A Survey of Litter at 298 Street Locations in Toronto, Ontario

Conducted for

# City of Toronto Solid Waste Management Services Division

by

Environmental Resources Planning, LLC Gaithersburg, MD

**Final Report** 





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Thanks also to all of the field crews and staff at Environmental Resources Planning, LLC for their hard work and dedication to this project.



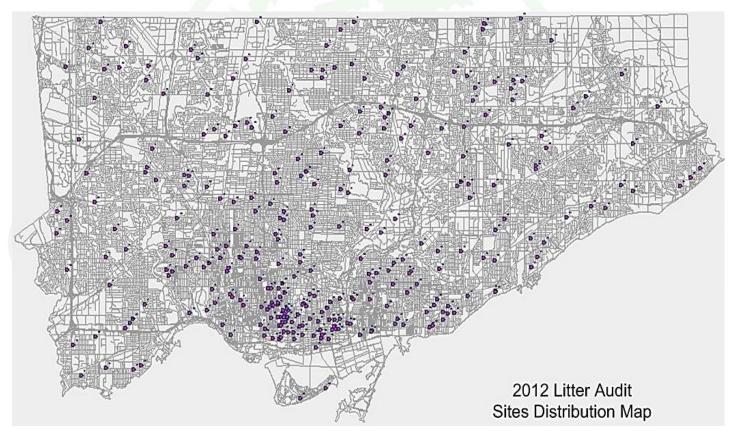
#### **Executive Summary**

In August 2012, Environmental Resources Planning, LLC conducted a citywide litter audit for the City of Toronto to gauge the rate, extent and composition of litter within City-maintained areas. The City had previously conducted four citywide litter audits in 2002, 2004, 2005 and 2006 using the same methodology, which allowed a comparison of each audit's results. The method used for conducting the litter audits involved counting litter and examining its characteristics as it is visually observed on the ground and did not require the physical removal of litter from the sites audited.

#### **Methodology Overview**

This litter audit was conducted by visually surveying 298 sites pre-selected by the City of Toronto. In order to be comparable to previous audits conducted by the City, this audit was conducted between August 8-18, 2012 by three survey teams to ensure that it would be completed within the three week parameter set by the City.

Figure ES1 – Sites Distribution Map



The sites originally surveyed in the 2002 audit were used in all subsequent audits. The number of sites was increased to 272 in 2005 and 298 in 2006. The same sites used in 2006 were surveyed in the 2012 litter audit. The site ID numbers from 2006 were also used.

Litter was classified as either large (four square inches or more) or small (less than four square inches.) All sites were 200 feet in length and a preferred width of 18 feet. Sites with 18 foot widths were termed "Fixed", while sites less than 18 feet wide were termed "Variable". The width of each site began 1.5 feet into the street, where litter tends to collects and whose area is maintained and cleaned by the City.

The same classifications of litter from previous litter audits were used in the 2012 survey to ensure comparability of results. In addition, brand names of items were recorded when visible.

This audit surveyed accumulated litter rather than fresh litter. Surveys of fresh litter depend on cleaning up of each site and waiting a predetermined period of time before sampling. Fresh litter surveys provide more statistically credible evidence about recently littered items, but understate the context of littering over time and are more resource intensive as well. Detailed information about the methodology used to conduct this audit is included in the Appendix.

#### **Summary of Results**

Large Litter dropped from 4,341 items in 2006 to 3,433 in 2012, a reduction of 20.9 percent. The largest component of Large Litter, Misc. Paper, grew from 18.6 percent in 2006 to 21.5 percent in 2012. Misc. Plastic was the second highest portion at 11.6 percent. Together these items comprised one-third of all Large Litter. Cups, Lids and Straws were third highest at 8.5 percent, quadrupling from 2.1 percent in 2006. Many of these items were coffee cup lids. The increase in the number of Cups, Lids and Straws corresponds to the percentage of these items in recent litter studies conducted in the 2010 Northeast Litter Survey<sup>1</sup>.

A total of 2,038 items of *Small Litter* were observed, representing a reduction of 67.3 percent compared to 2006. Notably, most categories of *Small Litter* showed significant reductions since 2006. Exceptions were *Candy Wrappers*, which only dropped by 7.1 percent and *Bottle Caps* (the only component of *Small Litter* that increased), which grew by 100 percent from 9 items in 2006 to 18 items in 2012. *Cigarette Butts* were the largest component of *Small Litter* (31.3 percent) followed by *Gum Litter* (28.9 percent.)

In addition, to the tally of litter, items were also examined to determine the brand names where visible. Data regarding the occurrence and prevalence of branded items are included in Appendix D.

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<sup>&</sup>lt;sup>1</sup> The 2010 Northeast Litter Survey included these items in fast food packaging. When broken out separately, these items comprised a similar part of litter in the states of Maine (10.7%), New Hampshire (8.5%) and Vermont (7.1 %.)

#### **Introduction**

In August 2012, Environmental Resources Planning, LLC conducted a citywide litter audit for the City of Toronto to gauge the rate, extent and composition of litter within City-maintained areas. The City had previously conducted four citywide litter audits in 2002, 2004, 2005 and 2006 using the same methodology, which allowed a comparison of each audit's results. The method used for conducting the litter audits involved counting litter and examining its characteristics as it is visually observed on the ground and did not require the physical removal of litter from the sites audited.

#### **Company Background**

ER Planning's Principal has led a number of citywide and statewide litter surveys as well as the 2008 National Litter Survey sponsored by Keep America Beautiful:

- ➤ New Jersey (2004)
- Georgia (2006)
- > Tennessee (2006)
- ➤ U.S. National Litter Survey (2008)
- > Maine (2010)
- ➤ New Hampshire (2010)
- > Oakland, CA (2011-12)
- > San Francisco, CA (2011-12)
- > Toronto, ON (2012)
- > Vermont (2010)
- ➤ Washington, D.C. (2011-12)

#### **Methodology**

This litter audit was conducted by surveying 298 pre-selected sites determined by the City of Toronto. In order to be comparable to previous audits conducted by the City, this audit was conducted between August 8-18, 2012 by three survey teams to ensure that it would be completed within the three week parameter set by the City. The methodology used in the City's previous litter audits was followed, as requested by the City.

The only modification made, at the City's request, was changing the maximum square footage for measuring *Small Litter* from 45 square feet to 54 square feet for each site. This allowed each team to survey *Small Litter* along the entire width of each site.

Using the material categories and auditing the same 298 sites surveyed in 2006 maintained consistency with (and allowed comparability to) the results of the 2006 audit. The site ID numbers from 2006 were also used.

As in 2006, each site was surveyed twice for *Large Litter*. If an item was only observed in one of those passes, it was tallied as one-half of an item, as directed by the methodology.

Field crews surveyed more than 772,000 square feet along Toronto streets and rights-of-way. Data for both the large and small components of litter were entered directly onto field forms. Field crews also collected data for branded litter, which is included in the Appendix.

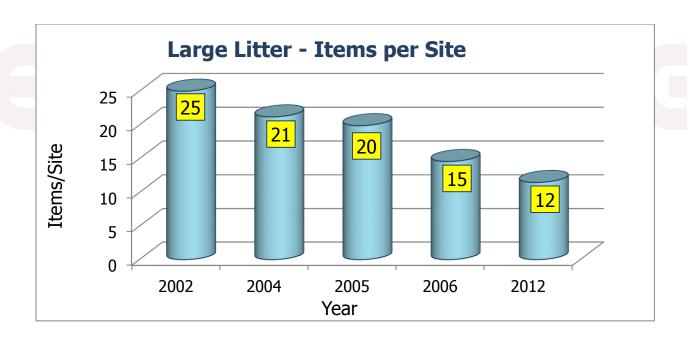
#### **Survey Results**

The survey results are broken down into sections addressing *Large Litter* and *Small Litter* separately. Additional details regarding the data recorded in the 2012 Toronto Streets Litter Audit can be found in the Appendices.

#### **Large Litter**

*Large Litter* dropped from 4,341 items in 2006 to 3,433 in 2012, a reduction of 20.9 percent. Figure 1 shows how *Large Litter* in Toronto has steadily declined since 2002.

Figure 1 – Large Litter Items Reduction: 2002-2012



The highest portion of *Large Litter, Misc. Paper*, grew from 18.6 percent in 2006 to 21.5 percent in 2012. *Misc. Plastic* was the second highest portion at 11.6 percent. Together these items comprised approximately one-third of all *Large Litter. Cups, Lids and Straws* were third highest at 8.5 percent, quadrupling from 2.1 percent in 2006. Many of these items were coffee cup lids.

Table 1 shows the top 20 components of *Large Litter*. Together they comprise 78.6 percent of this category. *Misc. Paper* has been the major component of *Large Litter* in each of the litter audits that have been conducted for the City. The complete list is included in Appendix A. A comparison of the percentages of all components of *Large Litter* (2002-2012) is included in Appendix B.

Table 1 – Large Litter – Top 20 Items

#	Large Litter Items	Items <sup>2</sup>	Percent <sup>3</sup>
1	Misc. Paper	736.5	21.5%
2	Misc. Plastic	396.5	11.6%
3	Cup Lids, Pieces Lids, Straws	292	8.5%
4	Non-Brand Towels / Napkins	223	6.5%
5	Home Articles	100.5	2.9%
6	Plastic Packaging - Other	92.5	2.7%
7	Water (Plastic)	90.5	2.6%
8	Receipts (Business, Transfers, Etc.)	90.5	2.6%
9	Tobacco Packaging (Packs, Matches, Etc.)	89.5	2.6%
10	Candy Bar Wraps	79.5	2.3%
11	Plastic Wrap	79	2.3%
12	Foil Materials/Foil Pieces	57.5	1.7%
13	Paper Cups (Hot)	57	1.7%
14	Soft Drink (Cans)	49.5	1.4%
15	Printed Material (Newspapers, Etc.)	49	1.4%
16	Plastic Drink Cups	46	1.3%
17	Construction Debris	46	1.3%
18	Paper Cups (Cold)	43	1.3%
19	Snack Food Packaging	42	1.2%
20	Paper Food Wrap	35	1.0%
Tota	l - Top 20 Items in Large Litter	2,697.0	78.6%
Tota	l Large Litter	3,432.5	100.0%

<sup>&</sup>lt;sup>2</sup> The methodology used for this study requires that items of *Large Litter* observed on just one of the two passes be reported as half an item as shown in Table 1. For easier reference, some of the tables and figures in this report may round these numbers.

<sup>&</sup>lt;sup>3</sup> Percents are rounded to one decimal. To derive the exact percentage of each item, divide the number of items into the total number of large litter items.

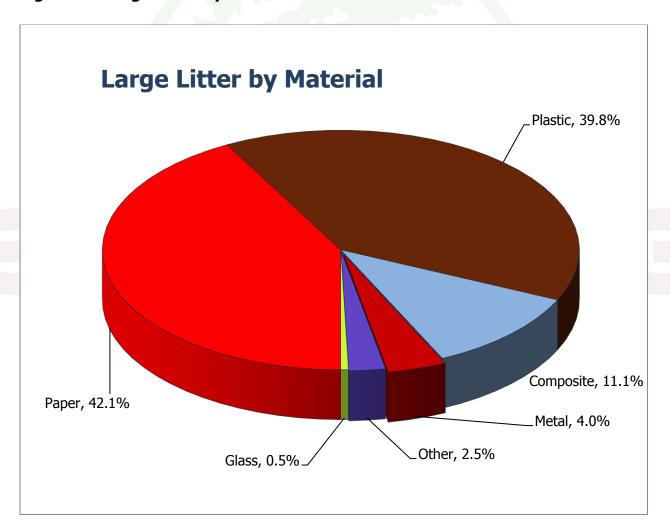
#### **Large Litter by Material**

For the purpose of comparing items by material type, items were categorized based on their known composition. Items comprising more than one material were categorized as composite.

Toronto's litter audits have always placed *Misc. Paper* in the *Other Misc.* category rather than in the *Paper* category. For evaluating litter by material type, *Misc. Paper* was added to the *Paper* category.

In terms of material type, *Large Litter* was dominated by paper (42.1 percent), followed by plastic (39.8 percent.) Categories of items of multiple materials (composite) comprised 11.1 percent. Metal items accounted for 4.0 percent, while all other items (glass, cloth, tobacco or other materials), accounted for 3.0 percent.

Figure 2 – Large Litter by Material



#### **Large Litter by Category**

Table 2 compares *Large Litter* in 2012 to the same categories in 2006. Categories are listed in descending order. The *Cups* and *Other Packaging* categories increased both by number of items and as a percentage of *Large Litter. Paper*, as a category used by the City, dropped significantly, but when the subcategory of *Misc. Paper* (categorized historically as *Other Misc.*) is added, paper remains the most significant portion of Toronto's *Large Litter*.

**Table 2 – Large Litter (2006-2012)** 

Survey Year	2012		2006	
Category	Items Percent		Items	Percent
Other Misc.	1,435.5	41.8%	1,775.5	39.9%
Cups (All Types)	467.0	13.6%	317.0	7.1%
Paper <sup>4</sup>	432.0	12.6%	954.5	21.4%
Snack	223.5	6.5%	299.0	6.7%
Beverage Cont. & Packaging	233.0	6.8%	373.0	8.4%
Other Packaging	168.0	4.9%	99.0	2.2%
Food Wraps	125.0	3.6%	168.0	3.8%
Tobacco Items & Packaging <sup>5</sup>	111.5	3.2%	165.0	3.7%
Bags (All Types)	98.0	2.9%	145.5	3.3%
Take-Out	57.5	1.7%	54.5	1.2%
Cloth	39.0	1.1%	70.5	1.6%
Other Containers	37.5	1.1%	25.0	0.6%
Trays	5.0	0.1%	6.0	0.1%
Total	3,432.5	100.0%	4,452.5	100.0%

The charts below compare the percentages of each category of *Large Litter* in 2012 (Figure 3) and 2006 (Figure 4.)

<sup>&</sup>lt;sup>4</sup> Paper in Table 2 excludes *Misc. Paper*. *Misc. Paper* and *Misc. Plastic* are included in the *Other Misc.* category. This is how *Misc. Paper* and *Misc. Plastic* have been categorized historically by Toronto's litter audits. However, to provide a more precise understanding of *Large Litter* by material, Figure 2 shows *Large Litter* broken down by actual material composition, which includes *Misc. Paper* with other *Paper* components and *Misc. Plastic* with other *Plastic* components.

<sup>&</sup>lt;sup>5</sup> This category in Table 2 includes *Tobacco Packaging* as well as *Cigarette and Cigar Debris*, while Table 1 refers only to *Tobacco Packaging*.

Figure 3 – Large Litter by Category (2012)

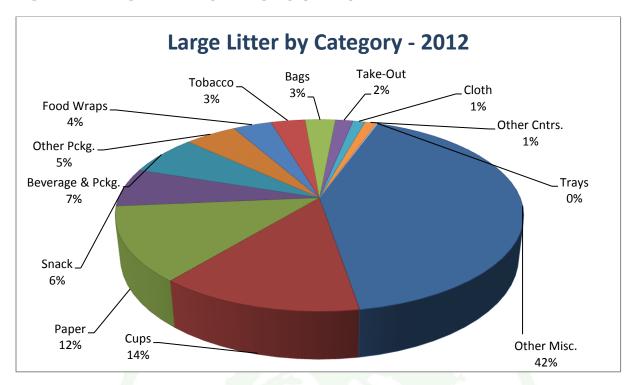
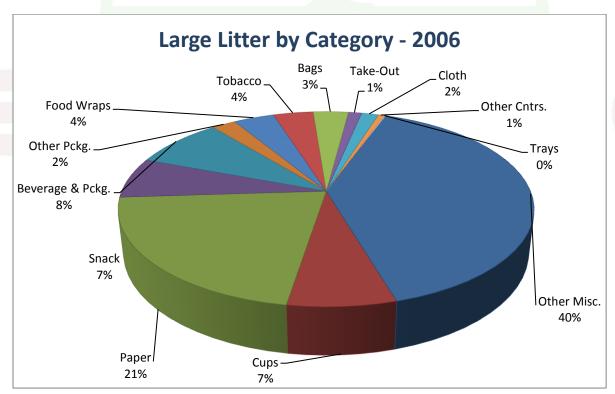


Figure 4 – Large Litter by Category (2006)



#### **Large Litter Statistical Tests**

Statistical tests were conducted on the resulting litter rates at each site. As shown in Table 3, only five sites (1.7 percent of all sites audited) yielded high litter rates. It is not unusual for litter surveys to yield several such sites. This is especially true when many areas are litter free, but some hot spots still exist. There is no statistical reason to remove these data points from the analysis. Furthermore, doing so would only reduce the mean value of *Large Litter* per site from an average of 12 items per site to an average of 11 items per site.

Site 515, the site with the most litter, was also the most littered site (262 items.) Additional technical discussion of the statistical aspects of this survey can be found in Appendix I.

Table 3 – Sites with High Rates of Large Litter

Site ID	<i>Items</i>
111	51
259	55
310	73
409	64
515	103

The number of sites with no *Large Litter* grew from five in 2006 to 20 in 2012. The site rankings distribution for *Large Litter* in 2012 was similar to 2006.

Slightly more than one-third of the sites audited had above average rates of *Large Litter*, while slightly less than two-thirds of the sites yielded below average rates. Performing this calculation to one decimal place meant that no site in 2012 yielded a precisely average rate.

**Table 4 – Site Ranking Distribution (Large Litter)** 

	<u>20.</u>	<u>12</u>	<u>2006</u>	
Site Rankings	# of Sites	<b>Percent</b>	# of Sites	Percent
Above Average	109	37%	88	30%
Average	0	0%	8	3%
Below Average	189	63%	202	68%
Total	298	100%	298	100%

#### **Small Litter**

A total of 2,038 items of *Small Litter* were observed, representing a reduction of 67.3 percent compared to 2006 (6,240 items.) Since the total area surveyed for *Small Litter* in 2012 (11,584 square feet) was virtually identical to 2006 (11,512), these results indicate a significant reduction in *Small Litter*. The 2012 audit yielded an average of one small littered item per 5.7 square feet compared with one littered item per 2.1 square feet in 2006.

As shown in Table 5, most components of *Small Litter* showed significant reductions since 2006. Exceptions were *Candy Wrappers*, which were only 7.1 percent lower and *Bottle Caps*, which increased from 9 items in 2006 to 18 items in 2012, making it the only component of *Small Litter* that increased. *Cigarette Butts* were the largest component of *Small Litter* (31.3 percent.)

**Table 5 – Small Litter** 

Small Litter: 2006 and 2012					
Itom Doscription	2012		2006		Change
Item Description	Items	Percent	Items	Percent	(2006-2012)
Aluminum	23	1.1%	151	2.4%	(84.8%)
Bottle Caps	18	0.9%	9	0.1%	100.0%
Candy Wrappers	92	4.5%	99	1.6%	(7.1%)
Cigarette Butts	637	31.3%	925	14.8%	(31.1%)
Glass	42	2.1%	963	15.4%	(95.6%)
Gum Litter	590	28.9%	1,930	30.9%	(69.4%)
Hard Plastic	100	4.9%	225	3.6%	(55.6%)
Metal (not Aluminum)	17	0.8%	69	1.1%	(75.4%)
Other Material	15	0.7%	153	2.5%	(90.2%)
Tobacco Packaging, etc.	15	0.7%	147	2.4%	(89.8%)
Paper	336	16.5%	1,082	17.3%	(68.9%)
Plastic Film	93	4.6%	172	2.8%	(45.9%)
Poly Foam - Peanuts	9	0.4%	141	2.3%	(93.6%)
Poly Foam - Other Pieces	42	2.1%	103	1.7%	(59.2%)
Rubber	3	0.1%	45	0.7%	(93.3%)
Straws	6	0.3%	26	0.4%	(76.9%)
Total Small Litter	2,038	100.0%	6,240	100.0%	(67.3%)

#### **Small Litter Statistical Tests**

Statistical tests were conducted on the resulting litter rates at each site. As shown in Table 6, seven sites (2.3 percent of all *Small Litter* sites audited) yielded high litter rates, similar to the results for *Large Litter*.

Table 6 – Sites with High Rates of Small Litter

Site ID	<i>Items</i>
300	54
408	47
111	40
305	40
149	37
222	36
329	35

The *Small Litter* rates for sites with the highest values (35-54 items per site) were within a tighter range than sites with the highest values of *Large Litter*. There is no statistical reason to remove these data points from the analysis. Furthermore, doing so would only reduce the mean value of *Small Litter* per site from an average of 7 items per site to an average of 6 items per site. Additional technical discussion of the statistical aspects of this survey can be found in Appendix I. Of the 40 sites that had no *Small Litter*, six of them had no *Large Litter* as well.

The site rankings distribution for *Small Litter* in 2012 (Table 7) was similar to the distribution for *Large Litter*. Slightly less than one-third of the sites audited had above average rates of *Small Litter*, while slightly more than two-thirds of the sites yielded below average rates. Performing this calculation to one decimal place meant that no site in 2012 yielded a precisely average rate of *Small Litter*.

**Table 7 – Site Ranking Distribution (Small Litter)** 

	<u>20.</u>	<u>2012</u>		
Site Rankings	# of Sites	Percent		
Above Average	93	31%		
Below Average	205	69%		
Total	298	100%		

#### **Litter Abatement**

The City of Toronto reported on the status of litter abatement operations, specifically noting any changes put in place since 2006.

The City operates three types of litter cleaning services:

- 1. 58 (29 city owned and 29 contracted) contracted street cleaners assigned to downtown routes. Sidewalks, major and minor streets, alleyways, and lanes are cleaned. In 2006, 56 (44 city-owned and 12 contracted) street cleaners were assigned.
- 2. 64 manual street cleaning routes that use a broom and bag to clean heavily littered areas in downtown Toronto.
- 3. 27 "Flying Squad Routes" using mobilized vehicles that are specifically dispatched to particularly littered areas.

In addition, the City has increased the number of litter bins placed at strategic points in the City to 6,200. The City expects that number to grow to 12,000 eventually.

The synergy of multiple litter abatement efforts has likely contributed to the reduction in litter. Such efforts also help to create community pride in cleaner streets, helping to reinforce a litter-free ethic among residents.

The observations of litter items per audit site have continually decreased since the first litter audit in 2002, despite decreases in the budget for these services.

#### **Additional Observations**

Littering is a complex dynamic involving a number of factors and root causes.

While surveying, field crews also made note of sites in which the area surveyed had a level of litter significantly different from the surrounding offsite area.

Some of the littered bottles observed appeared to be thin plastic water bottles whose label had peeled off. In other cases, water bottle labels were found that had no corresponding bottle on the site audited.

#### Photo 1 – Receptacle Adjacent to Bus Stop



The City's use of aesthetically designed bins that accept both litter and recyclables in separate compartments using a foot pedal has likely contributed to the reduction in litter along Toronto's streets. These have the potential to reduce litter significantly when placed adjacent to transition points such as bus stops.

Photo 2 – Receptacle Adjacent to Bus Stop (Close-up)



However, as a close-up of this photo shows, a certain amount of apathy exists in some areas.

A number of items, mostly cups, have been abandoned on and around the bench at this bus stop, despite easy access to proper disposal.

#### **Conclusions**

- > Litter in Toronto continued to decline in 2012.
- > Large Litter was reduced from 15 items per site in 2006 to 12 items per site in 2012, a 20.9 percent reduction. Since 2002, Large Litter per site has declined by 52.0 percent.
- Misc. Paper (21.5 percent) continued to comprise the largest component of Large Litter by a wide margin. Misc. Plastic was the next largest component (11.6 percent.) The third largest component, Cup Lids, Pieces and Straws, quadrupled from 2.1 percent in 2006 to 8.5 percent in 2012.
- > Small Litter was reduced by 67.3 percent since 2006 with significant reductions in almost all categories. There were two exceptions. Candy Wrappers only dropped by 7.1 percent. Bottle Caps, the only category of Small Litter to grow, increased from 9 in 2006 to 18 in 2012 (100 percent increase.) Cigarette Butts were largest component (31.3 percent) of Small Litter.
- Transition points such as bus stops remain a challenge, despite the availability of aesthetically designed litter receptacles that are easily accessible and easy to use.

#### Recommendations

- > Determine whether the trash and recycling collection processes contribute to the presence of litter, particularly smaller items.
- ➤ Focus litter abatement efforts on areas with sites that yielded high litter rates, especially for those with high litter rates in both 2006 and 2012.
- > Toronto should examine cigarette butt litter programs and policies to address the ongoing issue of cigarette butt litter.

#### References

2010 Northeast Litter Survey – A Baseline Survey of Litter at 288 Street and Highway Locations in Maine, New Hampshire and Vermont. Environmental Resources Planning, LLC. Gaithersburg, MD. July 2011.

## 2012 Toronto Streets Litter Audit Appendices

Appendix A – Large Litter (All Items)

Appendix B – Large Litter (2002-2012)

Appendix C – Ranking of Sites (Large Litter, Small Litter and All Litter)

Appendix D – Branded Litter

Appendix E – Methodology

Appendix F – Large Litter Categories and Descriptions

Appendix G – List of Sites

Appendix H – Sites Distribution Map

Appendix I – Field Forms

Appendix J – Statistical Analysis of Litter Audits Results

Appendix K – Firm Qualifications



## Appendix A – Large Litter (All Items)

Large Litter Items	Total	Percent
Misc. Paper	736.5	21.5%
Misc. Plastic	398.5	11.6%
Cup Lids, Pieces Lids, Straws	292	8.5%
Non-Brand Towels / Napkins	223	6.5%
Home Articles	100.5	2.9%
Plastic Packaging - Other	92.5	2.7%
Water (Plastic)	90.5	2.6%
Receipts (Business, Transfers, Etc.)	90.5	2.6%
Tobacco Pckg. (Packs, Matches, Etc.)	89.5	2.6%
Candy Bar Wraps	79.5	2.3%
Plastic Wrap	79	2.3%
Foil Materials/Foil Pieces	57.5	1.7%
Paper Cups (Hot)	57	1.7%
Soft Drink (Cans)	49.5	1.4%
Printed Material (Newspapers, Etc.)	49	1.4%
Plastic Drink Cups	46	1.3%
Construction Debris	46	1.3%
Paper Cups (Cold)	43	1.3%
Snack Food Packaging	42	1.2%
Paper Food Wrap	35	1.0%
Misc. Paperboard	32.5	0.9%
Paper Packaging - Other	31	0.9%
Plastic Bags - Not Retail	30	0.9%
Sweet Packaging (Describe)	30	0.9%
Plastic Retail Bags	29	0.8%
Paperboard (Cereal Type)	27.5	0.8%
Soft Drink (Plastic)	27	0.8%
Polystyrene Cups (Foam)	26	0.8%
Gum Wrappers	26	0.8%
Other Cloth	26	0.8%
Other Confectionery (Describe)	25	0.7%
Utensils	24	0.7%
Lottery Ticket Debris	23.5	0.7%

Large Litter Items	Total	Percent
Cigarette / Cigar Debris (>4")	22	0.6%
Tire & Rubber Debris	21	0.6%
Vehicle & Metal Road Debris	20	0.6%
Other Plastic Shells/Boxes	19.5	0.6%
Paper Bags - Fast Food	18	0.5%
Candy Pouches	18	0.5%
Milk/Juice (Plastic)	17	0.5%
Cans - Aluminum	16.5	0.5%
Cardboard Boxes/ Box Material	16	0.5%
Condiment Package (Salt, Etc.)	16	0.5%
Stationary (School, Business Etc.)	15	0.4%
Clothing Or Clothing Pieces	13	0.4%
Misc. Cardboard	13	0.4%
Aseptic (Box)	12	0.3%
Zipper Bags/ Sandwich	11.5	0.3%
Plastic Jars / Bottles/ Lids	11	0.3%
Paper / Foil Composite Wrap	11	0.3%
Name Brand FF Towels/Napkins	9	0.3%
Polystyrene Clamshells	8.5	0.2%
Beer Cans	7.5	0.2%
Plastic/Composite - Other	7.5	0.2%
Sport Drink (Plastic)	7	0.2%
Paper Fast Food Plates	6.5	0.2%
Paper Retail Bags	6	0.2%
Container Lids	5	0.1%
Misc. Glass	4.5	0.1%
Soft Drink (Glass)	4	0.1%
Foil Pouches	4	0.1%
Paper Beverage Cases	4	0.1%
Milk/Juice (Can)	3.5	0.1%
Paper Bags - Not Retail	3.5	0.1%
Glass Jars/ Bottles Misc.	3	0.1%
Other Paper Cups	3	0.1%
Beer Bottles (Glass)	2	0.1%

Large Litter Items	Total	Percent
Milk/Juice (Glass)	2	0.1%
Milk/Juice (Gable Top)	2	0.1%
Six Pack Plastic Rings	2	0.1%
Cans - Steel	2	0.1%
Polystyrene Trays	2	0.1%
Other Material Trays	2	0.1%
Sport Drink (Glass)	1	0.0%
Water (Glass)	1	0.0%
Foil Containers	1	0.0%
Paper Clamshells	1	0.0%
Other Plastic FF Plates	1	0.0%
Plates - Other Materials	1	0.0%
Paper Trays	1	0.0%
Wine/ Liquor (Glass)	0	0.0%
Wine/ Liquor (Plastic/Other)	0	0.0%
Broken Glass Container	0	0.0%
Aerosol Cans (Paint, Oils, Etc.)	0	0.0%
Poly Fast Food Plates	0	0.0%
Total	3,432.5	100.0%

ER Planning

## Appendix B – Large Litter (2002-2012)

Large Litter	Tor-12	Tor-06	Tor-04	Tor-02
Aerosol Cans (Paint, Oils, etc.)	0.0%	0.0%	0.0%	0.0%
Aseptic (Box)	0.3%	0.3%	0.5%	0.5%
Beer Bottles (Glass)	0.1%	0.1%	0.2%	0.1%
Beer Cans	0.2%	0.1%	0.0%	0.2%
Broken Glass Container	0.0%	0.0%	0.1%	0.0%
Candy Bar Wraps	2.3%	3.2%	2.9%	3.0%
Candy Pouches	0.5%	0.4%	2.2%	1.1%
Cans - Aluminum	0.5%	0.1%	0.1%	0.2%
Cans - Steel	0.1%	0.2%	0.1%	0.0%
Cardboard Boxes/Box Material	0.5%	0.8%	0.1%	0.4%
Cigarette/Cigar Debris (>4")	0.6%	2.2%	0.2%	1.2%
Clothing and Pieces	0.4%	0.7%	0.4%	0.2%
Condiment Package	0.5%	0.3%	1.4%	1.0%
Construction Debris	1.3%	4.1%	0.6%	
Home Articles	2.9%	1.5%	3.5%	3.1%
Tire & Rubber Debris	0.6%	0.3%	0.4%	
Container Lids	0.1%	0.2%	0.1%	0.4%
Cup Lids, Pieces, Straws	8.5%	2.1%	3.2%	2.7%
Branded Fast Food Towels/Napkins	0.3%	0.5%	0.3%	0.4%
Foil Containers	0.0%	0.0%	0.1%	0.1%
Foil Materials/Foil Pieces	1.7%	0.8%	1.9%	4.5%
Foil Pouches	0.1%	0.1%	0.1%	0.0%
Glass Jars/Bottles	0.1%	0.0%	0.1%	0.0%
Gum Wrappers	0.8%	1.5%	2.6%	2.0%
Lottery Ticket Debris	0.7%	0.3%	0.7%	0.4%
Milk/Juice (Gable Top)	0.1%	0.3%	0.2%	0.1%
Milk/Juice (Glass)	0.1%	0.1%	0.1%	0.0%
Milk/Juice/Tea (Plastic)	0.5%	0.1%	0.1%	0.1%
Misc. Glass/Can	0.2%	0.6%	0.1%	1.2%
Misc. Cardboard	0.4%	0.6%	0.8%	
Misc. Paper	21.5%	18.6%	14.8%	21.2%
Misc. Paperboard	0.9%	1.1%	0.5%	
Misc. Plastic	11.6%	10.9%	5.0%	3.7%
Newspapers, Flyers, Books, etc.	1.4%	4.8%	7.7%	9.4%
Other Cloth	0.8%	1.0%	0.7%	0.5%
Other Confectionery	0.8%	0.3%	0.2%	1.8%
Other Material Trays	0.1%	0.0%	0.0%	0.0%
Other Paper Cups	0.1%	0.1%	0.1%	0.1%

Large Litter	Tor-12	Tor-06	Tor-04	Tor-02
Other Plastic Shells/Boxes	0.6%	0.2%	0.1%	0.2%
Paper/Foil Composite Wrap	0.3%	1.5%	0.3%	0.4%
Paper Bags - Fast Food	0.5%	0.9%	0.4%	0.5%
Paper Bags - Not Retail	0.1%	0.4%	0.3%	0.4%
Paper Beverage Cases	0.1%	0.0%	0.0%	0.0%
Paper Clamshells	0.0%	0.1%	0.1%	0.0%
Paper Cups (Cold)	1.3%	0.8%	0.7%	0.5%
Paper Cups (Hot)	1.7%	2.6%	2.0%	1.4%
Paper Fast Food Plates	0.2%	0.0%	0.1%	0.0%
Paper Food Wrap	1.0%	0.3%	0.5%	0.6%
Paper Packaging - Other	0.9%	0.3%	0.5%	1.0%
Paper Retail Bags	0.2%	0.1%	0.2%	0.1%
Paper Trays	0.0%	0.0%	0.1%	0.0%
Paperboard (Cereal Type)	0.8%	1.2%	0.3%	0.2%
Plastic/Composite - Other	0.2%	0.3%	0.5%	3.3%
Plastic bags - Not Retail	0.9%	1.5%	1.8%	1.0%
Plastic Drink Cups	1.3%	0.7%	0.9%	0.2%
Plastic Jars/Bottles/Lids	0.3%	0.1%	0.7%	1.0%
Plastic Packaging - Other	2.7%	0.8%	2.4%	5.6%
Plastic Retail Bags (Incl. Fast Food/Conv.)	0.8%	0.1%	0.2%	0.6%
Plastic Wrap	2.3%	2.1%	2.2%	0.2%
Plates - Other Materials	0.0%	0.0%	0.0%	0.0%
Polystyrene Clamshells	0.2%	0.0%	0.1%	0.7%
Polystyrene Cups (Foam)	0.8%	0.9%	0.6%	0.8%
Receipts, Forms, Transfers, etc.	2.6%	4.4%	6.0%	1.1%
Six-Pack Plastic Rings	0.1%	0.1%	0.0%	0.0%
Snack Food Packaging	1.2%	0.3%	0.6%	0.3%
Soft Drink (Cans)	1.4%	2.9%	2.3%	2.4%
Soft Drink (Glass)	0.1%	0.2%	0.0%	0.0%
Soft Drink (Plastic)	0.8%	1.0%	0.2%	0.4%
Sport Drink (Glass)	0.0%	0.1%	0.0%	0.1%
Sport Drink (Plastic)	0.2%	0.3%	0.1%	0.1%
Stationary	0.4%	0.1%	0.7%	1.6%
Sweet Packaging (Describe)	0.9%	1.1%	1.4%	0.6%
Tobacco Packs, Cellophane, etc.	2.6%	1.5%	8.8%	2.5%
Towels/Napkins - Non-Branded	6.5%	10.6%	10.1%	8.8%
Utensils	0.7%	0.4%	0.4%	1.3%
Vehicle & Metal Road Debris	0.6%	0.8%	0.5%	0.9%
Water (Glass)	0.0%	0.1%	0.0%	0.0%
Water (Plastic)	2.6%	2.6%	1.3%	0.6%

Large Litter	Tor-12	Tor-06	Tor-04	Tor-02
Wine/ Liquor (Glass)	0.0%	0.0%	0.0%	0.1%
Wine/ Liquor (Plastic/Other)	0.0%	0.0%	0.0%	0.1%
Zipper Bags/Sandwich	0.3%	0.3%	0.4%	0.4%
Poly Fast Food Plates	0.0%	0.0%	0.1%	0.0%
Polystyrene Trays	0.1%	0.1%	0.1%	0.0%
Other Plastic FF Plates	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%



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## **Appendix C – Ranking of Sites**

Site ID	Site #	Large Litter
515	288	103
310	225	73
409	255	64
259	210	55
111	106	51
413	259	50
61	56	47
151	145	45
96	91	42
35	30	40
69	64	40
63	58	37
311	226	35
47	42	34
150	144	33
509	282	33
408	254	33
105	100	32
204	182	32
401	248	32
70	65	31
217	195	31
411	257	30
124	119	30
49	44	29
418	264	29
102	97	28
59	54	28
32	27	27
218	196	27
59 32 218 110 219 31 125 209	54 27 196 105 197 26	28 27 27 26 26 25 25 25 25 25
219	197	26
31	26	25
125	120	25
209	187	25
329	239	25
503	276	25

Site ID	Site #	Small Litter
300	215	54
408	254	47
111	106	40
305	220	40
149	143	37
222	200	36
329	239	35
124	119	33
306	221	33
158	152	30
155	149	29
335	244	29
503	276	29
524	297	28
153	147	27
307	222	27
179	173	26
301	216	25
110	105	24
316	230	24
515	288	24
21	17	22
54	49	22
182	176	22
20	16	21
260	211	21
321	234	21
59	54	20
213	191	19
336	245	19
69	64	18
119	114	18
120	115	18
254	206	18
61	56	17
212	190	17
315	229	17

Site ID	Site #	All Litter
515	288	127
111	106	91
408	254	80
		79
310 409	225	
259	255	73
	210	69 64
61	56	
124	119	63
300	215	62
305	220	60
329	239	60
69	64	58
151	145	56
503	276	54
413	259	54
524	297	52
96	91	51
110	105	50
306	221	49
335	244	49
59	54	48
301	216	46
35	30	44
260	211	44
401	248	44
149	143	42
153	147	42
105	100	41
222	200	41
307	222	41
311	226	41
63	58	40
509	282	40
158	152	40
132	126	39
316	230	39
8	8	38

Site	Site	Large		Site	Site	Small	Site	Site	All
ID	#	Litter		ID	#	Litter	ID	#	Litter
524	297	24		132	126	16	21	17	38
332	241	24		313	228	16	32	27	38
8	8	23		8	8	15	47	42	38
43	38	23		57	52	15	54	49	38
53	48	23		114	109	15	217	195	38
132	126	23		259	210	14	114	109	37
260	211	23		261	212	14	179	173	37
1	1	22		309	224	14	204	182	37
114	109	22		131	125	13	150	144	36
148	142	22		146	140	13	70	65	35
56	51	21		165	159	13	155	149	35
112	107	21		324	236	13	20	16	34
115	110	21		112	107	12	212	190	34
258	209	21		171	165	12	112	107	33
303	218	21	J	178	172	12	321	234	33
312	227	21		210	188	12	411	257	33
301	216	21		334	243	12	213	191	32
46	41	20	6	401	248	12	309	224	32
141	135	20	3	12	10	11	49	44	31
305	220	20		32	27	11	332	241	31
335	244	20		113	108	11	418	264	31
34	29	19		142	136	11	102	97	29
55	50	19		151	145	11	120	115	29
207	185	19		333	242	11	219	197	29
302	217	19		40	35	10	258	209	29
51	46	18		83	78	10	313	228	29
67	62	18		256	207	10	254	206	29
309	224	18		337	246	10	261	212	29
12	10	17		58	53	9	1	1	28
25	20	17		92	87	9	12	10	28
58	53	17		96	91	9	182	176	28
94	89	17		105	100	9	315	229	28
157	151	17		116	111	9	218	196	28
212	190	17		157	151	9	31	26	27
402	249	17		202	180	9	131	125	27
21	17	16		318	232	9	142	136	27
54	49	16		409	255	9	43	38	26
66	61	16		504	277	9	46	41	26
104	99	16		513	286	9	55	50	26

Site	Site	Large		Site	Site	Small		Site	Site	All
ID	#	Litter		ID	#	Litter		ID	#	Litter
142	136	16		4	4	8		58	53	26
330	240	16		129	124	8		125	120	26
306	221	16		206	184	8		141	135	26
44	39	15		258	209	8		157	151	26
83	78	15		320	233	8		209	187	26
116	111	15		326	237	8		333	242	26
153	147	15		502	275	8		53	48	25
316	230	15		52	47	7		83	78	25
333	242	15		55	50	7		165	159	25
261	212	15		133	127	7		303	218	25
27	22	14		214	192	7		56	51	24
45	40	14		217	195	7		57	52	24
48	43	14		317	231	7		116	111	24
74	69	14		332	241	7		119	114	24
131	125	14		422	268	7		148	142	24
216	194	14		508	281	7		312	227	24
307	222	14		509	282	7		146	140	23
412	258	14	d	1	1	6		504	277	23
147	141	14	3	3	3	6		40	35	22
504	277	14		26	21	6		51	46	22
20	16	13		45	40	6		336	245	22
129	124	13		46	41	6		67	62	21
154	148	13		91	86	6		104	99	21
213	191	13		126	121	6		113	108	21
313	228	13		141	135	6	1	115	110	21
122	117	13		156	150	6		129	124	21
40	35	12		163	157	6		171	165	21
165	159	12		173	167	6		210	188	21
214	192	12		174	168	6		318	232	21
317	231	12		183	177	6		324	236	21
318	232	12		224	202	6		45	40	20
321	234	12		250	203	6		207	185	20
417	263	12		251	204	6		302	217	20
103	98	11		310	225	6		513	286	20
120	115	11		311	226	6		25	20	19
179	173	11		73	68	5		34	29	19
183	177	11		74	69	5		66	61	19
315	229	11		77	72	5		74	69	19
328	238	11		103	98	5		94	89	19

Site	Site	Large		Site	Site	Small		Site	Site	All
ID	#	Litter		ID	#	Litter		ID	#	Litter
513	286	11		104	99	5		202	180	19
254	206	11		184	178	5		214	192	19
23	18	10		204	182	5		317	231	19
52	47	10		520	293	5		330	240	19
91	86	10		522	295	5		334	243	19
113	108	10		16	13	4		402	249	19
123	118	10		18	15	4		320	233	18
202	180	10		30	25	4		44	39	17
308	223	10		35	30	4		52	47	17
320	233	10		47	42	4		183	177	17
517	290	10		51	46	4		48	43	16
146	140	10		65	60	4		91	86	16
158	152	10		70	65	4		103	98	16
16	13	9		75	70	4		154	148	16
57	52	9	7	76	71	4		412	258	16
97	92	9		87	82	4		122	117	16
140	134	9		144	138	4		256	207	16
171	165	9	d	168	162	4		174	168	15
174	168	9	3	176	170	4		216	194	15
201	179	9		215	193	4		328	238	15
210	188	9		223	201	4		27	22	14
520	293	9		252	205	4		178	172	14
18	15	8		270	213	4		308	223	14
30	25	8		303	218	4		337	246	14
62	57	8		308	223	4	1	417	263	14
73	68	8		328	238	4		517	290	14
79	74	8		413	259	4		520	293	14
90	85	8		414	260	4		147	141	14
152	146	8		426	272	4		4	4	13
300	215	8		500	273	4		16	13	13
324	236	8		501	274	4		73	68	13
506	279	8		505	278	4		326	237	13
37	32	7		506	279	4		502	275	13
65	60	7		514	287	4		18	15	12
68	63	7		517	290	4		30	25	12
77	72	7		2	2	3		77	72	12
107	102	7		41	36	3		206	184	12
167	161	7		43	38	3		224	202	12
334	243	7		56	51	3		506	279	12

Site	Site	Large		Site	Site	Small		Site	Site	All
ID	#	Litter		ID	#	Litter		ID	#	Litter
338	247	7		60	55	3		251	204	12
521	294	7		63	58	3		23	18	11
168	162	7		66	61	3		65	60	11
13	11	6		67	62	3		92	87	11
119	114	6		68	63	3		123	118	11
155	149	6		85	80	3		126	121	11
172	166	6		122	117	3		422	268	11
181	175	6		136	130	3		522	295	11
182	176	6		150	144	3		163	157	11
205	183	6		154	148	3		168	162	11
215	193	6		160	154	3		68	63	10
224	202	6		162	156	3		133	127	10
420	266	6		167	161	3		140	134	10
500	273	6		169	163	3		167	161	10
511	284	6		208	186	3		201	179	10
514	287	6		211	189	3		215	193	10
522	295	6		219	197	3		250	203	10
128	123	6	0	304	219	3		500	273	10
211	189	6	3	312	227	3		508	281	10
251	204	6		323	235	3		514	287	10
256	207	6		330	240	3		505	278	10
505	278	6		410	256	3		62	57	9
4	4	5		411	257	3		75	70	9
72	67	5		416	262	3		79	74	9
75	70	5		519	292	3	1	90	85	9
126	121	5		5	5	2		97	92	9
149	143	5		24	19	2		152	146	9
159	153	5		25	20	2		173	167	9
162	156	5		31	26	2		184	178	9
169	163	5		42	37	2		223	201	9
222	200	5		44	39	2		252	205	9
223	201	5		48	43	2		211	189	9
252	205	5		49	44	2		156	150	8
304	219	5		53	48	2		162	156	8
326	237	5		64	59	2		169	163	8
419	265	5		71	66	2		172	166	8
421	267	5		94	89	2		304	219	8
502	275	5		98	93	2		501	274	8
516	289	5		99	94	2		521	294	8

Site	Site	Large		Site	Site	Small	Site	Site	All
ID	#	Litter		ID	#	Litter	ID	#	Litter
523	296	5		100	95	2	13	11	7
163	157	5		106	101	2	26	21	7
33	28	4		108	103	2	37	32	7
41	36	4		109	104	2	41	36	7
42	37	4		137	131	2	107	102	7
50	45	4		138	132	2	144	138	7
81	76	4		143	137	2	270	213	7
95	90	4		148	142	2	338	247	7
106	101	4		161	155	2	410	256	7
109	104	4		164	158	2	419	265	7
184	178	4		172	166	2	511	284	7
203	181	4		177	171	2	516	289	7
206	184	4		220	198	2	128	123	7
250	203	4		221	199	2	160	154	7
337	246	4		271	214	2	3	3	6
410	256	4		402	249	2	42	37	6
422	268	4		403	250	2	85	80	6
501	274	4	0	412	258	2	106	101	6
510	283	4	3	415	261	2	109	104	6
518	291	4		417	263	2	159	153	6
160	154	4		418	264	2	181	175	6
7	7	3		419	265	2	205	183	6
14	12	3		516	289	2	208	186	6
28	23	3		518	291	2	420	266	6
36	31	3		7	7	1	426	272	6
82	77	3		13	11	1	518	291	6
84	79	3		23	18	1	519	292	6
85	80	3		29	24	1	523	296	6
89	84	3		33	28	1	33	28	5
101	96	3		50	45	1	50	45	5
108	103	3		62	57	1	60	55	5
133	127	3		78	73	1	72	67	5
134	128	3		79	74	1	76	71	5
143	137	3		84	79	1	95	90	5
144	138	3		86	81	1	108	103	5
164	158	3		88	83	1	136	130	5
170	164	3		90	85	1	143	137	5
173	167	3		95	90	1	164	158	5
177	171	3		101	96	1	176	170	5

Site	Site	Large		Site	Site	Small	Site	Site	All
ID	#	Litter		ID	#	Litter	ID	#	Litter
208	186	3		102	97	1	177	171	5
270	213	3		121	116	1	203	181	5
336	245	3		123	118	1	323	235	5
405	251	3		125	120	1	414	260	5
508	281	3		128	123	1	421	267	5
519	292	3		134	128	1	510	283	5
39	34	2		140	134	1	7	7	4
60	55	2		145	139	1	71	66	4
71	66	2		152	146	1	81	76	4
78	73	2		159	153	1	84	79	4
92	87	2		170	164	1	87	82	4
117	112	2		175	169	1	101	96	4
118	113	2		201	179	1	134	128	4
136	130	2		203	181	1	170	164	4
139	133	2	J	207	185	1	221	199	4
156	150	2		209	187	1	403	250	4
166	160	2		216	194	1	2	2	3
178	172	2	6	218	196	1	14	12	3
221	199	2	3	257	208	1	28	23	3
257	208	2		302	217	1	36	31	3
323	235	2		406	252	1	64	59	3
403	250	2		407	253	1	78	73	3
407	253	2		510	283	1	82	77	3
423	269	2		511	284	1	89	84	3
426	272	2		521	294	1	98	93	3
17	14	1		523	296	1	100	95	3
26	21	1		6	6	0	137	131	3
29	24	1		11	9	0	138	132	3
38	33	1		14	12	0	161	155	3
64	59	1		17	14	0	220	198	3
76	71	1		27	22	0	257	208	3
93	88	1		28	23	0	405	251	3
98	93	1		34	29	0	407	253	3
100	95	1		36	31	0	416	262	3
127	122	1		37	32	0	5	5	2
137	131	1		38	33	0	24	19	2
138	132	1		39	34	0	29	24	2
145	139	1		72	67	0	39	34	2
161	155	1		80	75	0	99	94	2

Site	Site	Large		5
ID	#	Litter		j
176	170	1		8
220	198	1		8
414	260	1		8
424	270	1		9
507	280	1		9
512	285	1		1
525	298	1		1
2	2	0		1
3	3 5	0		1
2 3 5 6		0		1
	6	0		1
11	9	0		1
24	19	0		1
80	75	0		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
86	81	0		1
87	82	0		1
88	83	0		2
99	94	0	()	3
121	116	0		4
135	129	0		4 4 4
175	169	0		4
180	174	0		4
271	214	0		
406	252	0		4
415	261	0		5
416	262	0		5
425	271	0		5
Total		3,433		To

Site ID	Site #	Small Litter
81	76	0
82	77	0
89	84	0
93	88	0
97	92	0
107	102	0
115	110	0
117	112	0
118	113	0
127	122	0
135	129	0
139	133	0
147	141	0
166	160	0
180	174	0
181	175	0
205	183	0
338	247	0
405	251	0
420	266	0
421	267	0
423	269	0
424	270	0
425	271	0
507	280	0
512	285	0
525	298	0
Total		2,038

	Site	Site	All
	<i>ID</i>	#	Litter
	117	112	2
	118	113	2
	139	133	2
	145	139	2
	166	160	2
	271 415	214	2
	415	261	2
	423	269	2 2 2 2 2 2 2 2 2
	17	14	1
	38	33	1
	86	81	1
	88	83	1
	93	88	1
	121	116	1
	127	122	1
ja	127 175	169	1
	406	252	1
	424	270	1
	424 507	280	1
	512	285	1
	525	298	1 1 0
	6	6	0
	525 6 11	9	0
	80	9 75	0 0 0 0
	135	129	0
	180	174	0
	425	271	0
	Total		5,471

#### **Appendix D – Branded Litter**

Prior visible litter studies performed in Canada and the U.S. have recorded the number of branded litter items to provide a better understanding of which brands contribute most to litter. As done in 2006, field crews noted the brand name of each large item of litter where recognizable and recorded each one on the field form.

In the 2012 survey, brand names were observed on 585 items, which included 227 unique brands. The most pervasive brand name observed in litter was Tim Hortons, which accounted for 106 of the identified branded items, 18.1 percent of all branded *Large Litter*. This is not surprising as Tim Hortons claims a 41 percent market share of quick service restaurant traffic.

McDonalds was the second most identified brand, accounting for 43 (7.4 percent) branded items. This was followed by Nestle (4.6 percent), Coca-Cola (2.7 percent) and Real Canadian (2.6 percent.)

#	Brand	Items	Percent
1	Tim Hortons	106	18.1%
2	McDonalds	43	7.4%
3	Nestle	27	4.6%
4	Coca Cola	16	2.7%
5	Real Canadian	15	2.6%
6	Subway	11	1.9%
7	Freezy	9	1.5%
8	TTC	8	1.4%
9	Wendy's	8	1.4%
10	du Maurier	7	1.2%
11	Excel Gum	6	1.0%
12	Heinz	6	1.0%
13	Next Tobacco	6	1.0%
14	Metro Stores	6	1.0%
15	Belmont	5	0.9%
16	Burger King	5	0.9%
17	Dasani	5	0.9%
18	Fruitopia	5	0.9%
19	Kirkland	5	0.9%
20	Popsicle	5	0.9%
21	Presidents Choice (PC)	5	0.9%
22	Red Bull	5	0.9%
23	Five Alive	4	0.7%
24	Lotto	4	0.7%

#	Brand	Items	Percent
25	Molsson	4	0.7%
26	Pepsi	4	0.7%
27	Starbucks	4	0.7%
28	7-Up	3	0.5%
29	Allen's Juice	3	0.5%
30	Budweiser	3	0.5%
31	Canada Dry	3	0.5%
32	City of Toronto (Parking Tickets)	3	0.5%
33	Compliments Water	3	0.5%
34	Fernbrook	3	0.5%
35	Lipton	3	0.5%
36	Minute Maid	3	0.5%
37	Mr. Freeze	3	0.5%
38	Orange Crush	3	0.5%
39	Peter Jackson	3	0.5%
40	Reese's	3	0.5%
41	Snickers	3	0.5%
42	7-11	2	0.3%
43	Amnesty International	2	0.3%
44	Arizona Tea	2	0.3%
45	Bank of Montreal	2	0.3%
46	Bic	2	0.3%
47	Duca Bank	2	0.3%
48	Durex Condom	2	0.3%
49	Fanta	2	0.3%
50	Fresca	2	0.3%
51	Gatorade	2	0.3%
52	Greenp Parking	2	0.3%
53	Maynard's	2	0.3%
54	MyBike Experience.Com	2	0.3%
55	PinkFlamingoInc.Com	2	0.3%
56	Powerade	2	0.3%
57	Quitling	2	0.3%
58	Schweppes	2	0.3%
59	Skittles	2	0.3%
60	Solo	2	0.3%
61	Sprite	2	0.3%
62	Stickling's Bakery	2	0.3%
63	Stride Gum	2	0.3%
64	Trident	2	0.3%
65	Wrigley's	2	0.3%
66	Aero Candy	1	0.2%

#	Brand	Items	Percent
67	Amabel Township	1	0.2%
68	Amigo Phone Card	1	0.2%
69	Annette's Donuts	1	0.2%
70	Aquafina	1	0.2%
71	Architectural Solutions	1	0.2%
72	Asian	1	0.2%
73	Azul Juice	1	0.2%
74	Barre Natural	1	0.2%
75	Bazooka	1	0.2%
76	Benson & Hedges	1	0.2%
77	Biologic Raisins	1	0.2%
78	Blue Jays (Baseball)	1	0.2%
79	Cadbury	1	0.2%
80	Canadian Classics	1	0.2%
81	Canadian Spring	1	0.2%
82	Canadian Tire	1	0.2%
83	Cara Tattoos	1	0.2%
84	Cedar Springs	1	0.2%
85	Chapman's Crème Glace	1	0.2%
86	Chubby Cola	1	0.2%
87	Cliff Bar	1	0.2%
88	Clorets	1	0.2%
89	Colts Sweets	1	0.2%
90	Country Style Coffee	1	0.2%
91	Cracker Barrel	1	0.2%
92	Dairy Queen	1	0.2%
93	Dentyne	1	0.2%
94	Disney	1	0.2%
95	Dole's	1	0.2%
96	Domino's	1	0.2%
97	Doritos	1	0.2%
98	Dunhill	1	0.2%
99	Elle Says	1	0.2%
100	Ensure	1	0.2%
101	Euro Rota	1	0.2%
102	Evian	1	0.2%
103	Faxe Beer	1	0.2%
104	Fibre One	1	0.2%
105	Frank's Red Hot	1	0.2%
106	Freedent	1	0.2%
107	Froster	1	0.2%
108	Fruit Rollup	1	0.2%

#	Brand	Items	Percent
109	Fruitella	1	0.2%
110	Fruitaffy	1	0.2%
111	Fudgsicle	1	0.2%
112	Fuji Apple	1	0.2%
113	Furlee Yogurt	1	0.2%
114	Galerie Candy	1	0.2%
115	Gayl	1	0.2%
116	Glaceau Vitamin Water	1	0.2%
117	GP8	1	0.2%
118	Great Value	1	0.2%
119	Haddad Bakery	1	0.2%
120	Haagen Dazs	1	0.2%
121	Heineken	1	0.2%
122	Honest Ed's	1	0.2%
123	Hot Rod	1	0.2%
124	Hyland Ice	1	0.2%
125	Iko Shingles	1	0.2%
126	Island Soda	1	0.2%
127	Iso Flex	1	0.2%
128	Jolly Rancher	1	0.2%
129	Jones Cola	1	0.2%
130	Juliana Fine Furniture	1	0.2%
131	Jumbo push pop	1	0.2%
132	Jumex	1	0.2%
133	Just Love	1	0.2%
134	Kashi	1	0.2%
135	Kellogg's	1	0.2%
136	Kisko Freezie	1	0.2%
137	Kit Kat	1	0.2%
138	Kool Ade	1	0.2%
139	Krinos Feta Cheese	1	0.2%
140	Krispy Kernels	1	0.2%
141	Krispy Kreme	1	0.2%
142	Lait	1	0.2%
143	Larabar Candy	1	0.2%
144	Lays	1	0.2%
145	Lichfields	1	0.2%
146	Life	1	0.2%
147	Loblaws	1	0.2%
148	Louisville Assembly Plant	1	0.2%
149	Mackintosh Caramels	1	0.2%
150	Magnum	1	0.2%

#	Brand	Items	Percent
151	Maltesers	1	0.2%
152	Mama	1	0.2%
153	Marlboro	1	0.2%
154	Matinee Cig	1	0.2%
155	M&Ms	1	0.2%
156	MacDonald Tobacco	1	0.2%
157	Mike & Ike	1	0.2%
158	Mill Street Beer	1	0.2%
159	Miss Vickie's	1	0.2%
160	Monster	1	0.2%
161	Montclair	1	0.2%
162	Mr. Big	1	0.2%
163	Mr. Sub	1	0.2%
164	Natrel	1	0.2%
165	Nature Valley	1	0.2%
166	Naya	1	0.2%
167	Neilson	1	0.2%
168	Nerds	1	0.2%
169	No Frills	1	0.2%
170	Nova Era	1	0.2%
171	Oasis Juice	1	0.2%
172	Oh Henry	1	0.2%
173	Olympic Yogurt	1	0.2%
174	Omega roofing	1	0.2%
175	Oriental Harvest	1	0.2%
176	Pall Mall	1	0.2%
177	PC Relief	1	0.2%
178	Peel District School board	1	0.2%
179	Pina Loca	1	0.2%
180	Players	1	0.2%
181	Podium Cigarettes	1	0.2%
182	Polar	1	0.2%
183	Proline Lottery	1	0.2%
184	Pringles	1	0.2%
185	Quaker	1	0.2%
186	React2	1	0.2%
187	Red Rave	1	0.2%
188	Regina Candy	1	0.2%
189	Resale Home & Condo Guide	1	0.2%
190	Ricola	1	0.2%
191	Ronco Steel	1	0.2%
192	Ruffles	1	0.2%

#	Brand	Items	Percent
193	Sago	1	0.2%
194	Sand N Sun	1	0.2%
195	Savoia Tile	1	0.2%
196	Scotch Tape	1	0.2%
197	Sealtest	1	0.2%
198	Second Cup Coffee	1	0.2%
199	Selection Natural Spring Water	1	0.2%
200	Seneca Cigarettes	1	0.2%
201	Simply Orange Juice	1	0.2%
202	SkyFlakes Crackers	1	0.2%
203	Smarties	1	0.2%
204	Snak-Pak	1	0.2%
205	Sun Life Juice	1	0.2%
206	Super Cycle	1	0.2%
207	TenRen's Tea Time	1	0.2%
208	Tin Nels	1	0.2%
209	Toblerone	1	0.2%
210	Tootsie Rolls	1	0.2%
211	Transitions Lens	1	0.2%
212	Treasure Mills	1	0.2%
213	Tropicana	1	0.2%
214	Twisted Fruit	1	0.2%
215	Twix	1	0.2%
216	USA Gold	1	0.2%
217	Walmart	1	0.2%
218	Welch's	1	0.2%
219	Wet Ones	1	0.2%
220	Wonder Bread	1	0.2%
221	Wonderbar	1	0.2%
222	Yahoo Milk	1	0.2%
223	Yarl Foo	1	0.2%
224	Yop Yogurt	1	0.2%
225	Yoplait	1	0.2%
226	Zabiha Hala	1	0.2%
Total		<i>585</i>	100.0%

Table D1 shows the percentage of branded items by product type. A detailed analysis of each product category follows.

**Table D1 – Branded Items by Product Type** 

Product Type	Percent
Beverage Containers	24 %
Beverage Cups	23 %
Candy and Confection Packaging	17 %
Fast Food Packaging and Wrappers	13 %
Receipts, Forms and Transfers	6 %
Tobacco Packaging	5 %
Bags	5 %
Miscellaneous Paper	3 %
Beverage Labels	2 %
Other Items and Labels	2 %

#### **Beverage Containers - Branded**

Beverage containers represent the most significant portion of brand name items found in 2012. Table D2 details the beverage container type by brand name, including 139 distinguishable beverage containers representing 58 unique brands.

**Table D2 – Branded Beverage Containers** 

Brand Name	Items	Percent	Water	Soft	Juice	Beer	Energy	Milk	Tea	Sport	Health
Real Canadian	15	10.8%	15								
Coca-Cola	14	10.1%		14							
Nestle	9	6.5%	9								
Kirkland	5	3.6%	5								
Red Bull	5	3.6%					5				
5-Alive	4	2.9%			4						
Fruitopia	4	2.9%			4						
Pepsi	4	2.9%		4							
7-UP	3	2.2%		3							
Allen's Juice	3	2.2%			3						
Canada Dry	3	2.2%		3							
Dasani	3	2.2%	3								
Fernbrook	3	2.2%	3								

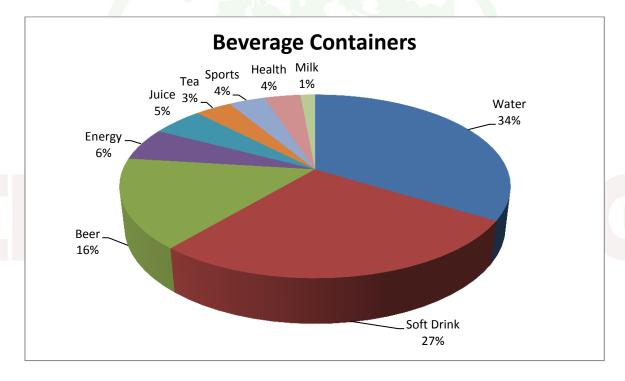
<b>Brand Name</b>	Items	Percent	Water	Soft	Juice	Beer	Energy	Milk	Tea	Sport	Health
Lipton	3	2.2%							3		
Minute Maid	3	2.2%			3						
Molsson	3	2.2%				3					
Orange Crush	3	2.2%		3							
Presidents	3	2.2%	3								
Arizona	2	1.4%							2		
Budweiser	2	1.4%				2					
Compliments	2	1.4%	2								
Fanta	2	1.4%		2							
Fresca	2	1.4%		2		48					
Gatorade	2	1.4%		5						2	
Powerade	2	1.4%			ماروا					2	
Schweppes	2	1.4%	4	2							
Sprite	2	1.4%		2							
Amabel	1	0.7%	1				5				
Aquafina	1	0.7%	1	~~							
Azul Juice	1	0.7%			1	74			\		
Canadian	1	0.7%	1	4	\ o	SA.			A		
Cedar Springs	1	0.7%	1					)			
Chubby Cola	1	0.7%	1	1			The Man				
Dole's	1	0.7%			1						
Ensure	1	0.7%									1
Faxe Beer	1	0.7%				1					
Glaceau	1	0.7%	_1								
GP8	1	0.7%				1			1	1	
Heineken	1	0.7%				1	1 1				
Island Soda	1	0.7%		_ 1 _							
Jones Cola	1	0.7%		1							
Jumex	1	0.7%			1						
Lait Milk	1	0.7%						1			
Life	1	0.7%									1
Mill St. Beer	1	0.7%				1					
Monster	1	0.7%					1				
Montclair	1	0.7%	1								
Naya Spring	1	0.7%	1								
Neilson Milk	1	0.7%						1			
Oasis Juice	1	0.7%			1						
Red Rave	1	0.7%					1				

<b>Brand Name</b>	Items	Percent	Water	Soft	Juice	Beer	Energy	Milk	Tea	Sport	Health
Reese's	1	0.7%						1			
Sealtest	1	0.7%						1			
Simply	1	0.7%			1						
Sun Life Juice	1	0.7%			1						
Tropicana	1	0.7%			1						
Twisted Fruit	1	0.7%			1						
Yahoo Milk	1	0.7%						1			
Total	139	100%	47	38	22	8	7	5	5	5	2
Percent *			34%	27	16%	6%	5%	4%	4%	4%	2%

<sup>\*</sup> These percentages do not add up to 100 percent due to rounding.

Of the 139 beverage containers where the brand name was distinguishable, 34 percent were water bottles and 27 percent were soft drink containers.

Figure D1 – Branded Beverage Containers by Product



As shown in Figure D1, the top three beverage products (water, soft drink and beer) comprised 77 percent of branded beverage containers. The remaining six beverage products made up 23 percent of beverage container litter.

#### **Beverage Cups - Branded**

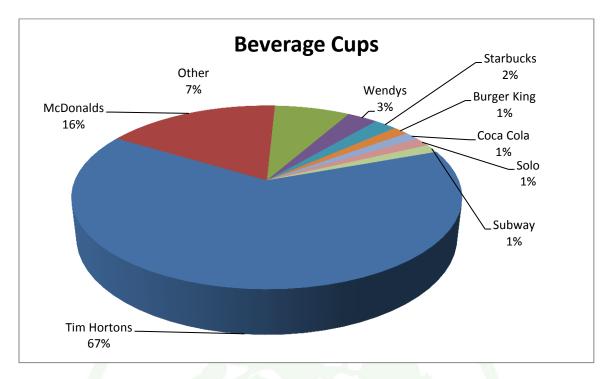
The second most frequent type of brand name litter found was take-out and convenience store cups, lids and straws. A total of 144 brand name items were counted, with the vast majority (66.7 percent) originating from Tim Hortons.

**Table D3 – Branded Cups** 

Brand Name	Items	Percent
Tim Hortons	96	66.7%
McDonalds	23	16.0%
Wendy's	4	2.8%
Starbucks	3	2.1%
Burger King	2	1.4%
Coca Cola	2	1.4%
Solo	2	1.4%
Subway	2	1.4%
7-11	1	0.7%
Country-Style Coffee	1	0.7%
Froster	1	0.7%
Jolly Rancher	1	0.7%
Mr. Sub	1	0.7%
Nova Era	1	0.7%
Polar	1	0.7%
Second Cup Coffee	1	0.7%
Ten Ren's Tea Time	1	0.7%
Total	144	100.0%

As shown in Table D3, Tim Hortons and McDonalds cups account for 82.7 percent of all beverage cups identified in 2012. Figure D2 below provides a breakout of the top nine most frequently found items with an "other" category that groups all brand names with under two items found during the 2012 audit.

Figure D2 – Branded Beverage Cups



As Figure D2 indicates, even with an "other" category, Tim Hortons and McDonalds beverage cups are the brand names most likely to be found throughout the streets of Toronto.

#### **Candy/Confection Wrappers - Branded**

After Beverage Containers and Cups, Candy/Confection Wrappers and Packaging was the third most common brand name of litter found in Toronto. Both Freezy and Nestle were the most common types (18 percent) of Candy/Confection Wrappers and Packaging found during the street audit. A total of 100 items were identified by brand name as shown in Table D4 below.

**Table D4 – Branded Candy/Confection Wrappers** 

Brand Name	<b>Items</b>	Percent
Freezy	9	9.0%
Nestle	9	9.0%
Excel Gum	6	6.0%
Popsicle	5	5.0%
Mr. Freeze	3	3.0%
Snickers	3	3.0%

Brand Name	Items	Percent
Maynard's	2	2.0%
Reese's	2	2.0%
Skittles	2	2.0%
Stride Gum	2	2.0%
Trident	2	2.0%
Wrigley's	2	2.0%
Aero Candy	1	1.0%
Barre Natural	1	1.0%
Bazooka	1	1.0%
Cadbury	1	1.0%
Chapman's Crème Glace	1	1.0%
Cliff Bar	1	1.0%
Clorets	1	1.0%
Dairy Queen	1	1.0%
Euro Rota	1	1.0%
Dentyne	1	1.0%
Fibre One	1	1.0%
Freedent	1	1.0%
Fruit Rollup	1	1.0%
Fruitella	1	1.0%
Fruitaffy	1	1.0%
Fuji Apple	1	1.0%
Furlee Yogurt	1	1.0%
Galerie Candy	1	1.0%
Haagen Dazs	1	1.0%
Hot Rod	1	1.0%
Iso Flex	1	1.0%
Jumbo push pop	1	1.0%
Kashi	1	1.0%
Kisko Freezie	1	1.0%
Kit Kat	1	1.0%
Larabar Candy	1	1.0%
Lichfields	1	1.0%
Mackintosh caramel	1	1.0%
Magnum	1	1.0%
Maltesers	1	1.0%
M&Ms	1	1.0%
Mike & Ike	1	1.0%

Brand Name	Items	Percent
Miss Vickie's	1	1.0%
Mr. Big	1	1.0%
Nature Valley	1	1.0%
Nerds	1	1.0%
Oh Henry	1	1.0%
Peter Jackson	1	1.0%
Pina Loca	1	1.0%
Presidents Choice/PC	1	1.0%
Quaker	1	1.0%
React2	1	1.0%
Regina Candy	1	1.0%
Ricola	1	1.0%
Smarties	1	1.0%
Snak-Pak	1	1.0%
Toblerone	1	1.0%
Tootsie Rolls	1	1.0%
Treasure Mills	1	1.0%
Twix	1	1.0%
Welch's	1	1.0%
Wonderbar	1	1.0%
Yarl Foo	1	1.0%
Total	100	100.0%

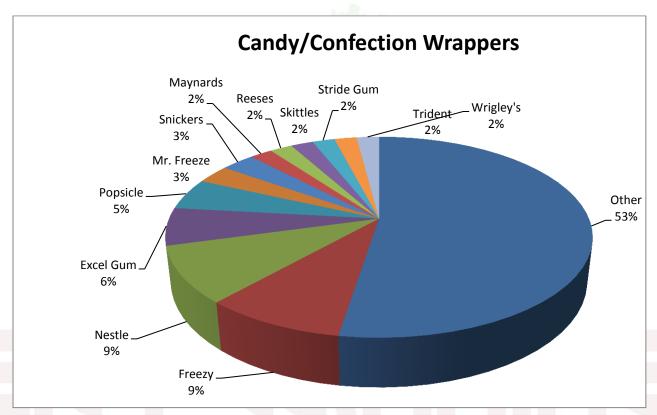
Because so many brand names were observed just once, Table D5 provides a summary of the results.

**Table D5 – Branded Candy/Confection Wrappers** 

Brand Name	Items	Percent
Other	53	53.0%
Freezy	9	9.0%
Nestle	9	9.0%
Excel Gum	6	6.0%
Popsicle	5	5.0%
Mr. Freeze	3	3.0%
Snickers	3	3.0%
Maynard's	2	2.0%

Brand Name	Items	Percent
Reese's	2	2.0%
Skittles	2	2.0%
Stride Gum	2	2.0%
Trident	2	2.0%
Wrigley's	2	2.0%
Total	100	100.0%

**Figure D3 - Branded Candy/Confection Wrappers** 



As the charts indicate, approximately 53 percent of all branded candy/confection items were found only once, with the remaining 47 percent found two or more times.

#### **Fast Food Packaging - Branded**

Fast food packaging comprised a large percent of the total number of brand name items found. As Table D6 indicates, a total of 75 fast food wrappers were identified with the top three brand name items originating from McDonalds, Tim Hortons, or Subway Restaurant.

**Table D6 – Branded Fast Food Packaging** 

Brand Name	Items	Percent
McDonalds	14	18.7%
Tim Hortons	9	12.0%
Subway	8	10.7%
Heinz	6	8.0%
Nestle	4	5.3%
Wendy's	4	5.3%
Stickling's Bakery	2	2.7%
Annette's Donuts	1	1.3%
Asian	1	1.3%
Biologic raisins	1	1.3%
Burger King	1	1.3%
Cracker Barrel	1	1.3%
Domino's	1	1.3%
Doritos	1	1.3%
Frank's Red Hot	1	1.3%
Fruitopia	1	1.3%
Fudgsicle	1	1.3%
Just Love	1	1.3%
Kellogg's	1	1.3%
Kool Ade	1	1.3%
Krinos Feta Cheese	1	1.3%
Krispy Kernels	1	1.3%
Lays	1	1.3%
Loblaws	1	1.3%
Mama	1	1.3%
Metro Stores	1	1.3%
Olympic Yogurt	1	1.3%
Oriental Harvest	1	1.3%
Pringles	1	1.3%
SkyFlakes Crackers	1	1.3%
Tin Nels	1	1.3%
Wonder Bread	1	1.3%
Yop Yogurt	1	1.3%
Yoplait	1	1.3%
Zabiha Hala	1	1.3%
Total	75	100.0%

Since a large number of brand names of fast food packaging were observed, the data was simplified to group all items that were found only once into an "Other" category. Figure D4 displays the results of the top 7 most frequently found brand name items with all other items being grouped into the category titled "Other."

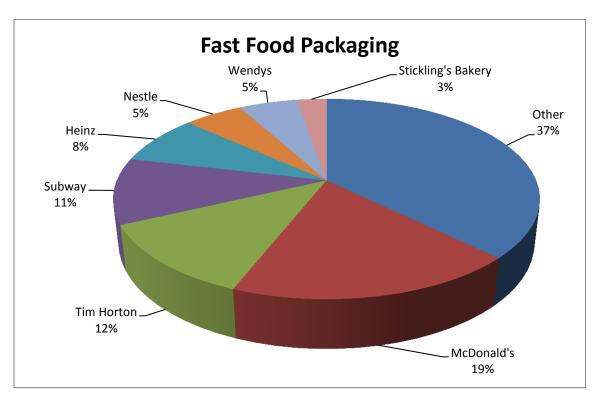


Figure D4 – Branded Fast Food Packaging

In summary, 41 percent of all brand name fast food packages were comprised of McDonalds and Tim Hortons, while 37 percent of brand name items were those items that were recorded only once throughout the audit, with the remaining 21 percent representing other fast food brands.

#### **Receipts, Forms and Transfers - Branded**

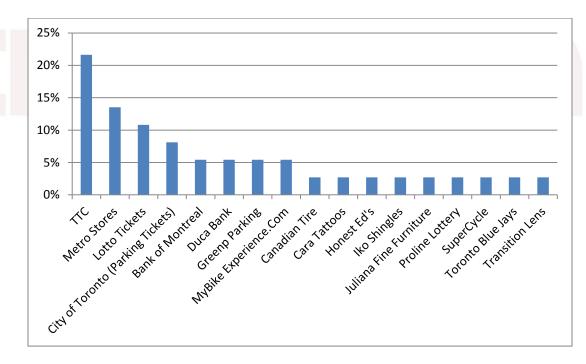
In 2012, 37 brand name receipts, forms and transfers were found, or approximately 38 percent of the 2006 total. Similar to 2006, the majority of the items (22 percent) were comprised of TTC receipts.

Table D7 and Figure D4 display the brand names and percent composition for each of the 37 items observed in 2012.

**Table D7 – Branded Receipts/Forms** 

Brand Name	Items	Percent
TTC	8	21.6%
Metro Stores	5	13.5%
Lotto Tickets	4	10.8%
City of Toronto (Parking Tickets)	3	8.1%
Bank of Montreal	2	5.4%
Duca Bank	2	5.4%
Greenp Parking	2	5.4%
MyBike Experience.Com	2	5.4%
Canadian Tire	1	2.7%
Cara Tattoos	1	2.7%
Honest Ed's	1	2.7%
Iko Shingles	1	2.7%
Juliana Fine Furniture	1	2.7%
Proline Lottery	1	2.7%
SuperCycle	1	2.7%
Transition Lens	1	2.7%
Toronto Blue Jays	1	2.7%
Total	37	100.0%

**Figure D4 – Branded Receipts/Forms** 



The top three items, which included Metro store receipts, lottery tickets and parking tickets, accounted for 56 percent of the total brand names found.

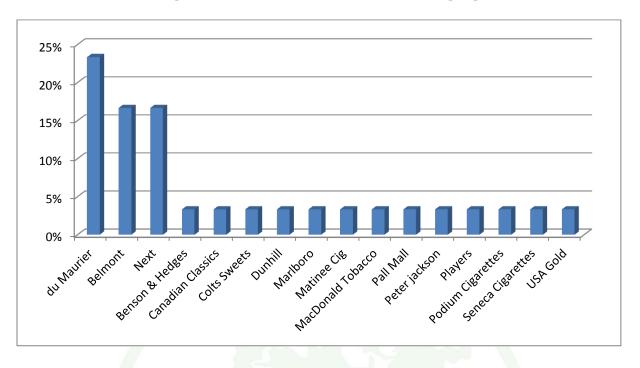
#### **Tobacco Packaging - Branded**

Du Maurier, Belmont, and Next were the dominant brands of tobacco litter observed in the litter audit of 2012; comprising 57 percent of observed brand packaging on city streets. Unlike the 2006 study, brands such as DK and Native were not observed in this survey.

**Table D8 – Branded Tobacco Packaging** 

Brand Name	Items	Percent
Du Maurier	7	23.3%
Belmont	5	16.7%
Next	5	16.7%
Benson & Hedges	1	3.3%
Canadian Classics	1	3.3%
Colts Sweets	1	3.3%
Dunhill	1	3.3%
Marlboro	1	3.3%
Matinee Cigarettes	1	3.3%
MacDonald Tobacco	1	3.3%
Pall Mall	1	3.3%
Peter Jackson	1	3.3%
Players	1	3.3%
Podium Cigarettes	1	3.3%
Seneca Cigarettes	1	3.3%
USA Gold	1	3.3%
Total	30	100.0%

Figure D5 - Branded Tobacco Packaging



#### **Bags - Branded**

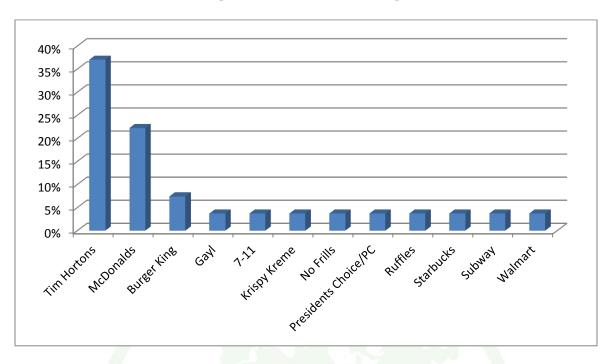
As shown in Table D9 and Figure D6, Tim Hortons and McDonalds accounted for more than 57 percent of branded bags. Of all bags observed, only two were retail grocery bags.

**Table D9 – Branded Bags** 

Brand Name	Items	Percent
Tim Hortons	10	37.0%
McDonalds	6	22.2%
Burger King	2	7.4%
Gayl	1	3.7%
7-11	1	3.7%
Krispy Kreme	1	3.7%
No Frills	1	3.7%
Presidents Choice/PC	1	3.7%
Ruffles	1	3.7%
Starbucks	1	3.7%
Subway	1	3.7%
Walmart	1	3.7%
Total	27	100.0%

52

Figure D6 – Branded Bags



#### **Miscellaneous Paper - Branded**

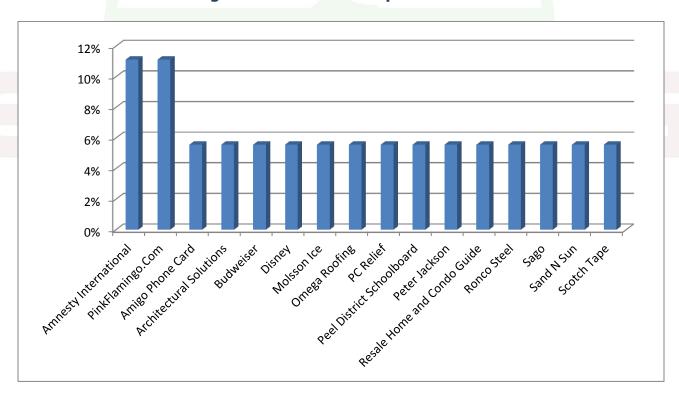
The majority of *Large Litter* documented in the 2012 study was comprised of miscellaneous paper. However, only 18 brand named items could be recorded. This may be related to several days of rain observed as the 2012 audits began.

Table D10 and Figure D7 show that the majority of branded miscellaneous paper identified was observed just once. Only twice (Amnesty International and PinkFlamingo.com) did survey crews identify the same item more than one time.

**Table D10 - Branded Paper Items** 

Brand Name	Items	Percent
Amnesty International	2	11.1%
PinkFlamingo.Com	2	11.1%
Amigo Phone Card	1	5.6%
Architectural Solutions	1	5.6%
Budweiser	1	5.6%
Disney	1	5.6%
Molsson Ice	1	5.6%
Omega Roofing	1	5.6%
PC Relief	1	5.6%
Peel District School Board	1	5.6%
Peter Jackson	1	5.6%
Resale Home and Condo Guide	1	5.6%
Ronco Steel	1	5.6%
Sago	1	5.6%
Sand N Sun	1	5.6%
Scotch Tape	1	5.6%
Total	18	100.0%

Figure D7 - Branded Paper Items



#### **Beverage Labels - Branded**

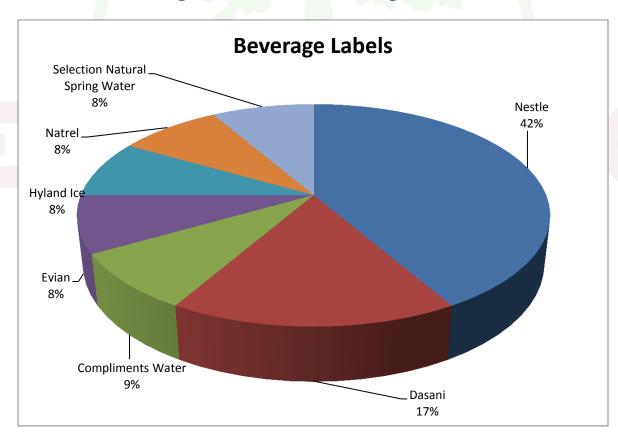
A separate category was created to account for beverage container labels that had become separated from the containers themselves.

During the 2012 litter audit, a total of 12 such labels were recorded. The majority of branded labels found (58 percent) originated from two brands – Nestle and Dasani.

**Table D11 – Branded Beverage Labels** 

Brand Name	<b>Items</b>	Percent
Nestle	5	41.7%
Dasani	2	16.7%
Compliments Water	1	8.3%
Evian	1	8.3%
Hyland Ice	1	8.3%
Natrel	1	8.3%
Selection Natural Spring Water	- 1	8.3%
Total	12	100.0%

Figure D8 - Branded Beverage Labels



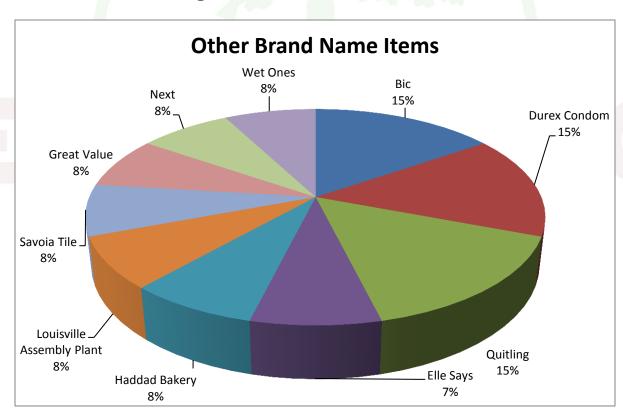
#### **Other Items - Branded**

Branded items that did not easily fit into one of the other categories were placed into an "other" category.

**Table D12 – Other Branded Items** 

Brand Name	Items	Percent
Bic	2	15.4%
Durex Condom	2	15.4%
Quitling	2	15.4%
Elle Says	1	7.7%
Haddad Bakery	1	7.7%
Louisville Assembly Plant	1	7.7%
Savoia Tile	1	7.7%
Great Value	1	7.7%
Next	1	7.7%
Wet Ones	1	7.7%
Total	13	100.0%

Figure D9 – Other Branded Items



#### **Appendix E – Methodology**

The 2012 methodology in this section is based on the methodology used in 2006 as directed by the City of Toronto. Copies of the forms used are included in Appendix H.

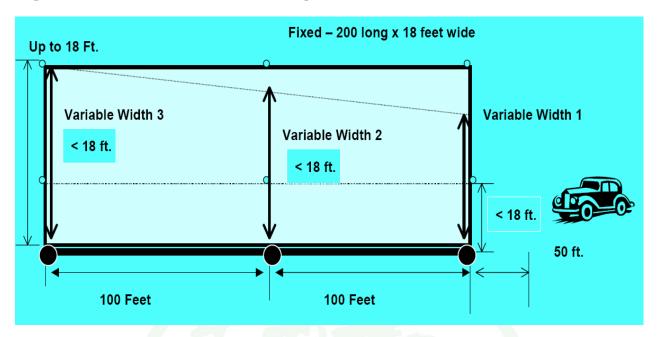
#### **Conducting the Litter Audit**

Audit teams shall be comprised of a minimum of two people. Upon arriving at a site, the team safely parks their vehicles. Traffic cones should be placed on the roadway for traffic control, and to meet provincial highway/road safety requirements. Team members shall be dressed in fluorescent orange/yellow traffic vests to increase visibility. All sites should be the same size. Sites are to be 200 ft. (61 meters) x 18 ft. (5.5 meters.) These full-sized sites are termed as FIXED sites. In many instances the site width may be less than 18 feet, this may occur for example in commercial areas where the storefront is set back less than the prescribed distance, if this area is not available each site should be 200 ft. in length by the width available (<18 ft. (5.5 meters) which will be recorded.) These sites are termed VARIABLE sites.

Beginning at the front of the parked car (or the start of the site), the team shall use a measuring device to measure 50 feet ahead of the start of the site. Using street marking paint (water based to dissolve) or some other temporary marking method (i.e., chalk or pylons), a mark should be made on the pavement ahead to denote the starting point of the audit site. From this point the team will measure 100 feet, marking the roadway with another identifier to show the mid-point of the site.

A final measurement of an additional 100 feet denotes the end of the audit site. As mentioned above, each site is to be 200 feet in length. The width measurement shall be taken at the start, midpoint and end of the site. The width of the site should be measured from 1.5 feet inside the curb or the start of the pavement, towards the outer edge of the site, up to a maximum width of 18 feet and marked to indicate the boundary. This rule is set to include 1.5 feet into the street since curbs are normal catchment structures, for which the City is responsible for litter clean up. Figure E1 depicts the audit site setup.

**Figure E1 - Schematic of Survey Site** 

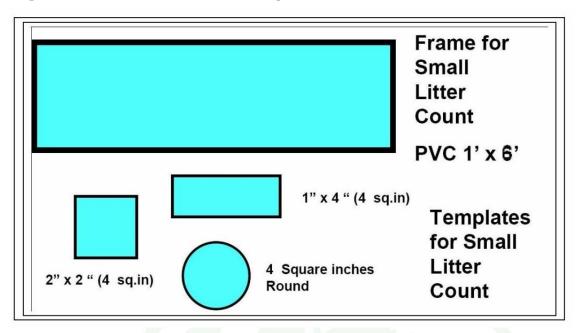


#### **Classification of Large Litter**

For purposes of classifying litter, and in accordance with the methods used in previous litter surveys, *Large Litter* is defined to be that which is greater than 4 square inches in size. To assist the field teams with determining the litter sizes three templates shall be provided to each surveyor of an area of 4 square inches in rectangle, square and round shape form. Figure E2 depicts the litter templates diagrams.

At each site location this litter audit will observe and document *Large Litter* in 14 categories, and 84 subcategories. See Appendix F for a detailed description of the littered items to be observed. The Site Surveyor - Large Item and Branded Litter Count forms will be used for recording large items of litter found at each site.

Figure E2 – Small Litter Templates



#### **Branded Litter**

On the Site Surveyor-Large Item and Branded Litter Count form, using the 84 categories of *Large Litter* as a guide, data observing the names of manufacturers and brand owners of littered materials will be recorded. Branded Litter is described as any *Large Litter* (i.e., more than four square inches in size) that has a recognizable brand name affixed.

#### **Classification of Small Litter**

*Small Litter* is classified as those pieces of debris that are less than four square inches in size, within a defined area of an audit site. The S*mall Litter* audit methodology examines three segments, or slices taken through the audit site. The successful bidder shall construct a frame for each audit team, using 1/2 inch P.V.C. plastic tubing (or a similar material) to act as the template. This frame shall measure 1 foot wide and 6 feet long.

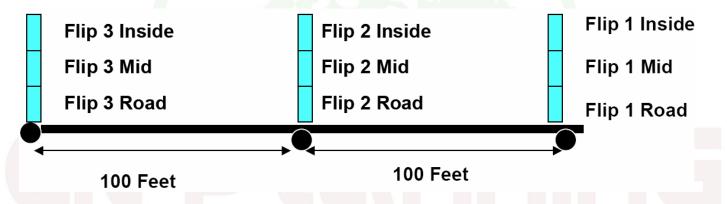
Three successive "flips" of the frame will complete crossing the site to the 18 ft. limit of the site. *Small Litter* is classified under 16 categories; refer to Table 3 below for a listing of the S*mall Litter* categories. The litter auditor will observe and count all the S*mall Litter* contained within the frames at three locations within each site: the start, mid-point and end of the site.

At each segment three flips of the frame will be analyzed, thus surveying a total of 18 square feet of the site. See Figure E1 for a depiction of the site setup for the *Small Litter* survey. The Litter Survey - Small Item Count form will be used to record the findings for each site.

#### **Table 3 - Categories of Small Litter**

- Aluminum/Foil Debris
- Bottle Caps
- Candy Packaging & Wrappers
- Cigarette Butts
- Glass
- Gum Litter
- Hard Plastic
- Metal (not Aluminum)
- Other Materials
- Other Polystyrene Debris
- Other Tobacco
- Paper
- Plastic Film
- Polystyrene Packing Materials
- Rubber
- Straws

#### Figure E1 - Site Set-up - Small Litter



#### **Survey Count**

At each audit site the general observation should be conducted first and recorded on the Site Surveyor-Large Item and Branded Litter Count form. This information describes the site number, date, digital photos taken, start time, type of site (residential, industrial, commercial, downtown core), type of roadway, whether road is divided, grass height, evidence of a clean-up, stop sign/traffic light visible, fast food near-by, convenience store nearby, described the litter catch points (grass line, hedge, fence, other) and provided a visual litter rating on a subjective basis.

The visual litter rating is an "opinion" expressed by the surveyor as to whether the site is dirty (highest rating = 4) or clean (lowest rating = 1.)

At each site, after set up is complete, one person will conduct the *Large Litter* survey count, and record the names number of items examined on the site. The other person will conduct the S*mall Litter* survey, using the method described.

The persons conducting the *Large Litter* audit will walk the site slowly, recording their observations either directly on to the Litter Survey - Large and Branded Litter Item Count forms. This completes Pass One. The surveyor then repeats the observations (Pass Two) over the site, using the same procedure, but in the opposite direction. If the counts differ from each pass the average will be recorded as the total.



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## **Appendix F – Large Litter Categories and Descriptions**

<b>Major</b> 1	<b>Sub</b> 1 2	<b>Large Litter</b> Beer Cans Beer Bottles (Glass)	<b>Sub-Category</b> Beverage Beverage	<b>Material</b> Metal Glass	<b>Description</b> Consumer beer can containers Refillable and non-refillable beer bottles
	3	Soft Drink (Glass)	Beverage	Glass	Soft drinks in glass containers
	4 5 6 7 8 9 10	Soft Drink (Cans) Soft Drink (Plastic) Sport Drink (Glass) Sport Drink (Plastic) Water (Glass) Water (Plastic) Wine/ Liquor (Glass)	Beverage Beverage Beverage Beverage Beverage Beverage	Metal Plastic Glass Plastic Glass Plastic Glass	Soft drinks in metal can containers Soft drinks in plastic containers Sport drinks in glass containers Sport drinks in plastic containers Packaged water in glass containers Packaged water in plastic containers Wine & liquor in glass
	11	Wine/ Liquor (Plastic/Other)	Beverage	Plastic	Wine & liquor in plastic or other formats
2	12 13 14 15	Milk/Juice (Plastic) Milk/Juice (Glass) Milk/Juice (Gable) Foil Pouches	Beverage Beverage Beverage Other Pckg	Plastic Glass Paper Composite	Milk or juice containers in plastic Milk or juice containers in glass Milk/juice in gable top cartons Packaged goods and pieces of foil pckg.
3	16 17 18 75 19	Aseptic (Box) Broken Cont. Glass Six Pack Plastic Rings Foil Containers Plastic Drink Cups	Other Pckg Other Pckg Other Pckg Other Pckg Cups	Composite Glass Plastic Metal Plastic	Drink-in-box, juice, fluids, other Glass bottle fragments Retainer plastic for carrying cans Foil wraps (e.g., ice cream) Cups, all resin types
3	20 21 22	Paper Cups (Cold) Paper Cups (Hot) Polystyrene Cups	Cups Cups Cups	Paper Paper Plastic	Cups, all paper types - cold drinks Cups, all paper types - hot drinks Cups, all polystyrene types - hot drinks
4	23 24 25	(Foam) Other Paper Cups Cup Lids, Pieces Lids Plastic Retail Bags	Cups Cups Bags	Paper Plastic Plastic	Cups, other materials Cups, lids, straws and pieces Whole\pieces of retail plastic bags
	26	Paper Retail Bags Paper Bags - Fast	Bags	Paper	Whole\pieces of retail paper bags
	27	Food Plastic Bags - Not	Bags	Paper	Whole\pieces of fast food paper bags
	28	Retail	Bags	Plastic	Whole\pieces of non-retail plastic bags
	29	Paper Bags - Not Retail	Bags	Paper	Paper bags & sacks (e.g., leaf debris)
	30	Zipper Bags/ Sandwich	Bags	Plastic	Plastic lunch bags and sacs
5	31	Cardboard Boxes & Material	Other Packaging	Paper	All cardboard and box materials
	32	Paperboard (Cereal Type)	Other Packaging	Paper	Cereal, shoe boxes and pieces etc.
	33	Paper Beverage Cases	Other Packaging	Paper	Paper material outer packaging for beverage products
	34	Polystyrene Clamshells	Other Packaging	containers	
	35	Paper Clamshells	Other Packaging	Paper	Whole and pieces of take-away or other paper containers
	36	Other Plastic	Other	Plastic	PET, PVC, HDPE, other material shells

Major	Sub	<b>Large Litter</b> Shells/Boxes	<b>Sub-Category</b> Packaging	Material	Description	
6	37	Plastic Jars / Bottles/ Lids	Other Containers	Plastic	Non-beverage plastic jars/bottles, (e.g., detergent bottles)	
	38	Glass Jars/ Bottles Misc.	Other Containers	Glass	Glass jars/bottles not described above	
	39	Cans - Steel	Other Containers	Metal	Steel food/non-food containers	
	40	Cans - Aluminum	Other Containers	Metal	Aluminum food/non-food containers	
	41	Container Lids	Other Containers		All lids, closures, and pieces > 4 sq. in.	
	42	Aerosol Cans (Paint, Oils, Etc.)	Other Containers Food	Metal	Aerosol cans, tops, lids - all products	
7	43	Paper Food Wrap	Wraps/Contain ers	Paper	Commercial/Non-commercial food wrap (e.g., meat wrap)	
	44	Paper / Foil Composite Wrap	Food Wraps/ Containers	Composite	Wrap for food/non-food (e.g., hamburger paper/foil)	
	45	Plastic Wrap	Food Wraps/ Containers	Plastic	All plastic wrap types, food, non-food	
	54	Condiment Package (Salt, Etc.)	Take-Out Extras		Pouches (e.g., ketchup, salt), containers, creamers	
	55	Utensils	Take-Out Extras	Plastic	Forks, knives, chop sticks etc.	
	56	Branded Fast Food Towels/Napkins	Take-Out Extras	Paper	Towels & napkins with identifiable brand	
	57	Paper Fast Food Plates	Take-Out Extras	Paper	Paper Plates used to serve fast food	
	58	Poly Fast Food Plates	Take-Out Extras	Plastic	Polystyrene Plates used to serve fast food	
	59	Other Plastic Fast Food Plates	Take-Out Extras	Plastic	Other Material Plates used to serve fast food	
	60	Plates - Other Materials	Take-Out Extras		Plates - not fast food (e.g., picnic plates)	
8	46	Polystyrene Trays	Trays	Plastic	Take-out/non-take out, microwavable, display trays	
	47	Paper Trays	Trays	Paper	Take-out/non-take out, microwavable, display trays	
	48	Other Material Trays	Trays		Take-out/non-take out, microwavable, display trays	
9	49	Gum Wrappers	Confectionary/ Snack		Packaging used to seal, sell gum products	
	50	Candy Bar Wraps	Confectionary/ Snack		Packaging used to seal, sell candy products	
	51	Candy Pouches	Confectionary/ Snack		Packaging used to seal, sell candy products	
	52	Sweet Packaging Confectionary/ (Describe) Snack	Snack Confectionary/ Snack	Snack		Packaging used to seal confections (e.g., cakes)
	53	Other Confectionery (Describe)			All other packaging for confectionaries	
	63	Snack Food Packaging	nack Food Confectionary/ ackaging Snack		All snack food (e.g., chips)	

Major	Sub	Large Litter	Sub-Category	Material	Description
10	61	Clothing Or Clothing Pieces	Cloth		All cloth, clothing pieces, and clothing discarded on site
	62	Other Cloth	Cloth		Tarps, industrial fabrics etc.
11	64	Plastic Packaging - Other	Other Miscellaneous	Plastic	Plastic packaging otherwise not described
	65	Paper Packaging - Other	Paper/ Fibre Material	Paper	Paper packaging otherwise not described
	66	Plastic/Composite - Other	Other Miscellaneous		All paper and composite debris not previously described
	67	Foil Materials/Foil Pieces	Other Miscellaneous	Metal	Foils and pieces, aluminum food foils, industrial foils
12	68	Non-Brand Towels / Napkins	Paper/ Fibre Material	Paper	Napkins and towels - no brand identification
	69	Lottery Ticket Debris	Paper/ Fibre Material	Paper	Tickets, and gaming items
	70	Printed Material (Newspapers, Etc.)	Paper/ Fibre Material	Paper	Commercially printed materials (newspapers, flyers, etc.)
	71	Stationary (School, Business Etc.)	Paper/ Fibre Material	Paper	School papers, business forms, etc.
	72	Receipts (Business, Transfers, Etc.)	Paper/ Fibre Material	Paper	Receipts, tickets, bus transfers, invoices, packing slips
13	73	Cigarette / Cigar Debris (>4")	Tobacco		Tobacco items
	74	Tobacco Pckg (Packs, Matches, Etc.)	Tobacco		Tobacco packaging, matches, lighters, matchboxes
14	76	Misc. Paper	Other Miscellaneous	Paper	All other paper whole or shredded, unidentifiable
	77	Misc. Plastic	Other Miscellaneous	Plastic	All other plastic whole or shredded, unidentifiable
	78	Misc. Paperboard	Other Miscellaneous	Paper	All other paperboard whole or shredded, unidentifiable
	79	Misc. Cardboard	Other Miscellaneous	Paper	All other cardboard whole or shredded, unidentifiable
	80	Misc. Glass	Other Miscellaneous	Glass	All other glass, whole or broken, unidentifiable
	81	Vehicle & Metal Road Debris	Other Miscellaneous		Debris associated with transportation
	82	Construction Debris	Other Miscellaneous		Debris associated with construction
	83	Tire & Rubber Debris	Other Miscellaneous	Rubber	Rubber sheets/pieces, tire pieces, shock absorbers
	84	Home Articles	Other Miscellaneous		All non-described household items, (e.g., lamps, etc.)

## **Appendix G – Sites List**

#	Site ID	Ward	Team	Name	Directions
1	1	1	В	Markbrook Lane	Steele/Kipling, south of Steele to Markbrook; site on Markbrook
2	2	1	В	Glenhollow Avenue	Finch/Hwy 27, west on Finch, south on Halusia, east on Briarwood, south on Glenhollow Avenue
3	3	1	В	Amoro Drive	Rexdale/Kipling, north on Kipling, west on Westhumber, south on Amoro 3.5 blocks to site; site on Amoro
4	4	2	В	Iron Street	Dixon Road/Martin Grove, north on Martin Grove, west on Belfield, just north on Iron
5	5	2	В	Lockheed Blvd	Lawrence/Scarlett, north on Scarlett Road, to Lockheed Boulevard; site two blocks west on Lockheed Boulevard
6	6	2	В	Westona Street	Lawrence/Royal York Road east on Lawrence two blocks; site just south on Westona
7	7	2	В	Kingdom Street	Weston/Lawrence, south on Scarlett Road east on Kingdom Street; Site on Kingdom Street between Brownlea Avenue and Waterton Road on south side
8	8	4	В	Martin Grove Road	Dixon/Martin Grove, south on Martin Grove; site on west side of Martin Grove Road just past Waterbury Drive
9	11	4	В	Aylesbury Road	Rathburn/Islington, go north on Islington two blocks, west on Aylesbury, two blocks just before Thornbury; site on Aylesbury on south side
10	12	3	В	Rathburn Road	Renforth Road - Eglinton Avenue west from intersection go south on Renforth Road to Rathburn. Go west Rathburn Road and stop before The West Mall
11	13	4	В	Finchley Road	Bloor/Islington, north on Islington past Dundas Street, east on

#	Site ID	Ward	Team	Name	Directions
					Hilldowntree 2 blocks, south on Finchley; site on west side of Finchley Road
12	14	4	В	Burnhamthorpe Park Boulevard	Burnhamthorpe/Kipling, go east on Burnhamthorpe 1 block, north on Wembley, then west on Burnamthorpe
13	16	5	В	Fieldway Road	Bloor/Kipling, east on Bloor under railroad tracks, south on Green Lands, west on Fieldway; site on Fieldway Road just past the CPR Spur on north side
14	17	5	В	Elderidge Avenue	Prince Edward Drive/Bloor, south on Prince Edward Drive west on Elderidge Avenue; site on Elderidge Avenue just after turning corner where street turns north.
15	18	5	В	Rosewood Avenue	Royal York Road/The Queensway, go west on the Queensway 6 blocks, north on Loma Road west on Rosewood Avenue
16	20	6	В	Valermo Drive	Horner Avenue/Browns Line, go north on Browns Line 2 blocks, east on Valermo Road 1.5 blocks
17	21	6	В	Browns Line	Browns Line/Lakeshore, north on Browns Line; site is on east side of Browns Line just over the bridge and before Dover Drive
18	23	5	В	Canmotor Avenue	The Queensway/Islington, east on the Queensway, go south on Canmotor Avenue, just past Cavern
19	24	11	В	Oak Street	401/Weston Road south on Weston 5 blocks, east on Oak Street; site on south side of Oak Street just before Yelland Street
20	25	13	В	Street Clair Avenue West	Jane Street/Saint Clair Avenue West - go West on Saint Clair Avenue West, to Scarlett Road - site is on Saint Clair Avenue West at corner of Scarlett Road & Street Clair Avenue West
21	26	13	В	Maria Street	Runnymede/Dundas, go east on Dundas, north on Johns, east on

#	Site ID	Ward	Team	Name	Directions
					Maria Street
22	27	13	В	Methuen Avenue	Bloor/Jane, go north on Jane to Methuen Avenue go west on Methuen Avenue
23	28	13	В	Runnymede Road	Dundas/Runnymede, go south on Runnymede till just before Annette
24	29	13	В	Spring Road	The Queensway/Parkside Drive, go west on Queensway then north on Spring Road; site is on east side of Spring Road just before Deer Pen Road
25	30	17	В	Nairn Avenue	Rogers Road/Dufferin Street, go west on Rogers Road 5 blocks, north on Nairn Avenue just past Teignmouth
26	31	17	В	Osler Street	Old Weston Road /Saint Clair Avenue West, go east on Street Clair 2 blocks then just south on Osler Street
27	32	17	В	Caledonia Road	Caledonia/Saint Clair Avenue West, go north on Caledonia about 50 feet.
28	33	17	В	Uxbridge Avenue	Old Weston Road/Davenport Road go east on Davenport 5 blocks, south on Uxbridge Avenue
29	34	17	В	Ashburnham Road	Davenport Road/Dufferin Street, go west on Davenport 3 blocks, then north on Greenlaw Avenue, then east on Ashburnham Road; site is on the south side of Ashburnham Road just past Via Italia.
30	35	17	В	McFarland Avenue	Davenport Road/Dufferin Street, west on Davenport 1 block, then north on McFarland to the intersection of Ashburnham/McFarland
31	36	14	В	Dupont Street	Dupont/Landsdown, west on Dupont till just before Campbell Avenue
32	37	14	В	Campbell Avenue	Dupont/Lansdowne, west on Dupont, south on Campbell, just before Antler
33	38	14	В	Indian Trail	Bloor/Parkside Drive, go east on Bloor, south on Indian Grove, east on Indian Trail
34	39	14	В	Sunnyside Avenue	Parkside Drive/Bloor Street West, south on Parkside Drive to Grenadier, east on Grenadier, south on

#	Site ID	Ward	Team	Name	Directions
					Sunnyside Avenue just south of Grenadier
35	40	14	В	Queen Street West	Queen/Lansdowne Avenue; west on Queen until Callender Street; site on north side of Queen Street between Callander Street and Triller Avenue
36	41	18	В	Whytock Avenue	Bloor/Lansdowne, south on Landsdowne 1600 feet, then go west on Whytock Avenue and site is on north side of Whylock just after the curve
37	42	18	В	Muir Avenue	Dundas Street West/Dufferin Street, go south on Dufferin, west on Lindsay, north on Sheridan, east on Muir
38	43	18	А	Macklem Avenue	Dufferin/Dundas, go north on Dufferin, turn right onto Parr Street; when you turn north Parr Street becomes Macklem Avenue; site on west side of Mackelm Avenue
39	44	19	А	Pendrith Street	Ossington/Bloor, north on Ossington 2 blocks, right on Pendrith Street; site on Pendrith Street, just after Roblocke Avenue
40	45	19	A	Crawford Street	Queen Street West/Bathurst Street heading west on Queen Street, turn north onto Crawford Street; site on Crawford Street just north of Logie Place
41	46	19	А	Stafford Street	Queen/Bathurst Street From Queen/Bathurst, head west on Queen, go south on Niagara, head west on Richmond Street, turn south onto Stafford; site on Stafford Street just before Adelaide Street West
42	47	19	А	Mansfield Avenue	Bathurst/Dundas Street West on Dundas from intersection to Claremont Street; Site on Mansfield past Clinton Street
43	48	19	А	Euclid Avenue	College Street/Bathurst, west on College Street to Euclid Avenue Site on Euclid Avenue, midway between

#	Site ID	Ward	Team	Name	Directions
					Ulster Street and College Street
44	49	19	А	Palmerston Avenue	College Street/Bathurst, west on College Street to intersection of college and Palmerston. Site on Palmerston
45	50	17	А	Benson Avenue	Saint Clair Avenue/Dufferin Avenue East on Saint Clair Avenue, south on Alberta to intersection with Benson Avenue Site is on Benson.
46	51	17	Α	Alberta Avenue	Dufferin & Davenport; East on Davenport to Alberta Avenue, site on Alberta Avenue
47	52	20	A	Portland Street	Bathurst Street/Front Street, east on front Street. From intersection to Portland Street, site is on Portland Street and Front Street, but before Wellington Street West
48	53	20	А	Wolseley Street	Queens Street West/Bathurst Street, east on Queen to Ryerson Avenue, north on Ryerson to intersection of Ryerson and Wolseley Street Site is at intersection of Ryerson and Wolseley Street, on Wolseley.
49	54	20	A	Dennison Avenue	Dundas Street/Bathurst Street, go east on Dundas to Dennison Avenue East; Site is on west side of Denison Avenue between Wolsely Street and Queen Street
50	55	20	А	Augusta Avenue	Bathurst/Queen, from intersection go east on Queen to Augusta Avenue, go north on Augusta to intersection of Augusta and Woseley; site on Augusta, just off Woseley
51	56	20	А	Napanee Court	Dundas/Bathurst, east on Dundas till you hit Vanauley Street go south on Vanauley and then go east on Napanee Site on Napane East
52	57	20	А	Kensington Avenue	Spadina/Dundas, west on Dundas then north on Kensington, about 200 feet in. Site on east side of Kensington Avenue

#	Site ID	Ward	Team	Name	Directions
53	58	20	А	Glasgow Street	College/Spadina, go south on Spadina, east on Cecil, north on Glasgow
54	59	20	А	Elm Street	University/College, south on University 2 blocks, west on Elm, just after Murray Street
55	60	20	Α	Oxley Street	Queen/Spadina, south on Spadina 3 blocks, then east on Oxley; site 50 feet east of Spadina
56	61	27	Α	Grenville Street	Yonge/College, go west on College, north on Bay, west Elizabeth /Grenville Street; site on north side of Grenville Street beginning at intersection.
57	62	21	В	Old Park Road	Bathurst/Eglinton - go west on Eglinton Avenue to Old Park Road, north on Old Park Road; site is 50 feet north of Ridge Hill Drive on east side
58	63	21	В	Vesta Drive	Eglinton/Bathurst, east on Bathurst 2 blocks, south on Vesta Drive 1/2 block
59	64	21	В	Ava Road	Bathurst/Eglinton, south on Bathurst 3 blocks, east on Ava Road 2 blocks to the intersection of Ava/Rosemary; site on south side of Ava Road just before Rosemary Road
60	65	21	В	Vesta Drive	Bathurst/ Eglinton, east on Eglinton, south on Vesta Drive; site on Vesta Drive just south of Ava Road on west side of street
61	66	21	А	Bathurst Street	Street Clair/Bathurst, north on Bathurst past Claxton/Lonsdale site on Bathurst immediately after Lonsdale, east side
62	67	7	В	Windhill Crescent	Finch/Weston, go west on Finch to Weston, go south on Weston, west on Lanya Road south (left) on Unser Grove, then first left onto Windhill Crescent; site on north side of Windhill Crescent

#	Site ID	Ward	Team	Name	Directions
63	68	7	В	Franson Crescent	Finch/Weston, go west on Finch to Weston, south on Weston to Coronado, west on Coronado, and north on Street Lucie, west on Franson; site on west side of Franson Crescent
64	69	9	В	Wilson Avenue	Jane/Wilson, east on Wilson past Ridge Road; site on Wilson
65	70	8	В	Tuscan Gate	Keele Street/Sheppard Avenue West - turn East onto Sheppard Avenue West go past bridge turn left (north) onto Tuscan, site on Tuscan
66	71	10	В	Josephine Road	Sheppard Avenue/Bathurst Avenue, south on Bathurst Avenue, right on Down's Drive, Left on Clanton Park Road left onto Josephine Road; site on Josephine Road on west side
67	72	10	В	Heaton Street	Sheppard/Bathurst, south on Bathurst, take right on Codsell and left onto Heaton's; site on Heatons
68	73	23	В	Newtonbrook Boulevard	Yonge/Finch, north on Yonge to Drewry, west on Drewry to Hilda , south on Hilda to Newtonbrook; site on south side of Newtonbrook Boulevard
69	74	23	В	Churchill Avenue	Yonge/Finch, north of Yonge on Churchill, past Senlac; site on Churchill
70	75	23	В	Tamworth Road	Yonge/Finch, from last location go east on Churchill, north on Tamworth, site on east side of Tamworth starting at intersection of Churchill Avenue/Tamworth Road
71	76	23	В	Tamworth Road	Yonge/Finch, south on Yonge, east (right) on Park Home Avenue, go north (right) on Tamworth; site on east side of Tamworth beginning at intersection of Park Home Avenue/Tamworth Road
72	77	23	С	Doris Avenue	Yonge Street/Finch Avenue - south on Young Street, east on Church Avenue north on Doris Avenue; site is

#	Site ID	Ward	Team	Name	Directions
					on east side of Doris Avenue just past Grandview Way
73	78	23	С	Byng Avenue	Yonge/ Finch, west on Finch past Bayview, make left on Estelle going south, turn right (west) on third street Byng; site on Byng past Wilfred
74	79	24	С	Dumont Street	Yonge/Steeles, south of Steeles on Yonge, east on Newton, north on Dumont; site on east side of Dumont Street
75	80	24	С	Michigan Drive	Yonge/ Steeles, east of Yonge on Steeles, turn south (right) on Whitman, east on Michigan; site on Michigan Drive
76	81	24	С	Wycliffe Avenue	Finch/Bayview, south on Bayview, east on Wycliffe; site on Wycliffe Avenue ,east of Whitelock Crescent
77	82	33	С	Cobblestone Street	Finch/Leslie, south of Finch on Leslie, east on Van Horne Avenue, north on Seneca Drive; site on Cobblestone west of Seneca
78	83	33	С	Leslie Street	Finch/Leslie, on Leslie, south of Finch, south of Corning Rd; site on Leslie near Lesgay
79	84	33	С	George Henry Boulevard	Sheppard & Don Mills - South on Don Mills , West on George Henry Boulevard on George Henry after Farmview Crescent
80	85	34	С	Roywood Drive	401 & Victoria Park, south of 401 on Victoria Park, west on York Mills, north on Ness, right (east) on Lynedock Crescent, turn onto Roywood just past school; site on Roywood on corner of Roywood and Niantic Crescent
81	86	34	С	Don Mills Road	York Mills/Don Mills Road- go north on Don Mills Road, past Moatfield Drive before Graydon Hall Drive; site on Don Mills

#	Site ID	Ward	Team	Name	Directions
82	87	34	С	Aldenham Crescent	York Mills/Don Mills, east on York Mills south on Valleywoods Road east on Brookbanks Drive, connect to Underhill Drive, south on Underhill Drive then west onto Cassandra Blvd, left (south) onto Aldenham; site on Aldenham
83	88	25	С	Tottenham Road	Leslie/Lawrence, south on Leslie, left on Lawrence, first left off Lawrence go on Tottenham; site at Tottenham
84	89	25	C	Riderwood Drive	Leslie/Sheppard, south on Leslie past 401, turn east on Bannatyne, left on Riderwood past Orchid; site on Riderwood
85	90	25	С	Ealing Drive	Leslie/401, south (left) on Leslie to Bannatyne, past Stubbs, to Ealing; site on Ealing
86	91	25	С	Wimpole Drive	Bayview/401, south on Bayview, past 401, 2nd toad east on Wimpole; site on Wimpole
87	92	25	С	York Mills Road	Bayview/401, south on Bayview, east on York Mills; site on York Mills after Community Centre by Wilket Creek
88	93	25	С	Danville Drive	Bayview/York Mills, go west on York Mills, North on Upper Highland, east on Danville; site on Danville
89	94	25	С	Bayview Avenue	Bayview/Lawrence, south on Bayview right before Lawrence on west side
90	95	25	В	Stratford Crescent	Bayview/Lawrence, south of Lawrence on Bayview to Blythwood, right on Blythdale to Stratford Crescent - site on Stratford Crescent
91	96	25	В	Bayview Avenue	Bayview Avenue/ Lawrence Avenue: south on Bayview past Lawrence Avenue; site on Bayview just past Bythwood, before Sunnydene Crescent
92	97	25	В	Deloraine Avenue	Yonge/Wilson, south on Yonge, past Wilson, west on Deloraine; site on Deloraine
93	98	16	В	Henning Avenue	Yonge/Elington, west on Eglinton from Yonge, turn right (north) on the

#	Site ID	Ward	Team	Name	Directions
					second street, Henning Avenue site on Henning
94	99	15	В	Glenmount Avenue	Bathurst/Eglinton, north on Bathurst, west on Glengrove; south on Glenmount; site at intersection of Glengrove and Glenmount just south of Glengrove (west side)
95	100	15	В	Dalemount Avenue	Bathurst/Lawrence, south on Bathurst, west Dell Park, north on Dalemount; site on Dalemount, east side
96	101	15	В	Lanark Avenue	Dufferin/ Eglinton, east of Dufferin on Eglinton, or west of Bathurst, then south on Oakwood, then right/west on Lanark; site on Lanark
97	102	15	В	Ronald Avenue	Dufferin/Eglinton, west on Eglinton turn south (left) onto Ronald Road; site on Ronald Road after Bowie and before Schell Avenue
98	103	12	В	Amesbury Drive	Keele / Lawrence , south on Keele Avenue, west on Flamborough, South on Amesbury, go to Gotham Court , U-Turn, so site is on Amesbury looking North , 50 Ft. past Gotham
99	104	12	В	Brookhaven Drive	Jane/Lawrence, east on Lawrence past Jane turn south on Brookhaven: site is 500 feet after Fox
100	105	12	В	Thurodale Avenue	Jane/Lawrence, east on Lawrence, south on Brookhaven, west on Thurodale: site is 200 feet after Duckworth on Thurodale
101	106	12	В	Lampton Avenue	Jane/ Eglinton, east on Eglinton then south on Guestville Avenue to Astoria, west on Astoria Avenue which turns into Lambton Avenue; site is on Lambton west of Chryessa Avenue
102	107	9	В	Cornelius Parkway	Keele/Wilson, south on Keele, east on Wilson to Cornelius; site is on Cornelius and Graham Road at the corner

#	Site ID	Ward	Team	Name	Directions
103	108	9	В	Murray Road	Keele/Wilson, east on Wilson, take first left (north) on Murray, past Katherine; site on Murray Road North of Spalding
104	109	9	В	Beffort Road	Dufferin/Wilson, north on Dufferin past Wilson, Dufferin becomes Beffort Road; site is 200 feet north of where Dufferin turns into Beffort
105	110	9	В	Sheppard Avenue West	Keele Street/Sheppard west of Keele, site is 300 feet before Arleta Avenue
106	111	8	В	Finch Avenue West	Jane / Finch , East on Finch - Approximately 200 feet east of Driftwood Street
107	112	8	В	Jane Street	Jane / Steele, West on Steeles to Jane Street, South on Jane past Hallmar, site on Jane
108	113	8	В	Magnetic Drive	Dufferin & Steele, on Steeles west of Dufferin, turn south onto Alness St; take first left (east) onto Magnetic Drive; site on Magnetic Drive
109	114	8	В	Chesswood Drive	Finch & Dufferin , on Finch West of Dufferin, South on second street, Chesswood before Champagne, site on Chesswood
110	115	16	В	Lawrence Avenue West	Lawrence Avenue, East of Avenue Road - 200 feet, east of Avenue Road. Site is west of bus shelter on North Side in front of Medical Clinic
111	116	12	В	Tretheway Drive	Jane/Lawrence, south on Jane past Lawrence, east on Tretheway past Millennium; site on Tretheway
112	117	16	В	Avenue Road	Yonge / Lawrence - South on Yonge, west on Lawrence, South on Avenue Road, site is past Caribou Road , on Avenue Road
113	118	13	В	Woodland Heights	Queensway/Parkside -Located West of Grenadier Pond - High Park; site on Woodland Heights. Uphill after Y intersection
114	119	6	В	Butterick Road	The Queensway/Kipling. South on Kipling to Evans Avenue, west on Evans Avenue to Butterick. Site on

#	Site ID	Ward	Team	Name	Directions
					Butterick, midway between beginning and end of street
115	120	32	С	Queen Street East	Queen/Woodbin, East East on Queen 100 feet after Wineva
116	121	32	С	Glen Stewart Avenue	Kingston Road/Victoria Park. West on Kingston Road and south 200 feet, turn west on Glen Stewart Avenue; site on Glen Stewart Avenue just before Glen Stewart Avenue turns north.
117	122	30	С	Walpole Avenue	Danforth/Greenwood, south on Greenwood and east on Walpole 100 feet; site on Walpole
118	123	32	С	Barker Avenue	Victoria Park/Saint Clair Avenue East, west on Saint Clair Avenue East to O'Connor Drive, south/west on O'Connor Drive to Woodbine Avenue, south on Woodbine to Barker Avenue (8th street on left); Site begins 100 feet before Coleridge Avenue
119	124	31	С	Halsey Avenue	Saint Clair /Victoria Park, south on Victoria Park, southwest on Dawes Road, east (right) onto Halsey Avenue, Site on north side of Halsey Avenue - beginning 100 ft. from intersection
120	125	32	С	Aldridge Avenue	Danforth/Coxwell, east on Danforth, south on Aldridge 100 ft.; site on Aldridge
121	126	32	С	Ashdale Avenue	Queen/Coxwell, Ashdale, west on Queen Street East past Ashdale Avenue (one way south only) to Kent Road, north on Kent Rd then east onto Dundas Street East then south onto Ashdale Avenue site on east side of Ashdale Avenue (opposite side of street)
122	127	32	С	Orchard Park Boulevard	Queen Street/Coxwell Avenue east on Queen, past Orchard Park. Boulevard (one way south only) to Penny La north on Penny Lane; to Orchard Park. Boulevard south on Orchard

#	Site ID	Ward	Team	Name	Directions
					Park. Blvd; site on west side of Orchard Park Blvd 200 feet in from intersection
123	128	32	С	Wayland Avenue	Gerard Street/Main Street, travel east on Gerrard Street to Wayland Avenue; go south on Wayland Avenue 500 feet; site on west side of Wayland Avenue just past Swanwick Avenue
124	129	32	С	Gerrard Street East	Gerrard Street East/Main, travel east on Gerrard Street East; site on Gerrard Street East 200 feet after Malvern Avenue
125	131	44	С	Ellesmere Road	Ellesmere/Morningside, east on Ellesmere and stop just after you pass Mirrow Court (Mirrow Court is west of Conlins Road); site is on the right/south side of Ellesmere between Mirrow and Conlins Road.
126	132	44	С	Kingston Road	Queen Street/Woodbine Avenue - north on Woodbine Avenue turn east onto Kingston Road; site on south side of Kingston Road 50 feet past Silver Birch Avenue
127	133	44	С	Hedge End Road	Meadowvale/Sheppard go west on Sheppard to Hedge End Road make turn left (right) onto Hedge End Road; site is on south side of Hedge End Road just after the street curves.
128	134	44	С	Portsmouth Drive	Meadowvale/Lawrence, go east on Lawrence to Portsmouth, go south on Portsmouth,; site is at corner just as Portsmouth turns east
129	135	44	С	Broadbridge Drive	Lawrence/Port Union, go east on Lawrence past Port Union to East Avenue up to Baronial Court, make a right/east on Baronial; site on Broadbridge past Hartsville Avenue
130	136	44	С	Moorefield Drive	Lawrence/Port Union, go east on Lawrence, north on Brimforest Gate, west on Moorefield 200 feet on the north side; site on Moorefield Drive

#	Site ID	Ward	Team	Name	Directions
131	137	44	С	Manse Road	Lawrence/Manse, go south on Manse; site is on west side of street in the 235 Manse Road Complex
132	138	43	С	Galloway Road	Lawrence Avenue/Markham Road - east on Lawrence Avenue to Galloway Road, south on Galloway; site is 200 feet south of Chantrey Court
133	139	43	С	Leverhume Crescent	Lawrence/Galloway, travel south on Galloway to Westlake Road past San Crescent to Leverhume Crescent site on Leverhume
134	140	42	С	Scarborough- Pickering Town Line	Markham Road/401 - North on Markham Road, east on Steels Avenue to Scarborough-Pickering Town line; site is 500 feet south on west side of street;
135	141	42	С	Littles Road	(Old) Finch Avenue/Morningside Avenue, east on Old Finch Avenue; right (south) on Littles Road until you pass Goodall Drive; site is on west side of Littles Road just after bus shelter.
136	142	31	С	St Clair Avenue East	Saint Clair Avenue East/Victoria Park, west on Saint Clair Avenue 3 blocks
137	143	31	С	Northdale Boulevard	Victoria Park/Saint Clair East, west on Saint Clair East, north on O'Connor, west on Curity, south on Cranfield, west on Northdale; site on Northdale between Hollanger and Cranfield
138	144	29	С	Monarch Park Avenue	Coxwell/Danforth, north on Coxwell from Danforth, turn left/west on Glebeholme then north onto Monarch Park Avenue; site on Monarch Park Avenue halfway between Gleveholme Boulevard and Milverton Boulevard
139	145	29	С	Plains Road	Danforth/Coxwell, north on Coxwell Avenue to Plains, go west on Plains Road 250 m; site is Plains Road
140	146	30	А	Caroline Avenue	Queen/Pape, travel east on Queen Street East to Caroline Avenue turn south on Caroline Avenue site is halfway between Queen and Eastern

#	Site ID	Ward	Team	Name	Directions
					Avenue
141	147	30	А	Frizzell Avenue	Danforth/Pape, travel south on Pape turn west onto Frizzell; site on north side of Frizzell Avenue beginning 100 feet from intersection of Pape Avenue/Frizzell Avenue
142	148	29	А	Selkirk Street	Pape/Danforth, East on Danforth, north/left on Pape, right/west on Selkirk; site on Selkirk
143	149	29	Α	Pape Avenue	Danforth/Pape Avenue; turn North on Pape Avenue; site is on Pape Avenue just past Mortimer Avenue across from Centennial College
144	150	30	A	Booth Avenue	Queen/Broadview, turn south on Broadview, E on eastern , turn south on Booth Follow Booth 500 feet; site on Booth
145	151	29	Α	Fernwood Gardens	Pape Avenue /Danforth Avenue, north on Pape Avenue, west on Woodville Avenue, north on Broadview Avenue, west on Fernwood Gardens; site on Fernwood 50 feet west of Broadview Avenue
146	152	35	С	Zenith Drive	Birchmount/Street Clair, south on Birchmount, east on Zenith 50 feet; site on Zenith
147	153	35	С	Kennedy Road	Kennedy/ Eglinton, south on Kennedy; site on west side of Kennedy Road 200 feet past Merrian Road
148	154	35	С	Verdun Avenue	Eglinton/Midland, south on Midland, turn east on Verdun; site on Verdun, 50 feet after Commonwealth
149	155	35	С	Eglinton Avenue East	Eglinton Avenue/Kennedy Road - east on Eglinton Avenue, 400 feet; site on south side of Eglinton adjacent to Go Station.
150	156	37	С	Sherwood Avenue	Victoria Park/Lawrence, east on Lawrence to Pharmacy, south on Pharmacy turn east on Sherwood; site on Sherwood, 50 feet after

#	Site ID	Ward	Team	Name	Directions
					Courton
151	157	37	С	Laxford Avenue	Pharmacy/Lawrence, south on Pharmacy turn east on Sherwood, turn north on Waxford follow Waxford to Laxford site on Laxford
152	158	37	С	Warden Avenue	Warden/Lawrence, south on Warden; site on Warden 100 feet south of Danube Drive
153	159	37	С	Princemere Circle	Kennedy/Lawrence, north on Warden turn west on Princemere, site at northwest corner of Princemere Circle; site on Princemere
154	160	37	С	Flora Drive	Kennedy/Lawrence, south on Kennedy turn west on to Flora, follow flora to the northwest corner of street. Site is on Flora, 200 feet from northwest corner
155	161	40	С	Ellesmere Road	Lawrence Avenue/Midland Avenue - north on Midland Avenue, west on Ellesmere Road; site on Ellesmere Road on north boulevard of transit loop
156	162	40	С	Crocus Drive	Ellesmere/Warden, west on Ellesmere turn north on Crocus to west corner of street, 100 feet east, from northwest corner; site on Crocus
157	163	40	С	Murmouth Road	Sheppard/Birchmount, south on Birchmount, turn east on Cass turn south on Murmouth Road 200 feet south on Murmouth; site on Murmouth
158	164	40	С	Kellen Street	Warden/Sheppard travel north on Warden, turn east on Warden Court turn south on Nortonwille, turn east on Kellen 200 feet; site on Kellen
159	165	40	С	Huntingwood Drive	Sheppard/Warden, on north on Warden turn east on Huntingwood 100 feet after Dunmurray Boulevard; site on Huntingwood

#	Site ID	Ward	Team	Name	Directions
160	166	39	С	Kilchurn Castle Drive	Kennedy/Sheppard north on Kennedy, turn west on Huntingwood Drive, turn south 100 feet on Kilchurn Castle Drive; site on Kilchurn Castle Drive Between Huntingwood Drive and Inverary Crescent
161	167	39	С	Sanwood Boulevard	McNicoll/Birchmount, travel north on Birchmount turn east onto Sanwood 200 feet; site on Sanwood Boulevard
162	168	39	С	Chapel Park Square	Birchmount/Steele; travel east on Steele, turn south on Grove Avenue, turn west on Canongate, turn northwest on Chapel Park Sq. 100 feet; site on Chapel Park Square
163	169	41	С	Midland Avenue	Sheppard/Midland, north on Midland, 50 feet north of Havendale; site on Midland
164	170	41	С	Crockamhill Drive	Huntingwood/Midland, east on Huntingwood, north on Crookamhill Drive, 100feet; site on Crockamhill Drive
165	171	40	С	Scoville Square	Brimley/Steele, south on Brimley, west on Royal and northeast on Scoville, 160 feet; site on Scoville
166	172	41	С	Maybrook Drive	McNicoll/McCowan, east on McNicoll, north on Maybrook 500 ft. site on Maybrook
167	173	32	С	Victoria Park Avenue	Victoria Park Avenue/Kingston Rd; go south on Victoria park, Site begins 100 feet south of Victoria Park Avenue/Kingston Road intersection on west side
168	174	36	С	Wynnview Court	Birchmount/Kingston, east on Kingston to Glen Everest, East on Glen Everest to Wynnnview; site south on Wynnview 200 feet
169	175	36	С	Sloley Road	Kingston/Dorset, south on Dorset, east on Sloley 50 feet.; site on Sloley
170	176	36	С	Randall Crescent	Eglinton/McCowan, go west on McCowan, west on Phyllis, west on Randall 100 feet; site on Randall

#	Site ID	Ward	Team	Name	Directions
171	177	36	С	Randall Crescent	Eglinton/McCowan, south on McCowan right/east on Phyllis, south 500feet; Randall
172	178	36	С	Kingston Road	Kingston/McCowan, 500 feet west of McCowan site on Kingston Road
173	179	36	С	Eglinton Avenue East	Eglinton E/Markham, 200 feet east of Markham; site on Eglinton
174	180	38	С	Suraty Avenue	Lawrence/McCowan, north on McCowan, west on Meldazy, south on Kentcliff and west on Suraty 100feet; site on Suraty
175	181	38	С	Lynnbrook Drive	Ellesmere/McCowan, east on Ellesmere, south on Parkington, east on Lynnbrook 100 feet; site on Lynnbrook
176	182	38	С	Progress Avenue	Ellesmere/McCowan, north on McCowan, east on Progress, 200 feet; site on Progress
177	183	42	С	Sheppard Avenue East	Sheppard/Markham, east on Sheppard 600 feet; site on south side of Sheppard just east of Progress Avenue
178	184	42	С	Unita Grove	Sheppard/Markham Road east on Sheppard north on Washburn, northwest on Mammoth Hall Trail, northeast on Unita Grove 50 feet; site on Unita Grove
179	201	30	Α	Broadview Avenue	Danforth/Broadview; site on Broadview, go south on Broadview, just past Montcrest Boulevard
180	202	26	В	Esandar Street	Eglinton & Bayview, East on Eglinton, South on Laird Drive, East on Esandar , site on Esandar just after railroad tracks
181	203	22	В	Cleveland Street	Bayview/ Eglinton, west on Eglinton to Cleveland, south on Cleveland 1 km to site; site on Cleveland just below Belsize
182	204	22	В	Berwick Avenue	Yonge/ Eglinton, south on Yonge, left/west on Berwick; site is on north side half way between Yonge and Duplex

#	Site ID	Ward	Team	Name	Directions
183	205	22	А	Chaplin Crescent	Street Clair/Yonge, north on Yonge to Chaplin, go west on Chaplin; site on Chaplin Crescent. Immediately after intersection of Chaplin Crescent./Duplex Avenue on the north side
184	206	22	Α	Avenue Road	Bloor/Avenue, north on Avenue to Edmund, from Edmund, north beyond Clarendon; site on Avenue Rd
185	207	27	А	Roxborough Street West	Yonge/Bloor, north on Yonge Street then left/east on Roxborough; site on Roxborough on north side
186	208	27	A	Mt. Pleasant Road	Yonge/Bloor, east on Bloor, left/north on Mt. Pleasant; site on Mount Pleasant between Rosedale Valley and Elm
187	209	28	А	Prospect Street	Yonge/Wellesley, east on Wellesley, south on Parliament, west/right on Amelia, past Rose; site on Prospect Street
188	210	27	А	Mutual Street	Yonge/Carlton, east on Carlton, at third road turn right/south onto Mutual; site on Mutual south of Dundas;
189	211	20	А	John Street	Corner of King Street / John Street , Site on John Street immediately north of intersection King/John
190	212	28	A	Colbourne Street	King/Yonge, south on Yonge, turn left (east) on King, right (south) on Church Street, West on Wellington, at Scott Street, turn North then Colburne is at first Stop Sign, site on Colbourne
191	213	28	А	George Street	Yonge/Front, south on Yonge, East on Front, south (right) on Jarvis. Site on George Street
192	214	28	А	Richmond Street East	Queen/Sherbourne, east Queen past Sherbourne, past Parliament, turn right on Power Street, west on Richmond Street East; site on Richmond Street East between Parliament Street and Power Street

#	Site ID	Ward	Team	Name	Directions
193	215	28	А	Pashler Avenue	Dundas/Sherbourne, east on Dundas past Sherbourne, past parliament, south on parliament, east to Shuter, north on Regent Street, east on Street Bartholomew Street., north to Pashler, site on Pashler
194	216	28	А	Bright Street	Yonge/Queen, east on Queen, past Yonge, past parliament, right (south) on Bright Street (do not pass King Street East); site on Bright Street between Queen Street and King Street on east side
195	217	28	A	Dundas Street East	Dundas/Sherbourne Street; east on Dundas past parliament, past Sackville, between Sumach (on the left side) Sherbourne and Wyattmark on right. Site on Dundas
196	218	30	А	Carroll Street	Broadview/Queen; travel west on Queen; turn onto Carroll Street; site is on west side of Carroll Street before Matilda Avenue
197	219	30	А	Kintyre Avenue	Broadview/Queen, travel north on Broadview to Kintyre, turn west on Kintyre; site 300 feet from intersection
198	220	28	A	Lake Shore Avenue	2 km south of Hanlan's point ferry dock on Lake Shore (50 feet from Gibraltar (Centre for the Arts)
199	221	32	С	Cedarvale Avenue	South on Woodbine to Danforth, E on Danforth, north on Cedarvale Avenue; site on east side of Cedarvale past Strathmore Boulevard
200	222	26	С	Don Mills Road	Don Mills Road/Eglinton Avenue East near the Ontario Science Centre Parking Lot
201	223	26	В	Millwood Road	Eglinton / Bayview - East on Eglinton Road, South on Laird which becomes Millwood; site on Millwood Rd just before Leaside Bridge
202	224	26	В	Overlea Boulevard	Eglinton / Bayview, East on Eglinton , South on Millwood Road, East on Overlea- site on Overlea between

#	Site ID	Ward	Team	Name	Directions		
					Leaside Park Drive & Thorncliff Park Drive		
203	250	19	А	Stafford Street	Bathurst/King, west on King, west to Stafford south on Stafford just before Canniff Street; site on Stafford		
204	251	20	А	University Avenue	University / Queen, North on University - site is on east side of University Avenue just before Armoury Street		
205	252	28	Α	Avenue (of the Island)	on Toronto Island - on Avenue of the Island about 600 meters north of Lake Shore Avenue		
206	254	19	Α	Clinton Street	Bloor West/Dufferin, east on bloom from intersection, past Christie to Clinton, south on Clinton to Clinton Place; site is on east side of Clinton Street		
207	256	28	Α	King Street West	University / King , site is on King - South side 50 feet East from University Avenue		
208	257	28	А	Parkview Avenue	Parliament/Wellesley, east on Wellesley past Parliament until you hit Parkview, north on Parkview until you reach the end of the street		
209	258	28	Α	Sackville Street	Sherbourne/Queen, east on Queen, south on Sackville past Ray, site on Sackville		
210	259	27	Α	Dundas Street West	Yonge Street/Dundas Street West; west on Dundas; site is on South side of Dundas, in front of Eaton's Centre,		
211	260	20	Α	Spadina Avenue	Queen/Spadina, go north on Spadina to Dundas; site is just above the Dundas /Spadina intersection, northward; site on Spadina		
212	261	20	А	Augusta Avenue	Bathurst/Spadina, north on Spadina from intersection to Oxford west to Augusta; site is south of Oxford left side		
213	270	28	А	Lake Shore Avenue	Toronto Island - Go to Wards island, south on Withrow, then west on Lake Shore site is 500 meters west of Algonquin on Lake Shore Avenue		

#	Site ID	Ward	Team	Name	Directions		
214	271	36	С	Wynnview Court	Birchmount/Kingston, east on Kingston to Glen Everest, East on Glen Everest to Wynnnview; site south on Wynnview at end of street		
215	300	19	А	Bloor Street West	Bloor Street, between Euclid and Manning		
216	301	20	Α	Bloor Street West	Bloor/Bathurst , Go East on Bloor, site 1/2 block East of Albany		
217	302	20	Α	Sussex Avenue	Bathurst/Bloor; East on Bloor past Bathurst , South on Spadina - site is on Sussex 200 feet from Spadina		
218	303	20	A	Borden Street	Harbor/Bathurst, North on Bathurst to Harbor Road East on Harbor to Borden, South on Borden, site 200 feet south		
219	304	20	A	Lippincott Street	College/ Bloor, North on Bathurst, east on Ulster Street, South on Lippincott - site is on Lippincott 200 feet before College		
220	305	20	Α	Spadina Avenue	College / Spadina - on Spadina South past College - site on Spadina		
221	306	20	А	Kensington Avenue	Spadina / Dundas - go North on Spadina, West on Baldwin, South on Kensington - site half way between Fitzroy / Dundas on Kensington		
222	307	20	Α	Dundas Street West	Dundas / Spadina - West on Dundas, 100 feet past Kensington		
223	308	20	Α	Hickory Street	Dundas/Bathurst - South on Bathurst - East on Dundas, North on Hickory - site on Hickory		
224	309	20	Α	Dundas Street West	Dundas/Bathurst - South on Bathurst, East on Dundas, past Carlyle, site is on Dundas		
225	310	20	А	Eden Place	Queen / Bathurst - Street on Bathurst past Dundas, East on Carr Street, South on Eden - site on Eden at corner		
226	311	19	А	Euclid Avenue	Dundas/ Bathurst - South on Bathurst, West on Dundas , South on Euclid , site is an alley on west side of Euclid		

#	Site ID	Ward	Team	Name	Directions		
227	312	19	А	Mansfield Avenue	College / Bathurst: South on Bathurs - West on College - South on Manning, West on Mansfield; Site or Mansfield before Clinton Street		
228	313	19	А	Crawford Street	Bathurst/Dundas: South on Bathurst, West on Dundas - North on Crawford - site past Cinder Street		
229	315	19	A	Niagara Street	Bathurst/King, South on Bathurst to Tecumseth Place, turn south onto Tecumseth Street, South to Niagara, site on Niagara Street starting at corner of Tecumseth Street and Niagara		
230	316	20	Α	Wellington Street West	Spadina/Wellington: Turn west on Wellington, site is 100 feet east of Portland Street		
231	317	20	А	Adelaide Street West	Intersection Bathurst; north on Bathurst Street to Adelaide, Turn east on Adelaide;site on Adelaide just past Brant Street		
232	318	20	Α	Augusta Avenue	Queen/Spadina - west on Queen past Spadina until Augusta - east side, site on Augusta		
233	320	20	A	Sullivan Street	Spadina/Dundas - go south on Spadina to Grange Avenue, East on Grange to Huron , South on Huron to Sullivan - East on Sullivan; Site between Grange Street & Beverly Street		
234	321	20	А	Queen Street West	Queen/University, west on Queen about 100 feet west of University		
235	323	20	A	John Street	Wellington/John: Front & John, go north on John, site on John before Wellington, beside CBC Centre		
236	324	28	А	Cooper Street	Yonge/Queens Quay East, go east on Queens Quay to Cooper, north on Cooper		
237	326	27	А	Street Nicholas Street	Yonge/Bloor - West on Bloor, South on Street Nicholas - 100 feet after Street Mary		
238	328	27	А	Gloucester Street	Yonge & Bloor Street, South on Yonge, East on Gloucester - site is on		

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#	Site ID	Ward	Team	Name	Directions		
					north side of Gloucester Street 50 feet west of (before) Church Street		
239	329	27	А	Grosvenor Street	Yonge/Bloor - from Yonge turn west on Grosvenor; site is on north side of Grosvenor Street beginning 100 feet after Bay Street		
240	330	28	А	Ontario Street	Bloor/Parliament: turn west on Aberdeen, South on Ontario Street - site is 100 feet on Ontario Street		
241	332	27	Α	Gerrard Street East	Gerrard/Sherbourne; site is west on Gerrard 200 feet on north side		
242	333	28	Α	Dundas Street East	Dundas/Parliament, west of Parliament on Dundas. 10 feet east of Berkley/Dundas on south side		
243	334	28	А	Richmond Street East	Richmond Street/Sherbourne Street; site is west on Richmond Street between Sherbourne & George Street on north side		
244	335	28	Α	Frederick Street	Jarvis / King , S on Jarvis , E on King , South on Frederick Street		
245	336	28	А	The Esplanade	Parliament/Front; go west on Front Street, turn left onto Berkeley and then west on Espalande - near Parliament		
246	337	41	С	Midland Avenue	Kennedy Road/Sheppard Avenue; go east on Sheppard Avenue turn left (north) onto Midland Avenue; site on east side of on Midland Avenue in front of Agincourt High School.		
247	338	7	В	Benrubin Drive	Kipling/Finch, go east on Finch, north on Milady, east on Firenza; site on Benrubin		
248	401	1	С	Sanagan Road	Islington Avenue/ Finch Avenue West; south on Islington Avenue, turn right (West) on Albion Road; proceed approximately 1,000 meters west, turn left (south) on Sanagan. Site is on right hand side just past Lightwood Drive		
249	402	1	В	Garfella Drive	Steele West/Kipling Avenue; travel South on Kipling; turn right (west) on Mount Olive Drive, turn Left onto		

#	Site ID	Ward	Team	Name	Directions		
					Garfella Drive - site is on right side of street, in green space adjacent Albion Creek area		
250	403	3	В	Gentian Drive	Eglinton Avenue West/Renforth Drive; From Eglinton, Turn south onto Renforth Dr; turn East onto Gentian Drive, Site is on right side of street just past Ashfield Drive		
251	405	5	В	Cochrane Drive	The Queensway/Royal York Road; West on The Queensway, turn right (north) on Avon Park Road; left onto Cochrane Drive; Site is in left side of street - in park area.		
252	406	6	В	Symons Street	The Queensway/Royal York Road; South on Royal York Road; Turn left (east) onto Symons Street from Royal York Road; site is on right side of street - past George Street		
253	407	13	В	Langmuir Crescent	Saint Clair Avenue West/Jane Street; south on Jane Street; at Annette turn left onto Baby Point Road proceed west; turn left (south) onto Humbercrest Boulevard; then right onto Langmuir Crescent; site is on right side of street in green park space		
254	408	14	В	Jameson Avenue	King Street West/Dufferin Street West; travel west on King Street West; turn left (south) onto Jameson Avenue; site is on in front of school.		
255	409	15	В	Castlefield Avenue	Keele Street/Eglinton Avenue West; travel east on Eglinton Avenue West; turn left (north) on Caledonia Road, then left again on to Castlefield Avenue; proceed to small park across from Woodborough Avenue Site in green space		
256	410	16	В	Grey Road	Bathurst Street/Lawrence Avenue West; proceed east on Lawrence Avenue West; Grey street is off of Lawrence going north. Turn onto Grey Street. Site is in green space on		

#	Site ID	Ward	Team	Name	Directions
					right side of Grey Road, north of Fairlawn Avenue and south of Germain Avenue
257	411	17	А	Northcliffe Boulevard	Saint Clair Avenue West/Dufferin Avenue; east on Saint Clair Avenue West, turn left onto Northcliffe Boulevard - site on right side of street - 75 meters north of Saint Clair West
258	412	18	В	Dublin Street	Bloor Street West/Dufferin Street; proceed West on Bloor Street West; turn left (south) onto Saint Helens Avenue; Dublin Street is 100 meters south. Site anywhere on Dublin St (it is very short)
259	413	20	A	Lippincott Street	Bloor Street West /Bathurst Street; South on Bathurst; Turn left onto College - turn left (north) on Borden, left onto Vangough Street, turn left onto Lippincott; Site on right side immediately south of Vangough Street
260	414	25	С	Hopperton Drive	Sheppard Avenue East/Leslie Street; South on Leslie Street, turn right (west) on Bannatyne Drive; then immediately again turn right(north) on Woodsworth Rd; proceed to turn left onto Hopperton Drive - site on right side of street - 50 meters
261	415	25	С	Shouldice Court	Sheppard Avenue East/Leslie Street; South on Leslie Street, turn right (west) on Bannatyne Drive; then immediately again turn right (north) on Woodsworth Road; proceed to turn left onto Davean Drive then turn right (north) onto Shouldice Crt.
262	416	27	А	Grosvenor Street	Queen Street West/Yonge Street; travel west on Queen Street West, turn right (north) onto University Avenue; proceed around Queens Park Circle

#	Site ID	Ward	Team	Name	Directions		
263	417	28	А	Sydenham Street	Queen Street East/Parliament Street; east on Queen Street East, turn left onto Sydenham Street (about 100 meters east of Parliament) Site is 10- 20 meters from Queen Street. Sydenham is a very short street.		
264	418	29	С	Memorial Park A	Danforth Avenue/Donlands Avenue; North on Donlands, turn right (east) onto Memorial Park Avenue - proceed past Greenwood - site is in parkland area between Greenwood and Kiniborne Avenue		
265	419	30	А	Winnifred Avenue	Leslie Street/ Queen Street East; South on Leslie Street; turn right (west) onto Eastern Avenue; then right (north) onto Winnifred Avenue; Site is 50 meters north of Eastern Avenue on right side of street.		
266	420	31	С	Dunkirk Road	Danforth Avenue/Woodbine Avenue; North on Woodbine Avenue; Turn left (west) onto Dunkirk Avenue; site is on right side of street 20 meters past Woodmount Avenue		
267	421	32	С	Rhodes Avenue	Queen Street East/Leslie Avenue; travel east on Queen Street East, turn left (north) onto Coxwell Avenue; turn left (west) onto Fairford Avenue, then first left onto Rhodes Avenue; Site is 150 meters south of Fairford on right side of street north of Dundas Street		
268	422	34	С	Upjohn Road	Leslie Street/York Mills Road; travel east on York Mills, turn right (south) onto Upjohn Road near entrance to Seneca College, Site on right side of road 70 meters		
269	423	36	С	Kenny Avenue	Danforth Avenue/Warden Avenue; travel south on Warden, Kenny Avenue is a small street 200 meters, south of Danforth Avenue; Site is immediately at intersection of Kenny & Warden proceeding west on right		

#	Site ID	Ward	Team	Name	Directions		
					side of street.		
270	424	37	С	Minford Avenue	Birchmount Avenue/ Lawrence Avenue East; west on Lawrence Avenue East; turn left onto Warden travel south to Minford Avenue; turn left (east) onto Minford, site commences at intersection Minford/ Warden on right side of street.		
271	425	38	С	Kencliff Crescent	Brimley Road/ Lawrence Avenue East; travel east on Lawrence Avenue East; turn left (north) onto McCowan Road proceed north to Meldazy Drive; turn left onto Meldazy Drive then immediately turn right onto Kencliffe Crescent.		
272	426	39	В	Glen Springs Drive	Victoria Park Avenue/ Finch Avenue East; travel east on Finch Avenue East; turn left (north) onto Warden Avenue, proceed to Glen Springs Drive (about 1 km); turn left (west) onto Glen Springs - site begins immediately after first curve towards South		
273	500	3	В	Lloyd Manor Road	Eglinton/Kippling Avenue, West on Eglinton, South on Lloyd Manor Road site before Winsland		
274	501	36	С	Winston Avenue	Gerrard/Victoria Park, South on Victoria Park, East on Winston Avenue		
275	502	36	С	Fallingbrook Road	Victoria Park/Kingston Road West on Kingston, South on Fallingbrook		
276	503	10	В	Charleswood Drive	Wilson Avenue/Allen Road West on Wilson, North on Bathurst, East on Charleswood Drive, site on south side past Almond Road		
277	504	35	С	St Clair Avenue East	Saint Clair/Warden Avenue, West on Saint Clair, east of Herron Avenue		
278	505	40	С	Bridletowne Circle	Finch Avenue East/Warden, West on Finch, South on Bridletowne Circle, site on south side, past Collingbrook		

#	Site ID	Ward	Team	Name	Directions		
279	506	9	В	Victory Drive	Wilson Avenue/Keele Street, west on Wilson, North on Agate Road West, site at intersection on Victory on Northwest side		
280	507	13	В	Humberview Road	Bloor Street West/Jane Street, North on Jane to Humberview Road past, site on north side		
281	508	41	С	Mollard Road	Brimley Avenue/Finch Avenue, South on Brimley, West on Humtingwood Drive, North on Mollard 50 feet from intersection		
282	509	17	В	Algarve Crescent	Saint Clair Avenue West/Old Weston Road North on Old Weston Road West on Algarve Crescent, site is 120 feet from intersection on north side		
283	510	32	С	Scarborough Road	Kingston Road/Victoria Park Avenue, West on Kingston Road, South on Scarborough Road past Pine Road site on West		
284	511	21	В	Heathdale Road	Saint Clair Avenue West/Bathurst Street, North on Bathurst, West on Heathdale Road past Raglan Road 200 feet on north side		
285	512	16	В	Duplex Avenue	Yonge St/Lawrence Avenue, South on Yonge, West on Glengrove Avenue West, South on Duplex Avenue, site 50 feet from corner		
286	513	44	С	Ling Road	Morningside Avenue/Lawrence Avenue East, South on Morningside, East on Ling Road, site 200 feet from intersection		
287	514	22	А	Avenue Road	Avenue Road/Saint Clair Avenue West, South on Avenue Road to Oakland Avenue, site starts at intersection		
288	515	7	В	Sheppard Avenue West	Finch Avenue West/Jane Street, South on Jane, West on Sheppard Avenue West to Arrow Road; site starts at intersection on north side of Sheppard Avenue West		
289	516	40	С	Corinthian Boulevard	Finch Avenue East/Pharmacy Avenue, South on Pharmacy, West on		

#	Site ID	Ward	Team	Name	Directions		
					Corinthian Blvd, past Brantford 50 feet on North side		
290	517	6	В	Murrie Street	Lake Shore Boulevard West/Kipling Avenue, East on Lake Shore Boulevard, North on Dwight Avenue, right on Murrie Street, site 50 feet from corner.		
291	518	31	С	Machokie Road	Woodbine Avenue/O'Connor Drive, West on O'Connor Drive, South on Machokie Road site 50 feet from intersection		
292	519	3	В	Eringate Drive	Rathburn Road/Renford Drive, North on Renford Drive, East on Eringate Drive past Odessa Avenue, site at intersection		
293	520	3	В	The West Mall	Bloor Street West/The West Mall, North on The West Mall, past Eva Road site 50 feet from intersection		
294	521	20	А	Bernard Avenue	Dupont Street/Davenport Road West on Dupont Street, South on Street George Street, East on Bernard Avenue, site on south side, 100 feet from corner		
295	522	21	A	Davenport Road	Saint Clair Avenue West/Bathurst Street, South on Bathurst, East on Davenport Road site is past Albany Road, 50 feet on south side		
296	523	13	В	Watson Avenue	Jane Street/Annette Street, North on Jane Street, West on Bradley Avenue, North on Watson Avenue, site 50 feet from intersection		
297	524	15	В	Rogers Road	Eglinton Avenue West/Keele Street, South on Keele Street, East on Rogers Road past Scott Rd 50 feet on South side		
298	525	35	С	Davidson Avenue	Danforth Road/Kennedy Road, South on Kennedy Road, East on Raleigh Avenue, right on Davidson Avenue, site 75 feet from corner		

### **Appendix H – Sites Distribution Map**



## **Appendix I – Field Forms**

- > Large Litter Survey Form
- > Small Litter Survey Form
- > Branding Form



#### Large Litter Survey Form

Fixed or Variable (F/V):
Width 1 – Start: (max. 18 ft.)
Width 2 – Middle: (max. 18 ft.)
Width 3 – End: (max. 18 ft.)
/N):
tails:
/

		0				
Large Litter	Category	Pass 1	Total	Pass 2	Total	<b>Brand Names Observed</b>
Beer Cans	Beverage					
Beer Bottles (Glass)	Beverage					
Soft Drink (Glass)	Beverage					
Soft Drink (Cans)	Beverage					
Soft Drink (Plastic)	Beverage					
Sport Drink (Glass)	Beverage					
Sport Drink (Plastic)	Beverage					
Water (Glass)	Beverage					
Water (Plastic)	Beverage					
Wine/ Liquor (Glass)	Beverage					
Wine/ Liquor (Plastic/Other)	Beverage					
Milk/Juice (Plastic)	Beverage					
Milk/Juice (Glass)	Beverage					
Milk/Juice (Gable Top)	Beverage					
Foil Pouches	Other Bev. Pckg.					
Aseptic (Box)	Other Bev. Pckg.					
Broken Glass Container	Other Bev. Pckg.					
Six Pack Plastic Rings	Other Bev. Pckg.					
Foil Containers	Other Bev. Pckg.					
Plastic Jars / Bottles/ Lids	Other Cntrs.					
Glass Jars/ Bottles Misc.	Other Cntrs.					
Cans - Steel	Other Cntrs.					
Cans - Aluminum	Other Cntrs.					
Container Lids	Other Cntrs.					
Aerosol Cans (Paint, Oils, Etc.)	Other Cntrs.					

	ı	1		
Plastic Drink Cups	Cups			
Paper Cups (Cold)	Cups			
Paper Cups (Hot)	Cups			
Polystyrene Cups (Foam)	Cups			
Other Paper Cups	Cups			
Cup Lids, Pieces Lids, Straws	Cups		<u> </u>	
Plastic Retail Bags	Bags			
Paper Retail Bags	Bags			
Paper Bags - Fast Food	Bags			
Plastic Bags - Not Retail	Bags			
Paper Bags - Not Retail	Bags			
Zipper Bags/ Sandwich	Bags			
Cardboard Boxes/ Box Material	Other Pckg.			
Paperboard (Cereal Type)	Other Pckg.			
Paper Beverage Cases	Other Pckg.			
Polystyrene Clamshells	Other Pckg.			
Paper Clamshells	Other Pckg.			
Other Plastic Shells/Boxes	Other Pckg.			
Paper Food Wrap	Food Wraps			
Paper / Foil Composite Wrap	Food Wraps			
Plastic Wrap	Food Wraps			
Condiment Package (Salt, Etc.)	Take-Out			
Utensils	Take-Out			
Paper Fast Food Plates	Take-Out			
Poly Fast Food Plates	Take-Out			
Other Plastic FF Plates	Take-Out			
Plates - Other Materials	Take-Out			
Name Brand FF Towels/Napkins	Take-Out			
Non-Brand Towels / Napkins	Paper			
Lottery Ticket Debris	Paper			
Printed Material (Newspapers, Etc.)	Paper			
Stationary (School, Business Etc.)	Paper			
Receipts (Business, Transfers, Etc.)	Paper			
Polystyrene Trays	Trays			
Paper Trays	Trays			
Other Material Trays	Trays			

Gum Wrappers	Snack			
Candy Bar Wraps	Snack			
Candy Pouches	Snack			
Sweet Packaging (Describe)	Snack			
Other Confectionery (Describe)	Snack			
Snack Food Packaging	Snack			
Clothing Or Clothing Pieces	Cloth			
Other Cloth	Cloth			
Plastic Packaging - Other	Other Pckg			
Paper Packaging - Other	Paper			
Plastic/Composite - Other	Other Misc.			
Foil Materials/Foil Pieces	Other Misc.			
Cigarette / Cigar Debris (>4")	Tobacco			
Tobacco Pckg. (Packs, Matches, Etc.)	Tobacco			
Misc. Paper	Other Misc.			
Misc. Plastic	Other Misc.			
Misc. Paperboard	Other Misc.			
Misc. Cardboard	Other Misc.			
Misc. Glass	Other Misc.			
Vehicle & Metal Road Debris	Other Misc.			
Construction Debris	Other Misc.			
Tire & Rubber Debris	Other Misc.			
Home Articles	Other Misc.			

Site ID:		Date:				Surveyor:	<u>":</u>						
Small Litter Items		Section #1	n #1			Section #2	n #2			Section #3	£# u		Grand
# Description	Flip 1	Flip 2	Flip 3	Total	Flip 1	Flip 2	Flip 3	Total	Flip 1	Flip 2	Flip 3	Total	Total
1 Aluminum													
2 Bottle caps													
3 Candy wrappers													
4 Chewing Gum (on pavement)													
5 Cigarette butts													
6 Glass													
7 Hard Plastic													
8 Metal (not Aluminum)													
9 Other material													
10 Tobacco Packaging, etc.													
11 Paper													
12 Plastic film													
13 Poly foam - Peanuts													
14 Poly foam - Other Pieces													
15 Rubber													
16 Straws													
Total - All Items													

#### **Brand Names Form**

List of Brand Names Observed

#### **Appendix J – Statistical Analysis of Litter Audit Results**

In the *Large Litter* category, five sites yielded litter rates that were more than three standard deviations above the mean (11.5), as shown on Table 3 (page 13.) If the *Large Litter* counts had yielded a "normal distribution," such measurements could potentially be considered as outliers. However, as is true with many litter surveys, the distribution is skewed with considerably more observations above the mean than below it. In fact, not a single measurement is even one standard deviation below the mean. Toronto's 2006 Litter Audit had yielded a similar distribution. Given the nature of these litter audits, using a "three standard deviation" rule-of-thumb as a bellwether for outliers would not apply to the survey results.

When large values (such as the 103 observation, more than seven deviations above the mean) are obtained, they should be reviewed to ensure accuracy. In this case, these five data points did reflect the amount of litter observed. Thus the larger values indicate a "heavy-tailed" distribution for this set of values. This, in turn, serves to caution against conducting statistical procedures that rely on an assumption of normality. However, given the context of litter audits, these observations reflect data within a typical range.

The situation for *Small Litter* is comparable to that for *Large Litter*. Seven *Small Litter* observations exceed three standard deviations above the mean, while no observation is even one standard deviation below the mean. Nor is the distribution of *Small Litter* normal. Again, however, these were valid measurements and suggest a heavy-tailed distribution with observations that are within a typical range for litter audits.



#### **Appendix K – Firm Qualifications**

Steven R. Stein, Project Manager for the 2012 Toronto Streets Litter Audit, is Principal of Environmental Resources Planning, LLC ("ER Planning",) North America's most experienced firm in the field of litter-related studies and litter's effects on our communities.

Mr. Stein has led statewide litter surveys (Georgia, Maine, New Hampshire, New Jersey, Tennessee and Vermont), citywide litter surveys (Oakland, San Francisco, Toronto and Washington D.C.) and beach litter surveys (California.) He also led the design and management of the 2008 National Litter Survey for Keep America Beautiful.

His work with litter, which began in 1987, has been featured on ABC's *Good Morning America* and *NPR* as well as in the *New York Times* and *National Geographic Magazine*. Field crews under his direction have physically surveyed litter along more than 16 million square feet of roadways and recreational areas.

Mr. Stein has taught *Environmental Science* and *Ethics in Management* at the university level and was recently invited to participate in a study prepared for the President as a subject matter expert on environmental issues and community dynamics.

#### **Education**

- Ph.D. Level Coursework Environmental Science, SUNY College of Environmental Science and Forestry (SUNY-ESF)/Syracuse University (SU.) Focus of studies: The influence of cultural archetypes on littering behavior. Authored a literature review of behavioral and litter quantification/characterization studies conducted between 1968 and 2006.
- M.Sci. Natural Resource Policy and Management, SUNY-ESF/SU. Focus of studies: Macroeconomic relationship of Asian/U.S. recycling industries and evaluation of sustainable policy initiatives. Master's thesis examined the implications of public policy intervention on the establishment of sustainable domestic recycling markets. Studied under two forest economists. Recipient of New York SWANA Annual Scholarship Award.
- B.Sci. Cum Laude Environmental Studies, SUNY-ESF/SU. Focus of studies: Waste Management and Environmental Law. Teaching assistant for Dr. Allen Lewis's Introduction to Environmental Studies course. Internship with New York State Department of Environmental Conservation.

#### **Selected Litter-Related Projects and Reports**

- 2012 Toronto Streets Litter Audit Project Manager (2012)
- ♣ Contribution of Polystyrene Foam Food Service Products to Litter Author (2012)
- ♣ Our Beaches and Seas The Mechanics of Risk (2012)
- ♣ Multi-City Paper and Plastic Bag Litter Survey Project Manager (2012)
- ♣ Sustainable Consumption Expert Roundtable, Johnson Foundation (2012)
- ♣ Ocean Conservancy: Pro Bono Beach Litter Survey Methodology (2011)
- ♣ FoLAR: Los Angeles County Trash Biography Peer Review (2011)
- ♣ National Litter Forum: Restoring Our Communities Organizer and Sponsor (2011)
- ♣ President's National Infrastructure Advisory Council Report: Optimization of Resources - Contributor (2010)
- ♣ Keep America Beautiful: 2008 National Litter Survey and Litter Cost Research Study
   Project Manager and Lead Report Author (2009)
- ↓ Keep America Beautiful: Community Appearance Index Development Project Manager (2008)
- ★ Keep America Beautiful: International Litter Research Forum (2007)
- ♣ Litter: Literature Review Lead Report Author (2007)
- ♣ Ocean Conservancy's National Marine Debris Monitoring Program Pro Bono Survey Director for Chincoteague Island, VA Site (2006-2007)
- ♣ Potomac Watershed Initiative Trash Monitoring Protocol Subcommittee Pro Bono (2006-2007)
- ♣ Georgia Visible Litter Survey Project Manager (2006)
- ◆ Tennessee Visible Litter Survey Project Manager (2006)
- ← California Beach Litter Study Project Manager (2005-2006)
- ♣ New Jersey Litter Study Project Manager (2004)
- ♣ North Carolina Litter Study Co-Author (2001)

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