
Miller Group	23068 Warden Avenue Georgina, ON	905.476.7555 Rob Zander 905.895.1200 x5721	No	Not applicable as facility not licensed to accept waste from Peterborough	Not Applicable
Miller Group	112 Bales Drive Newmarket, ON	alex.lubrinsky@miller group.ca	Yes	\$88/tonne \$69/tonne-Shingles	Approx. 1 hour, 40 minutes (110 km)

Operator	Location	Contact Info	Licensed	Tipping Fee	One-way Distance and Travel Time from Bensfort Road Landfill
WSI	2332 County Road 41 Napanea, ON	613.388.2200	Yes	\$101/tonne Discounts available	Approx. 1 hour, 47 minutes (160 km)
WSI	117 Advance Boulevard Brampton, ON	905.791.5250	Unknown	No response to date	Approx. 1 hour, 45 minutes (160 km)
BFI	4800 Development Avenue Brockville, ON	613.345.2442	Yes	\$88/tonne	Approx. 2 hours, 51 minutes (270 km)
BFI	375 Clements Road W Ajax, ON	289.274.0137	No	Not applicable as facility not licensed to accept waste from Peterborough	Not Applicable
B. Private Landfill Sites					
Lafleche (BioReactor Landfill)	17125 Lafleche Road Moose Creek, ON	613.538.2776	Yes	No response to date	Approx. 4 hours (340 km)
Walker Industries (South Landfill)	3081 Taylor Road Niagara Falls, ON	905.227.4142	Yes	Household - \$103/tonne Contractor Leaf Yard - \$65.90/tonne Concrete/asphalt - \$10/tonne	Approx. 2 hours, 36 minutes (260 km)
Newalta	65 Green Mountain Road W. Stoney Creek, Ontario	905.561.0305	No	Not applicable as facility not licensed to accept waste from Peterborough	Not Applicable
BFI (Ridge Landfill)	20262 Erieau Road Blenheim, ON (Chatham-Kent)	Tim Kozlof 519.676.5000 x102 tim.kozlof@bficanada. com	Yes	\$70/tonne	Approx. 4 hours, 15 minutes (420 km)
BFI	3354 Navan Rd Ottawa, ON	613.824.7289	Yes	\$96/tonne	Approx. 3 hours, 35 minutes (290 km)
Waste Management	2301 Carp Rd Ottawa, ON	613.831.3563	Yes	No Response to date	Approx. 3 hours, 5 minutes (250 km)
Waste Management	4052 Oil Heritage Rd Petrolia, ON	519.882.3044	Yes	No response to date	Approx. 4 hours (405 km)

Attachment B
Calculation of Haul Costs

Calculation of Haul Costs

In regard to calculating haul costs, the following assumptions have been made:

- Average capacity for a waste collection vehicle is 6 tonnes based on current information from Peterborough landfill disposal records of average tonnes per load in 2012
- The lowest cost alternative will be selected by haulers
- The Waste Management Transfer Station in Courtice is the lowest cost alternative

Sources used for haul cost evaluation are as follows:

Guidelines for Establishing Transfer Stations for Municipal Solid Waste- Province of British Columbia (2013)

The Province of British Columbia has developed a report outlining guidelines for establishing transfer stations for municipal solid waste. This report identified that \$100/hour/collection vehicle is reasonable to use for estimating haul costs. Additionally, UEM undertook a study for Haldimand County in 2007 examining the need for a new transfer station. The study determined that \$80/hour/collection vehicle was reasonable for estimating haul costs for a waste collection vehicle. Considering inflation, this figure aligns with the more recent figure provided by the Province of British Columbia. Based on \$100/hour/waste collection vehicle, the following is the estimated cost to utilize the Waste Management Transfer Station in Courtice.

55 minutes x 2 ways = 110 minutes @ \$100/hour/truck = \$180 return trip

\$180/6 tonnes = \$30/tonne haul cost

\$30/tonne haul cost + \$82/tonne tipping fee + \$1.17/tonne environmental fee = **\$113.17/tonne**

Operating Costs for Trucks- University of Minnesota (2005)

In a 2005 study by the University of Minnesota, Department of Civil Engineering, entitled "Operating Costs for Trucks", it was determined that \$1.54/km was a reasonable haul cost for trucks in the waste disposal industry. Note that this figure is slightly outdated, and when considering inflation this figure seems to align with the more recent figure taken from discussion with WMI staff, which is discussed below. The following is the estimated cost to utilize the Waste Management Transfer Station in Courtice, based on \$1.54 km for collection vehicles.

75km x 2 ways = 150 kilometres @ \$1.54/km = \$231 return trip

\$231/6 tonnes = \$38.5/tonne haul cost

\$38.5/tonne haul cost + \$82/tonne tipping fee + \$1.17/tonne environmental fee = **\$121.17/tonne**

Discussion with Waste Management Inc. Staff

UEM obtained input from Waste Management Inc. staff (March 2013) regarding haul costs for waste collection vehicles. WMI staff indicated that \$2.00/km is a reasonable haul cost for a collection vehicle in 2013. The following is the estimated cost to utilize the Waste Management Transfer Station in Courtice, based on \$2.00 km for collection vehicles.

75km x 2 ways = 150 kilometres @ \$2.00/km = \$300 return trip

\$300/6 tonnes = \$50/tonne haul cost

\$50/tonne haul cost + \$82/tonne tipping fee + \$1.17/tonne environmental fee = **\$133.17/tonne**

Attachment C
Calculations in Support of Sensitivity Analysis

Sensitivity Analysis for Peterborough Tipping Fee Study

B. Sensitivity Analysis No. 1 – Private Sector Transfer Station in Peterborough

The Alberta Transfer Station Technical Guidance Manual (2008) indicates that a general “rule of thumb” in the waste management industry is that a transfer station may be more economical where haul distances to the closest landfill exceed 25 to 35km (ie. 50 to 70 km round trip). This statement is further reinforced by the United States Environmental Protection Agency’s report entitled “Waste Transfer Stations: A Manual for Decision Making” which states that 35 miles (56 km) round trip is the industry standard break-even point with regards to direct hauling and transfer hauling. Since the closest reasonable disposal alternative in Peterborough is the Waste Management Transfer Station in Courtice which is a 150 kms round trip, this exceeds the rule of thumb distance for direct haul of waste. Therefore, a sensitivity analysis was undertaken to consider the impact of the private sector establishing a transfer station in Peterborough.

Waste Quantities

In undertaking the waste cost analysis, it was initially assumed that only the large waste haulers would likely seek other lower cost locations outside of Peterborough for disposal. This represented approximately 23,167 tonnes of waste in 2012. However, if a new transfer station was established by the private sector in Peterborough, this would be convenient for both large and small haulers and even the residential self-haul, if the tipping fee was lower than the tipping fee at the PCCWMF. Therefore, with respect to the sensitivity analysis the waste quantity that could be impacted is the total 30,252 tonnes of commercial and residential self-hauled disposed in 2012.

Sensitivity Analysis

Two methods were used to calculate the impacts of the establishment of a private sector transfer station in Peterborough.

(i) Sensitivity Analysis 1.1 – Comparison to Other Private Sector Transfer Stations

As noted on **Table A-1**, the posted gate fee for the 17 private sector transfer stations contacted for this study ranged from \$83 to \$106/tonne. The Waste Management Transfer Station in Courtice and the Miller Group Transfer Station in Whitby are the closest and were also considered to be most likely representative of the type of transfer station that would be established in Peterborough and the tipping fee that could be charged. If the Waste Management Transfer Station is used as the comparative and a similar tipping fee is charged of approximately \$83/tonne, then private sector haulers and possibly residential self-haul would have a lower cost alternative in Peterborough by approximately \$7/tonne compared to the current disposal cost of \$90/tonne.

The tipping fee for a private sector transfer station in Peterborough may be slightly higher as it is not as close to Highway 401 and available disposal facilities as the Courtice and Whitby Transfer Stations. Based on an estimated cost of \$110/hr to operate a transfer vehicle and Peterborough being approximately 2 hours from Courtice (two-way haul time), the incremental increase in tipping fee for

the additional haul distance would be approximately \$8/tonne. This would set the tipping fee at \$91/tonne which is very close to the current Peterborough tipping fee of \$90/tonne.

If all of the private sector and residential self-hauled waste were to go to a new private sector transfer station in Peterborough, Peterborough would lose the \$90/tonne tipping fee for the entire 30,252 tonnes, which would be a loss of annual tipping fee revenue of approximately \$2.72 M.

(ii) Sensitivity Analysis 1.2 – Cost to Establish a New Transfer Station

It is assumed that transfer stations such as that operated by Waste Management in Courtice or the Miller Group in Whitby and elsewhere, operate on an economic model that results in a profit being generated by the private sector company operating the facility. The following provides an overview of the estimated cost to establish and operate a transfer station and to haul and dispose of the waste from that facility:

Capital Costs

(i) Purchasing of land for transfer station

- \$100,000 to purchase 1 ha of industrial land in Peterborough
- 10 years to capitalize- $\$100,000 / 10 \text{ years} = \$10,000/\text{year}$
- $\$10,000/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.33/\text{tonne}}$

(ii) Approvals and construction of transfer station facility

- \$1 million to build a new transfer station in Peterborough
- 20 years to capitalize- $\$1,000,000 / 20 \text{ years} = \$50,000/\text{year}$
- $\$50,000/\text{year} / 32,252 \text{ tonnes/year} = \mathbf{\$1.65/\text{tonne}}$

(iii) Purchasing of transportation fleet

- 30,252 tonnes per year, operating 6 days per week is approximately 100 TPD. Based on this, five transfer vehicles would be required. It is assumed one spare transfer vehicle would be in the fleet to account for vehicles in travel and a backup resulting in a total of six transfer vehicles.
- \$180,000 per 20 to 25 tonne transfer vehicle and trailer x 6 = \$1,080,000
- transfer tractor and trailer lasts about 7 years- $\$1,080,000 / 7 \text{ years} = \$154,286/\text{year}$
- $\$154,286/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$5.10/\text{tonne}}$

(iv) Purchasing of other major equipment

- \$200,000 to purchase loader
- loader lasts about 7 years- $\$200,000 / 7 \text{ years} = \$28,571/\text{year}$
- $\$28,571/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.94/\text{tonne}}$

(v) Total Annual Capital Cost

- \$0.33/tonne - Purchasing of land for Transfer Station
- \$1.65/tonne – Approval and construction of Transfer Station Facility
- \$5.10/tonne - Purchasing of transportation fleet
- \$0.94/tonne - Purchasing of other major equipment

Total Annual Capital Cost is approximately **\$8.02/tonne**.

Operating Costs

(i) Labour (3.5 FTE for scale house operator, loader operator and labourer)

$-\$60,000/\text{year} \times 3.5 \text{ FTE} / 30,252 \text{ tonnes/year} = \mathbf{\$6.94/\text{tonne}}$

(ii) Building Operations, Utilities and Maintenance

$-\$30,000/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.99/\text{tonne}}$

(iii) Processing Operations and Maintenance

$-\$25,000/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.83/\text{tonne}}$

(iv) Building Insurance

$-\$5,000/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.17/\text{tonne}}$

(v) Taxes

$-\$15,000/\text{year} / 30,252 \text{ tonnes/year} = \mathbf{\$0.50/\text{tonne}}$

(vi) Total Annual Operating Cost

\$5.13/tonne – Labour (3.5 FTE for scale house operator, loader operator and labourer)

\$0.67/tonne – Building Operations, Utilities and Maintenance

\$1.63/tonne – Processing Operations and Maintenance

\$0.33/tonne – Building Insurance

+ \$0.98/tonne – Taxes

Total Annual Operating Cost is approximately **\$9.43/tonne**. Therefore, the total annual cost to establish and operate a private sector transfer station in Peterborough is estimated to be approximately **\$17.45/tonne**.

Haul Costs

An average weight of 20 to 25 tonnes per transfer vehicle utilized @ \$110/hour:

(i) To Niagara Falls (Walker Industries' Landfill)

-distance of 2 hours, 36 minutes (260 km)

156 minutes \times 2 ways = 312 minutes @ \$110/hour/truck = \$572 return trip

$\$572/22 \text{ tonnes} = \mathbf{\$26.00/\text{tonne}}$

(ii) To Ottawa (WMI's Carp Road Landfill)

-distance of 3 hours, 5 minutes (250 km)

-185 minutes \times 2 ways = 370 minutes @ \$110/hour/truck = \$678 return trip

$\$678/22 \text{ tonnes} = \mathbf{\$30.82/\text{tonne}}$

(iii) To Ottawa (BFI's Navan Road Landfill)

-distance of 3 hours, 35 minutes (290 km)

215 minutes \times 2 ways = 430 minutes @ \$110/hour/truck = \$787 return trip

$\$787/22 \text{ tonnes} = \mathbf{\$35.77/\text{tonne}}$

(iv) To Chatham-Kent (BFI's Ridge Landfill)

-distance of 4 hours, 15 minutes (420 km)

255 minutes x 2 ways = 510 minutes @ \$110/hour/truck = \$935 return trip

\$935/22 tonnes = **\$42.50/tonne**

Therefore, the haul costs are estimated to range between \$26/tonne and \$42.50/tonne. With capital and operating costs included, the cost to establish and operate a transfer station and haul to a disposal facility ranges from **\$43.45/tonne to \$59.95/tonne**.

Disposal Costs

The posted gate prices for disposal at the landfills noted above range from \$70 to \$103/tonne. However, discounts are negotiated by large volumes haulers at disposal facilities, especially as there is also competition to these Ontario landfills from landfills in New York and Michigan that have much lower tipping fees. It is understood that tipping fees at landfills in Michigan are as low as \$6 to \$8 per tonne, while tipping fees at landfills in New York state are around \$15 to \$18 per tonne.

There is also the consideration to whether the private sector firm establishing the transfer station hauls to its own disposal facility. This would result in the best economic model for the private company as it is assumed all costs are internalized.

As noted, the closest landfill is the Walker Landfill in Niagara Falls. The posted gate price is \$103/tonne, however, Walkers are entering contracts with municipalities and other repeat, large volume private hauler customers in the order of \$45 to \$60/tonne. Further, Walker representative indicate that I,C&I material could be accepted in the \$35 to \$40/tonne range. If disposal at Walkers was \$35/tonne, the total cost could be \$78.45/tonne. At the upper end of the range, for a \$60/tonne tipping fee, this would be \$103.45/tonne.

C. Sensitivity Analysis No. 2 – Implications on Landfill Life of Decreased Disposal of Private Sector Collected Waste at the PCCWMF

A major result of a decrease in the amount of waste disposed at the PCCWMF due to an out-migration of private sector hauled waste is that the life of the landfill site is extended. Sensitivity Analysis No. 2 considers the implications to Peterborough of a decrease in the amount of waste disposed.

- It is estimated that there is approximately 1,450,000 m³ (950,000 tonnes) of disposal capacity remaining at the PCCWMF. This represents approximately 13.1 years of disposal capacity (to approximately 2026) based on current disposal rates.
- If the large private haulers diverted the approximately 23,167 tonnes of waste collected and disposed at the PCCWMF in 2012 to the Waste Management Transfer Station in Courtice, then this decrease in waste disposed would extend the life of the PCCWMF by approximately 6.2 years to 2032.
- If a private transfer station was established in Peterborough and all of the 30,252 tonnes of waste delivered by private sector haulers and residential self-haul to the PCCWMF in 2012 was received by

the private sector transfer station, then the life of the PCCWMF would increase by 9.7 years to approximately 2036.

There are both advantages and disadvantages to Peterborough if the private sector waste was not received at the PCCWMF.

Advantages

- The life of the landfill could be extended by 6.2 to 9.7 years to approximately 2030 to 2034.
- The remaining and increased site life would be available to serve the municipal needs of the City and County of Peterborough.
- Delays the time frame for when major capital expenditures (such as new cell construction) are required at the landfill site. However, it does not eliminate the capital spending.
- Delays the time for when additional disposal capacity is required for Peterborough to replace the PCCWMF. This includes undertaking the planning and approval process for new disposal capacity which is usually lengthy, costly and controversial.
- Establishment of a private sector transfer station in Peterborough results in additional jobs and new tax revenue in the municipality.

Disadvantages

- Loss in annual tipping fee revenue from the private sector
- If the total cost to operate the PCCWMF (i.e. administrative, operating, capital, closure, and post-closure) is below the current tipping fee or any future increased tipping fee, then this currently results in the landfill site being a net positive revenue generator. This revenue helps offset the cost of the site in the municipal tax base. If this private sector waste is lost to the site, then Peterborough would lose the profit from tipping fees beyond that which covers the operating cost.
- Little to no decrease in administrative and operating costs at the PCCWMF with the reduction in waste disposed. Therefore, cost per tonne for administrative and operating costs increases. This cost must be fully offset by the municipal tax base, which would result in an increase in taxes related to waste management.