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April 20, 2017

Summary of Litter Audits

Dear Mr. Hruska

Enclosed is our summary report on litter audits that our company has conducted over the past 15 years.

Our firm has developed a statistically rigorous methodology of auditing large and small litter items. This was done after working with one of North America's leading pioneers of litter audit, Mr. Dan Syrek, from California. Mr. Syrek's methodology was deemed to be the "gold standard" of litter auditing in the 1990's; but it was very complicated and difficult to explain to clients.

MGM Management revised the litter auditing methodology to be less complicated. Our methodology was peer reviewed as statistically acceptable during a legal action in California some years ago.

CPIA asked us to:

- Lists the studies MGM Management has done in Canada & the USA
- Comment on how these studies quantify the retail bag litter rates
- Discuss key litter audits done in Canada
- Discuss our methodology to indicate it is statistically valid

Our analysis shows that during the 44 litter audits that our firm has conducted plastic retail bag litter represents 0.4% of the total large litter observed.

Mark McKenney President



Summary of Litter Audits

Litter Audits in Canada & USA

MGM Management has conducted 489 litter audits, since 1990 to the present time: These include, major and medium sized Canadian cities, Regional Municipalities, and municipalities in the USA. These include:

- Ontario – conducted under supervision of Dan Syrek, 1990
- Ontario – Toronto area 1994, done by McKenney with Syrek assistance
- City of Toronto, Streets Litter Audit 2002
- City of Toronto, Streets Litter Audit 2003
- Regional Municipality of Peel, Streets Litter Audit 2003
- Regional Municipality of York, Streets Litter Audit 2003
- Regional Municipality of Durham, Streets Litter Audit 2003
- City of Toronto – Streets Litter Audit 2004
- City of Toronto – Parks Litter Audit 2004
- City of Toronto - Streets Litter Audit 2005
- City of Toronto - Streets Litter Audit 2006
- City of San Francisco (USA) - Streets Litter Audit 2007 (April 2007)
- Alberta Highways – Litter Characterization Study (Recycling Council of Alberta)
- City of Edmonton - Streets Litter Audit 2007 (May – June 2007)
- City of San Francisco (USA) - Streets Litter Audit 2008 (April 2008)
- City of San Jose (USA) – Streets Litter Audit 2008 (August 2008)
- City of San Francisco (USA) – Streets Litter Audit (2009)
- Alberta Highways Litter Survey – Alberta Transportation (2009)
- City of Edmonton – Streets litter Audit (2009)
- City of Winnipeg – for Multi-Material Stewardship Manitoba – Streets (2010)
- City of Brandon - for Multi-Material Stewardship Manitoba – Streets (2010)
- City of Edmonton - Streets litter Audit (2010)
- City of Edmonton - Streets litter Audit (2011)
- City of Edmonton - Streets litter Audit (2012)
- City of Edmonton - Yellowhead Highway Corridor Litter Audit (2012)
- City of Winnipeg – Multi-Material Stewardship Manitoba – Streets (2012)
- City of Brandon - Multi-Material Stewardship Manitoba – Streets (2012)
- City of Edmonton – Streets audit (2013)
- City of Winnipeg – Canadian Beverage Container Recycling Assoc. (2013)
- City of Brandon - Canadian Beverage Container Recycling Assoc. (2013)
- City of Steinbach - Canadian Beverage Container Recycling Assoc. (2013)
- City of Winnipeg – Canadian Beverage Container Recycling Assoc. (2014)
- City of Brandon - Canadian Beverage Container Recycling Assoc. (2014)
- City of Steinbach - Canadian Beverage Container Recycling Assoc. (2014)
- City of Flin Flon - Canadian Beverage Container Recycling Assoc. (2014)
- City of Thompson - Canadian Beverage Container Recycling Assoc. (2014)
- City of Edmonton – Street Litter Audit (2014)
- Regional Municipality of Wood Buffalo (2015) (Ft. MacMurray)
- City of Winnipeg – Canadian Beverage Container Recycling Assoc. (2015)



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- City of Brandon - Canadian Beverage Container Recycling Assoc. (2015)
- City of Steinbach - Canadian Beverage Container Recycling Assoc. (2015)
- City of Flin Flon - Canadian Beverage Container Recycling Assoc. (2015)
- City of Thompson - Canadian Beverage Container Recycling Assoc. (2015)
- City of Winnipeg – Canadian Beverage Container Recycling Assoc. (2016)
- City of Brandon - Canadian Beverage Container Recycling Assoc. (2016)
- City of Steinbach - Canadian Beverage Container Recycling Assoc. (2016)
- City of Flin Flon - Canadian Beverage Container Recycling Assoc. (2016)
- City of Thompson - Canadian Beverage Container Recycling Assoc. (2016)

All the litter audits we have completed have been conducted using the same methodology, so that the results are comparable between different years, and comparable from one municipality to another.

The major cities audited for litter in Canada include:

- City of Toronto (1990, 1994, 2002, 2003, 2004, 2005, 2006)
- Regional Municipality of Peel (2003)
- Regional Municipality of York (2003)
- Regional Municipality of Durham (2003)
- City of Edmonton (2009, 2010, 2011, 2012, 2013, 2014, 2015)
- City of Winnipeg (2010, 2012, 2014, 2014, 2015)
- City of Brandon (2010, 2012, 2014, 2014, 2015)
- Regional Municipality of Wood Buffalo (2015) (Ft. MacMurray)

The major cities audited for litter in the USA include:

- City of San Francisco (USA) - Streets Litter Audit (2007, 2008, & 2009)
- City of San Jose (USA) – Streets Litter Audit 2008 (August 2008)

Using the same methods, has allowed us to assemble a substantial data base of large litter observations. In total, we have documented nearly 103,000 large litter data observations from the cumulative data. We believe this is the largest litter data set currently available in Canada.

Our firm has not conducted any litter audits in Quebec, nor in the Atlantic Provinces. We are aware of two litter audits conducted by Multi-Material Stewardship Board, in Newfoundland in 2016, and one in 2013 by the same organization. There have also been regional litter audits done in Nova Scotia by various local organizations, but we cannot comment on the methodologies used nor the results obtained from these audits.

Observations - Retail Plastic Bag Litter

Data has been kept in a consolidated data set since 2002, which captures observations from 44 audits. Since 2002, our firm has audited 4,400 audit site locations. In those audits a total of 102,951 observations of large litter have been documented.

Large Litter Observed (by litter count) - All Audits 2002 - 2016				
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All Beverage	All Cups	Bags (paper & plastic)	Boxes	Other Containers	Wraps	Take-Out Extras	Trays	Confectionary	Textiles	Other Packaging	Printed & Fiber	Tobacco	Other Misc. Litter	Total
6,486	8,326	3,754	1,275	2,234	2,158	2,377	211	8,793	1,533	6,045	19,097	6,241	34,424	102,951
6.3%	8.1%	3.6%	1.2%	2.2%	2.1%	2.3%	0.2%	8.5%	1.5%	5.9%	18.5%	6.1%	33.4%	100.0%

This table shows that bag litter of all types, which included plastic retail bags, non-retail plastic bags, zipper bags, paper retail bags, paper non-retail bags, and paper fast food bags are 3.6% of total large litter observed.

Of this bag litter plastic retail bags account for 431 bag litter observations, or 0.04% of total large litter observed. The table below illustrates the observations of plastic retail bags for all audits conducted since 2002.

Plastic Retail Bag Litter - MGM Management Audits - 2002 - 2016							
	1990's	2002	2003	2003	2003	2004	2004
	Ontario Litter (no data)			Peel Region	Durham Region		Toronto Parks
Total litter counted		Toronto 6,304	York Region 8,678	4,362	5,698	Toronto 5,265	5,551
Plastic retail bags	0	38	34	3	6	11	43
% plastic retail bags		0.6%	0.4%	0.1%	0.1%	0.2%	0.8%
	2005	2006	2007	2007	2007	2008	2008
				RCO Charact.	Edmonton Streets	San Francisco	
	Toronto 6,309	Toronto 4,323	San Francisco 3,813	1,391	2,650	3,973	San Jose 3,928
Plastic retail bags	17	5	23	28	10	25	17
% plastic retail bags	0.3%	0.1%	0.6%	2.0%	0.4%	0.6%	0.4%
	2009	2009	2009	2010	2010	2010	2011
	San Francisco		Alberta Highways				
	4,488	Edmonton 3,361	3,407	Edmonton 2,378	Winnipeg 2,300	Brandon 1,260	Edmonton 2,134
Plastic retail bags	69	9	2	12.5	10.5	6	23.5
% plastic retail bags	1.5%	0.3%	0.1%	0.5%	0.5%	0.5%	1.1%
	2012	2012	2012	2013	2013	2013	2013
	Edmonton	Winnipeg	Brandon	Winnipeg	Brandon	Steinbach	Edmonton
Total litter counted	1,933	1,922	996	1,442	842	185	1,957
Plastic retail bags	5.5	3	3.5	5.5	3	1.5	6.5
% plastic retail bags	0.3%	0.2%	0.4%	0.4%	0.4%	0.8%	0.3%
	2014	2014	2014	2014	2014	2014	2015
	Winnipeg	Brandon	Steinbach	Flin Flon	Thompson	Edmonton	Ft. McMurray
Total litter counted	1,400	731	121	303	514	1,895	1,855



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Plastic retail bags	3	2		1		1	2.5
% plastic retail bags	0.2%	0.3%	0.0%	0.3%	0.0%	0.1%	0.1%
	2015	2015	2015	2015	2015	2016	2016
	Brandon	Flin Flon	Thompson	Winnipeg	Steinbach	Steinbach	Winnipeg
Total litter counted	732	296	469	1,221	96	116	1,189
Plastic retail bags	2.0	1.5	1.0	2.0	0.0	0.0	3.5
% plastic retail bags	0.3%	0.5%	0.2%	0.2%	0.0%	0.0%	0.3%
	2016	2016	2016				
	Brandon	Flin Flon	Thompson				
Total litter counted	502	244	420				
Plastic retail bags	3.0	0.0	1.0				
% plastic retail bags	0.6%	0.0%	0.2%				
Total plastic retail bags:	431	% plastic retail bags	0.4%	Total large litter	102,951		

Methodology & Qualifications

The MGM Management method of auditing litter is based upon counting “accumulated litter”. Litter is observed at randomly selected locations, and counted based upon a list of 84 subcategories of litter. The same litter item categories are used for all audits. At each location auditors count the number of pieces of litter that have been deposited.

Site locations are randomly chosen to avoid any biased selection of sites. This is done using a random sample generating computer program, then creating a location map to direct auditors to the randomly selected locations. The same locations are used if the audit is repeated at a subsequent interval, so that the litter rate on the site can be compared.

For major cities the size of Toronto, San Francisco, San Jose, Winnipeg, and Edmonton the normal sample size is 100 – 200 audit locations. Litter is generated by people, so the sample size for smaller municipalities with lower populations can be reduced. The Fort MacMurray audit was set at 105 sites, the City of Brandon at 65 litter sites, whereas cities like Flin Flon used a smaller sample size of 25 sites. There are practical limitations of how many sites and audit team can conduct in each sampling period, which limits the total sites which can be audited.

For each site the large litter and small litter are counted using the methodology. The litter rate expressed as large litter items per site, is calculated for each site, and then amalgamated for the entire litter audit to give an overall litter rate for the full audit study. Litter rates can therefore be compared by individual site location, or collectively for the entire study compared to subsequent repeat audits.

A detailed explanation of the audit methodology appears in Appendix 1.



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Appendix 1 – Detailed Methodology

Our litter audits count “accumulated litter”. This is different than an audit using “fresh litter” counts, where a site is cleaned, then researchers return after a set time to count the number of pieces of litter that have been deposited. Accumulated litter allows for an examination of the occurrence of litter as it has developed over time. Fresh litter count surveys are much more labour intensive, and therefore costlier to conduct, compared to accumulated litter audits. The accumulated litter approach can provide information about whether a site has more or less litter on it in a subsequent audit, whereas the fresh litter audit approach is a good method of examining litter conditions at a given point in time when the site is audited.

Random Site Selection

In selecting where to conduct a site audit it is important to have an unbiased method of site selection. The current methodology does not allow discretion in the field in selecting sites to be audited. Sites are pre-selected using computer techniques. In this way, neither the “dirtiest” nor the “cleanest” locations are necessarily picked. The survey teams count litter at sites that are selected in advance of field crews traveling to the location.

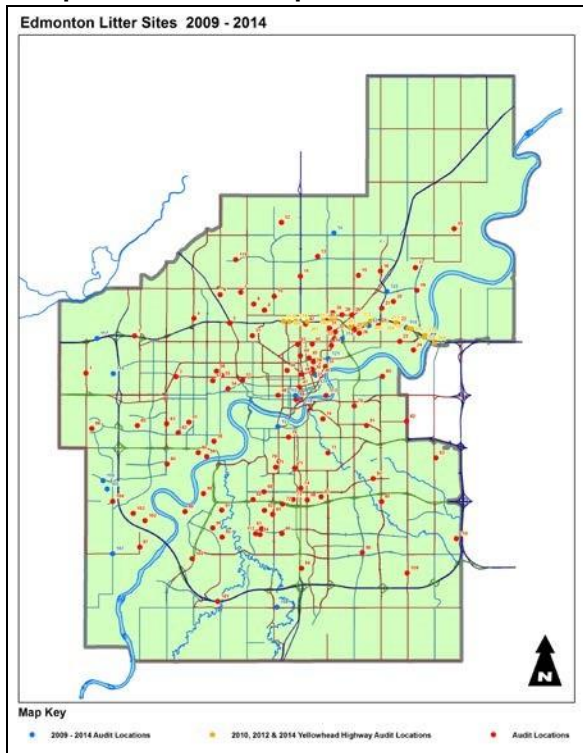
To select sites for an audit, a geographical information system (GIS) database for the municipality is obtained as GIS data files (ArcGIS 9.2 by Environmental Systems Research Institute Inc.). Using ArcGIS 9.2, the consultant uses all potential public street locations within the service area. After inputting these data coordinates, a random sample generator program selects potential litter audit sites. These data are then plotted on computer generated maps using ArcGIS 9.2, and detailed locations are identified.



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Sample Litter Audit Map



Sites are rejected if they are located:

- on major highways / freeways
- location was on a bridge
- location clearly within a construction area
- on railway/subway rights-of-way
- on hydroelectric power line rights-of-way
- on/within water (ponds, rivers, streams/ lakes)
- access was difficult or impossible
- if located on industrial or private lands

Detailed directions are written by the consultant to direct audit teams to each of the selected sites. Directions are written in a manner that would allow any field team to find each site easily. Field teams are asked to travel to the sites using these directions so that no bias towards whether the site was dirty or clean would be introduced.

For each site, further details of the audit site are added to the archival file by the audit team while at location, to allow future audit teams to find the same sites should the City wish to re-audit them in the future. GPS co-ordinates of latitude and longitude are taken at each site to allow accurate location information to return to the site in future years.

Detailed Site Files



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The consultant created an individual hard copy site file for each location. These files contain the following:

- Discrete site location ID number
- Travel directions sheet
- Photographic label card (for taking photos on-site)
- Large Litter Site Surveyor Form (for recording large litter observed) ▪ Small Litter Item Count form (for recording small litter)

2.3 Conducting a Site Audit

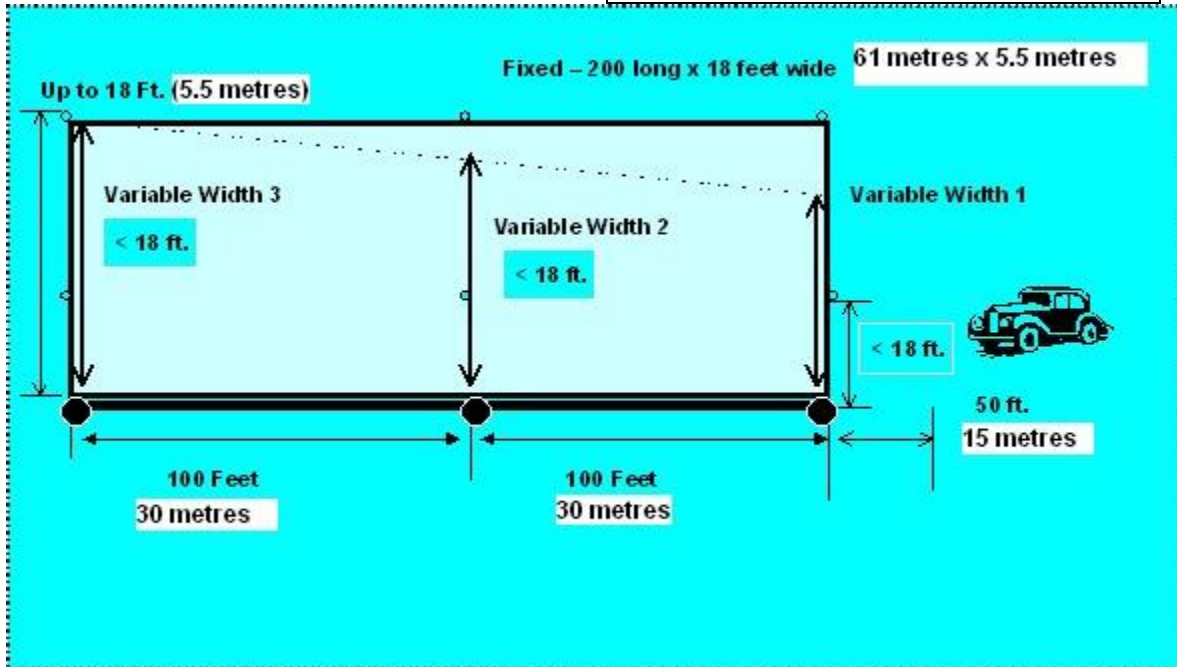
The audit team approached their assigned sites from the directions that were predetermined and located the site. Upon arriving at a site, the team safely parked their vehicle. Traffic cones are placed on the roadway for traffic control, with team members dressed in fluorescent orange/yellow traffic vests to increase visibility.

Beginning at the front of the parked car (or the start of the site), the team used a measuring device to measure 15 metres (50 feet) ahead of the start of the site. Using street marking paint or other distinguishing marker, a mark was drawn on the pavement ahead to denote the starting point of the audit site. From this point the team measured an additional 30 metres (100 feet), marking the roadway with another identifier to show the mid-point of the site. A final measurement of an additional 30 metres (100 feet) as made to denote the end of the audit site. Each site was 61 metres (200 feet) in length.

The width of the site was measured from approximately 0.5 metres (1.5 feet) inside the curb (from the center of the roadway) towards the outer edge of the site, up to a maximum width of 5.5 metres (18 feet). The rule was set to include 0.5 metres into the street since the curb is a normal catchments structure, for which the municipality is responsible for litter clean up. Sites with a width of 5.5 metres and 61 metres long are designated as a “fixed” site.

In many instances a site was less than 5.5 metres wide. This occurs in commercial areas where storefronts provide less than 5.5 metres from the roadways (plus 0.5 metres into the road). Sites less than 5.5 metres in width are designated as “variable” sites.

Figure 1 - Schematic of Litter Audit Site



Classification of Large Litter

For purposes of classifying litter, and in accordance with the methods used in previous litter surveys conducted by MGM Management, large litter was defined to be that which is greater than 25 square centimeters (4 sq. in.) in size.

Classification of Small Litter


Small litter are those pieces of debris that are less than 25 square centimetres in size, within a defined area of an audit site. The small litter audit methodology examines three transacts, or slices, of the site. A frame made of 12 millimetres (1/2 inch) P.V.C. plastic tubing was constructed to act as a frame. This frame is 3 metres (1 foot) wide and 1.8 metres (6 feet) long. A surveyor would look for and count small litter in three samples, one at the start of the site, one at the midpoint and one at the end of the site. At each transact section; three flips of the frame are done, thus surveying 1.7 square metres (18 square feet) of the site – repeated three times.



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Small Litter Templates




**Frame for
Small
Litter
Count**

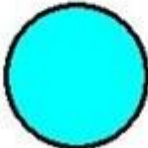
PVC 1' x 6 ft.
0.3 m x 1.8 m = 0.54 sq.m



5 cm x 5 cm =
25 sq. cm.



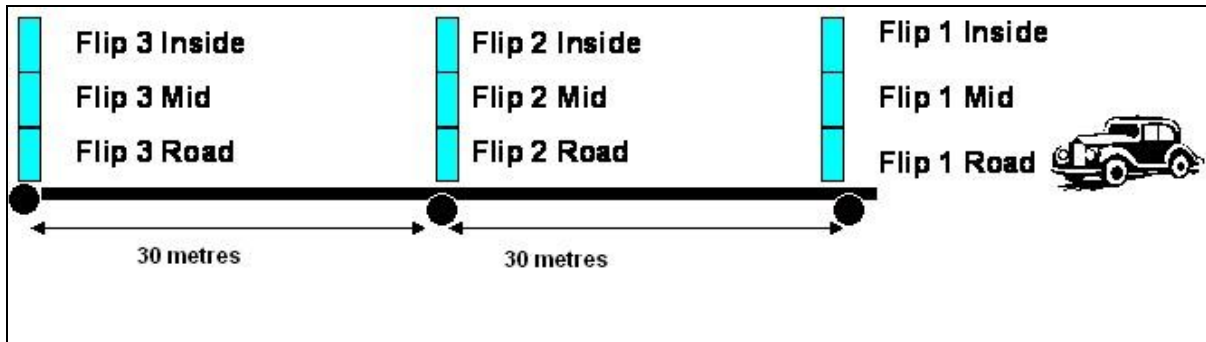
1" x 4 " (4 sq.in)
2.5 cm x 10 cm = 25 sq.cm.



4 Square inches
Round (25 sq. cm)

**Templates
for Small
Litter
Count**

Site Set-up – Small Litter





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Categories of Small Litter

The 16 categories in the litter counts less than 25 square centimetres (<4 sq. inches) that are examined are:

- cigarette butts / debris
- other tobacco
- bottle caps
- straws
- candy packaging & wrappers
- polyfoam packing materials
- other polystyrene debris
- glass
- paper
- plastic film
- hard plastic
- aluminum / foil debris
- rubber
- metal (not aluminum)
- other materials
- gum deposits on roadways & sidewalks



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Categories of Large Litter

Eighty-four sub-categories of large litter are counted. These are divided into 14 major categories to aid in classification and analysis. The major categories and the subcategories are listed below.

Major Category	SubCategory Number	Large Litter	Sub-Category Name	Material
1 - Beverage Containers	1	Beer Cans	Beverage Containers	Metal
	2	Beer Bottles (glass)	Beverage Containers	Glass
	3	Soft Drink (glass)	Beverage Containers	Glass
	4	Soft Drink (cans)	Beverage Containers	Metal
	5	Soft Drink (plastic)	Beverage Containers	Plastic
	6	Sport Drink (glass)	Beverage Containers	Glass
	7	Sport Drink (plastic)	Beverage Containers	Plastic
	8	Water (glass)	Beverage Containers	Glass
	9	Water (plastic)	Beverage Containers	Plastic
	10	Wine/ Liquor (glass)	Beverage Containers	Glass
	11	Wine/ Liquor (plastic/other)	Beverage Containers	Plastic
	12	Milk/Juice (plastic)	Beverage Containers	Plastic
	13	Milk/Juice (glass)	Beverage Containers	Glass
	14	Milk/Juice (gable top)	Beverage Containers	Composite
2 - Other Packaging	15	Foil Pouches	Other Packaging	Composite
	16	Aseptic (box)	Other Packaging	Composite
	17	Broken Glass Container	Other Packaging	Glass
	18	Six Pack Plastic Rings	Other Packaging	Plastic
	75	Foil Containers	Other Packaging	Metal
	64	Plastic Packaging Other	Other Packaging	Plastic
	65	Paper Packaging Other	Other Packaging	Paper
	66	Plastic /Composite other	Other Packaging	Composite
3 - Cups	67	Foil Materials /Foil Pieces	Other Packaging	Metal
	19	Plastic Drink Cups	Cups	Plastic
	20	Paper Cups (cold)	Cups	Paper



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	21	Paper Cups (hot)	Cups	Paper
	22	Polystyrene Cups (foam)	Cups	Plastic
	23	Other Paper Cups	Cups	Paper
	24	Cup Lids, Pieces, Lids	Cups	Plastic
4 - Bags	25	Plastic Retail Bags	Bags	Plastic
	26	Paper Retail Bags	Bags	Paper
	27	Paper Bags - Fast Food	Bags	Paper
	28	Plastic Bags - Not Retail	Bags	Plastic
	29	Paper Bags - Not Retail	Bags	Paper
	30	Zipper Bags/Sandwich Bags	Bags	Plastic
5 - Boxes	31	Cardboard Boxes/ Box Material	Boxes	Paper
	32	Paperboard	Boxes	Paper
	33	Paper Beverage Cases	Boxes	Paper
	34	Polystyrene Clamshells	Boxes	Plastic
	35	Paper Clamshells	Boxes	Paper
	36	Other Plastic Shells/Boxes	Boxes	Plastic
6 - Other Containers	37	Plastic Jars / Bottles/ Lids	Other Containers	Plastic
	38	Glass Jars/Bottles	Other Containers	Glass
	39	Cans - Steel	Other Containers	Metal
	40	Cans - Aluminum	Other Containers	Metal
	41	Container Lids	Other Containers	Plastic
	42	Aerosol cans (paint, oils, etc.)	Other Containers	Metal

Major Category	SubCategory Number	Large Litter	Sub-Category Name	Material
7 - Wraps	43	Paper Food Wrap	Wraps	Paper
	44	Paper /Foil Composite Wrap	Wraps	Composite
	45	Plastic Wrap	Wraps	Plastic
8 - Take-Out Extras	54	Condiment Packaging	Take-Out Extras	Plastic
	55	Utensils	Take-Out Extras	Plastic
	56	Name Brand Napkins / Serviettes	Take-Out Extras	Paper



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	57	Paper Fast Food Plates	Take-Out Extras	Paper
	58	Poly Fast Food Plates	Take-Out Extras	Plastic
	59	Other Plastic FF Plates	Take-Out Extras	Plastic
	60	Plates - Other Mat's	Take-Out Extras	Other
9 - Trays	46	Polystyrene Trays	Trays	Plastic
	47	Paper Trays	Trays	Paper
	48	Other Trays	Trays	Other
10 - Confectionary & Snacks	49	Gum Wrappers	Confectionary & Snacks	Paper
	50	Candy Bar Wraps	Confectionary & Snacks	Paper
	51	Candy Pouches	Confectionary & Snacks	Paper
	52	Sweet Packaging	Confectionary & Snacks	Paper
	53	Other Confectionery	Confectionary & Snacks	Paper
	63	Snack Food Packaging	Confectionary & Snacks	Paper
11 - Cloth	61	Clothing or Clothing Pieces	Cloth	Fibres
	62	Other Cloth	Cloth	Fibres
12 - Printed & Fibre Materials	68	No Brand Name Napkins /Serviettes	Printed & Fibre Materials	Paper
	69	Lottery \Ticket Debris	Printed & Fibre Materials	Paper
	70	Printed Material	Printed & Fibre Materials	Paper
	71	Stationary (school, business etc.)	Printed & Fibre Materials	Paper
	72	Receipts (business forms, bus tickets)	Printed & Fibre Materials	Paper
13 - Tobacco	73	Cigarette / Cigar Debris	Tobacco	Paper
	74	Tobacco other	Tobacco	Other
14 - Other Miscellaneous	76	Misc. Paper	Other Miscellaneous	Paper
	77	Misc. Plastic	Other Miscellaneous	Plastic
	78	Misc. Paperboard	Other Miscellaneous	Paper
	79	Misc. Cardboard	Other Miscellaneous	Paper
	80	Misc. Glass	Other Miscellaneous	Glass
	81	Vehicle & Metal Road Debris	Other Miscellaneous	Other
	82	Construction debris	Other Miscellaneous	Other
	83	Tire & Rubber debris	Other Miscellaneous	Other



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	84	Home Articles	Other Miscellaneous	Other
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Detailed Descriptions of Large Item Categories

1	Beer Cans	All brands of consumer beer can containers
2	Beer Bottles (glass)	Refillable and non-refillable beer bottles, all sizes
3	Soft Drink (glass)	Soft drinks, carbonated, non-carbonated, flavoured drinks in glass containers
4	Soft Drink (cans)	Soft drinks, carbonated, non-carbonated, flavoured drinks in metal can containers
5	Soft Drink (plastic)	Soft drinks, carbonated, non-carbonated, flavoured drinks in plastic containers, all sizes
6	Sport Drink (glass)	Sport drinks, carbonated or non-carbonated, flavoured drinks in glass containers, all sizes
7	Sport Drink (plastic)	Sport drinks, carbonated or non-carbonated, flavoured drinks in plastic containers, all sizes
8	Water (glass)	Packaged water, carbonated or non-carbonated, flavoured drinks in glass containers, all sizes
9	Water (plastic)	Packaged water, carbonated or non-carbonated, flavoured drinks in plastic containers, all sizes
10	Wine/ Liquor (glass)	Wine & liquor in glass, all sizes
11	Wine/ Liquor (plastic/other)	Wine & liquor in plastic or any other formats, all sizes
12	Milk/Juice (plastic)	Milk or juice containers, packages in plastic
13	Milk/Juice (glass)	Milk or juice containers, packages in glass
14	Milk/Juice (gable top)	Milk or juice containers, packages in gable top paper cartons, all sizes
15	Foil Pouches	All packaged goods in foil packaging, pieces of foil materials
16	Aseptic (box)	Drink-in-box, juice, fluids, other
17	Broken Glass Container	Glass fragments
18	Six Pack Plastic Rings	Retainer plastic for carrying cans
19	Plastic Drink Cups	Cups, all sizes, all resin types



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20	Paper Cups (cold)	Cups, all sizes, all paper types - cold drinks
21	Paper Cups (hot)	Cups, all sizes, all paper types - hot drinks
22	Polystyrene Cups (foam)	Cups, all sizes, all polystyrene types - hot drinks
23	Other Paper Cups	Cups, other materials

24	Cup Lids, Pieces of Lids	Fragments and pieces of cups
25	Plastic Retail Bags	Whole and pieces of retail plastic bags
26	Paper Retail Bags	Whole and pieces of retail paper bags
27	Paper Bags – Fast Food	Whole and pieces of fast food outlet paper bags
28	Plastic Bags – Not Retail	Whole and pieces of plastic bags, not retail
29	Paper Bags - Not Retail	Paper bags & sacs, example leaf bag debris
30	Zipper/Sandwich Bags	Plastic lunch bags and sacs
31	Cardboard Boxes/ Box Materials	All cardboard and box materials
32	Paperboard (cereal type)	Cereal, shoe boxes and pieces etc.
33	Paper Beverage Cases	Paper material outer packaging for beverage products
34	Polystyrene Clamshells	Whole and pieces of take-away or other Styrofoam containers
35	Paper Clamshells	Whole and pieces of take-away or other paper containers
36	Other Plastic Shells/Boxes	PET, PVC, HDPE , other material shells
37	Plastic Jars/Bottles/Lids	All jars, bottles etc., plastic, non-beverage, example: dish detergent bottle
38	Glass Jars/Bottles Misc.	All jars, bottles not described above, in glass
39	Cans – Steel	Food, non-food and other product steel can containers
40	Cans - Aluminum	Food, non-food and other product aluminum can containers
41	Container Lids	All lids, closures, and pieces > 4 sq. in.



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42	Aerosol Cans (paint, oils, etc.)	Aerosol cans, tops, lids - all products
43	Paper Food Wrap	Wrap for food, commercial & non-commercial; example: meat wrap,
44	Paper/Foil Composite Wrap	Wrap for food or non-food items, commercial & noncommercial; example: hamburger paper/ foil composite wrap,
45	Plastic Wrap	All plastic wrap types, food, non-food
46	Polystyrene Trays	Trays for take-out, non-take out, microwavable, display, etc.

47	Paper Trays	Trays for take-out, non-take out, microwavable, display, etc.
48	Other Material Trays	Trays for take-out, non-take out, microwavable, display, etc.
49	Gum Wrappers	Packaging used to seal, sell gum products
50	Candy Bar Wraps	Packaging used to seal, sell candy products
51	Candy Pouches	Packaging used to seal, sell candy products - pouch format
52	Sweet Packaging	Packaging used to seal, sell confections (cakes, pies, sweet snack products)
53	Other Confectionary	All other packaging for confectionaries
54	Condiment Package (salt, ketchup, vinegar, etc.)	Pouches, containers, creamers, etc.
55	Utensils	Forks, knives, chop sticks, etc.
56	Name Brand (fast food, etc.) Towels / Napkins / Serviettes	Towels & napkins etc. with brand identification identifiable
57	Paper Fast Food Plates	Paper Plates, used to serve fast food
58	Poly Fast Food Plates	Polystyrene Plates, used to serve fast food
59	Other Plastic Fast Food Plates	Other Material Plates, used to serve fast food
60	Plates - Other Materials	Plates for other than fast food applications, i.e. picnic plates used by families



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61	Clothing or Clothing Pieces	All cloth, clothing pieces, and clothing discarded on the site
62	Other Cloth	Tarps, industrial fabrics etc.
63	Snack Food Packaging	All snack food (i.e. Salty snacks, chips)
64	Plastic Packaging Other	Plastic packaging otherwise not described
65	Paper Packaging Other	Paper packaging otherwise not described
66	Plastic/Composite Other	All paper and composite debris not previously described
67	Foil materials/Foil Pieces	Foils and pieces, aluminum food foils, industrial foils
68	No Brand Name Towels/ Napkins/Serviettes	Napkins and towels - no brand identification
69	Lottery Ticket Debris	Tickets, and gaming items
70	Printed Material (newspapers, flyers, books etc.)	All printed material, commercially printed
71	Stationary (school, business etc.)	Includes school papers, written items, other printed materials such as business forms
72	Receipts (store receipt, bus transfers etc.)	Receipts, business items, invoices, packing slips, bus transfers, commercial tickets (concerts, cinema)
73	Cigarette/Cigar debris (>4")	Tobacco items
74	Tobacco Other (packs, matches, cellophane)	Packages, wrappers, tobacco foil products, lighters, matchboxes
75	Foil Containers	Foil containers (ice cream wraps)
76	Misc. Paper	All other non-described paper material, whole or shredded, unidentifiable as another category
77	Misc. Plastic	All other non-described plastic material, whole or shredded, unidentifiable as another category



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78	Misc. Paperboard	All other non-described paperboard material, whole or shredded, unidentifiable as another category
79	Misc. Cardboard	All other non-described cardboard material, whole or shredded, unidentifiable as another category
80	Misc. Glass	All other non-described glass material, whole or broken, unidentifiable as another category
81	Vehicle & Metal Road Debris	Debris associated with transportation, private or commercial
82	Construction Debris	Debris associated with construction, private or commercial
83	Tire & Rubber Debris	Rubber materials, tire pieces, shock absorbers, sheet rubber or pieces
84	Home Articles	All non-described household items, (i.e. Lamps, electrical, lawn chairs, etc.)

Photographic Record of the Site

At each site location, the litter audit team took digital photographs. One shot was taken at the start of the site, looking towards the end of the site – away from the vehicle. The second shot was taken in the mid-point of the site – looking across the width of the site towards the boundary. And the final photograph was taken at the end of the site – looking back towards the start of the site (towards the vehicle). The purpose of the photographs is to set the scene of the site – not to detail litter on the ground.

The site-specific digital photographs are downloaded to the database of the survey, as an archival record of the site during the audit period.

Site Photographs (sample photographs)



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