



DIVERT NS

Nova Scotia Roadside Litter Audits

2021 Results



October 2021 - 21-1798



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Divert NS
35 Commercial Street, Suite 400
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Attention: Divert NS

Nova Scotia Roadside Litter Audits – 2021 Results

Dillon Consulting Limited (Dillon) is pleased to present Divert NS with the 2021 roadside litter audit results. This report summarizes the information collected during the roadside litter audits that took place from June 14 to July 15, 2021. Through this report, we believe that we have sufficiently provided an overview of the current accumulation and composition of litter at Nova Scotia's pre-selected litter site locations. These results have been compared to the 2008 Nova Scotia litter audit, as well as comparable audits from other jurisdictions.

Thank you for the opportunity to assist you with this important assignment. We look forward to discussing this report with you and supporting your ongoing litter and waste management initiatives.

Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink that reads "EMance".

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Executive Summary

Divert NS retained Dillon Consulting Limited to conduct roadside litter audits throughout Nova Scotia. The audits took place from June 14 to July 15, 2021, and included 75 pre-selected locations across the province. The sites were audited to provide a 'snapshot' assessment of the composition of the accumulated litter present on the roadsides of Nova Scotia. Types of litter were classified into two categories:

- Large litter – equal to or larger than 25 square centimetres; and,
- Small litter – smaller than 25 square centimetres.

Within each site, a site survey and assessments on large and small litter were completed. Litter was categorized by type, and any identifiable brands were noted. An additional assessment, referred to as a 'supersite' evaluation, was completed at ten of the pre-selected sites. The purpose of the supersite audit was to provide a comprehensive review of small litter accumulation and help Divert NS expand its knowledge on small litter type and occurrences.

Large litter was observed at all audit sites, with a total of 2,844 pieces collected or an average of 38 pieces per site. The most common primary categories for large litter observed were Other Miscellaneous (21%), Cups (13%), and Food Wrappers/Containers (12%). The most common sub-categories of large litter observed were Plastic Wrap and Miscellaneous Plastic, both representing approximately 8% of the total large litter observed.

The influence of the COVID-19 pandemic on litter quantities in the province was apparent. Of the 2,844 pieces of large litter audited, 3% were from the Medical Waste category. This included masks, disposable gloves, disinfecting wipes, and hand sanitizer bottles.

Litter with identifiable brands represented 25% of the total large litter collected. Of these, the most common brands observed were Tim Hortons (26%) and McDonald's (10%). It is noted that this result was consistent with the previous Nova Scotia litter audit undertaken in 2008, indicating that the distribution of branded litter has not changed appreciably over the last decade.

The results of the study were compared to other North American municipalities where a comparable litter audit methodology was employed. These included Toronto, Edmonton, Winnipeg, San Francisco, and Vancouver. Nova Scotia's average large litter count (38 pieces) was higher than the comparison cities, with averages ranging from seven (7) to 34 pieces. As the comparison audits were from cities with regular scheduled street cleaning and were not undertaken on a province-wide scale as with this audit, the audit sites within the urban Halifax area were isolated to allow for a more representative comparison. The average large litter results from the Halifax area were more comparable to the comparison cities with an average of 22 pieces.

The small litter audit involved examining three sections within each audit site. Small litter was observed at all sites, except for two. The total quantity of small litter observed was 801 pieces or 12.3 pieces per site. The average for the sites located in the urban Halifax area was 17.7 pieces. These averages are comparable to the comparison cities noted above, which had averages ranging from 5.2 to 25.5 pieces. The most common categories of small litter observed were Cigarette Butts/Debris (23%), Hard Plastic (20%), and Plastic Film (13%).

A site is considered a supersite when all small litter within the site is observed. These assessments were completed at 10 pre-determined sites. The total small litter observed at the supersites was 4,840, with an average number per supersite of 484 pieces. This average number of small litter recorded at the supersites was comparable to the comparison cities noted above which had averages ranging from 194 to 1,295 pieces. The most common categories of small litter observed were Cigarette Butts/Debris (32%), Hard Plastic (20%), and Paper (15%).

Based on the results of the study, it is recommended that targeted campaigns on large litter items focus on single use items from the quick-service industry, including cups, food wrappers, containers, napkins, straws and utensils. Targeted campaigns on small litter items are recommended to focus on cigarette butts.

The results of the audit demonstrate that branded litter continues to be a consistent contributor to roadside litter in the province. It is recommended to approach brands and companies as possible, to encourage their engagement in litter management.

Finally, it is recommended that follow-up litter audits be completed to assess the success of any litter and/or diversion programs.

Introduction

Dillon Consulting Limited (Dillon) is pleased to present Divert NS with the results of the 2021 roadside litter audits. Divert NS identified litter as an area that required further research within the province, and engaged Dillon to undertake the audit to provide a 'snapshot' assessment of the composition of the accumulated litter present on the roadsides of Nova Scotia. The results of the litter audit provide data to inform education initiatives and anti-litter campaigns.

The audits took place from June 14 to July 15, 2021, and included 75 pre-selected locations across the province. Types of litter were classified into two categories:

- Large litter – equal to or larger than 25 square centimetres; and,
- Small litter – smaller than 25 square centimetres.

The main objectives identified for the roadside litter audits were as follows:

- A detailed analysis of the quantity and weight of large litter items within the survey area;
- A detailed analysis of the quantity of small litter items that fell within three small subsections of each survey area;
- A detailed analysis of the quantity and weight of small litter items within the entirety of ten of the survey sites ('supersites');
- Comparison of results to the 2008 Nova Scotia litter audit;
- Comparison of results to audits from other municipalities; and,
- Analysis and reporting of results.

2.0 Methodology

Dillon staff completed litter assessments on a total of 75 sites between June 14 and July 15, 2021. This section of the report provides an overview of the roadside litter audit methodology.

2.1 Site Selection

In order to provide comparable results, the 55 locations audited during the 2008 litter survey were used as the basis for selecting the 2021 audit sites. For the 2021 survey, four potential sample sites were identified for each former audit location. To select the actual sample sites randomly, our team utilized a set direction/distance methodology based on the 2008 location. For example, sample site 1 was selected by taking the northern most point from the former sample area and selecting the road that was closest to 1.5 km east and 0.5 km north. This served as the starting point and the remainder of the sample site extended in a north or east position (depending on the direction of the road). In the event that the site was not viable based on the exclusions listed below, the directions were changed to their opposites (e.g., north to south, east to west).

Table 1 summarizes how the site selections were randomized for each of the locations.

Table 1: Sampling Location Site Selection

Location	Sample Site 1	Sample Site 2	Sample Site 3	Sample Site 4
55 Locations	0.5 km N 1.5 km E	1.75 km S 2 km W	2.5 km N 0.5 km W	0.25 km S 0.75 km E

The following sites were excluded from site selection:

- Major highway (100 series highway);
- Bridges;
- Construction areas;
- Railways;
- On or close to water;
- Hazardous areas (cliffs, unstable ground);
- Difficult to access by foot; and,
- Private or industrial zoned areas.

At each of the 55 locations, a minimum of one sample site was audited. The second, third, and fourth sample sites were completed if time permitted. These sample sites also served as backup sites in the event that the first sample site was inaccessible (e.g., emergency road repair). A summary of the locations and sample sites is provided in Table 2.

Table 2: Sampling Location and Site Summary

Location	Samples to Audit	Samples Completed if time Permitted
55 Locations based on 2008 audit	Sample Site 1	Sample Sites 2, 3, 4

A complete list of the 2021 litter audit sites is provided in Appendix A and are illustrated on Figures 1 to 4 in Appendix B. A summary of the number of sites completed per Solid Waste-Resource Management Region is provided as Table 3. It is noted that, at the request of Divert NS, an audit site was added in Digby to provide an additional location within Region 7. In total, 75 sites were audited between June 14 and July 15, 2021. This included 55 main sites, the additional site in Digby, and 19 additional sites.

Table 3: Survey Sites by Region

Region Number	Region Name	Number of Primary Sites	Number of Additional Sites	Total Number of Sites
1	Cape Breton	11	3	14
2	Antigonish – Guysborough – Pictou County	6	2	8
3	East Hants – Cumberland – Colchester	5	2	7
4	Halifax Regional Municipality	19	9	28
5	Annapolis – Kings	7	2	9
6	South Shore – West Hants	6	0	6
7	Yarmouth - Digby	1	2	3
	Total	55	20	75

2.2

Conducting the Litter Audit

The 2021 roadside litter audits were undertaken using a methodology consistent with current litter audit best practices used by other jurisdictions.

The standard audit area was measured to be 60 metres x 5 metres, whenever possible. When an audit area was full sized (i.e., 300-square metres), it was termed a “fixed site.” In cases where the site was less than 5 metres wide due to tree lines, residential property lines, or commercial storefronts encroaching on the prescribed distance, the site was termed a “variable site.”

From the beginning of the pre-selected site, the Dillon team used a measuring device to measure 15 metres ahead of the start of the site. Using a temporary marking method such as a pylon or chalk, a mark was made to denote the starting point of the pre-selected audit site. From this point, the Dillon team used a measuring device to measure 30 metres, marking the roadway with another temporary identifier to show the mid-point of the site. A final measurement of an additional 30 metres denoted the end of the audit site.

The width measurements were taken at the start, midpoint and end of the site. The width of the site was measured 0.5 metres from inside the curb or the start of the pavement, towards the outer edge of the site. The maximum width was 5 metres and marked to indicate the boundary.

2.2.1 Site Survey

Before any litter audits were initiated, a site survey was completed. During the site survey, Dillon staff recorded any relevant information about the litter site and the surrounding vicinity. This included the following information:

- Date and time;
- Global positioning system (GPS) coordinates (both start and end of site);
- Team members completing the audit;
- Site identification information;
- Site measurements (variable or fixed);
- Road type;
- Land use (residential, commercial, rural);
- Area attributes;
- Stores within site;
- Visual rating (1-4) of the cleanliness of the site;
- Litter catchment points;
- Litter bins within site; and,
- Distribution of litter (scattered, piles, evidence of litter clean-up, etc.).

A sample site survey form is provided in Appendix C.

It is noted that land use was classified by observation and not zoning. Any site that was adjacent to a residence was classified as residential, whether in an urban or rural setting.

2.2.2 Classification of Large Litter

Large litter was defined as any litter greater than or equal to 25 square centimetres in size. All of the large litter was collected and audited at each of the 75 sites. A first and second pass was completed and the litter observed was counted, weighed, and recorded on a litter data form (Appendix C). Dillon identified 13 main categories and 97 sub-categories for large litter (See Table 4). Examples for each sub-category of large litter are provided in Appendix D.

Due to the COVID-19 pandemic, a large litter category, Medical Waste, was included to account for disposable gloves, masks, and disinfecting wipes.

It is noted that Construction Debris was initially categorized as a sub-category under Other Miscellaneous; however, due to the quantity of construction debris litter observed during the audits, it

was changed to a main category. Due to this change mid-audit, Construction Debris does not have any sub-categories. It is recommended that sub-categories be added for future audits to better define the primary types of construction litter being observed.

All large litter was collected during the audit and was disposed of properly in accordance with regional/municipal requirements.

Table 4: Large Litter Categories

<p>Paper/Fibre Materials</p> <ul style="list-style-type: none"> 1 Paper Packaging – Other 2 Unbranded Towels/Napkins 3 Lottery Ticket Debris 4 Printed Materials - Cost Newspaper 5 Printed Materials - Free Newspaper 6 Mixed Paper Materials (magazines, stationary paper) 7 Receipts/Bus Tickets 8 Bundled Flyers <p>Take-Out Extras</p> <ul style="list-style-type: none"> 9 Condiment Packaging 10 Plastic Utensils 11 Branded Towels/Napkins 12 Paper Fast Food Plates 13 Poly Fast Food Plates 14 Other Plastic Fast Food Plates 15 Plates – Other Materials 16 Straws 17 Paper Trays <p>Confectionary/Snack</p> <ul style="list-style-type: none"> 18 Gum Wrappers 19 Candy Bar Wrappers 20 Candy Pouches 21 Sweet Packaging (describe) 22 Other Confectionary (Describe) 23 Snack Food Packaging 24 Chip Packaging <p>Tobacco and Cannabis</p> <ul style="list-style-type: none"> 25 Cigarette/Cigar Debris 26 Tobacco Other (packs, matches, cellophane, lighters) 27 Cannabis Packaging 28 Vaping Products <p>Cups</p> <ul style="list-style-type: none"> 29 Plastic Drinking Cups 30 Paper Cups (cold) 31 Composite Cups (hot) 32 Polystyrene Cups (foam) 33 Other Paper Cups 34 Cup Lids/Pieces/Sleeves 	<p>Beverage Containers</p> <ul style="list-style-type: none"> 35 Refundable Metal Beverage Containers (alcohol) 36 Refundable Metal Beverage Containers (non-alcohol) 37 Refundable Glass Beverage Containers (alcohol) 38 Refundable Glass Beverage Containers (non-alcohol) 39 Refundable Plastic Beverage Containers (alcohol) 40 Refundable Plastic Beverage Containers (non-alcohol) 41 Refundable Aseptic Beverage Containers (alcohol) 42 Refundable Gable Top Beverage Containers (non-alcohol) 43 Refundable Gable Top Beverage Containers (alcohol) 44 Refundable Aseptic Beverage Containers (non-alcohol) 45 Milk & Milk Product Containers – Plastic 46 Milk & Milk Product Containers – Gable Top 47 Milk & Milk Product Containers – Glass <p>Containers</p> <ul style="list-style-type: none"> 48 Plastic Jars/Bottles/Lids 49 Glass Jars/Bottles 50 Steel Cans 51 Aluminum Cans 52 Container Lids 53 Aerosol Cans <p>Bags</p> <ul style="list-style-type: none"> 54 Plastic Bags - Branded 55 Paper Bags - Branded 56 Paper Bags – Fast Food 57 Plastic Bags – Unbranded 58 Paper Bags – Unbranded 59 Zipper/Sandwich Bags 	<p>Food Wrappers/Containers</p> <ul style="list-style-type: none"> 60 Paper Food Wrap 61 Paper/Foil Composite Wrap 62 Plastic Wrap 63 Polystyrene Trays 64 Polystyrene Clamshells 65 Paper Clamshells 66 Other Material Trays <p>Other Packaging</p> <ul style="list-style-type: none"> 67 Foil Pouches 68 Aseptic 69 Broken Glass Container 70 Six pack plastic rings 71 Foil Containers 72 Cardboard boxes 73 Paperboard 74 Paper Beverage Cases 75 Other Plastic Shells/Boxes <p>Other Miscellaneous</p> <ul style="list-style-type: none"> 76 Plastic Packaging – Other 77 Plastic/Composite –Other 78 Foil Materials/Foil Pieces 79 Misc. Paper 80 Misc. Plastic 81 Misc. Boxboard 82 Misc. Cardboard 83 Misc. Glass 84 Vehicle & Metal Road Debris 85 Tire & Rubber Debris 86 Home Articles 87 Organic Waste – Food Waste 88 Clothing, Textile, or Other Cloth 89 Bagged Pet Waste 90 Urine Bottles 91 Cosmetics <p>Medical Waste</p> <ul style="list-style-type: none"> 92 Disposable Gloves 93 Masks 94 Disinfecting Wipes 95 Hand Sanitizer Bottles 96 Other <p>Construction Debris</p> <ul style="list-style-type: none"> 97 Construction Debris
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2.2.3 Branded Litter

Branded litter is described as large litter where a recognizable brand name can be identified. Dillon recorded any branded litter observed during each litter audit. This effort will assist Divert NS in identifying the source of the litter.

2.2.4 Classification of Small Litter

Small litter was defined as observed litter that was less than 25 square centimetres in size. The small litter audit involved examining three sections within the audit site. Dillon constructed a small litter frame using PVC plastic tubing measuring 0.3 metres wide and 1.8 metres long to serve as the template. Up to three consecutive "flips" of the template frame were completed across the boundary of the site. Staff observed and counted all of the small litter contained within the template at three locations within each site: the start, midpoint and end of the site. All data was recorded on the small litter form provided in Appendix C. Dillon identified 16 small litter categories (Table 5).

Table 5: Small Litter Categories

Small Litter

- 1 Cigarette butts/debris
- 2 Other tobacco
- 3 Metal (not aluminum)
- 4 Aluminum foil/debris
- 5 Glass
- 6 Paper
- 7 Plastic film
- 8 Bottle caps
- 9 Hard plastic
- 10 Straws
- 11 Candy packaging/wrappers
- 12 Rubber
- 13 Polyfoam packing materials
- 14 Other polystyrene debris
- 15 Other material
- 16 Chewing gum

2.2.5 Supersites

The supersite audits involved having Dillon staff record, collect, and weigh all of the small litter observed within the fixed or variable site for a more thorough assessment of small litter. The supersite audit provided a comprehensive review of small litter accumulation over an entire audit site, providing additional information with regards to small litter type and occurrence. The supersite audits also served to validate the small litter audit procedure as outlined above.

Supersite audits were completed at ten randomly selected pre-determined sites. Supersite evaluation forms and categories are provided in Appendix C. All small litter was collected and disposed of properly in accordance with regional/municipal requirements.

2.2.6

Photographic Record of Site

During the site surveys, the litter audit team took photographs of each site from three points. The first photograph was taken from the beginning of the site looking towards the end of the site. The second photograph was taken from the mid-point of the site looking into the site (towards the boundary from the road) and the final photograph was taken from the end of the site looking towards the start. Photo 1 to Photo 3 provide an example of the photographs taken at each site. These photographs were taken at audit site 21-1, which had a visual cleanliness rating of 1 (no litter or very little litter). Photographs showing examples of sites representing visual cleanliness ratings 1 (no litter or very little litter) to 4 (large quantity of litter) are presented in Appendix E.

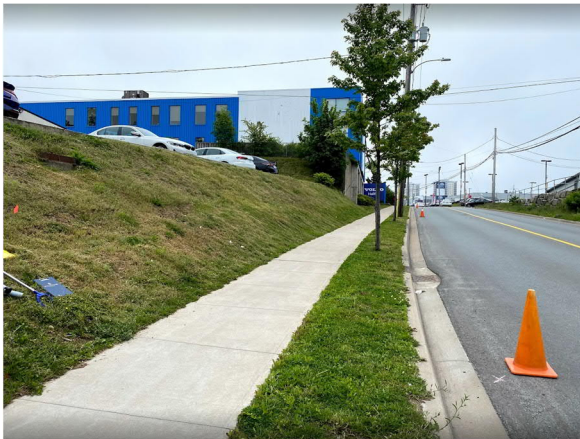


Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

3.0

Summary of Litter Results

This section of the report provides both the detailed results of the 2021 litter audit as well as a comparison to the previous litter assessment completed in 2008. Also included is an assessment of Nova Scotia's results against other municipalities. Sections 3.1, 3.2, and 3.3 present large litter results, small litter results and supersite results, respectively. Visual assessments of litter sites are presented in Section 3.4.

3.1

Large Litter Results

Large litter is any piece of litter that is equal to or greater than 25 square centimetres. This section of the report provides results for large litter by material type, category and subcategory. In 2021, a total of 2,844 large litter items were observed, with an average of 38 pieces per site. The average number of large litter items per metre of roadway audited was 0.76 pieces.

3.1.1

Large Litter by Category

Each of the large litter items were classified into 13 categories; Figure 1 illustrates these results graphically. The most common category of litter observed was Other Miscellaneous (21%). Miscellaneous litter included items such as miscellaneous paper, plastic, as well as household items and cosmetics. Cups (13%) and Food Wrappers/Containers (12%) were the next most common categories of litter recorded in 2021.

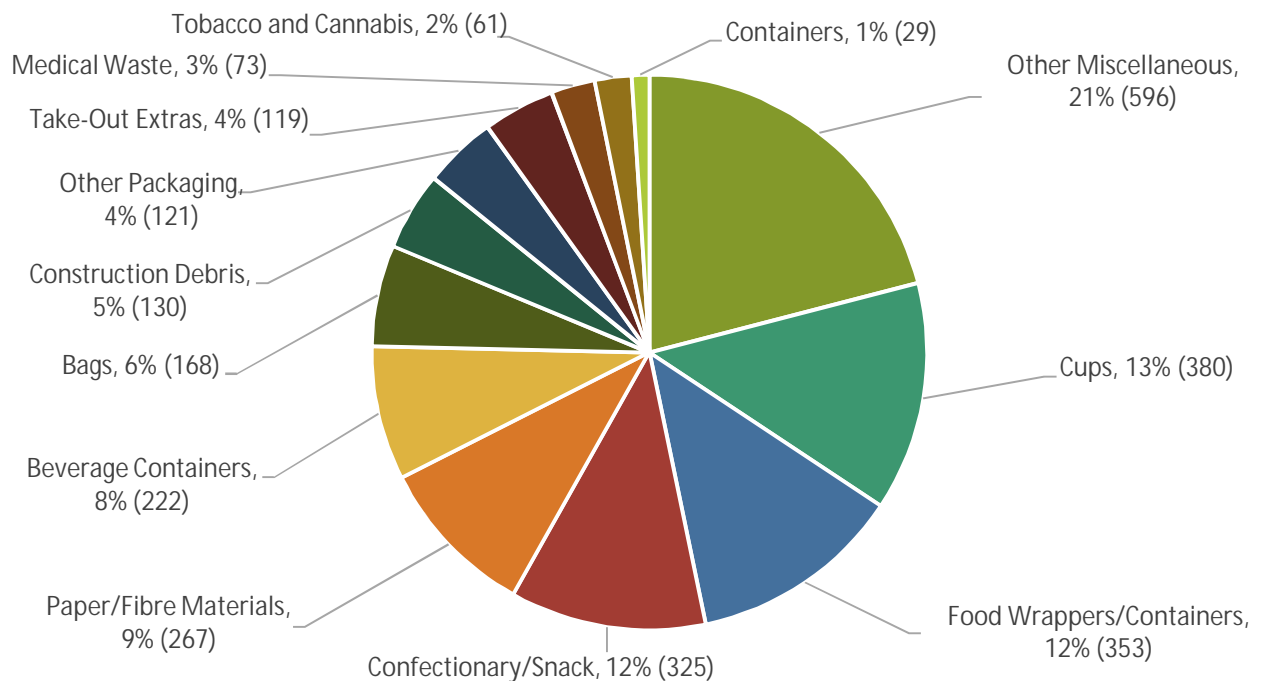


Figure 1: Large Litter Items by Category

3.1.2 Large Litter Results by Sub-category

There are several sub-categories within each of the 13 major categories. The breakdown of litter by each of the 97 sub-categories is provided in the sub-sections below. The subsections are presented in order of the largest category observed to the smallest category observed.

Other Miscellaneous (21%)

'Other Miscellaneous' was the largest category observed in 2021 and represented 21% of all large litter. The primary sub-categories assessed in 2021 included: Miscellaneous Plastic (36%) and Miscellaneous Paper (14%). It should be noted that miscellaneous plastics are plastics that did not fit into any other category or could not be identified, similarly with miscellaneous paper. Figure 2 illustrates the breakdown of this category.

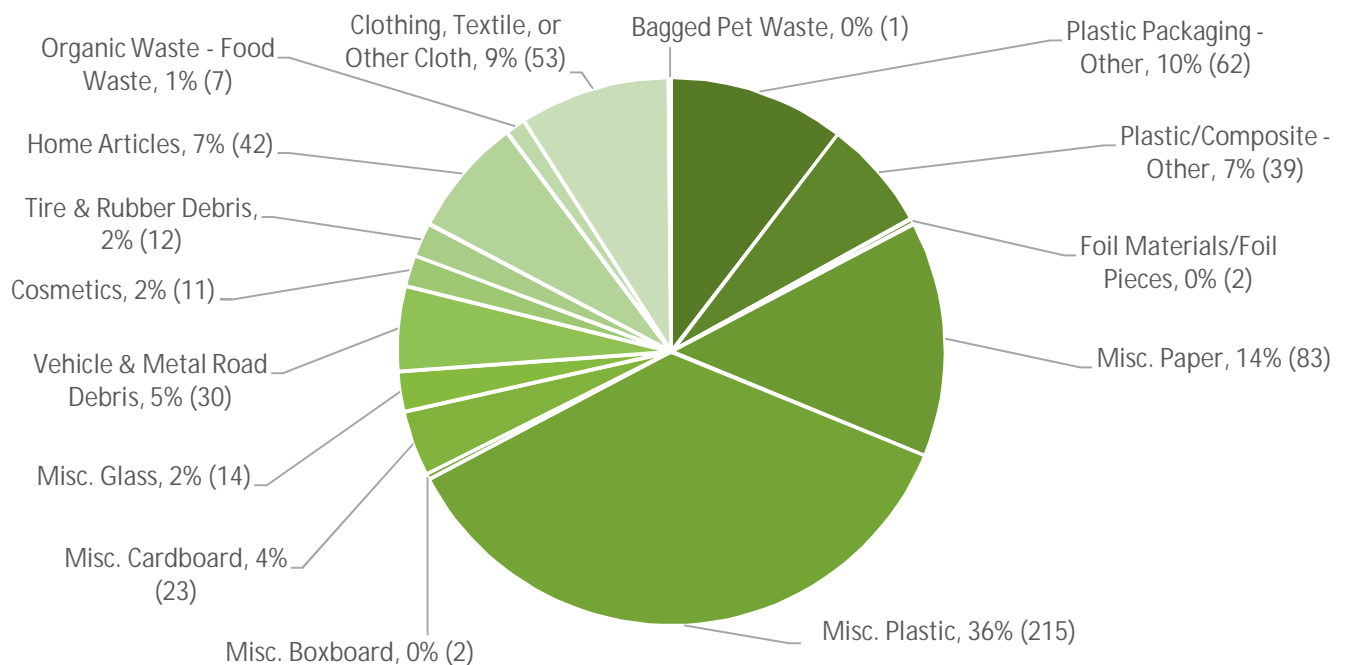


Figure 2: Other Miscellaneous Composition

Cups (13%)

Cups were the second largest category observed in the 2021 roadside litter audits, representing 13% of the total large litter. Composite Cups (hot) was the largest subcategory (34%), followed by Cup Lids/Pieces (32%), and Paper Cups (cold) (22%). Figure 3 illustrates the breakdown of the cups category.

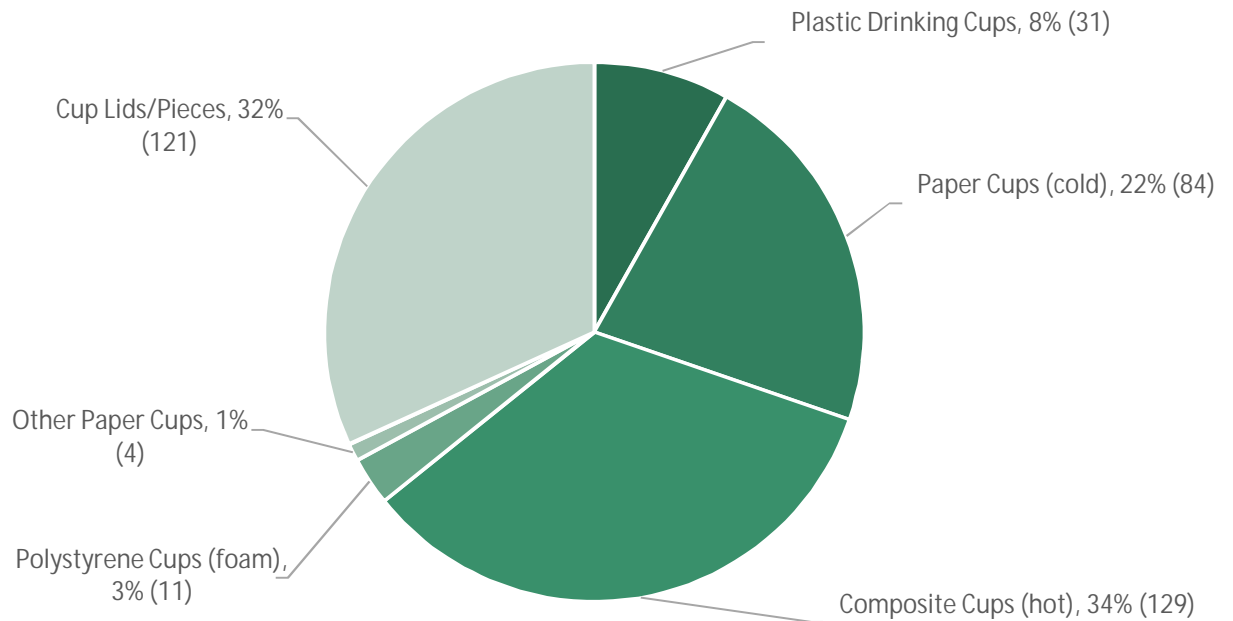


Figure 3: Cups Composition

Food Wrappers/Containers (12%)

Food Wrappers/Containers was the third largest category observed in the 2021 roadside litter audits and represented 12% of all large litter observed. Figure 4 illustrates the breakdown of this category. The sub-categories that comprised the majority of the Food Wrappers/Containers were Plastic Wrap (63%) and Paper/Foil Composite Wrap (26%). It is noted the Plastic Wrap sub-category comprised unidentifiable plastic wrap (non-branded) and saran wrap.

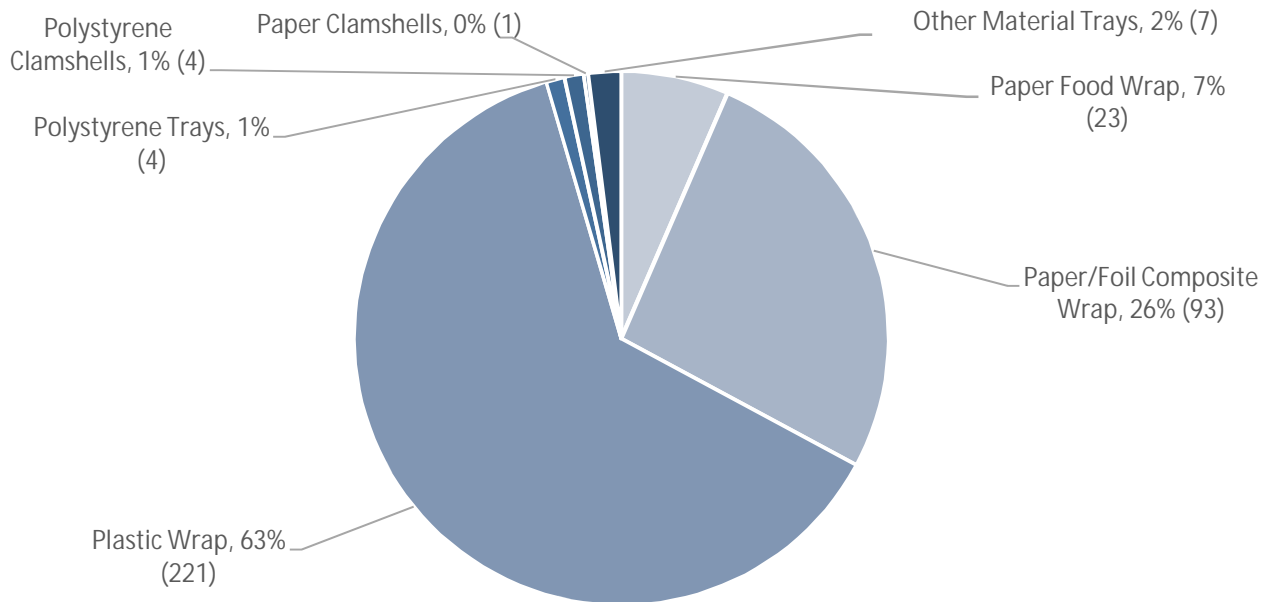


Figure 4: Food Wrappers/Containers Composition

Confectionary/Snacks (12%)

Confectionary/Snacks represented 12% of all large litter observed in 2021. The most frequently observed sub-categories for Confectionary/Snacks were Snack Food Packaging (26%) and Candy Bar Wrappers (25%). Figure 5 illustrates the results of the Confectionary/Snacks sub-category breakdown.

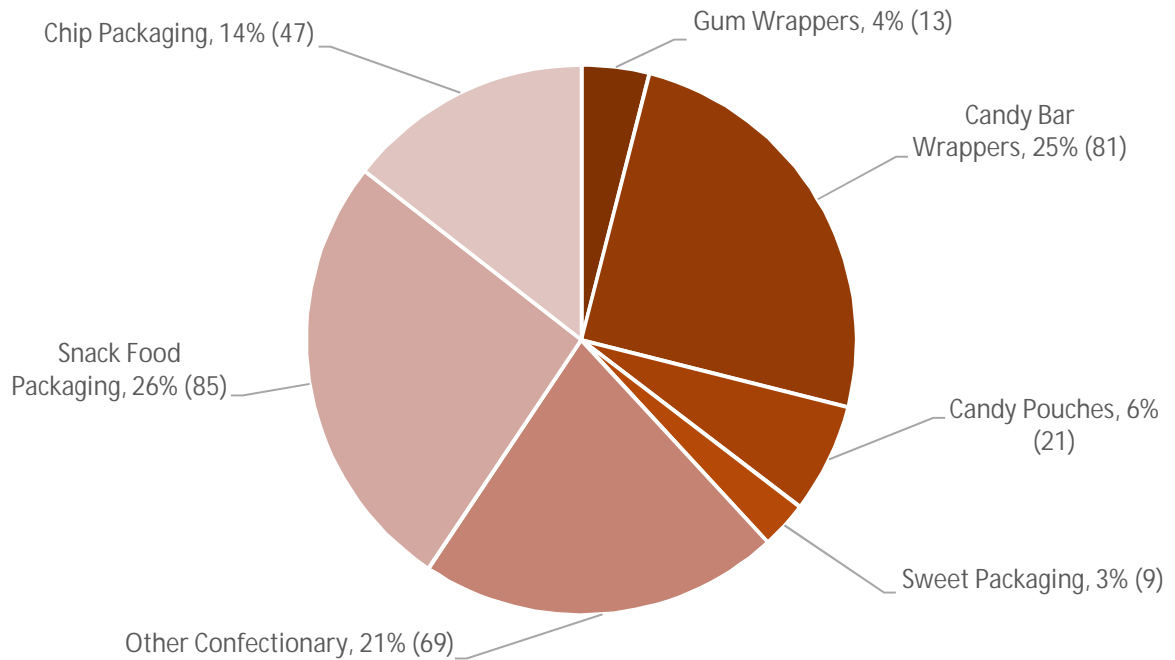


Figure 5: Confectionary/Snack Composition

Paper/Fibre Materials (9%)

Paper/Fibre Materials represented 9% of all large litter observed in the 2021 roadside litter audit. The largest sub-categories evaluated for Paper/Fibre Materials were Unbranded Towels/Napkins (44%), Mixed Paper Materials (magazines, stationary paper) (17%), and Receipts/Bus Tickets (15%). Figure 6 provides the detailed breakdown of this category.

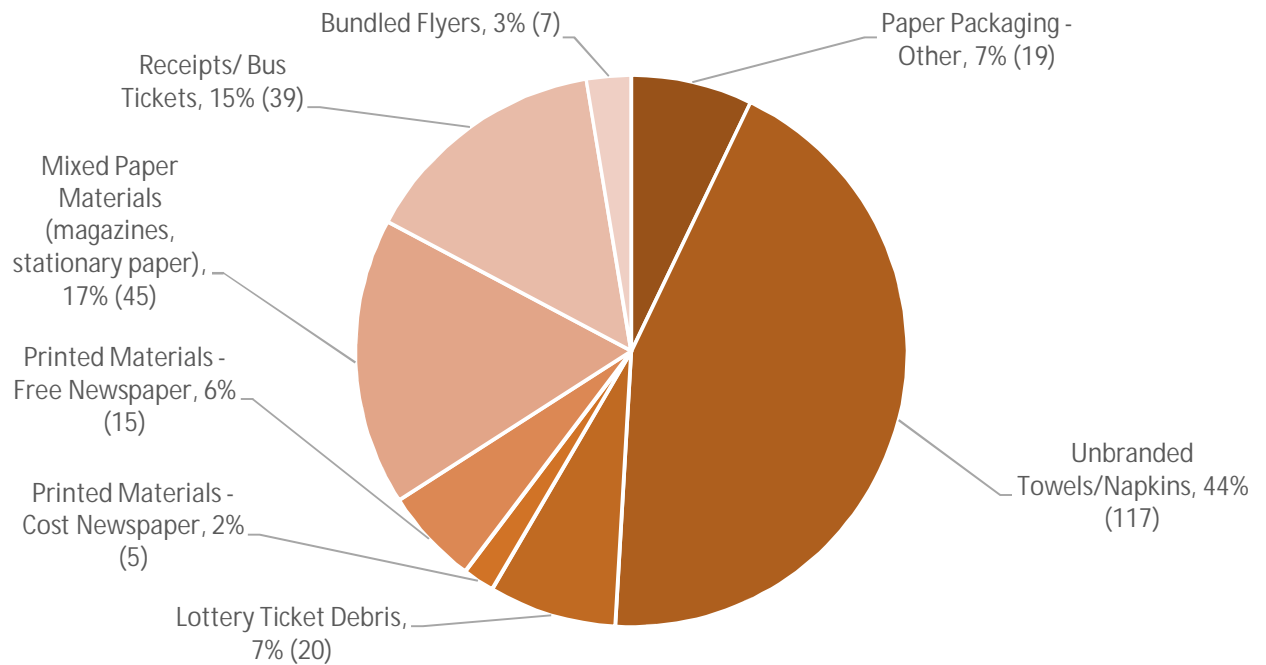


Figure 6: Paper/Fibre Composition

Beverage Containers (8%)

Beverage Containers accounted for 8% of all large litter observed in the 2021 audits. The largest sub-categories evaluated for beverage containers in 2021 were Refundable Metal (alcohol) (42%), Refundable Plastic (non-alcohol) (23%), and Refundable Metal (non-alcohol) (14%). Figure 7 illustrates the breakdown of the Beverage Containers category.

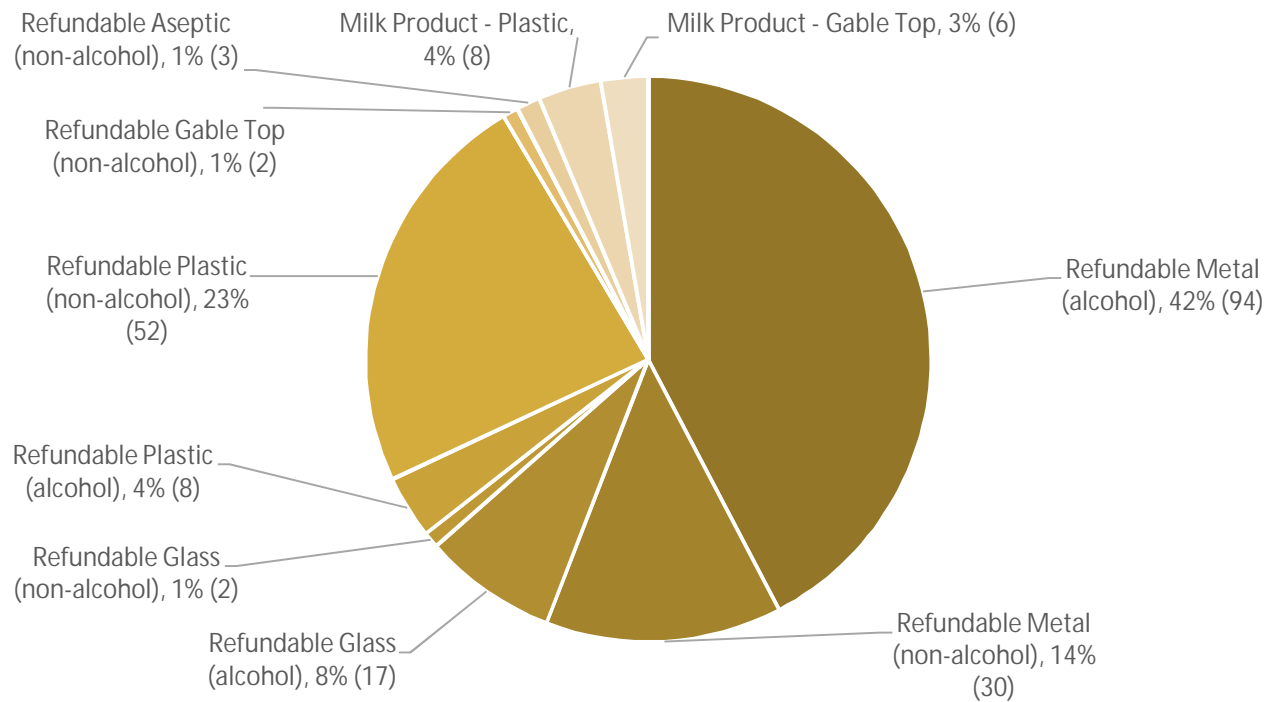


Figure 7: Beverage Containers Composition

Bags (6%)

Bags represented 6% of all large litter observed in 2021. This category predominantly consisted of Plastic Bags – Unbranded (plastic bags without an identifiable source) (57%), Plastic Bags - Branded (19%), and Zipper Bags/Sandwich Bags (13%). Figure 8 illustrates the 2021 composition of the Bags category.

It is noted that the total number of plastic bags observed during the audits (combined branded and unbranded) was 127, which represented 76% of the Bags category and 4.5% of the overall large litter. These results were likely influenced by the plastic bag ban that came into effect for Nova Scotia in October of 2020. It is recommended that plastic bags be audited during future audits to allow for a comparison of results and to evaluate the continued effect of the ban on plastic bag litter in the province.

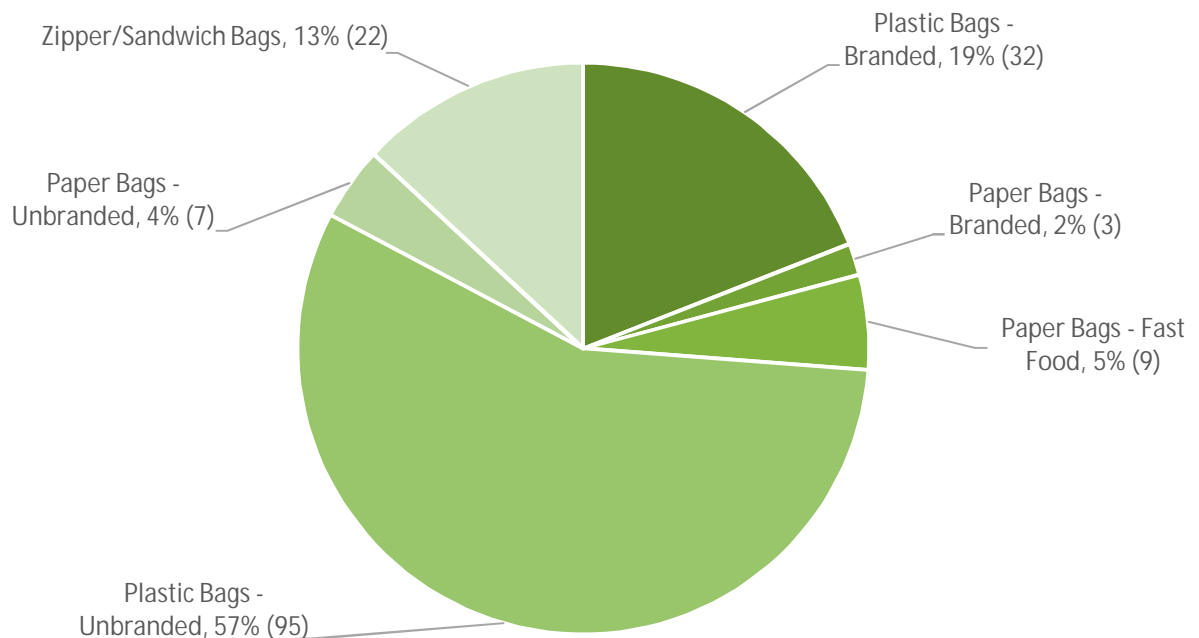


Figure 8: Bags Composition

Construction Debris (5%)

Construction Debris accounted for 5% of the large litter observed. Construction Debris was moved from a sub-category under 'Other Miscellaneous' to its own main category after a significant quantity of construction debris was observed during the audits. It is recommended that sub-categories be added for future audits for this type of litter. It is noted that the most frequently observed construction debris during the audits were wooden survey stakes.

Other Packaging (4%)

'Other Packaging' accounted for 4% of the overall large litter observed for the 2021 audits. The largest sub-categories observed for Other Packaging were Paperboard (61%) and Other Plastic Shells/Boxes (20%). Figure 9 illustrates the results of the 'Other Packaging' category.

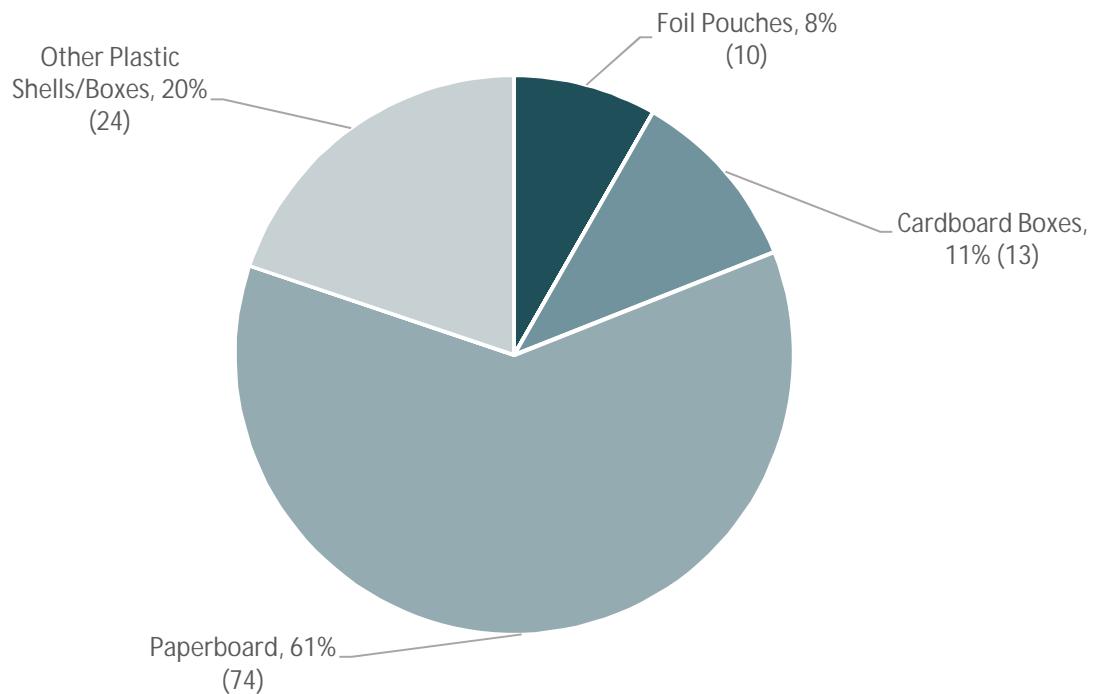


Figure 9: Other Packaging Composition

Take-Out Extras (4%)

Take-Out Extras accounted for 4% of the large litter observed. Take-Out Extras was largely comprised of Straws (45%), Condiment Packaging (28%), and Plastic Utensils (13%). Figure 10 illustrates the breakdown of this category.

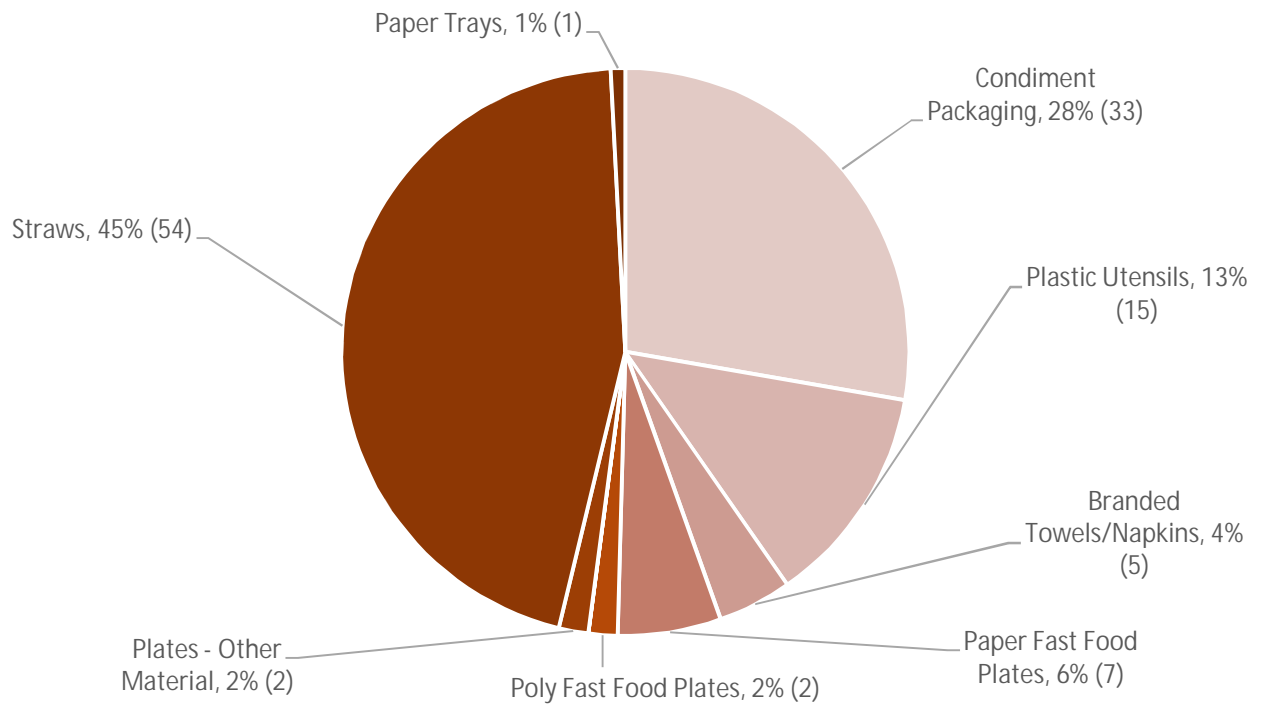


Figure 10: Take-Out Extras Composition

Medical Waste (3%)

Medical Waste accounted for 3% of the large litter observed. The primary sub-categories assessed were Masks (47%), Disinfecting Wipes (32%), and Disposable Gloves (15%). Figure 11 illustrates the breakdown of this category.

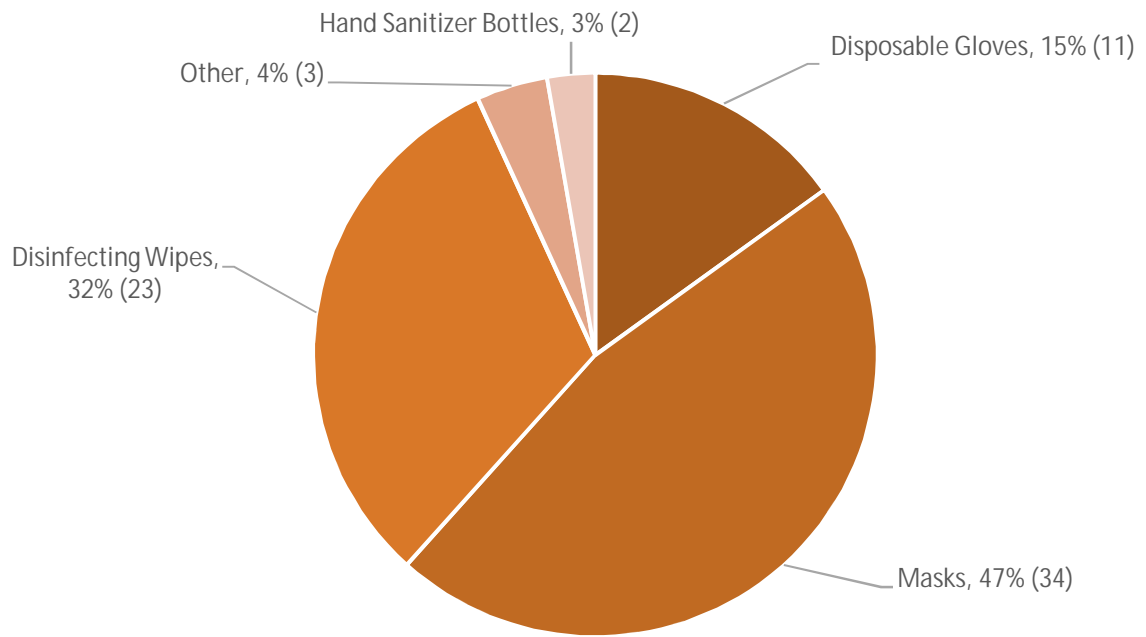


Figure 11: Medical Waste Composition

Tobacco and Cannabis (2%)

Tobacco and Cannabis represented 2% of the large litter items surveyed. Within this category, 85% was Tobacco Other and 8% was Vaping Products. Tobacco Other included cigarette packaging, cellophane wrapping, and lighters (Figure 12). It should be noted that cigarette butts are included within small litter counts.

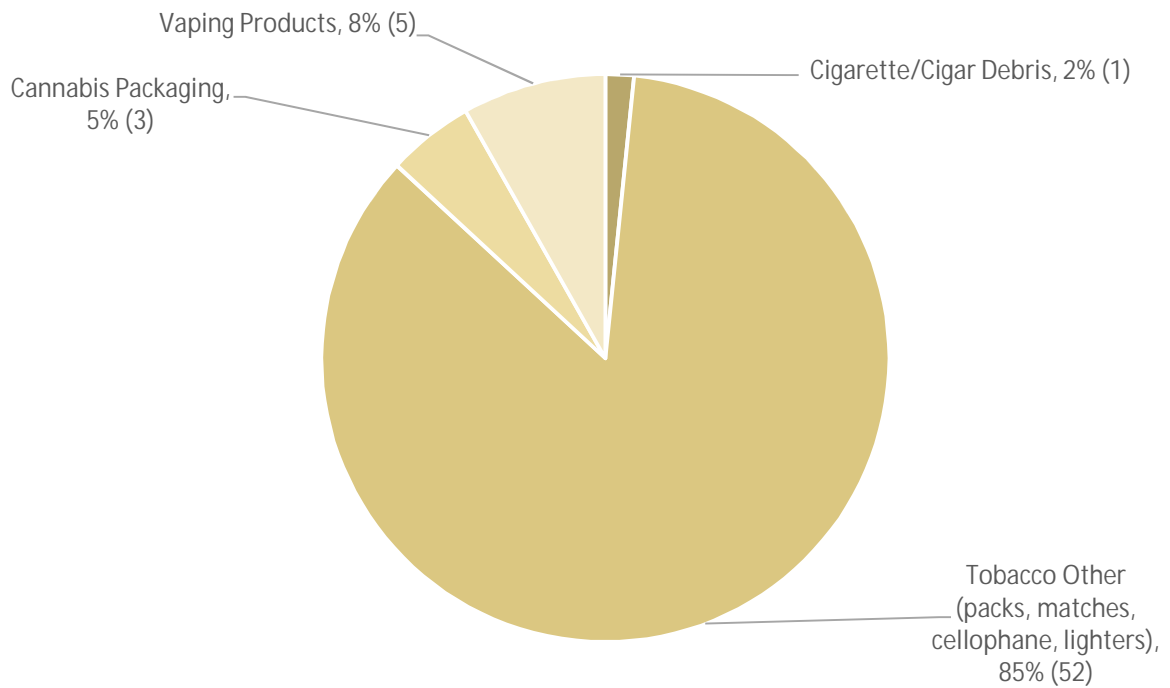


Figure 12: Tobacco and Cannabis Composition

Containers (1%)

In the 2021 audits, Containers represented 1% of all large litter observed. The breakdown of this category was mostly Plastic Jars/Bottles/Lids (48%) and Aluminum Cans (24%). The composition of Containers is illustrated on Figure 13.

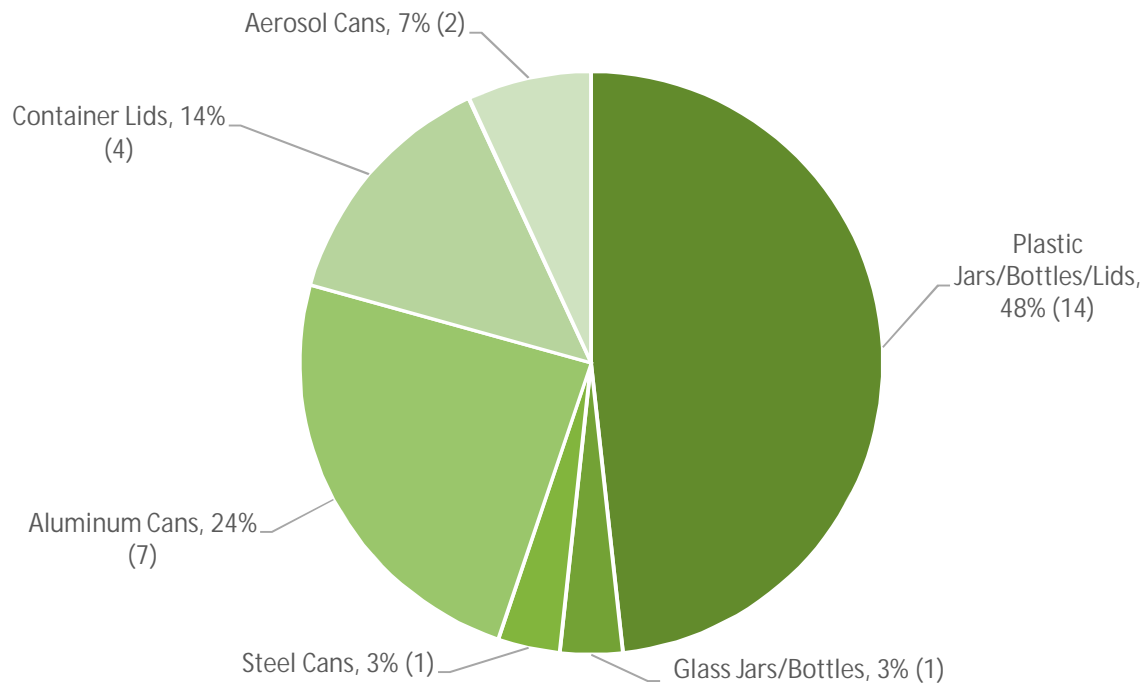


Figure 13: Containers Composition

3.1.3 Large Litter by Sub-category

The most common sub-category of large litter observed was Plastic Wrap which falls under the Food Wrappers/Containers category. Food Wrappers/Containers represented 12% of all large litter surveyed in 2021.

Table 6 illustrates the 20 most common large litter items observed (by sub-category) in the 2021 roadside litter audits. These 20 item types accounted for 69% of the total large litter items observed. The complete list of items is provided in Appendix F. It is noted that, in the absence of sub-categories, Construction Debris was itself included as a sub-category for the purpose of this ranking. It is recommended that the Construction Debris category be divided into multiple sub-categories for future audits.

It is further noted that the total number of plastic bags observed during the audits (combined branded and unbranded) was 127, which represented 4.5% of the overall large litter. Combining the two plastic bag sub-categories (unbranded ranked 7th and branded ranked 28th) would place plastic bags at a ranking of 5th in the list below. It is recommended that plastic bags be audited during future audits to allow for a comparison of results and to evaluate the continued effect of the plastic bag ban on this type of litter in the province.

Table 6: Top 20 Large Litter Items by Sub-Category

Ranking	Sub-Category	Number Observed	Percentage of Total Large Litter Items Observed
1	Plastic Wrap	221	8%
2	Misc. Plastic	215	8%
3	Construction Debris	130	5%
4	Composite Cups (hot)	129	5%
5	Cup Lids, Pieces, Sleeves	121	4%
6	Unbranded Towels/Napkins	117	4%
7	Plastic Bags - Unbranded	95	3%
8	Refundable Metal Beverage Containers (alcohol)	94	3%
9	Paper/Foil Composite Wrap	93	3%
10	Snack Food Packaging	85	3%
11	Paper Cups (cold)	84	3%
12	Misc. Paper	83	3%
13	Candy Bar Wrappers	81	3%
14	Paperboard	74	3%

Ranking	Sub-Category	Number Observed	Percentage of Total Large Litter Items Observed
15	Other Confectionary	69	2%
16	Plastic Packaging - Other	62	2%
17	Straws	54	2%
18	Clothing, Textile, or Other Cloth	53	2%
19	Tobacco Other (packs, matches, cellophane, lighters)	52	2%
20	Refundable Plastic Beverage Containers (non-alcohol)	52	2%
Total Top 20		1,964	69%

3.1.4 Large Litter by Sites

The ten litter sites having the greatest number of large litter pieces are listed below in Table 7. A full ranking of sites is provided in Appendix G.

The site with the most accumulated large litter was Site 45-1 with 400 pieces of large litter observed. Site 45-1 is located along a minor city street in Port Hawkesbury, adjacent to a Walmart. At the time of the audit, high grass and a roadside ditch were acting as litter catchment points.

The second highest large litter count was recorded at Site 10-2 with 136 pieces. Site 10-2 is located along a major rural road in Bridgetown, adjacent to a residence. At the time of the audit, high grass and a roadside ditch were acting as litter catchment points.

The site with the third highest accumulated large litter was Site 2-4. Site 2-4 is located along a rural road in Whites Lake, adjacent to a residence. At the time of the audit, a hedge, tall grass, and a roadside ditch were acting as litter catchment points. A traffic light was present along the road adjacent to the audit site.

Table 7: Large Litter Site Rankings

Ranking	Site Number	Region	Community	Number of Pieces of Large Litter
1	45-1	1- Cape Breton	Port Hawkesbury	400
2	10-2	5- Annapolis-Kings	Bridgetown	136
3	2-4	4- Halifax Regional Municipality	Whites Lake	122
4	46-1	1- Cape Breton	Chapel Island Indian Reserve No. 5	117

Ranking	Site Number	Region	Community	Number of Pieces of Large Litter
5	7-1	6- South Shore- West Hants	Harmony Mills	112
6	52-1	1- Cape Breton	Albert Bridge	106
7	32-1	3- East Hants- Cumberland- Colchester	Sydney Mines	89
8	50-4	1- Cape Breton	Sydney River	82
9	4-2	South Shore- West Hants	Mahone Bay	81
10	15-1	5- Annapolis-Kings	Kentville	77

3.1.5 Large Litter by Land Use

Sites were categorized by their typical land use. Land uses used to categorize sites included: commercial, residential, and rural. It is noted that, for the purpose of this study, a rural site that was adjacent to a residence was categorized as residential. Appendix H provides a breakdown of the number of sites per land use type, as well as a breakdown of large litter composition per land use type.

It is recommended that future audits include more detailed land use/zoning categories to allow for an expanded analysis and the identification (if any) of trends and correlations with regards to litter types and quantities.

3.1.6 Large Litter by Weight

All large litter was collected and weighed. The total weight of large litter collected during the audits was 92 kilograms, with the average weight of large litter per site being 1.2 kilograms. The average weight of large litter per metre of roadway audited was 0.02 kilograms. Appendix I lists the audit sites by weight of large litter collected. As illustrated in Appendix I, the total weight of litter did not correlate with the quantity of litter observed at a site. Some sites with large quantities of large litter had low overall weights, while others with small quantities of large litter had high overall weights.

3.1.7 Large Litter by Brand

All brands observed during the large litter audits were identified and sorted by parent brand. Figure 14 illustrates the top 20 parent brands identified. The full list is provided in Appendix J. In total, 707 branded litter items were observed, representing 73 parent brands and 25% of the total large litter. The most common parent brands observed were Tim Hortons (26%), McDonald's (10%), and AB InBev (9%). AB InBev is a large alcoholic beverage company which includes various sub-brands such as Budweiser, Busch, Labatt, Oland's, and Alexander Keith's. It is noted that there were likely additional branded litter items which could not be identified during the audits (e.g., brand had worn off, not apparent).

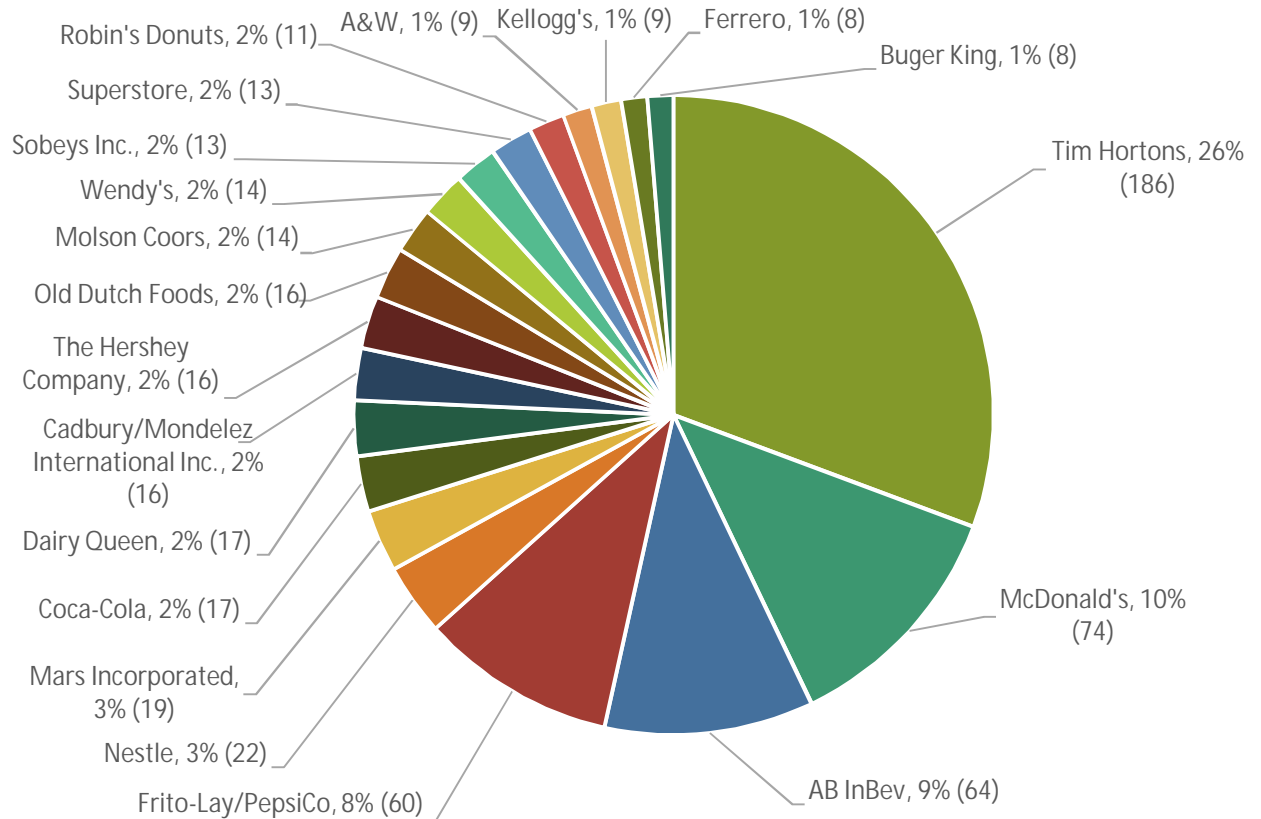


Figure 14: Top 20 Parent Brands

Figure 15 shows the top five parent brands along with the number of audit sites at which they were identified. As illustrated on Figure 15, litter from the top five parent brands were distributed across multiple sites, and were not concentrated at only a few. The number of sites appears to correlate with the total quantity observed. This indicates that branded litter is a widespread concern across the province.

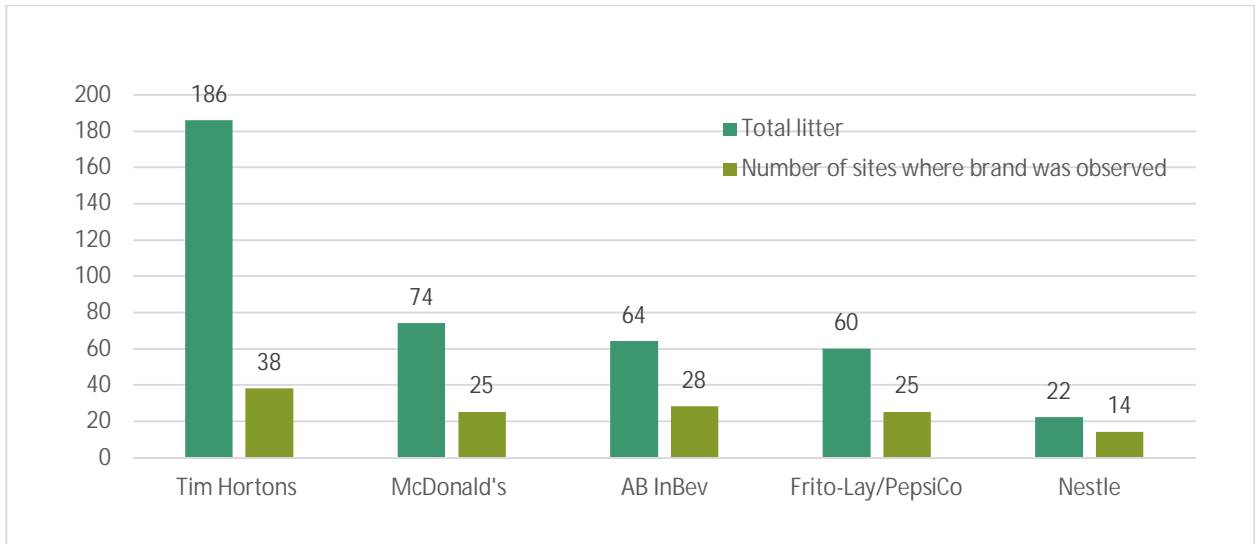


Figure 15: Distribution of Top 5 Parent Brands

3.1.8 Large Litter Results Compared to Other North American Municipalities

Large litter audits have been completed for several North American municipalities. These assessments audited large litter in similar categories using the same methodology as this study. Figure 16 illustrates the average number of large litter items per site for each municipality. It is noted that the comparison audits were completed for cities with regular (often daily) street cleaning, whereas this audit was undertaken for the Province of Nova Scotia as a whole. For this reason, the average for all litter sites, as well as for just the sites located in the urban Halifax area were illustrated for comparison.

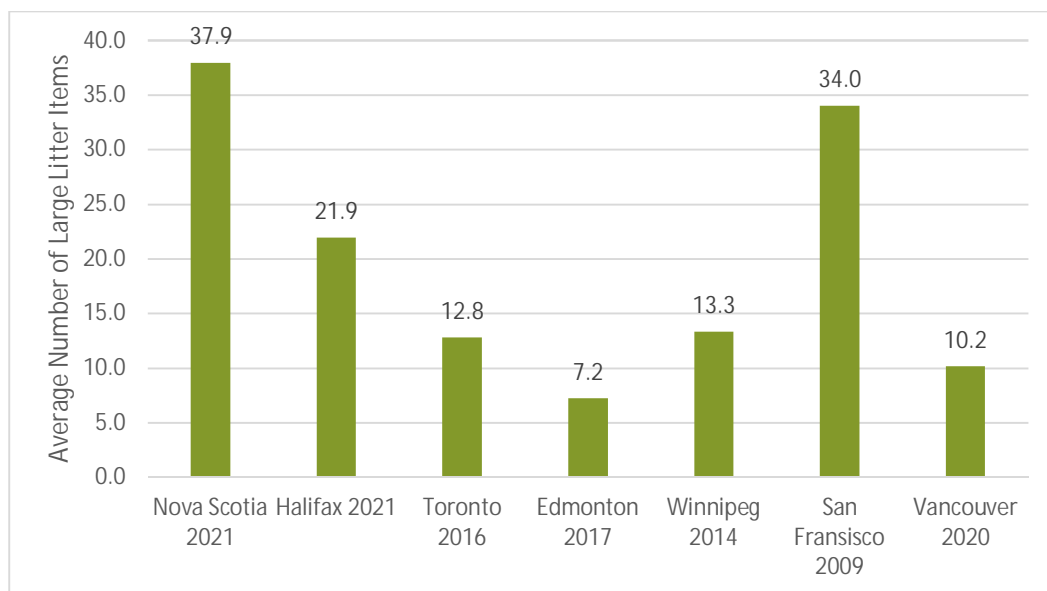


Figure 16: Average Large Litter Count

Additional comparison tables are provided in Appendix K. These include the percentage breakdown per large litter item category, as well as the average number of items counted per site based on category.

3.2 Small Litter Results

Small litter is any piece of litter that is less than 25 square centimetres. Small litter is divided into 16 categories. As previously noted, the small litter audit involved examining three sections within the audit site, not the entire site (supersite audit). This section reviews small litter by category and site. The total quantity of small litter observed was 801 pieces. This equates to an average of 12.3 pieces per site, or 0.25 pieces per metre of roadway audited. The most common categories of small litter observed were Cigarette Butts/Debris (23%), Hard Plastic (20%), Plastic Film (13%), and Paper (12%). Figure 17 illustrates the results graphically.

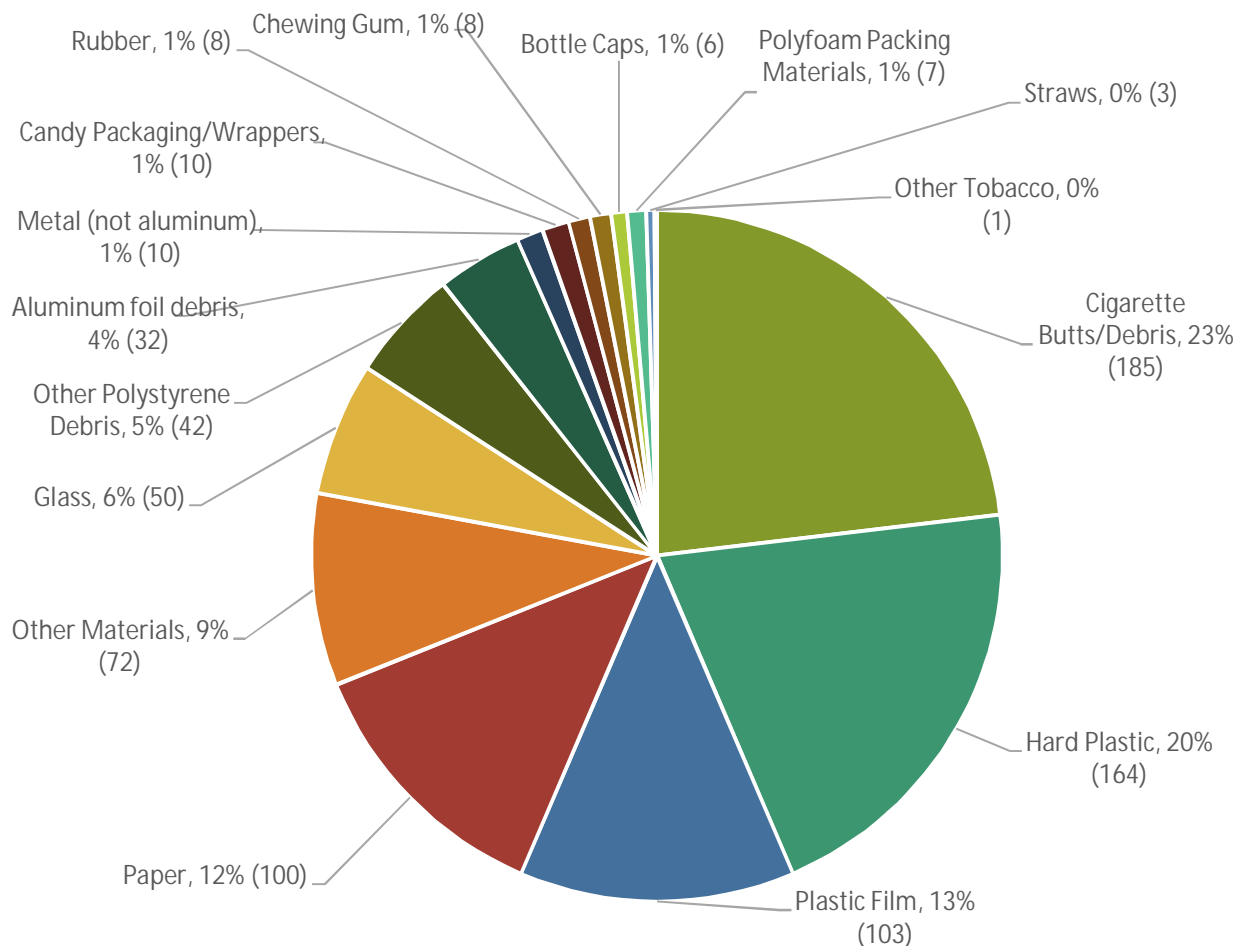


Figure 17: Small Litter Composition 2021

3.2.1

Small Litter by Sites

The ten small litter sites with the most observed small litter are listed below in Table 8. A full ranking of sites is provided in Appendix L.

The site with the most accumulated small litter was Site 30-1 with 105 pieces of small litter observed. Site 30-1 is located in Dartmouth, adjacent to commercial/industrial buildings. At the time of the audit, a curb and fence were acting as litter catchment points. Litter was observed largely concentrated in one area.

The second highest small litter count was recorded at Site 30-2 with 41 pieces. Site 30-2 is located in Dartmouth, adjacent to commercial/industrial buildings. At the time of the audit, a curb was acting as a litter catchment point. Litter was scattered throughout the site.

The site with the third highest accumulated small litter was Site 46-1 with 38 pieces of small litter. Site 46-1 is located in the Chapel Island Indian Reserve along a rural road, adjacent to residences and a convenience store. At the time of the audit, tall grass and a roadside ditch were acting as litter catchment points. Litter was scattered throughout the site.

Of note, three of the top ten sites (4-2, 46-1, and 52-1) were also within the top ten sites for large litter. Site 46-1 was discussed above. Sites 4-2 and 52-1 are both rural residential sites, with high grass and a roadside ditch for litter catchment points.

Table 8: Small Litter Site Rankings

Ranking	Site Number	Region	Community	Number of Pieces of Small Litter
1	30-1	4- Halifax Regional Municipality	Dartmouth	105
2	30-2	4- Halifax Regional Municipality	Dartmouth	41
3	46-1	1- Cape Breton	Chapel Island Indian Reserve No. 5	38
4	45-3	1- Cape Breton	Port Hawkesbury	33
5	49-1	1- Cape Breton	Marion Bridge	27
6	52-1	1- Cape Breton	Albert Bridge	26
7	4-2	6- South Shore- West Hants	Mahone Bay	26
8	18-1	4- Halifax Regional Municipality	Halifax	26
9	22-3	4- Halifax Regional Municipality	Halifax	25
10	21-2	4- Halifax Regional Municipality	Halifax	23

3.2.2 Small Litter by Land Use

Sites were categorized by their typical land use. Land uses used to categorize sites included: commercial, residential, and rural. It is noted that, for the purpose of this study, a rural site that was adjacent to a residence was categorized as residential. Appendix M provides a breakdown of the number of sites per land use type, as well as a breakdown of small litter composition per land use type.

It is recommended that future audits include more detailed land use/zoning categories to allow for an expanded analysis and the identification (if any) of trends and correlations with regards to litter types and quantities.

3.2.3 Small Litter Results Compared to Other North American Municipalities

Small litter audits were completed for several North American municipalities. These assessments audited small litter in similar categories using the same methodology as this study. Figure 18 illustrates the average number of small litter items per site for each municipality. Since the comparison audits were performed on cities, data is provided for both the province as a whole, as well as the audit sites located within the urban Halifax area.

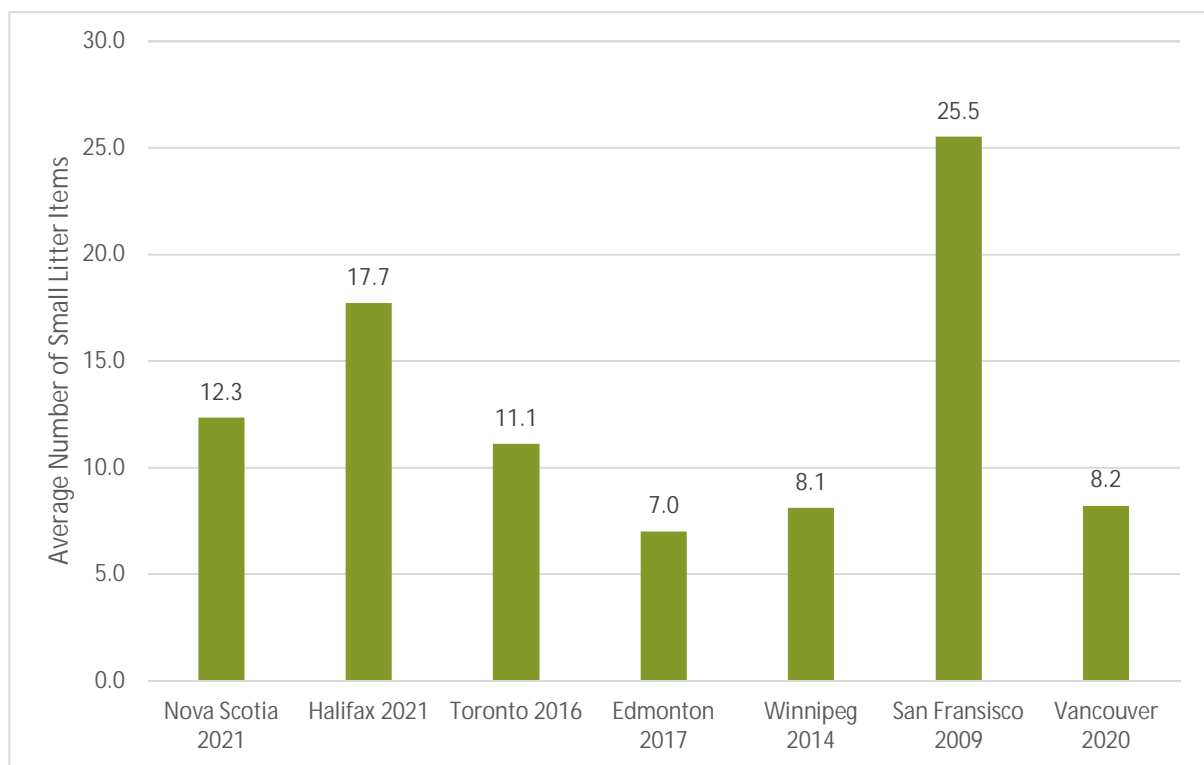


Figure 18: Average Small Litter Items per Site

Additional comparison tables are provided in Appendix N. These include the percentage breakdown per small litter item category, as well as the average number of items counted per site based on category.

3.3

Small Litter Supersite Results

A site is considered a supersite when *all* small litter within the site is observed, counted, and weighed; not only the three segmented portions of the site (beginning, mid, and end point). These assessments were completed at 10 pre-determined sites. In 2021, the total small litter observed was 4,840, with an average number per supersite of 484 pieces. The average number of small litter per metre of roadway audited was 9.7 pieces. The most common categories of small litter observed were Cigarette Butts/Debris (32%), Hard Plastic (20%), and Paper (15%) which accounted for a combined 67% of all small litter observed on the supersites.

Figure 19 illustrates these results graphically.

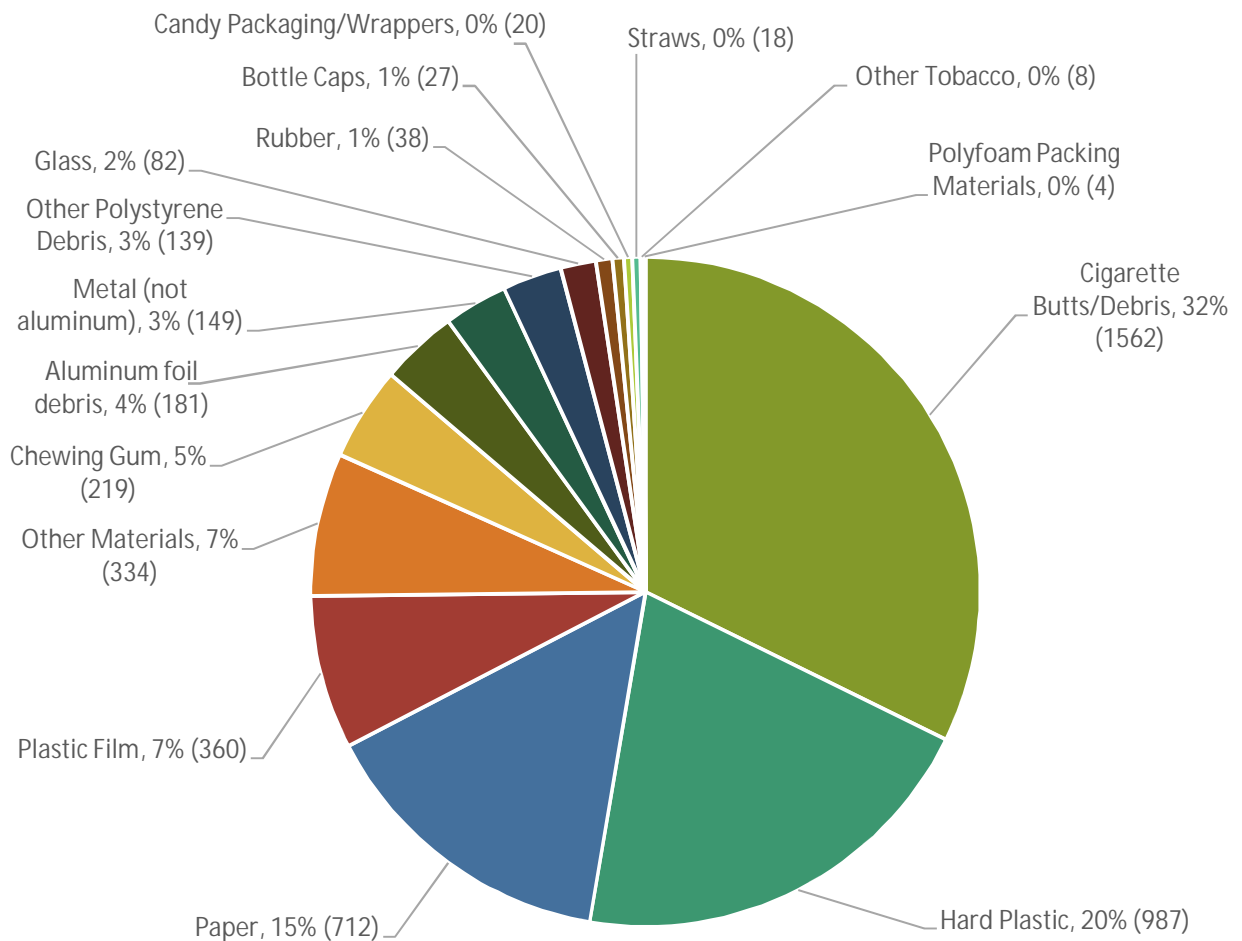


Figure 19: Supersite Small Litter Composition

3.3.1 Supersite Litter by Sites

All ten supersites are ranked in Table 9. The site with the most accumulated litter was Site 45-1, with 1,674 pieces of small litter observed. It is noted that this was also the site where the largest quantity of large litter was observed (400 items). Site 45-1 is located along a minor city street in Port Hawkesbury, adjacent to a Walmart. At the time of the audit, high grass and a roadside ditch were acting as litter catchment points.

The second highest small litter count at a supersite was recorded at Site 56, with 1,202 pieces of litter. Site 56 is located in Digby along a city street, adjacent to residential properties. At the time of the audit, the curb and the grass line were acting as litter catchment points.

The third highest small litter count at a supersite was recorded at Site 5-1, with 601 pieces of litter. Site 5-1 is located in Bridgewater on a city street with commercial properties surrounding. There were litter receptacles in close proximity to the site, with bins for garbage, recycling, and organics. At the time of the audit, the curb and a fence were acting as litter catchment points.

Table 9: Supersite Rankings 2021

Ranking	Site Number	Region	Community	Number of Pieces of Small Litter
1	45-1	1- Cape Breton	Port Hawkesbury	1,674
2	56	7- Yarmouth- Digby	Digby	1,202
3	5-1	6- South Shore- West Hants	Bridgewater	601
4	15-1	5- Annapolis- Kings	Kentville	565
5	25-1	4- Halifax Regional Municipality	Halifax	328
6	10-1	5- Annapolis- Kings	Dayton	181
7	40-1	2- Antigonish- Guysborough- Pictou County	Guysborough	129
8	35-1	3- East Hants- Cumberland- Colchester	Wentworth	82
9	20-1	4- Halifax Regional Municipality	Bedford	60
10	50-1	1- Cape Breton	Sydney	18

3.3.2 Overall Litter Accumulation on Supersites

When a site is observed as a supersite, every piece of litter is recorded. Table 10 illustrates the combined results of small and large litter for each site. The sites with the highest small litter counts as detailed above (45-1, 56, and 5-1), also had the highest total accumulated litter counts, with totals of 2,074 pieces, 1,240 pieces, and 629 pieces, respectively.

Table 10: Overall Combined Small and Large Litter for Supersites

Site Number	Number of Pieces of Small Litter	Number of Pieces of Large Litter	Total Litter
45-1	1,674	400	2,074
56	1,202	38	1,240
5-1	601	28	629
15-1	565	77	642
25-1	328	13	341
10-1	181	9	190
40-1	129	6	135
35-1	82	28	110
20-1	60	5	65
50-1	18	14	32

3.3.3 Supersite Analysis by Weight

All litter, small and large was observed and weighed at supersites. Table 11 provides the weights of both large and small litter, along with the total litter weight in kilograms.

Table 11: Supersites by Weight (kg)

Site	Weight of Small Litter (kg)	Weight of Large Litter (kg)	Total Weight (kg)
45-1	0.7	1.1	1.8
56	0.4	0.3	0.7
5-1	0.3	0.9	1.2
15-1	0.2	0.4	0.6
25-1	0.1	0.7	0.8
10-1	0.1	0.3	0.4
40-1	0.0	0.0	0.0
35-1	0.4	1.1	1.5
20-1	N/A	0.0	0.0
50-1	0.0	0.2	0.2

3.3.4 Supersite Results Compared to Other North American Municipalities

Supersite assessments were completed for a few North American municipalities. These assessments audited small litter throughout the entire site in similar categories, using the same methodology. Figure 20 illustrates the average number of small litter items per site for each municipality.

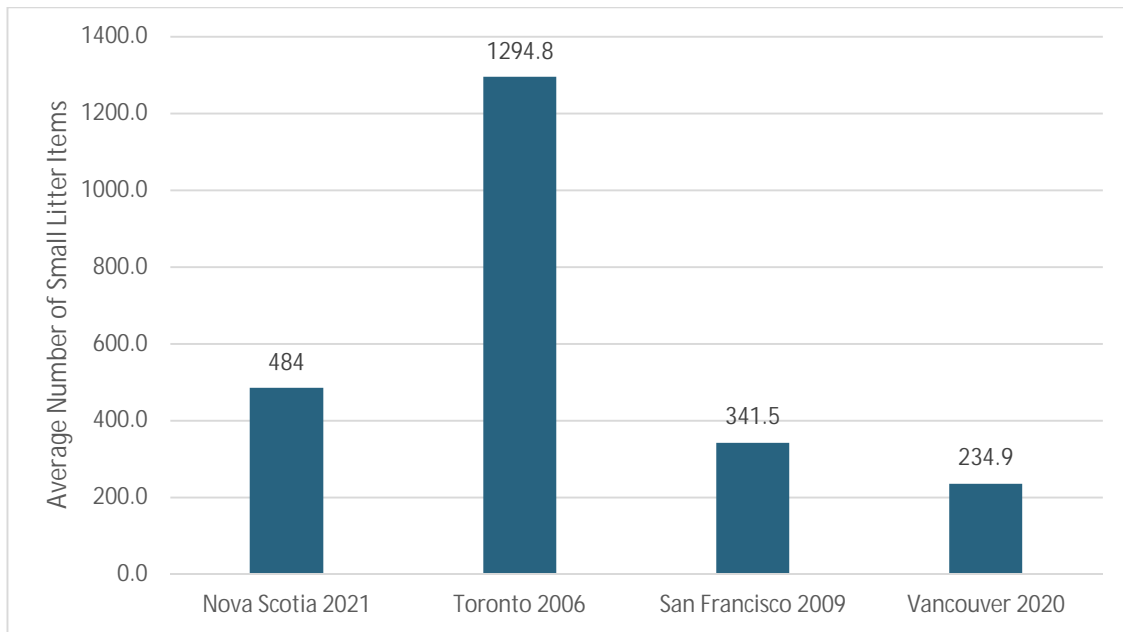


Figure 20: Average Supersite Small Litter Items per Site

Additional comparison tables are provided in Appendix O. These include the percentage breakdown per small litter item category, as well as the average number of items counted per site based on category.

3.4 Visual Assessments of Litter Sites

As a part of the site surveys, Dillon collected information regarding the area and adjacent roads of the audit sites (Appendix P). Dillon staff visually assessed the sites and ranked them on a scale from 1 to 4. Sites were ranked using the following criteria:

- Ranking of 1 – No noticeable litter or very little litter;
- Ranking of 2 – Noticeable litter in certain areas;
- Ranking of 3 – Consistent noticeable litter or large items or a concentrated pile of garbage/litter; and,
- Ranking of 4 – Requires more than one person for cleaning and required municipality/region attention.

Site record photographs showing examples of the four visual cleanliness rankings are provided in Appendix E.

As illustrated on Figure 21, 57% of sites were given the cleanliness index ranking of 1. An additional 36% were ranked as a 2, 4% were ranked as a 3 and 3% were ranked as having a cleanliness index of 4.

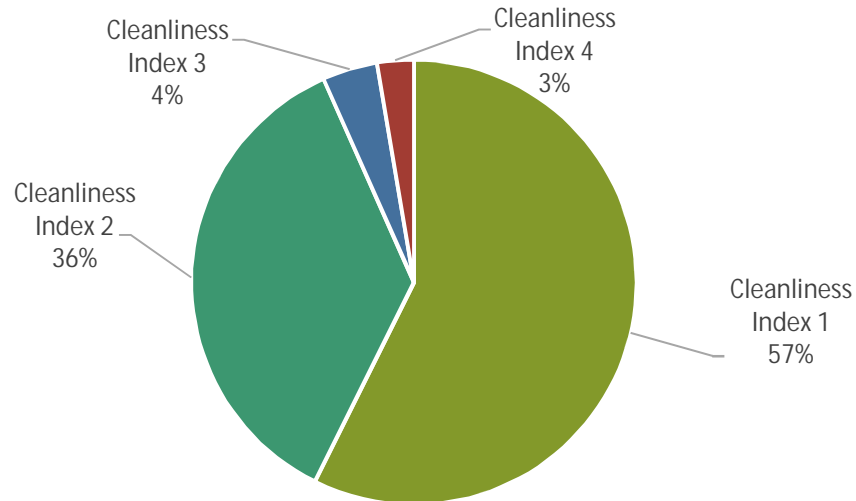


Figure 21: Visual Assessment Ranking of All Litter Sites

Overall, the sites audited had an average cleanliness index ranking of 1.5.

It is noted that high grass and vegetation at many of the audit sites where sidewalks were not present resulted in a higher percentage of sites being given a cleanliness index ranking of 1 or 2. Based on litter counts as reported above, it is apparent from these results that the audit sites appeared to be “cleaner” than actual site conditions, with vegetation hiding much of the litter present.

4.0

2008 and 2021 Results Comparison

The results from the 2021 roadside litter audit were compared to the results from the previous provincial litter audit undertaken in 2008 by the Nova Scotia Youth Conservation Corps and Nova Scotia Environment. It is noted that the methodology used in the 2008 audit differed from that completed and approved by Divert NS in the 2021 audit. For the 2021 litter audit, litter was divided based on size, with large litter divided into 13 categories and 97 sub-categories and small litter divided into 16 categories. In 2008, litter was not distinguished by size, and was categorized into broad categories based on source, material, and brand. In addition, the results from the 2008 audit were largely presented as percentages, with no raw data/counts provided.

Based on the above, Dillon has provided a comparison of results where possible. It is recommended that all future audits be undertaken using the methodology employed in 2021 to provide directly comparable data and to track the evolution of litter practices in the province.

4.1

Litter Results Comparison

To provide a comparison of overall litter results, Dillon grouped the 97 large litter sub-categories from 2021 to fit (as best possible) within the 2008 source litter categories (Table 12). It is noted that Plastic Wrap, representing 8% of the total large litter recorded in 2021 and comprising saran wrap and unidentifiable plastic wrap (non-branded), was divided 50/50 between the Quick Service and Miscellaneous categories from 2008. It is further noted that the Take-out Extras and Food Wrappers/Containers categories from 2021 were likely influenced by the pandemic, and were probably more representative of restaurant take-out as a whole and not necessarily only the traditional Quick Service industry.

The results from the comparison are illustrated on Figure 22. It should be stressed that the 2021 categories included in the comparison only represent the results for large litter. Small litter items (e.g., cigarette butts, etc.) were audited separately in 2021. For this reason, the percentages presented could be significantly affected by the inclusion (in the case of 2008) and absence (in the case of 2021) of small litter. For example, the large apparent drop in Tobacco/Cannabis litter between the two audits is likely not representative of actual conditions.

Moreover, as the raw data from the 2008 audit was not available, it was not possible to determine the number of pieces of litter per square metre audited to provide a true comparison.

Table 12: 2008 vs 2021 Litter Comparison

2008 Category	2021 Category	2021 Sub-Categories	Percentage of Total Litter (2008)	Percentage of Total Large Litter (2021)
Deposit/Milk Container	Beverage Containers	All	3.0%	8%
Grocery	Containers	All	3.2%	8%
	Bags	All, except Paper Bags – Fast Food		
	Other Packaging	Foil Pouches		
		Aseptic		
		Six-Pack Plastic Rings		
		Foil Containers		
		Paper Beverage Cases		
Other Plastic Shells/Boxes				
Snack Food	Confectionary/Snack	All	14.4%	12%
Tobacco	Tobacco/Cannabis	All	10.9%	2%
Quick Service	Take-Out Extras	All	13.4%	28%
	Cups	All		
	Food Wrappers/Containers	All, except 50% of Plastic Wrap		
	Other Packaging	Paperboard		
	Bags	Paper Bags – Fast Food		
Miscellaneous	Paper/Fibre Materials	All	55.1%	42%
	Other Miscellaneous	All		
	Medical Waste	All		
	Construction Debris	All		
	Food Wrappers/Containers	50% of Plastic Wrap		
	Other Packaging	Cardboard Boxes		
Broken Glass Container				
Total			100%	100%

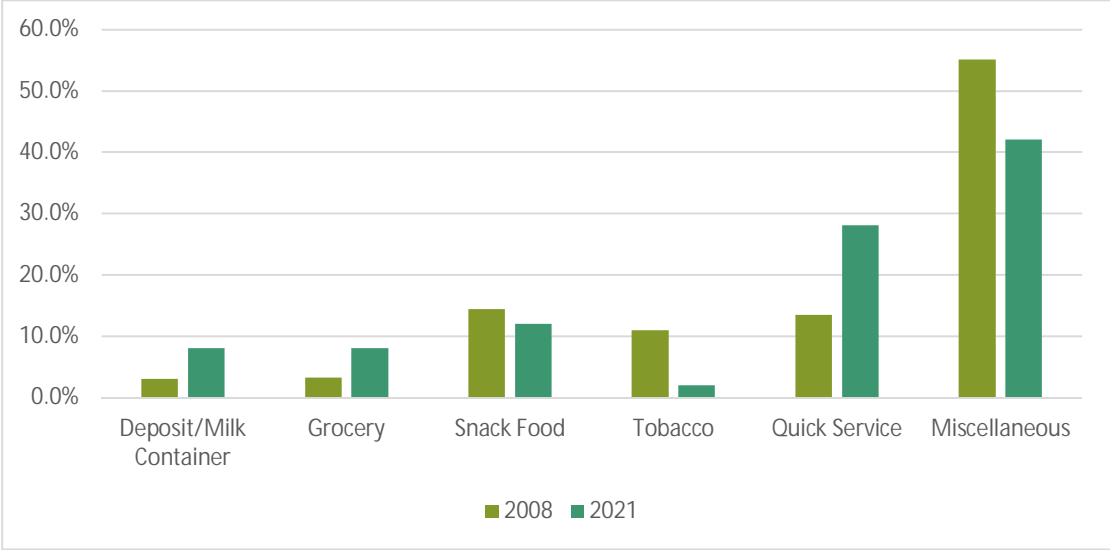


Figure 22: Comparison of Litter Categories

4.2 **Branded Litter Results Comparison**

Branded litter was compared between the 2021 and 2008 audits. Excluding cigarette butts from the comparison (branded as part of the 2008 audit), the most common brand for both audits was Tim Hortons, comprising approximately 26% of all branded litter. McDonald’s was also a comparable brand, comprising 10% and 8.3% of all branded litter in 2021 and 2008, respectively. The top ten brands for the 2021 and 2008 litter audits are illustrated in Figure 23 and Figure 24, respectively. A comparison of the top 10 brands from 2021 is provided graphically in Figure 25. It is noted again that AB InBev is a large alcoholic beverage company which includes various sub-brands such as Budweiser, Busch, Labatt, Oland’s, and Alexander Keith’s.

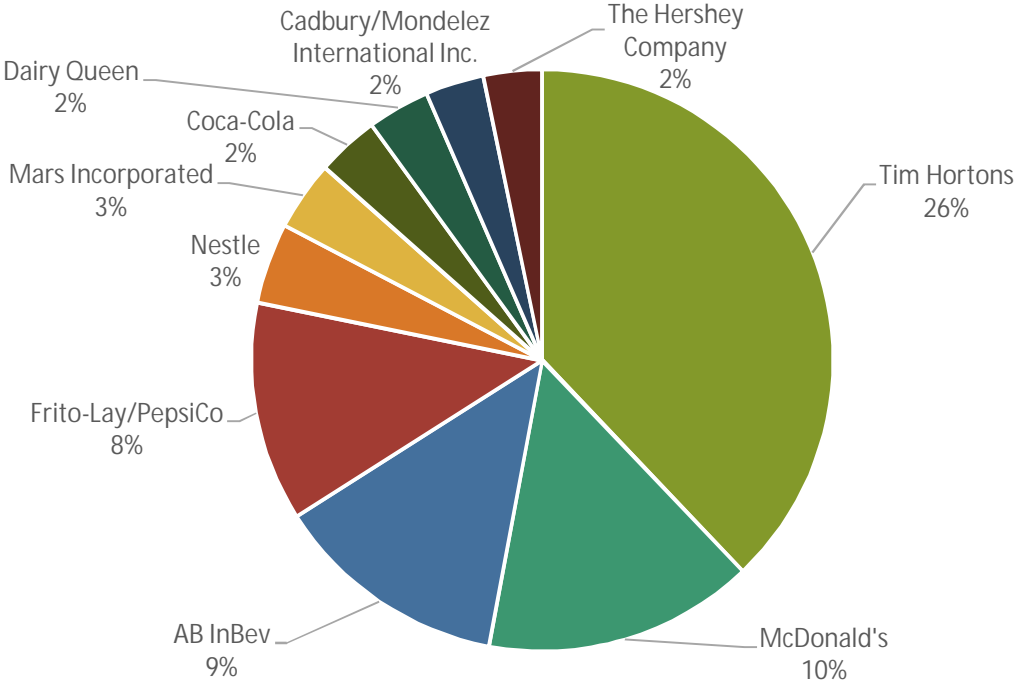


Figure 23: Top 10 Brands 2021

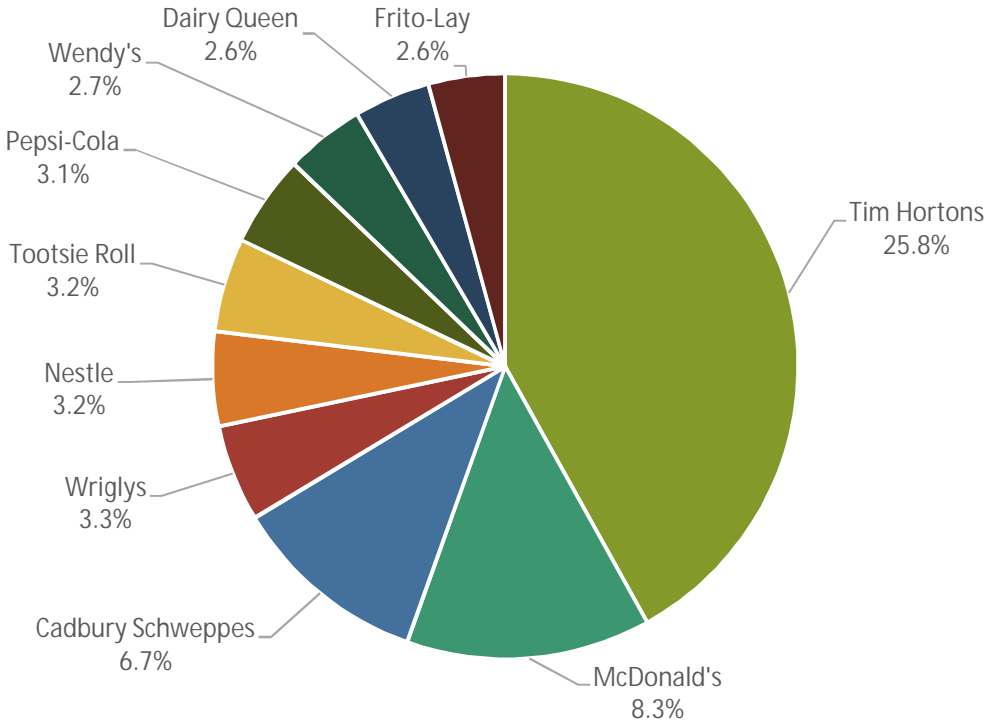


Figure 24: Top 10 Brands 2008

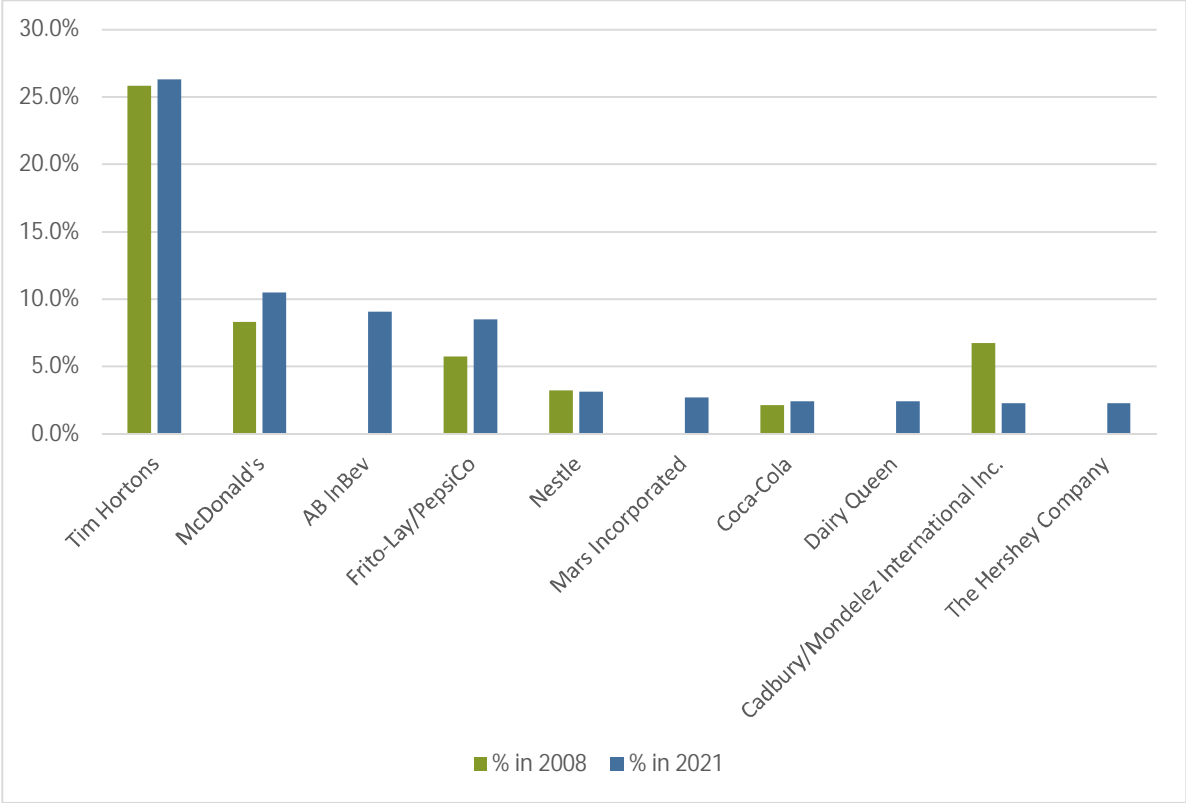


Figure 25: Comparison of Brands 2008/2021

5.0 Quality Assurance

Dillon employed quality assurance (QA) procedures within the litter audit methodology. These procedures related to operator input, litter categorization, and data collection and analysis.

5.1 Operator Input QA

A training program was developed and was required for the auditing team members. The training included a thorough understanding of the methodology, sort and categorization of materials, as well as hands-on training of tablet and software usage. Field team personnel also received training 'in the field' on sample audit sites to confirm proper counting protocols were followed.

5.2 Litter Categorization

The audit team received training on how to classify the different categories of both large and small litter. This included training on each of the categories and how they differed from other categories that may have appeared similar.

Any items that presented a challenge for the audit team to classify in the field were photographed. The team also added a note to the audit form that the material was unable to be identified during the audit. At the end of the field work, categories for the un-classified materials were confirmed with the project team in the office.

5.3 Data QA

The same two dedicated team members audited each sample site. Data input and accuracy from field data were verified using random spot checks to verify that material counting was accurate. A Dillon QA representative visited five audit sites prior to the auditors to do a pre-count of large litter. Audit sites 32-1, 30-1, 27-1, 20-2, and 28-2 were randomly selected for QA checks to confirm accuracy of counts.

Collection data was uploaded on a weekly basis to a secure cloud based system for checks by in-office staff on data accuracy and completeness.

Checks were built into any calculations on field data that was analyzed. This included reviewing all of the formulas to confirm the output and creating data validation formulas to verify results.

Conclusions

It is important to note the information contained within this report, detailing the 2021 litter audit results, is a “snapshot” in time. These results only reflect the conditions of the period of time in which litter was collected. Seasonal variability and weather, among other factors, can affect the amount of accumulated litter within an area. The litter audit results for the assessments that took place June 14 to July 15, 2021 are those reflected in this report.

Large litter was observed at all audit sites, with a total of 2,844 pieces collected or an average of 38 pieces per site. The most common primary categories for large litter observed were Other Miscellaneous (21%), Cups (13%), and Food Wrappers/Containers (12%). The most common sub-categories of large litter observed were Plastic Wrap and Miscellaneous Plastic, both representing approximately 8% of the total large litter observed.

The influence of the COVID-19 pandemic on litter quantities in the province was apparent. Of the 2,844 pieces of large litter audited, 3% were from the Medical Waste category. This included masks, disposable gloves, disinfecting wipes, and hand sanitizer bottles.

Litter with identifiable brands represented 25% of the total large litter collected. Of these, the most common brands observed were Tim Hortons (26%) and McDonald’s (10%). It is noted that this result was consistent with the previous Nova Scotia litter audit undertaken in 2008, indicating that the distribution of branded litter has not changed appreciably over the last decade. Furthermore, results from the 2021 audit showed branded litter at most audit sites, regardless of land use or site characteristics. This indicates that branded litter is a widespread concern across the province.

The results of the study were compared to other North American municipalities where a comparable litter audit methodology was employed. These included Toronto, Edmonton, Winnipeg, San Francisco, and Vancouver. Nova Scotia’s average large litter count (38 pieces) was higher than the comparison cities, with averages ranging from 7 to 34 pieces. As the comparison audits were from cities with regular scheduled street cleaning and were not undertaken on a province-wide scale as with this audit, the audit sites within the urban Halifax area were isolated to allow for a more representative comparison. The average large litter results from the Halifax area were more comparable to the comparison cities with an average of 22 pieces.

The small litter audit involved examining three sections within each audit site. Small litter was observed at all sites, except for two. The total quantity of small litter observed was 801 pieces or 12.3 pieces per site. The average for the sites located in the urban Halifax area was 17.7 pieces. These averages are comparable to the comparison cities noted above, which had averages ranging from 5.2 to 25.5 pieces.

The most common categories of small litter observed were Cigarette Butts/Debris (23%), Hard Plastic (20%), and Plastic Film (13%).

A site is considered a supersite when all small litter within the site is observed. These assessments were completed at 10 pre-determined sites. The total small litter observed at the supersites was 4,840, with an average number per supersite of 484 pieces. This average number of small litter recorded at the supersites was comparable to the comparison cities noted above which had averages ranging from 194 to 1,295 pieces. The most common categories of small litter observed were Cigarette Butts/Debris (32%), Hard Plastic (20%), and Paper (15%).

Overall litter counts (large and small), as reported above, could not be correlated to specific land uses or site characteristics. Future audits may provide additional data to aid in establishing any trends with regards to litter categories and quantity based on site attributes.

Recommendations

Based on Dillon's previous work on litter and illegal dumping for other jurisdictions, research indicates that success in combating litter is not an easy task. In order to assist with improving and tracking litter throughout the province, the following recommendations are provided based on the results of this audit.

Follow-up Litter Audits

If Divert NS or any of the Regions throughout Nova Scotia elect to move forward with litter abatement practices it is recommended that follow-up litter audits be completed to assess the success of any litter and/or diversion programs. It is also noted that this study was completed during the COVID-19 pandemic, which influenced the materials found in the Medical Waste category and likely influenced the behaviours of people towards littering in general. It is therefore recommended that follow-up litter audits be completed regardless of litter and/or diversion programs implemented. Specific recommendations regarding future audits include the following:

- Future audits follow the 2021 methodology to provide directly comparable data and to track any changes in roadside litter;
- Future audits should focus on sites with varying land uses and characteristics, to allow for the identification (if any) of trends and correlations;
- The Construction Waste category should be broken down into several sub-categories;
- Plastic bags should continue to be audited to continue to track the effect of the plastic bag ban on this type of litter in the province;
- Sites that were not captured in this study should be considered for inclusion as part of the next study to assess other types of land uses that may generate higher volumes of litter:
 - On/off ramps. The Dillon team observed high volumes of litter along on/off ramps while driving to/from sites;
 - Parks and trails. None of the audits were completed near trails or parks. It is anticipated that there would be more litter in these areas, specifically pet waste bags and/or newspapers;
 - Routes to waste facilities. It is anticipated that these routes would have more litter than average sites; and,
- A 'Suspected Branded Litter' category be added when categorizing branded litter to capture items such as napkins and straws that do not contain branding or items that may have been branded but are too decomposed to observe the branding.

Focus for Campaigns and Education

Targeted campaigns on large litter items are recommended to focus on single use items from the quick-service industry, including:

- Cups;

- Food wrappers and containers; and,
- Take out extras with a focus on napkins, straws and utensils.

It is noted that 73 pieces (3%) of the large litter audited in 2021 was categorized as Medical Waste (masks, disposable gloves, hand sanitizer bottles, etc.). Medical waste is an unfortunate result of the pandemic and continued proper disposal should be encouraged and advertised.

Targeted campaigns on small litter items are recommended to focus on cigarette butts.

Focus for Community Engagement/Responsibility

The primary brands recorded in the Province have remained consistent between the 2008 and 2021 roadside litter audits (Tim Hortons, McDonald's, Frito Lay/Pepsi). It is recommended to approach brands and companies as possible, to encourage their engagement in litter management.

Appendix A

List of Audit Sites

Sampling Location Site Selection

Region	2008 Audit Location	Site Number	Sample Site 1	Sample Site 2	Sample Site 3	Sample Site 4				
Region 1: Cape Breton	Port Hawkesbury, 100m after Int of Queen St and Hwy 4A	45	42 Paint St	N on Paint St	1 Point Tupper Rd	W on Point Tupper Rd	21 MacQuarrie Dr	E on MacQuarrie Dr	15 Paint St	NE on Paint St
	Barra Head, Int of Salmon River Rd and Hwy 247	46	12104 NS-4	W on NS-4	11657 NS-4	S on NS-4	321 Sitmuk Awti	S on Sitmuk Awti	Barra Head, Int of Salmon River Rd and Hwy 247	E on Hwy 247
	Lower L'Ardoise, Int of Hwy 247 and Doyle Rd	47	2km E of Int of Doyle Rd and Hwy 247	E on Hwy 247	500m W of Int of Hwy 247 and Little Harbour Rd	E on Little Harbour Rd	357 St Peters Fourchu Rd	NE on St Peters Fourchu Rd	1km E of Int of Doyle Rd and Hwy 247	E on Hwy 247
	Dominion, Int of Warburton Rd and Hwy 28	48	89 Union St	W on Union St	575 Gardiner Rd	N on Gardiner Rd	2772 Lingan Rd	E on Lingan Rd	66 NS-28	N on NS-28
	Marion Bridge, Int of Hwy 347 and Grand Mira Rd	49	2365 Hillside Rd	S on Hillside Rd	310 Grand Mira South Rd	N on Grand Mira South Rd	3561 NS-327	S on NS-327	164 Trout Brook Rd	W on Trout Brook Rd
	Sydney River, 250m past Int of Hwy 4 and Hwy 305	50	234 Newlands Ave	N on Newlands Ave	78 Causeway Dr	N on Causeway Dr	299 Murphy Rd	SE on Murphy Rd	157 Kimberly Dr	NW on Kimberly Dr
	Sydney, 100m up Churchill Dr from Hwy 347	51	15 Stuart St	E on Stuart St	35 Phillip St	N on Phillip St	173 Esplanade	NW on Esplanade	434 Churchill Dr	NW on Churchill Dr
	Louisbourg (Albert Bridge) 5km in on New Boston Rd	52	5147 NS Trunk 22	W on NS Trunk 22	4323 NS Trunk 22	E on NS Trunk 22	Louisbourg Hwy (by Shell)	S on Louisbourg Hwy	Louisbourg (Albert Bridge) 5km in on New Boston Rd	NW on New Boston Rd
	Southwest Margaree, Int of Hwy 19 and East side of SW Margaree Rd	54	E Side Southwest Margaree Rd (by cemetery)	E on Margaree Rd	19183 NS Trunk 19	NS on NS Trunk 19	19736 NS Trunk 19	S on NS Trunk 19	6946 NS-395	SE on NS-395
	Queensville, Int of McMaster Rd and Crandells Rd	55	Glenora, Glenora Rd	SE on Glenora Rd	500m after turn off at 1139 NS-105	SW towards NS-105	Glenora Rd, 250m off of exit from NS-105	NW towards NS-105	Queensville, Int of McMaster Rd and Crandells Rd	West on McMaster Rd
Region 2: Antigonish - Guysborough - Pictou County	Baddeck, Int of Jones St and Hwy 205	53	799 NS-205	NE on NS-205	60 NS-205	NE on NS-205	Big Baddeck Rd, 1.5km N of Trans-Canada Hwy	E on Big Baddeck Rd	625 NS-205	NE on NS-205
	Guysborough, Int of Old Riverside Rd and Tompkinville Dr	40	133 Main St	SE on Main St	222 Sunnyville Rd	E on Sunnyville Rd	10981 Marine Dr	N on Marine Dr	48 Main St	NW on Main St
	Cameron Settlement, 250m in on Cameron Settlement Rd	42	Cameron Settlement Rd (10km in off Sanctuary Rd)	E on Cameron Settlement Rd	Cameron Settlement Rd (6km in off Sanctuary Rd)	W on Cameron Settlement Rd	Cameron Settlement Rd (7.5km in off Sanctuary Rd)	W on Cameron Settlement Rd	Cameron Settlement Rd (9km in off Sanctuary Rd)	E on Cameron Settlement Rd
	Welsford, Int of West Branch Rd and Old Pictou Rd	36	500m W of Int of Allen Rd and Old Pictou Rd	W on Old Pictou Rd	304 Brook Rd	NE on Brook Rd	1764 NS-6	W on NS-6	1 km S of 2375 W Branch Rd	N on Branch Rd
	New Glasgow, 100m past Int of Hwy 4 and Hwy 348	37	509 Mountain Rd	NE on Mountain Rd	130 Vista Dr	E on Vista Dr	875 Granton Abercrombie Rd	N on Granton Abercrombie Rd	482 Merigomish Rd	SW on Merigomish Rd
	Thorburn, Int of Thorburn Rd and Finly Dan Rd	38	789 Thorburn Rd	E on Thorburn Rd	81 Kyle Rd	W on Kyle Rd	570 Pine Tree Rd	S on Pine Tree Rd	415 Finlay Dan Rd	E on Finlay Dan Rd
	Antigonish, Int of College St and St. Mary's St	39	43 Mount Cameron Cir	W on Mount Cameron Cir	2905 Old Hwy 104	N on Old Hwy 104	387 Cloverville Rd	N on Cloverville Rd	91 River Rd	S on River Rd
	Upper Rawdon, Int of Hwy 354 and Renfrew Rd	31	4304 NS Trunk 14	W on NS Trunk 14	3402 NS Trunk 14	W on NS Trunk 14	NS-354 (2.5km N of Upper Rawdon)	S on NS-354	3931 NS Trunk 14	N on NS Trunk 14
	Truro, Int of Queen St and Lorne St	32	4 McLean St	S on McLean St	272 James St	N on James S	362 NS-4	S on 362 NS-4	180 Lyman St	N on Lyman St
	East Mapleton, 2.5 km down Lynn Rd from Hwy 2	33	5km S of Int of Lynn Rd and Hwy 2	N on Lynn Rd	3.5km S of Int of Lynn Rd and Hwy 2	N on Lynn Rd	1km S of Int of Lynn Rd and Hwy 2	N on Lynn Rd	4.5km S of Int of Lynn Rd and Hwy 2	N on Lynn Rd
Region 3: East Hants - Cumberland - Colchester	Amherst, Int of Hwy 2 and Crescent Ave	34	1 Flemming St	S on Flemming St	1539 NS-6	N on NS-6	Eddy St, 1km NW of Basball fields	SE on Eddy St	32 Charles St	NW on Charles St
	Wentworth, 1 km past Int of Hwy 4 and Hwy 307	35	279 Lake Rd	E on Lake Rd	Wentworth Collingwood Rd, 750m off NS-4	N on Wentworth Collingwood Rd	479 NS-307	N on NS-307	195 Lake Rd	W on Lake Rd
	Brookside, Int of Brookside Rd and Mitchell Dr	1	Int of Irisweg Dr & Melanson Ln	S on Irisweg Dr	End of Carmella Dr Cul-de-sac	NW on Carmella Dr	Int of Karen Cres and Belgium Dr	E on Belgium Dr	70 Yeaholm Way	NW on Yeaholm Way
	Shad Bay, Int of Hwy 333 and Terrence Bay Rd	2	2890 NS-333	N on NS-333	63 James St	S on James St	2635 Prospect Rd	N on Prospect Rd	Int of Terrence Bay Rd and Powers Rd	N on Terrence Bay Rd
	West Dover, Int of Hwy 333 and West Dover Rd	3	Int of E Dover Rd and Learys Cove Rd	N on E Dover Rd	7114 Lighthouse Rte	E on Lighthouse Rte	6378 NS-333	E on NS-333	Int of W Dover Rd and NS-333	W on W Dover Rd
	Yankeetown, Int of Hwy 213 and Yankeetown Rd	18	2337 Hammonds Plains Rd	E on Hammonds Plains Rd	Int of Grant Line Rd & Hammonds Plains Rd	SW on Hammonds Plains Rd	665 Pockwock Rd	E on Pockwock Rd	98 Old Mill Rd	S on Old Mill Rd
	Sackville, Int of Hwy 324 and Old Sackville Rd	19	57 Raymond Dr	W on Raymond Dr	502 Viscount Run	S on Viscount Run	Int of Millwood Dr & Rossing Dr	S on Millwood Dr	35 Bruce Dr	E on Bruce Dr
	Bedford, Int of Hwy 2 and Meadowbrook Dr	20	22 Ridgevale Dr	N on Ridgevale Dr	End of Ahmadi Cres Cul-de-sac	N on Ahmadi Cres	101 Old Sackville Rd	NW on Old Sackville Rd	991 Shore Dr	S on Shore Dr
	Halifax, Int of Dutch Village Rd and Deal St	21	3425 Kempt Rd	E on Kempt Rd	127 Chain Lake Dr	NW on Chain Lake Dr	218 NS Trunk 2 (Bedford Hwy)	N on Bedford Hwy	3401 Romans Ave	E on Romans Ave
	Halifax, 1km up Herring Cove Rd from the Rotary	22	Int of Coburg Rd & Thornvale Ave	E on Coburg Rd	41 Dunbrack St	N on Dunbrack St	Bayers Rd (in front of Bayers Park Apartments)	E on Bayers Rd	157 Purcells Cove Rd	S on Purcells Cove Rd
Region 4: Halifax Regional Municipality	Halifax, Int of Hwy 3 and Quarry Rd	23	2051 MacDonald St	N on MacDonald St	200 Lighthouse Rte	S on Lighthouse Rte	Int of Berts Dr & Evans Ave	NW On Evans Ave	62 NS-349	W on NS-349
	Halifax, Int of South St and Oxford Rd	24	Int of South St & South Park St	E on South St	62 Spencer Ave	S on Spencer Ave	Int of Almon St & Gladstone St	SE on Gladstone St	6090 Inglis St	W on Inglis St
	Halifax, Int of North St and Windsor St	25	Int of Upper Water St and Valour Way	E on Upper Water St	12 Lawnwood Ave	E on Lawnwood Ave	3705 Barrington St	E on Barrington St	5813 Cunard St	W on Cunard St
	Dartmouth, Int of Portland St and Old Ferry Rd	26	61 Athorpe Dr	S on Athorpe Dr	2021 Brunswick St	NW on Brunswick St	End of Lakeshore Park Terr Cul-de-sac	SE on Lakeshore Park Terr	Int of Clement St & Hastings Dr	W on Clement St
	Dartmouth, 100m down Wyse Rd from Nantucket Ave	27	28 Wyntholme Ave	W on Wyntholme Ave	Int of Summit St & Windsor St	SE on Windsor S	Highfield Park Dr (in front of baseball field)	W on Highfield Park Dr	114 Portland St	S on Portland St
	Cole Harbour, Int of Cole Harbour Rd and Forrest Hills Parkway	28	95 Ritcey Cres	S on Ritcey Cres	28 White Birch Ln	NW on White Birch Ln	189 Taranaki Dr	SE on Taranaki Dr	20 Attwood Cres	SE on Attwood Cres
	Lawrencetown, Int of Hwy 207 and Leslie Rd	29	2411 W Porters Lake Rd	W on W Porters Lake Rd	4315 NS-207	S on NS-207	296 Leslie Rd	SE on Leslie Rd	4435 Marine Dr	E on Marine Dr
	Dartmouth, Int of Hwy 7 and Akerly Blvd	30	215 Cutler Ave	W on Cutler Ave	45 Borden Ave	SE on Borden Ave	Int of Hwy 7 and Akerly Blvd (entrance to Burnside)	S on Akerly Blvd	721 Wilkinson Ave	S on Wilkinson Ave
	Moosehead, Int of Hwy 7 and Stan Gammon Loop	41	28264 Marine Dr	SW on Marine Dr	27268 Marine Dr	SW on Marine Dr	28620 Marine Dr	N on Marine Dr	Int of Hwy 7 and Stan Gammon Loop	SE on Hwy 7
	Dean, Int of Hwy 336 and Dean Back Rd	43	1117 NS-336	N on NS-336	267 NS-336	W on NS-336	1321 NS-336	N on NS-336	Int of NS-336 and Dean Back Rd	NE on NS-336
Chaswood, 100m in on Lower Stewiacke Rd	44	13240 NS-224	W on NS-224	14015 NS-224	E on NS-224	1791 Wittenburg Rd	S on Whittenburg Rd	Int of NS-224 and Webster Rd	E on NS-224	

Sampling Location Site Selection

Region	2008 Audit Location	Site Number	Sample Site 1		Sample Site 2		Sample Site 3		Sample Site 4	
Region 5: Annapolis - Kings	Bridgetown, Hwy 1 and Inglewood Rd	10	543 NS Trunk 1 (By RCMP Station)	NE on NS Trunk 1	8265 Evangeline Tr	E on Evangeline Trail	Int of Hampton Mountain Rd and Clarence Rd	NW on Hampton Mountain Rd	343 Granville St	W on Granville St
	West Dalhousie, Int of West Dalhousie and Morse Rd	11	1.5km SE of Int of West Dalhousie & Morse Rd	NW on West Dalhousie	2km NW of int of West Dalhousie & Morse Rd	NW on West Dalhousie	2.5km N of int of West Dalhousie & Morse Rd	S on Morse Rd	800 m SE of Int of West Dalhousie & Morse Rd	NW on West Dalhousie
	Greenwood, Int of Hwy 201 and Rocknotch Rd	12	1390 NS-201	NE on NS-201	451 NS-201	NE on NS-201	892 Main St	W on Main St	1155 NS-201	W on NS-201
	South Alton, Int of Hwy 12 and English Mountain Rd	13	1.5km E of int of English Mountain Rd & Hwy-12	NW on English Mountain Rd	3858 NS-12	N on NS-12	4631 NS-12	S on NS-12	750m E of int of English Mountain Rd & Hwy-12	NW on English Mountain Rd
	Centreville, Int of Hwy 221 and Hwy 359	14	8235 NS-221	W on NS-221	7464 NS-221	NE on NS-221	2559 NS-359	NW on NS-359	991 Sherman Belcher Rd	SE on Sherman Belcher Rd
	Kentville, 500m up Hwy 1 from Hwy 12	15	310 Belcher St	W on Belcher St	439 Prospect Ave	NE on Prospect Ave	1127 Aldershot Rd	S on Aldershot Rd	203 Main St	NW on Main St
	Wolfville, Hwy 1 and Dyke Rd	16	11654 NS Trunk 1	SW on NS Trunk 1	225 Gaspereau Ave	N on Gaspereau Ave	161 NS Trunk 1	W on NS Trunk 1	11429 Evangeline Trail	W on Evangeline Trail
Region 6: South Shore - West Hants	Middlefield, 500m NW of Int of Hwy 8 and 210	7	NS Trunk 8 (1 km SE of int with NS-210)	NW on Trunk 8	NS Trunk 8 (700m NW on int with NS-210)	NW on Trunk 8	NS-210 (3km N of int with NS Trunk 8)	NE on NS-210	NS Trunk 8 (600 m SE of int with NS-210)	NW on Trunk 8
	Mahone Bay, 325 and Clearway St	4	92 Keddy Bridge Rd	SW on Keddy Bridge Rd	1868 NS-324	N on NS-324	581 Woodstock Rd	SE on Woodstock Rd	575 Main St	E on Main St
	Bridgewater, 325 and Pearl Rd	5	626 King St	SE on King St	3161 NS-325	W on NS-325	1423 King St	E on King St	215 Dominion St (Start in front of Tim Hortons)	NE on Dominion St
	Rose Bay, Int of Hwy 332 and Kingsburg Rd	6	3328 NS-332	SW on NS-332	389 Lower Lahave Rd	SE on Lower Lahave Rd	2806 NS-332	NW on NS-332	1 km SE of NS-332 and Kingsburg Rd int	NW on Kingsburg Rd
	Martock, 150m up from Windsor Back Rd from Hwy 14	17	491 Chester Rd	S on Chester Rd	4189 NS-14	N on NS-14	664 College Rd	NE on College Rd	7 Ashland Rd	S on Ashland Rd
Region 7: Yarmouth - Digby	Sable River, Intersection of Hwy 3 and East Sable Road	8	1409 Lighthouse Rte	NE on Lighthouse Rte	248 NS Trunk 3	SE NS Trunk 3	1680 NS Trunk 3	W on NS Trunk 3	1409 Lighthouse Rte	E on Lighthouse Rte
	Main Street, Yarmouth	9	Corner of Charles Crosby Dr & Elm St	NW on Elm St	Int of Yarmouth Bar Rd (718 NS-304) & Churn Rd	N on NS-304	Int of Main Shore Rd & Overton Rd	S on Main Shore Rd	245 Pleasant St	N on Pleasant St
	N/A	56	147 First Avenue, Conway	N on Conway						

Audited Site
Supersite

Appendix B

Site Locations

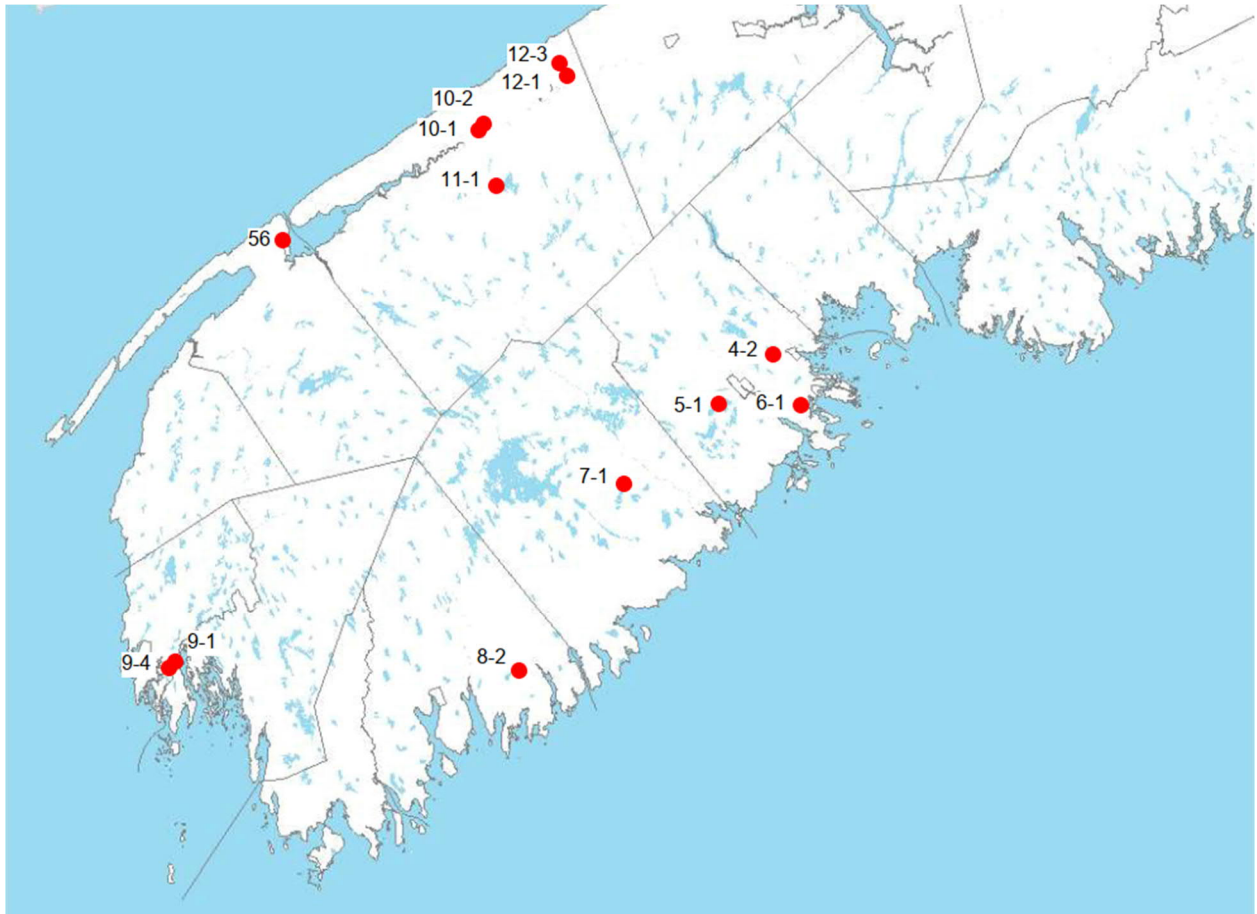


Figure 1: Audit Site Locations – Western Nova Scotia

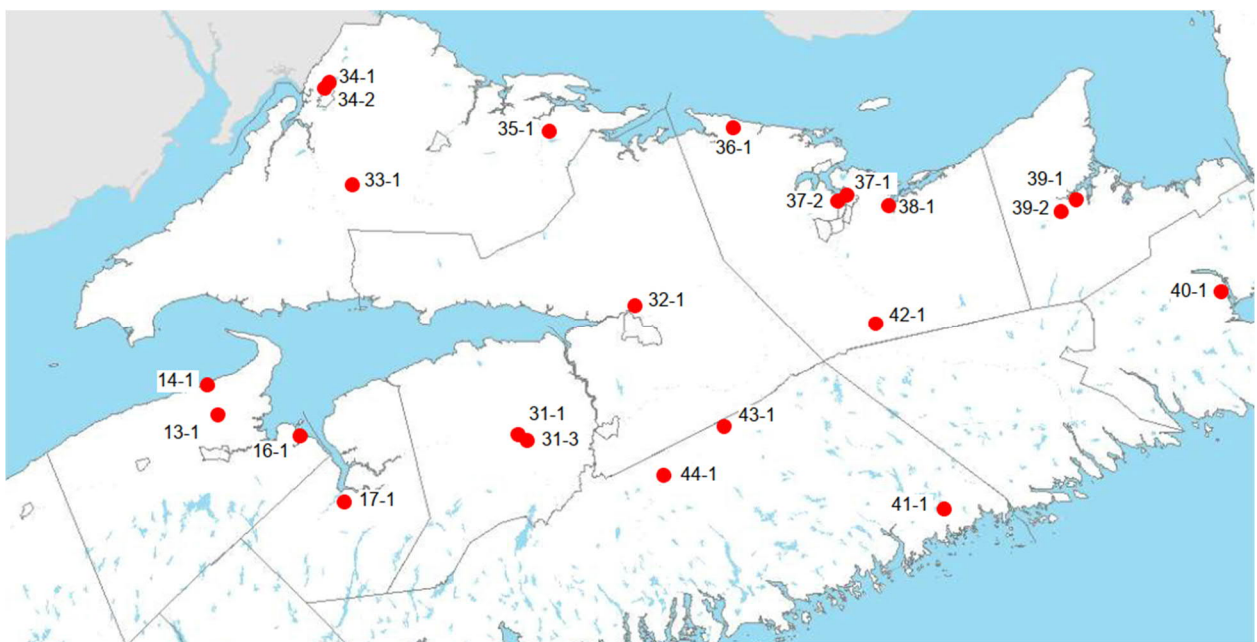


Figure 2: Audit Site Locations – Central Nova Scotia



Figure 3: Audit Site Locations – Eastern Nova Scotia

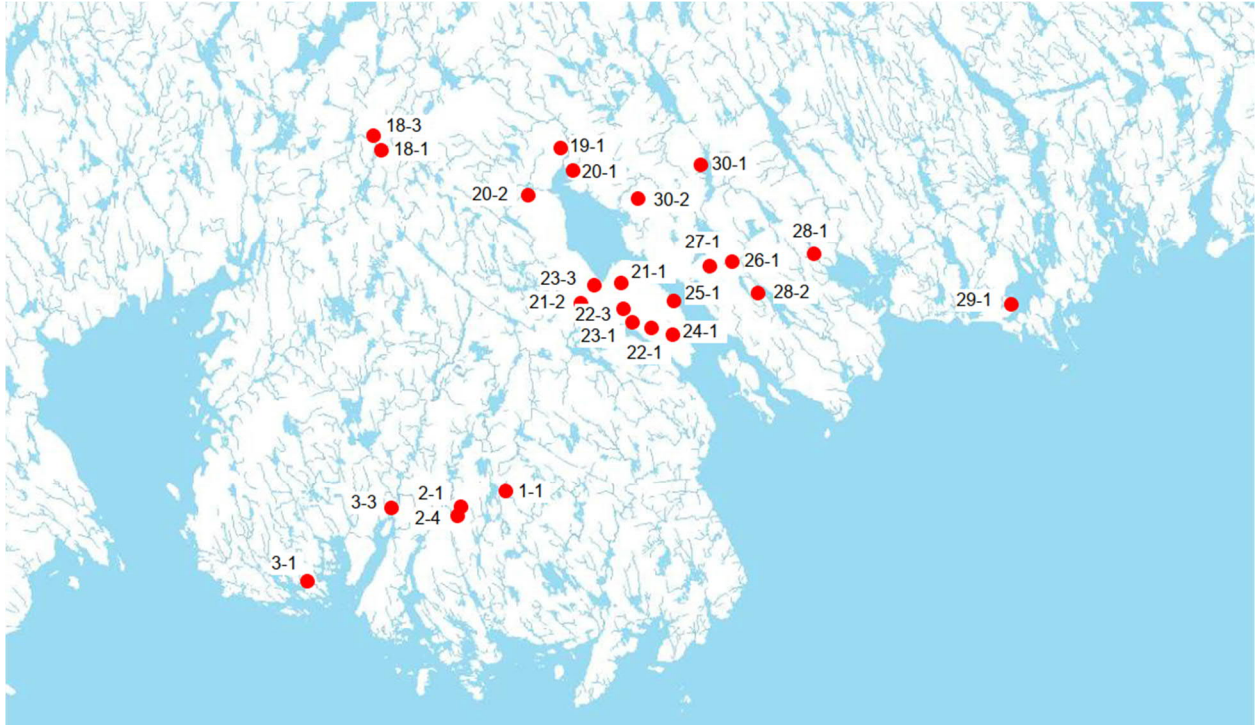


Figure 4: Audit Site Locations – Halifax Area

Appendix C

Forms

Site Survey Form

Site ID Number: _____ Site Name: _____

Street Name/Address: _____ Side of Street (NSEW) _____

Date: _____ (DD/MM/YYYY) Start Time: _____ (AM/PM) End Time: _____ (AM/PM)

Surveyor Names: _____

Site type: Fixed Variable Site length: **Always 60 m long**

If variable:

Width 1 - Start: _____ ft. (up to 5 m) GPS coordinates: _____

Width 2 - Middle: _____ ft. (up to 5 m)

Width 3 - End: _____ ft. (up to 5 m) GPS coordinates: _____

Street Type (check one): Major City Street Minor City Street Rural Road

Area Attributes:

(Check all that apply): Commercial Residential Rural Parkland

Grass Height (Check all that apply): N/A < 3" 3" – 6" Over 6"

Fast Food:	Name of Fast food facility:	Convenience Store:	Stop sign or Traffic light:	Bus stop within sight:	Bus stop within Survey Area:
Y / N		Y / N	Y / N	Y / N	Y / N

Traffic Calming Device within survey area? (Median budge etc.): Y / N If yes, then describe _____

City street/park litter bin within 50 meter radius of site boundary: Y / N

City street/park litter bin details: _____

Catch point: fence hedge curb grass line tree line other (explain in details)

Details: _____

Visual rating of site (1-4) _____ Number of Photos taken: _____

Litter Distribution: Scattered throughout site Largely in one area Litter in piles but throughout site

Other (explain) _____

Evidence of litter cleanup: Y / N Cleanup details: _____

Additional Comments: _____

Large Litter Audit Form

Date and Time _____
 Survey Team _____
 Site ID/Name _____
 Weight of Large Litter (kg) _____

Category	Sub-Category	Pass 1	Pass 2	Brand
Paper/Fibre Materials	Paper Packaging – Other			
	Non-Brand Name Towels/Napkins			
	Lottery Ticket Debris			
	Printed Materials - Cost Newspaper			
	Printed Materials - Free Newspaper			
	Mixed Paper Materials (magazines, stationary paper)			
	Receipts/ Bus Tickets			
	Bundled Flyers			
Take-Out Extras	Condiment Packaging			
	Plastic Utensils			
	Name Brand (Fast food etc.) Towels/Napkins			
	Paper Fast Food Plates			
	Poly Fast Food Plates			
	Other Plastic Fast Food Plates			
	Plates – Other Materials			
	Straws			
Confectionary/Snack	Paper Trays			
	Gum Wrappers			
	Candy Bar Wrappers			
	Candy Pouches			
	Sweet Packaging (describe)			
	Other Confectionary (Describe)			
Tobacco and Cannabis	Snack Food Packaging			
	Chip Packaging			
	Cigarette/Cigar Debris			
	Tobacco Other (packs, matches, cellophane, lighters)			
Cups	Cannabis Packaging			
	Vaping Products			
	Plastic Drinking Cups			
	Paper Cups (cold)			
	Composite Cups (hot)			
Beverage Containers	Polystyrene Cups (foam)			
	Other Paper Cups			
	Cup Lids			
	Refundable Metal Beverage Containers (alcohol)			
	Refundable Metal Beverage Containers (non-alcohol)			
	Refundable Glass Beverage Containers (alcohol)			
	Refundable Glass Beverage Containers (non-alcohol)			
	Refundable Plastic Beverage Containers (alcohol)			
	Refundable Plastic Beverage Containers (non-alcohol)			
	Refundable Aseptic Beverage Containers (alcohol)			
	Refundable Aseptic Beverage Containers (non-alcohol)			
	Refundable Gable Top Beverage Containers (non-alcohol)			
	Refundable Gable Top Beverage Containers (alcohol)			
Containers	Milk & Milk Product Containers – Plastic			
	Milk & Milk Product Containers – Gable Top			
	Milk & Milk Product Containers – Glass			
	Plastic Jars/Bottles/Lids			
	Glass Jars/Bottles			
	Steel Cans			
Bags	Aluminum Cans			
	Container Lids			
	Aerosol Cans			
	Plastic Retail Bags			
	Paper Retail Bags			
	Paper Bags – Fast Food			
Bags	Plastic Bags – No Brand			
	Paper Bags – No Brand			
	Zipper/Sandwich Bags			

Large Litter Audit Form

Food Wrappers/ Containers	Paper Food Wrap			
	Paper/Foil Composite Wrap			
	Plastic Wrap			
	Polystyrene Trays			
	Polystyrene Clamshells			
	Paper Clamshells			
	Other Material Trays			
Other Packaging	Foil Pouches			
	Aseptic			
	Broken Glass Container			
	Six pack plastic rings			
	Foil Containers			
	Cardboard boxes			
	Paperboard			
	Paper Beverage Cases			
Other Plastic Shells/Boxes				
Other Miscellaneous	Plastic Packaging – Other			
	Plastic/Composite –Other			
	Foil Materials/Foil Pieces			
	Misc. Paper			
	Misc. Plastic			
	Misc. Boxboard			
	Misc. Cardboard			
	Misc. Glass			
	Vehicle & Metal Road Debris			
	Tire & Rubber Debris			
	Home Articles			
	Organic Waste – Food Waste			
	Clothing, Textile, or Other Cloth			
	Bagged Pet Waste			
	Urine Bottles			
Cosmetics				
Medical Waste	Disposable Gloves			
	Masks			
	Disinfecting Wipes			
	Hand Sanitizer Bottles			
Construction Debris	Construction Debris			

Small Litter Audit Form

Date and Time _____
Survey Team _____
Site ID/Name _____

Small Litter Audit	Beginning of Site				Middle of Site				End of Site				Grand Total
	Flip 1	Flip 2	Flip 3	Total	Flip 1	Flip 2	Flip 3	Total	Flip 1	Flip 2	Flip 3	Total	
Cigarette butts/debris													
Other tobacco													
Metal (not aluminum)													
Aluminum foil/debris													
Glass													
Paper													
Plastic film													
Bottle caps													
Hard plastic													
Straws													
Candy packaging/wrappers													
Rubber													
Polyfoam packing materials													
Other polystyrene debris													
Other material													
Chewing gum													

Supersite Audit Form

Date and Time _____
Survey Team _____
Site ID/Name _____
Weight of Small Litter (kg) _____

Supersite Audit		Total
Cigarette butts/debris		
Other tobacco		
Metal (not aluminum)		
Aluminum foil/debris		
Glass		
Paper		
Plastic film		
Bottle caps		
Hard plastic		
Straws		
Candy packaging/wrappers		
Rubber		
Polyfoam packing materials		
Other polystyrene debris		
Other material		
Chewing gum		

Appendix D

Examples of Large Litter Sub-Categories

Examples of Large Litter Sub-Categories

Category	#	Sub-Category	Examples
Paper/Fibre Materials	1	Paper Packaging - Other	Paper packaging that does not fit into other categories
	2	Unbranded Towels/Napkins	Paper towels, napkins
	3	Lottery Ticket Debris	Lottery tickets
	4	Printed Materials - Cost Newspaper	Newspaper you pay for
	5	Printed Materials - Free Newspaper	Flyers and free news
	6	Mixed Paper Materials (magazines, stationary paper)	Sticky notes, stationary paper
	7	Receipts/Bus Tickets	Receipts
	8	Bundled Flyers	Bundles of newspaper flyers
Take-Out Extras	9	Condiment Packaging	McDonald's ketchup, McDonald's dipping sauces
	10	Plastic Utensils	Forks, knives, spoons
	11	Branded Towels/Napkins	McDonald's/Wendy's/Dairy Queen Napkins
	12	Paper Fast Food Plates	Paper plates
	13	Poly Fast Food Plates	Styrofoam plates
	14	Other Plastic Fast Food Plates	Plastic plates
	15	Plates - Other Material	Any other material plates
	16	Straws	Plastic or other material straws
	17	Paper Trays	French-fry trays
Confectionary/Snack	18	Gum Wrappers	Excel or other gum wrappers
	19	Candy Bar Wrappers	Coffee Crisp, Reese's, Kit Kat, Aero
	20	Candy Pouches	Welch's Gummies
	21	Sweet Packaging (Describe)	Other sweets (non-candy or gum)
	22	Other Confectionary (Describe)	Granola bar wrappers
	23	Snack Food Packaging	Other snack packaging
	24	Chip Packaging	Dorito's, Lay's, Old Dutch
Tobacco and Cannabis	25	Cigarette/Cigar Debris	Cigarettes and Cigars
	26	Tobacco Other (packs, matches, cellophane, lighters)	Cigarette packs, cellophane, lighters
	27	Cannabis Packaging	Cannabis packs, wrapping and packaging
	28	Vaping Products	Vapes, pods
Cups	29	Plastic Drinking Cups	McDonald's, Tim Hortons, Starbucks
	30	Paper Cups (cold)	McDonald's, Dairy Queen, Wendy's
	31	Composite Cups (hot)	Tim Hortons, McDonald's
	32	Polystyrene Cups (foam)	Styrofoam cups, Polar Pop
	33	Other Paper Cups	Mouthwash cups or other cups
	34	Cup Lids, Pieces, Sleeves	Lids for all cups
Beverage Containers	35	Refundable Metal Beverage Containers (alcohol)	Beer cans
	36	Refundable Metal Beverage Containers (non-alcohol)	Juice, pop cans
	37	Refundable Glass Beverage Containers (alcohol)	Beer, wine, hard alcohol bottles
	38	Refundable Glass Beverage Containers (non-alcohol)	Pop bottles
	39	Refundable Plastic Beverage Containers (alcohol)	Alcohol plastic bottles
	40	Refundable Plastic Beverage Containers (non-alcohol)	Water, juice bottles
	41	Refundable Aseptic Beverage Containers (alcohol)	Alcohol aseptic containers (single wine containers)
	42	Refundable Gable Top Beverage Containers (non-alcohol)	Tropicana carton
	43	Refundable Gable Top Beverage Containers (alcohol)	Alcohol gabletop containers (single wine containers)
	44	Refundable Aseptic Beverage Containers (non-alcohol)	Juice boxes
	45	Milk & Milk Product Containers – Plastic	White and chocolate milk bottles
	46	Milk & Milk Product Containers - Gable Top	White and chocolate milk cartons
	47	Milk & Milk Product Containers – Glass	Milk in glass bottles
Containers	48	Plastic Jars/Bottles/Lids	Motor oil bottles
	49	Glass Jars/Bottles	Non-beverage glass bottles (food containers)
	50	Steel Cans	Paint can, soup can
	51	Aluminum Cans	Small cans with pull back tab
	52	Container Lids	Lids for non-beverages
	53	Aerosol Cans	Hairspray
Bags	54	Plastic Bags - Branded	Superstore, Sobeys bags
	55	Paper Bags - Branded	Grocery store paper bags
	56	Paper Bags - Fast Food	McDonald's, Tim Hortons
	57	Plastic Bags - Unbranded	Unbranded plastic bags
	58	Paper Bags - Unbranded	Unbranded paper bags
	59	Zipper/Sandwich Bags	Ziploc bags

Examples of Large Litter Sub-Categories

Category	#	Sub-Category	Examples
Food Wrappers/Containers	60	Paper Food Wrap	Burger wrappers
	61	Paper/Foil Composite Wrap	Foil wrappers
	62	Plastic Wrap	Unidentifiable plastic wrap (non branded), saran wrap
	63	Polystyrene Trays	Styrofoam meat trays
	64	Polystyrene Clamshells	Styrofoam containers
	65	Paper Clamshells	Paper containers
Other Packaging	66	Other Material Trays	Other material containers
	67	Foil Pouches	Aluminum foil pouches (sometimes for juice)
	68	Aseptic	Soup containers
	69	Broken Glass Container	Broken glass
	70	Six-Pack Plastic Rings	Pop bottle rings, beer rings
	71	Foil Containers	Aluminum foil containers (or lined with foil)
	72	Cardboard Boxes	Unidentifiable cardboard boxes
	73	Paperboard	Fast food boxes (Chicken McNuggets box, Tim Hortons wrap box)
	74	Paper Beverage Cases	Paper beverage that are not cups
	75	Other Plastic Shells/Boxes	Plastic clamshells/containers not included in the other categories
Other Miscellaneous	76	Plastic Packaging – Other	Unidentifiable plastic packaging
	77	Plastic/Composite - Other	Unidentifiable mixed material packaging
	78	Foil Materials/Foil Pieces	Other aluminum materials and aluminum foil
	79	Misc. Paper	Unidentifiable paper pieces
	80	Misc. Plastic	Unidentifiable plastic pieces
	81	Misc. Boxboard	Unidentifiable boxboard pieces
	82	Misc. Cardboard	Unidentifiable cardboard pieces
	83	Misc. Glass	Unidentifiable glass pieces
	84	Vehicle & Metal Road Debris	Car axle
	85	Tire & Rubber Debris	Tires
	86	Home Articles	Reusable bags
	87	Organic Waste - Food Waste	Banana peel
	88	Clothing, Textile, or Other Cloth	Gloves (winter & work)
	89	Bagged Pet Waste	Bagged dog waste
Medical Waste	90	Urine Bottles	Bottles filled with urine
	91	Cosmetics	Chap stick, floss picks
	92	Disposal Gloves	Nitrile gloves
	93	Masks	Disposable and cloth (reusable)
	94	Disinfecting Wipes	Lysol wipes
	95	Hand Sanitizer Bottles	Purell
	96	Other	Pill bottles, inhaler
Construction Debris	97	Construction Debris	Wood stakes, insulation, drywall

Appendix E

Photographic Records of Sites

Site 21-1 (Visual Cleanliness Rating of 1)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Site 34-2 (Visual Cleanliness Rating of 2)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Site 51-1 (Visual Cleanliness Rating of 3)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Site 45-1 (Visual Cleanliness Rating of 4)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Appendix F

Large Litter by Sub-Category

Large Litter Items by Sub-Category

Ranking	Sub-Category	Number Observed	Percentage of Total Large Litter Items Observed
1	Plastic Wrap	221	8%
2	Misc. Plastic	215	8%
3	Construction Debris	130	5%
4	Composite Cups (hot)	129	5%
5	Cup Lids, Pieces, Sleeves	121	4%
6	Unbranded Towels/Napkins	117	4%
7	Plastic Bags - Unbranded	95	3%
8	Refundable Metal Beverage Containers (alcohol)	94	3%
9	Paper/Foil Composite Wrap	93	3%
10	Snack Food Packaging	85	3%
11	Paper Cups (cold)	84	3%
12	Misc. Paper	83	3%
13	Candy Bar Wrappers	81	3%
14	Paperboard	74	3%
15	Other Confectionary (Describe)	69	2%
16	Plastic Packaging - Other	62	2%
17	Straws	54	2%
18	Clothing, Textile, or Other Cloth	53	2%
19	Tobacco Other (packs, matches, cellophane, lighters)	52	2%
20	Refundable Plastic (non-alcohol)	52	2%
21	Chip Packaging	47	2%
22	Mixed Paper Materials (magazines, stationary paper)	45	2%
23	Home Articles	42	1%
24	Receipts/ Bus Tickets	39	1%
25	Plastic/Composite - Other	39	1%
26	Masks	34	1%
27	Condiment Packaging	33	1%
28	Plastic Bags - Branded	32	1%
29	Plastic Drinking Cups	31	1%
30	Refundable Metal (non-alcohol)	30	1%
31	Vehicle & Metal Road Debris	30	1%
32	Other Plastic Shells/Boxes	24	1%
33	Paper Food Wrap	23	1%
34	Misc. Cardboard	23	1%
35	Disinfecting Wipes	23	1%
36	Zipper/Sandwich Bags	22	1%
37	Candy Pouches	21	1%
38	Lottery Ticket Debris	20	1%
39	Paper Packaging - Other	19	1%
40	Refundable Glass (alcohol)	17	1%
41	Printed Materials - Free Newspaper	15	1%
42	Plastic Utensils	15	1%
43	Plastic Jars/Bottles/Lids	14	0%
44	Misc. Glass	14	0%
45	Gum Wrappers	13	0%
46	Cardboard Boxes	13	0%
47	Cosmetics	11	0%
48	Tire & Rubber Debris	12	0%
49	Polystyrene Cups (foam)	11	0%
50	Disposable Gloves	11	0%
51	Foil Pouches	10	0%
52	Sweet Packaging	9	0%
53	Paper Bags - Fast Food	9	0%
54	Refundable Plastic (alcohol)	8	0%
55	Milk Product - Plastic	8	0%
56	Bundled Flyers	7	0%
57	Paper Fast Food Plates	7	0%
58	Aluminum Cans	7	0%

Large Litter Items by Sub-Category

Ranking	Sub-Category	Number Observed	Percentage of Total Large Litter Items Observed
59	Paper Bags - Unbranded	7	0%
60	Other Material Trays	7	0%
61	Organic Waste - Food Waste	7	0%
62	Milk Product - Gable Top	6	0%
63	Printed Materials - Cost Newspaper	5	0%
64	Branded Towels/Napkins	5	0%
65	Vaping Products	5	0%
66	Other Paper Cups	4	0%
67	Container Lids	4	0%
68	Polystyrene Trays	4	0%
69	Polystyrene Clamshells	4	0%
70	Cannabis Packaging	3	0%
71	Refundable Aseptic (non-alcohol)	3	0%
72	Paper Bags - Branded	3	0%
73	Other	3	0%
74	Poly Fast Food Plates	2	0%
75	Plates - Other Material	2	0%
76	Refundable Glass (non-alcohol)	2	0%
77	Refundable Gable Top (non-alcohol)	2	0%
78	Aerosol Cans	2	0%
79	Foil Materials/Foil Pieces	2	0%
80	Misc. Boxboard	2	0%
81	Hand Sanitizer Bottles	2	0%
82	Paper Trays	1	0%
83	Cigarette/Cigar Debris	1	0%
84	Glass Jars/Bottles	1	0%
85	Steel Cans	1	0%
86	Paper Clamshells	1	0%
87	Bagged Pet Waste	1	0%
88	Other Plastic Fast Food Plates	0	0%
89	Refundable Aseptic (alcohol)	0	0%
90	Refundable Gable Top (alcohol)	0	0%
91	Milk Product - Glass	0	0%
92	Aseptic	0	0%
93	Broken Glass Container	0	0%
94	Six-Pack Plastic Rings	0	0%
95	Foil Containers	0	0%
96	Paper Beverage Cases	0	0%
97	Urine Bottles	0	0%
Total Litter		2844	100%

Appendix G

Large Litter by Site

Large Litter by Site

Ranking	Site	Region	Community	Number of Pieces of Large Litter Observed
1	45-1	1 - Cape Breton	Port Hawkesbury	400
2	10-2	5 - Annapolis - Kings	Bridgetown	136
3	2-4	4 - Halifax Regional Municipality	Whites Lake	122
4	46-1	1 - Cape Breton	Chapel Island Indian Reserve No. 5	117
5	7-1	6 - South Shore - West Hants	Harmony Mills	112
6	52-1	1 - Cape Breton	Albert Bridge	106
7	32-1	3 - East Hants - Cumberland - Colchester	Sydney Mines	89
8	50-4	1 - Cape Breton	Sydney River	82
9	4-2	6 - South Shore - West Hants	Mahone Bay	81
10	15-1	5 - Annapolis - Kings	Kentville	77
11	3-3	4 - Halifax Regional Municipality	Shad Bay	74
12	28-1	4 - Halifax Regional Municipality	Cole Harbour	64
13	18-1	4 - Halifax Regional Municipality	Halifax	63
14	41-1	4 - Halifax Regional Municipality	Moser River	58
15	30-2	4 - Halifax Regional Municipality	Dartmouth	57
16	2-1	4 - Halifax Regional Municipality	Whites Lake	55
17	34-2	3 - East Hants - Cumberland - Colchester	Amherst	53
18	31-3	3 - East Hants - Cumberland - Colchester	Upper Rawdon	50
19	38-1	2 - Antigonish - Guysborough - Pictou County	Thorburn	50
20	12-1	5 - Annapolis - Kings	Kingston	50
21	14-1	5 - Annapolis - Kings	Centreville	43
22	49-1	1 - Cape Breton	Marion Bridge	42
23	51-1	1 - Cape Breton	Sydney	42
24	45-3	1 - Cape Breton	Port Hawkesbury	41
25	39-2	2 - Antigonish - Guysborough - Pictou County	Antigonish	40
26	56	7 - Yarmouth - Digby	Digby	38
27	35-1	3 - East Hants - Cumberland - Colchester	Tatamagouche	28
28	5-1	6 - South Shore - West Hants	Bridgewater	28
29	22-1	4 - Halifax Regional Municipality	Halifax	27
30	37-2	2 - Antigonish - Guysborough - Pictou County	New Glasgow	27
31	30-1	4 - Halifax Regional Municipality	Dartmouth	27
32	16-1	5 - Annapolis - Kings	Grand Pre	26
33	18-3	4 - Halifax Regional Municipality	Upper Hammonds Plains	25
34	11-1	5 - Annapolis - Kings	Hannamville	25
35	22-3	4 - Halifax Regional Municipality	Halifax	24
36	36-1	2 - Antigonish - Guysborough - Pictou County	Fitzpatrick	23
37	6-1	6 - South Shore - West Hants	Rose Bay	20
38	24-1	4 - Halifax Regional Municipality	Halifax	19
39	54-1	1 - Cape Breton	Margaree Forks	19
40	37-1	2 - Antigonish - Guysborough - Pictou County	New Glasgow	19
41	33-1	3 - East Hants - Cumberland - Colchester	Mapleton	18
42	43-1	4 - Halifax Regional Municipality	Musquodoboit	18
43	28-2	4 - Halifax Regional Municipality	Dartmouth	18
44	48-1	1 - Cape Breton	Glace Bay	17
45	44-1	4 - Halifax Regional Municipality	Chaswood	17
46	17-1	6 - South Shore - West Hants	Windsor	17
47	21-1	4 - Halifax Regional Municipality	Halifax	16
48	23-3	4 - Halifax Regional Municipality	Halifax	16
49	51-3	1 - Cape Breton	Sydney	16
50	9-4	7 - Yarmouth - Digby	Yarmouth	16
51	8-2	6 - South Shore - West Hants	Shelburne	16
52	50-1	1 - Cape Breton	Sydney	14
53	12-3	5 - Annapolis - Kings	Kingston	14
54	25-1	4 - Halifax Regional Municipality	Halifax	13
55	13-1	5 - Annapolis - Kings	Kentville	13
56	21-2	4 - Halifax Regional Municipality	Halifax	12
57	29-1	4 - Halifax Regional Municipality	East Lawrentown	12
58	53-1	1 - Cape Breton	Baddeck	12
59	27-1	4 - Halifax Regional Municipality	Dartmouth	11
60	31-1	3 - East Hants - Cumberland - Colchester	Upper Nine Mile River	9

Large Litter by Site

Ranking	Site	Region	Community	Number of Pieces of Large Litter Observed
61	10-1	5 - Annapolis - Kings	Dayton	9
62	3-1	4 - Halifax Regional Municipality	Bridgetown	6
63	19-1	4 - Halifax Regional Municipality	Lower Sackville	6
64	34-1	3 - East Hants - Cumberland - Colchester	Amherst	6
65	39-1	2 - Antigonish - Guysborough - Pictou County	Antigonish	6
66	40-1	2 - Antigonish - Guysborough - Pictou County	Guysborough	6
67	23-1	4 - Halifax Regional Municipality	Halifax	5
68	20-1	4 - Halifax Regional Municipality	Bedford	5
69	47-1	1 - Cape Breton	Little Harbour	5
70	26-1	4 - Halifax Regional Municipality	Dartmouth	5
71	20-2	4 - Halifax Regional Municipality	Bedford	4
72	9-1	7 - Yarmouth - Digby	Yarmouth	3
73	55-1	1 - Cape Breton	West Bay Road	2
74	1-1	4 - Halifax Regional Municipality	Brookside	1
75	42-1	2 - Antigonish - Guysborough - Pictou County	Trafalgar	1
Total				2844
Average				37.9

Appendix H

Large Litter by Land Use

Table 1: Number of Litter Sites per Land Use Type

Land Use	Number of Litter Sites	Average Litter Count per Site
Commercial	17	59
Residential	54	29
Rural	4	66

Table 2: Large Litter Composition by Land Use

Large Litter Category	Overall	Commercial	Rural	Residential
Avg. # of Large Litter per Site	38	59.3	29.1	66.0
Beverage Containers	8%	4%	10%	10%
Cups	13%	12%	24%	12%
Bags	6%	5%	10%	6%
Other Packaging	4%	6%	5%	3%
Containers	1%	1%	1%	1%
Food Wrappers/ Containers	12%	13%	6%	13%
Take Out Extras	4%	6%	5%	3%
Confectionary/Snack	11%	10%	9%	13%
Other Miscellaneous	21%	22%	19%	21%
Paper/Fibre Material	9%	12%	4%	9%
Tobacco & Cannabis	2%	2%	1%	2%
Medical Waste	3%	4%	1%	2%
Construction Debris	5%	2%	5%	6%
Total	100%	100%	100%	100%

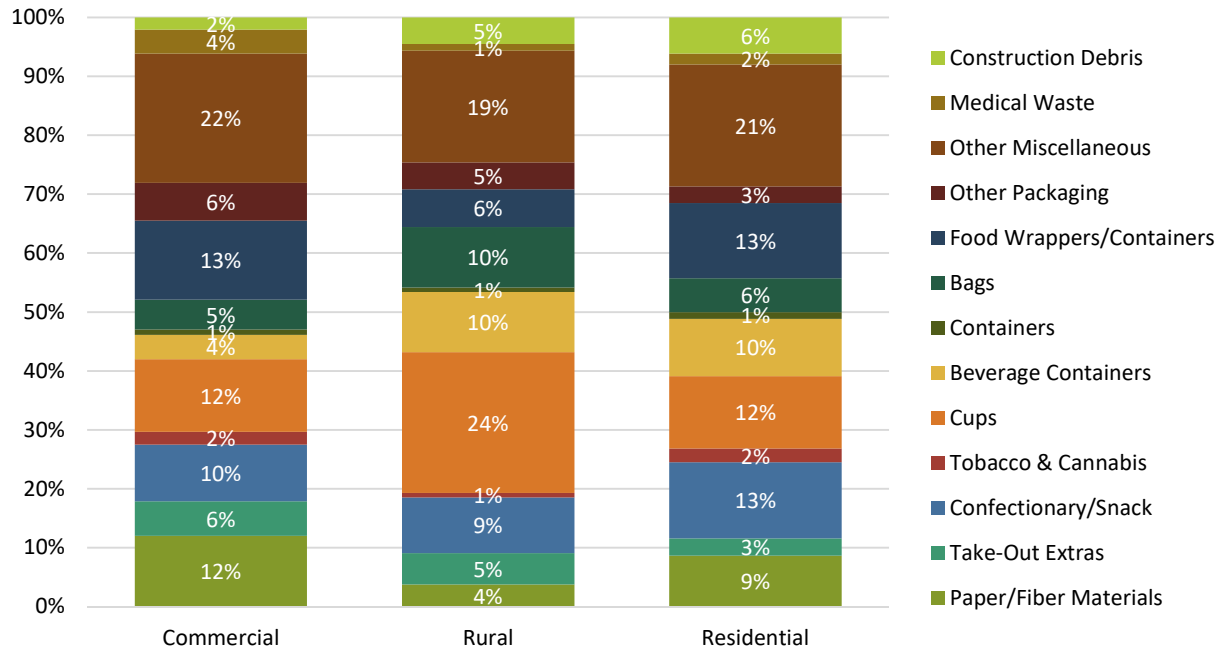


Figure 1: Large Litter Composition by Land Use

Appendix I

Large Litter by Weight

Large Litter by Weight

Ranking	Site	Region	Community	Weight (kg)	Number of Pieces of Large Litter Observed
1	28-2	4- Halifax Regional Municipality	Dartmouth	9.9	18
2	16-1	5- Annapolis- Kings	Grand Pre	7.7	26
3	50-4	1- Cape Breton	Sydney River	6.8	82
4	34-1	3- East Hants- Cumberland- Colchester	Amherst	6.5	6
5	2-4	4- Halifax Regional Municipality	Whites Lake	5.9	122
6	52-1	1- Cape Breton	Albert Bridge	4.2	106
7	45-3	1- Cape Breton	Port Hawkesbury	3.9	41
8	32-1	3- East Hants- Cumberland- Colchester	Sydney Mines	3.5	89
9	51-1	1- Cape Breton	Sydney	3.3	42
10	10-2	5- Annapolis- Kings	Bridgetown	3.0	136
11	14-1	5- Annapolis- Kings	Centreville	3.0	43
12	31-3	3- East Hants- Cumberland- Colchester	Upper Rawdon	2.7	50
13	2-1	4- Halifax Regional Municipality	Whites Lake	2.7	55
14	46-1	1- Cape Breton	Chapel Island Indian Reserve No. 5	2.7	117
15	34-2	3- East Hants- Cumberland- Colchester	Amherst	1.8	53
16	18-1	4- Halifax Regional Municipality	Halifax	1.5	63
17	38-1	2- Antigonish- Guysborough- Pictou County	Thorburn	1.4	50
18	47-1	1- Cape Breton	Little Harbour	1.3	5
19	37-2	2 - Antigonish - Guysborough - Pictou County	New Glasgow	1.3	27
20	44-1	4- Halifax Regional Municipality	Chaswood	1.2	17
21	45-1	1 - Cape Breton	Port Hawkesbury	1.1	400
22	36-1	2 - Antigonish - Guysborough - Pictou County	Fitzpatrick	1.1	23
23	35-1	3 - East Hants - Cumberland - Colchester	Tatamagouche	1.1	28
24	5-1	6 - South Shore - West Hants	Bridgewater	0.9	28
25	4-2	6 - South Shore - West Hants	Mahone Bay	0.8	81
26	39-2	2 - Antigonish - Guysborough - Pictou County	Antigonish	0.8	40
27	41-1	4 - Halifax Regional Municipality	Moser River	0.8	58
28	25-1	4 - Halifax Regional Municipality	Halifax	0.7	13
29	7-1	6 - South Shore - West Hants	Harmony Mills	0.7	112
30	28-1	4 - Halifax Regional Municipality	Cole Harbour	0.7	64
31	43-1	4 - Halifax Regional Municipality	Musquodoboit	0.7	18
32	12-1	5 - Annapolis - Kings	Kingston	0.7	50
33	49-1	1 - Cape Breton	Marion Bridge	0.6	42
34	11-1	5 - Annapolis - Kings	Hannamville	0.6	25
35	54-1	1 - Cape Breton	Margaree Forks	0.6	19
36	31-1	3 - East Hants - Cumberland - Colchester	Upper Nine Mile River	0.5	9
37	33-1	3 - East Hants - Cumberland - Colchester	Mapleton	0.5	18
38	15-1	5 - Annapolis - Kings	Kentville	0.4	77
39	17-1	6 - South Shore - West Hants	Windsor	0.4	17
40	29-1	4 - Halifax Regional Municipality	East Lawrentown	0.4	12
41	30-2	4 - Halifax Regional Municipality	Dartmouth	0.3	57
42	55-1	1 - Cape Breton	West Bay Road	0.3	2
43	6-1	6 - South Shore - West Hants	Rose Bay	0.3	20
44	56	7 - Yarmouth - Digby	Digby	0.3	38
45	10-1	5 - Annapolis - Kings	Dayton	0.3	9
46	50-1	1 - Cape Breton	Sydney	0.2	14
47	12-3	5 - Annapolis - Kings	Kingston	0.2	14
48	3-3	4 - Halifax Regional Municipality	Shad Bay	0.2	74
49	48-1	1 - Cape Breton	Glace Bay	0.2	17
50	51-3	1 - Cape Breton	Sydney	0.1	16
51	21-1	4 - Halifax Regional Municipality	Halifax	0.1	16
52	53-1	1 - Cape Breton	Baddeck	0.1	12
53	37-1	2 - Antigonish - Guysborough - Pictou County	New Glasgow	0.1	19
54	22-3	4 - Halifax Regional Municipality	Halifax	0.1	24
55	8-2	6 - South Shore - West Hants	Shelburne	0.1	16
56	30-1	4 - Halifax Regional Municipality	Dartmouth	0.1	27
57	27-1	4 - Halifax Regional Municipality	Dartmouth	0.1	11
58	26-1	4 - Halifax Regional Municipality	Dartmouth	0.1	5
59	23-1	4 - Halifax Regional Municipality	Halifax	0.1	5
60	20-2	4 - Halifax Regional Municipality	Bedford	0.1	4
61	9-4	7 - Yarmouth - Digby	Yarmouth	0.1	16
62	21-2	4 - Halifax Regional Municipality	Halifax	0.0	12

Large Litter by Weight

Ranking	Site	Region	Community	Weight (kg)	Number of Pieces of Large Litter Observed
63	40-1	2 - Antigonish - Guysborough - Pictou County	Guysborough	0.0	6
64	39-1	2 - Antigonish - Guysborough - Pictou County	Antigonish	0.0	6
65	23-3	4 - Halifax Regional Municipality	Halifax	0.0	16
66	9-1	7 - Yarmouth - Digby	Yarmouth	0.0	3
67	42-1	2 - Antigonish - Guysborough - Pictou County	Trafalgar	0.0	1
68	18-3	4 - Halifax Regional Municipality	Upper Hammonds Plains	0.0	25
69	22-1	4 - Halifax Regional Municipality	Halifax	0.0	27
70	24-1	4 - Halifax Regional Municipality	Halifax	0.0	19
71	3-1	4 - Halifax Regional Municipality	Bridgetown	0.0	6
72	20-1	4 - Halifax Regional Municipality	Bedford	0.0	5
73	13-1	5 - Annapolis - Kings	Kentville	0.0	13
74	19-1	4 - Halifax Regional Municipality	Lower Sackville	0.0	6
75	1-1	4 - Halifax Regional Municipality	Brookside	0.0	1
Total				91.9	2844
Average				1.2	37.9

Appendix J

Large Litter by Brand

Large Litter by Brand

Ranking	Parent Brand	Number of Pieces of Large Litter Observed	Percentage of Total Branded Litter
1	Tim Hortons	186	26%
2	McDonald's	74	10%
3	AB InBev	64	9%
4	Frito-Lay/PepsiCo	60	8%
5	Nestle	22	3%
6	Mars Incorporated	19	3%
7	Coca-Cola	17	2%
8	Dairy Queen	17	2%
9	Cadbury/Mondelez International Inc.	16	2%
10	The Hershey Company	16	2%
11	Old Dutch Foods	16	2%
12	Molson Coors	14	2%
13	Wendy's	14	2%
14	Sobeys Inc.	13	2%
15	Superstore	13	2%
16	Robin's Donuts	11	2%
17	A&W	9	1%
18	Kellogg's	9	1%
19	Ferrero	8	1%
20	Buger King	8	1%
21	Walmart	6	1%
22	Agropur Dairy Cooperative	5	1%
23	Starbucks	5	1%
24	Perfetti Van Melle	4	1%
25	Diageo	4	1%
26	Circle K	4	1%
27	Kraft Heinz	4	1%
28	General Mills	4	1%
29	KFC	4	1%
30	Boston Beer Company	4	1%
31	Harvey's	3	0%
32	Luxardo	3	0%
33	National Grape Cooperative Association	3	0%
34	Chris Brothers	2	0%
35	Keurig Dr Pepper	2	0%
36	Clif Bar & Company	2	0%
37	Dole Food Company	2	0%
38	Lindt	2	0%
39	Forty Creek Distillery	2	0%
40	Subway	2	0%
41	Mark Anthony Group	2	0%
42	Living Essentials LLC	1	0%
43	Pfizer	1	0%
44	Bel Group	1	0%

Large Litter by Brand

Ranking	Parent Brand	Number of Pieces of Large Litter Observed	Percentage of Total Branded Litter
45	Ben's Bakery	1	0%
46	Nova Scotia Spirit Co.	1	0%
47	Deluxe French Fries	1	0%
48	Dollarama	1	0%
49	Sazerac Company	1	0%
50	Proctor and Gamble	1	0%
51	Riverside Natural Foods	1	0%
52	Groupe Glutenberg	1	0%
53	Gordon Food Service	1	0%
54	Badlands Beverage Brands	1	0%
55	Pabst Brewing Company	1	0%
56	Kisko Products	1	0%
57	Beltek Foods	1	0%
58	Hasbro	1	0%
59	NSLC	1	0%
60	Delegat Group	1	0%
61	Pharmasave	1	0%
62	Corby Distilleries Ltd	1	0%
63	Regal Confections	1	0%
64	Gojo Industries	1	0%
65	Red Bull GmbH	1	0%
66	Unilever	1	0%
67	J&J Snack Foods	1	0%
68	Heineken	1	0%
69	Harvest Hill Beverage Company	1	0%
70	Garrison Brewing Company	1	0%
71	Mum-Mum	1	0%
72	Church & Dwight	1	0%
73	Flowers Foods	1	0%
Total		707	100%

Appendix K

Large Litter Results Compared to Other North American Municipalities

Table 2: Nova Scotia Large Litter Audit Results Compared with Audit Results of Other Cities (Average Number of Items per Site)

Category	Nova Scotia 2021	Halifax 2021	Toronto 2016	Edmonton 2017	Winnipeg 2014	San Francisco 2009	Vancouver 2020
Beverage Containers	3	0.9	0.7	0.1	1.5	1.3	0.3
Other Packaging	1.6	0.7	1.2	N/A	0.8	1.9	0.1
Cups	5.1	1.8	1.4	1.3	1.0	3.0	1.0
Bags	2.2	0.7	0.6	0.2	0.8	1.4	0.6
Other Packaging	N/A	N/A	0.1	0.3	0.3	0.7	0.3
Containers	0.4	0.3	0.1	0.6	0.1	0.7	0.1
Food Wrappers/ Containers	4.7	3.3	0.4	0.3	1.8	1.2	0.2
Take Out Extras	1.6	0.9	0.3	0.6	0.0	1.4	0.8
Trays	N/A	N/A	0.1	N/A	N/A	0.2	0.0
Confectionary/Snack	4.3	2.3	0.7	0.4	0.9	3.2	0.6
Cloth	N/A	N/A	0.2	N/A	0.2	0.4	0.1
Other Miscellaneous Packaging	N/A	N/A	0.0	N/A	N/A	N/A	0.0
Paper/Fiber Material	3.6	2.5	3.7	0.5	1.0	7.8	2.0
Tobacco & Cannabis	0.8	0.3	0.7	0.4	1.1	1.4	0.3
Other Miscellaneous	7.9	6.7	2.6	1.4	4.1	9.5	3.2
Medical Waste	N/A	N/A	0.0	0.1	N/A	N/A	N/A
Additional Categories	1	0.7	N/A	N/A	N/A	N/A	N/A
Household Articles	N/A	N/A	0.0	1.1	N/A	N/A	0.5
Construction Debris	1.7	0.8	N/A	N/A	N/A	N/A	N/A
Total	37.9	21.9	12.8	7.2	13.3	34.0	10.2

Appendix L

Small Litter by Site

Small Litter by Site

Ranking	Site	Region	Community	Number of Pieces of Small Litter Observed
1	30-1	4 - Halifax Regional Municipality	Dartmouth	105
2	30-2	4 - Halifax Regional Municipality	Dartmouth	41
3	46-1	1 - Cape Breton	Chapel Island Indian Reserve No. 5	38
4	45-3	1 - Cape Breton	Port Hawkesbury	33
5	49-1	1 - Cape Breton	Marion Bridge	27
6	52-1	1 - Cape Breton	Albert Bridge	26
7	4-2	6 - South Shore - West Hants	Mahone Bay	26
8	18-1	4 - Halifax Regional Municipality	Halifax	26
9	22-3	4 - Halifax Regional Municipality	Halifax	25
10	21-2	4 - Halifax Regional Municipality	Halifax	23
11	9-4	7 - Yarmouth - Digby	Yarmouth	22
12	39-2	2 - Antigonish - Guysborough - Pictou County	Antigonish	22
13	41-1	4 - Halifax Regional Municipality	Moser River	21
14	51-3	1 - Cape Breton	Sydney	20
15	8-2	6 - South Shore - West Hants	Shelburne	20
16	21-1	4 - Halifax Regional Municipality	Halifax	19
17	26-1	4 - Halifax Regional Municipality	Dartmouth	17
18	2-1	4 - Halifax Regional Municipality	Whites Lake	16
19	34-2	3 - East Hants - Cumberland - Colchester	Amherst	15
20	38-1	2 - Antigonish - Guysborough - Pictou County	Thorburn	15
21	37-2	2 - Antigonish - Guysborough - Pictou County	New Glasgow	15
22	14-1	5 - Annapolis - Kings	Centreville	15
23	7-1	6 - South Shore - West Hants	Harmony Mills	14
24	2-4	4 - Halifax Regional Municipality	Whites Lake	12
25	29-1	4 - Halifax Regional Municipality	East Lawrentown	12
26	37-1	2 - Antigonish - Guysborough - Pictou County	New Glasgow	12
27	28-1	4 - Halifax Regional Municipality	Cole Harbour	11
28	10-2	5 - Annapolis - Kings	Bridgetown	10
29	23-3	4 - Halifax Regional Municipality	Halifax	9
30	11-1	5 - Annapolis - Kings	Hannamville	9
31	17-1	6 - South Shore - West Hants	Windsor	9
32	51-1	1 - Cape Breton	Sydney	8
33	32-1	3 - East Hants - Cumberland - Colchester	Sydney Mines	7
34	43-1	4 - Halifax Regional Municipality	Musquodoboit	7
35	3-3	4 - Halifax Regional Municipality	Shad Bay	6
36	6-1	6 - South Shore - West Hants	Rose Bay	6
37	54-1	1 - Cape Breton	Margaree Forks	6
38	20-2	4 - Halifax Regional Municipality	Bedford	6
39	24-1	4 - Halifax Regional Municipality	Halifax	5
40	18-3	4 - Halifax Regional Municipality	Upper Hammonds Plains	5
41	48-1	1 - Cape Breton	Glace Bay	5
42	44-1	4 - Halifax Regional Municipality	Chaswood	5
43	27-1	4 - Halifax Regional Municipality	Dartmouth	5
44	12-3	5 - Annapolis - Kings	Kingston	5
45	12-1	5 - Annapolis - Kings	Kingston	5
46	31-3	3 - East Hants - Cumberland - Colchester	Upper Rawdon	3
47	9-1	7 - Yarmouth - Digby	Yarmouth	3
48	36-1	2 - Antigonish - Guysborough - Pictou County	Fitzpatrick	3
49	39-1	2 - Antigonish - Guysborough - Pictou County	Antigonish	3
50	16-1	5 - Annapolis - Kings	Grand Pre	3
51	23-1	4 - Halifax Regional Municipality	Halifax	2
52	31-1	3 - East Hants - Cumberland - Colchester	Upper Nine Mile River	2
53	1-1	4 - Halifax Regional Municipality	Brookside	2
54	53-1	1 - Cape Breton	Baddeck	2
55	42-1	2 - Antigonish - Guysborough - Pictou County	Trafalgar	2
56	13-1	5 - Annapolis - Kings	Kentville	2

Small Litter by Site

Ranking	Site	Region	Community	Number of Pieces of Small Litter Observed
57	3-1	4 - Halifax Regional Municipality	Bridgetown	1
58	19-1	4 - Halifax Regional Municipality	Lower Sackville	1
59	33-1	3 - East Hants - Cumberland - Colchester	Mapleton	1
60	34-1	3 - East Hants - Cumberland - Colchester	Amherst	1
61	50-4	1 - Cape Breton	Sydney River	1
62	47-1	1 - Cape Breton	Little Harbour	1
63	55-1	1 - Cape Breton	West Bay Road	1
64	28-2	4 - Halifax Regional Municipality	Dartmouth	1
65	22-1	4 - Halifax Regional Municipality	Halifax	0
Total				801
Average				12.3

Appendix M

Small Litter by Land Use

Table 1: Number of Litter Sites per Land Use Type

Land Use	Number of Litter Sites	Average Litter Count per Site
Commercial	13	29.0
Residential	48	8.0
Rural	4	10.5

Table 2: Small Litter Composition by Land Use

Small Litter Category	Overall	Commercial	Residential	Rural
Avg. # of Small Litter per Site	12.3	29.0	8.0	10.5
Cigarette Butts/Debris	22%	24%	22%	26%
Bottle Caps	1%	1%	1%	2%
Straws	0%	0%	0%	2%
Candy Packaging and Wrappers	1%	1%	2%	5%
Polyfoam Packing Materials (i.e., Foam Peanuts)	1%	1%	1%	0%
Other Polystyrene Debris (i.e., Poly Foam Pieces)	1%	6%	5%	0%
Glass	6%	3%	7%	24%
Paper	13%	11%	15%	5%
Plastic Film	13%	11%	14%	17%
Hard Plastic	21%	27%	15%	12%
Aluminum/Foil Debris	4%	2%	6%	0%
Rubber	0%	1%	1%	0%
Metal (not aluminum)	1%	2%	1%	0%
Chewing Gum	1%	1%	2%	0%
Other Material	9%	11%	8%	7%
Total	100%	100%	100%	100%

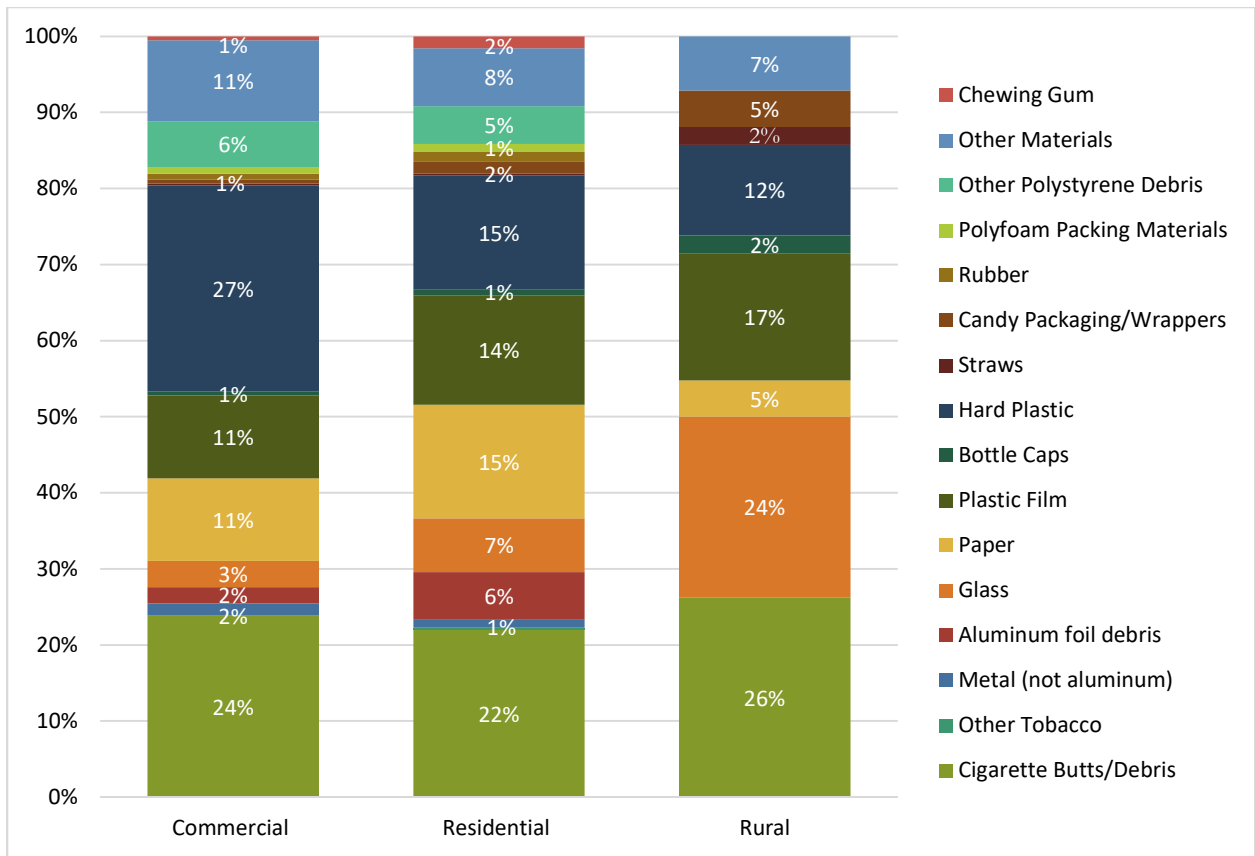


Figure 1: Small Litter Composition by Land Use

Appendix N

Small Litter Results Compared to Other North American Municipalities

Table 2: Nova Scotia Small Litter Audit Results Compared with Audit Results of Other Cities (Average Number of Items per Site)

Category	Nova Scotia 2021	Halifax 2021	Toronto 2016	Edmonton 2017	Winnipeg 2014	San Francisco 2009	Vancouver 2020
Cigarette Butts/Debris	2.8	3.8	2.6	2.4	3.5	3.2	2.0
Other Tobacco	0.0	0.1	0.1	0.0	0.0	0.5	0.0
Bottle Caps	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Straws	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Candy Packaging and Wrappers	0.2	0.2	0.3	0.4	0.0	0.4	0.3
Polyfoam Packing Materials (i.e., Foam Peanuts)	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Other Polystyrene Debris (i.e., Poly Foam Pieces)	0.6	1.1	0.1	0.4	0.0	0.4	0.1
Glass	0.8	0.2	0.8	0.4	0.6	6.0	0.9
Paper	1.5	2.4	2.4	1.3	1.2	2.1	1.4
Plastic Film	1.6	1.5	0.4	0.2	0.6	0.6	0.2
Hard Plastic	2.5	5.5	0.8	0.7	0.9	1.5	0.7
Aluminum/Foil Debris	0.5	0.2	0.2	0.0	0.3	0.3	0.3
Rubber	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Metal (not aluminum)	0.1	0.1	0.2	0.0	0.1	0.6	0.1
Chewing Gum	0.2	0.2	3.0	0.8	0.3	8.2	1.6
Food and Food Scraps	N/A	N/A	0.2	0.1	0.0	0.0	0.1
Other Material	1.1	2.3	0.0	0.1	0.1	1.2	0.2
Total	12.3	17.7	11.1	7.0	8.1	25.5	8.2

Appendix O

Supersite Litter Results Compared to Other North American Municipalities

**Table 1: Nova Scotia Supersite Audit Results Compared with Audit Results of Other Cities
(by Percent Breakdown)**

Category	Nova Scotia 2021	Toronto 2006	San Francisco 2009	Vancouver 2020
Cigarette Butts/Debris	32%	14%	25%	37%
Other Tobacco	0%	1%	0%	0%
Bottle Caps	1%	1%	1%	0%
Straws	0%	0%	1%	0%
Candy Packaging and Wrappers	0%	1%	4%	2%
Polyfoam Packing Materials (i.e., Foam Peanuts)	0%	1%	1%	1%
Other Polystyrene Debris (i.e., Poly Foam Pieces)	3%	3%	0%	0%
Glass	2%	17%	38%	3%
Paper	15%	12%	17%	10%
Plastic Film	7%	3%	3%	1%
Hard Plastic	20%	3%	7%	5%
Aluminum/Foil Debris	4%	2%	2%	2%
Rubber	1%	0%	1%	0%
Metal (not aluminum)	3%	1%	2%	1%
Chewing Gum	5%	40%	N/A	35%
Food and Food Scraps	N/A	0%	0%	1%
Other Material	7%	1%	1%	1%
Total	100%	100%	100%	100%

Table 2: Nova Scotia Supersite Audit Results Compared with Audit Results of Other Cities (Average Number of Items per Site)

Category	Nova Scotia 2021	Toronto 2006	San Francisco 2009	Vancouver 2020
Cigarette Butts/Debris	156.2	176.6	83.8	88.1
Other Tobacco	0.8	14.6	0.0	0.2
Bottle Caps	2.7	8.6	2.0	0.4
Straws	1.8	4.7	1.7	0.1
Candy Packaging and Wrappers	2	16.9	12.2	3.6
Polyfoam Packing Materials (i.e., Foam Peanuts)	0.4	39.2	3.3	3.3
Other Polystyrene Debris (i.e., Poly Foam Pieces)	13.9	14.5	0.5	0.4
Glass	8.2	218.7	128.1	6.8
Paper	71.2	154.3	56.8	23.8
Plastic Film	36	35.7	10.3	3.5
Hard Plastic	98.7	34.1	22.5	11.1
Aluminum/Foil Debris	18.1	24.9	6.2	4.0
Rubber	3.8	5.4	1.8	0.6
Metal (not aluminum)	14.9	15.3	8.2	1.7
Chewing Gum	21.9	518.5	0.0	82.2
Food and Food Scraps	N/A	0.0	0.0	3.5
Pet Waste (loose)	N/A	0.0	0.0	0.1
Needles/Syringes	N/A	0.0	0.0	0.1
Other Material	33.4	13.0	4.0	1.9
Total	484.0	1,294.8	341.5	234.9

Appendix P

Site Survey Results

Site Survey Results

Site ID Number	Date	Site Address	Side of Street	GPS Start of Site	GPS End of Site	Width 1	Width 2	Width 3	Street Type	Area	Grass Height	Fast Food	Name of Fast Food	Conv. Store	Stop or Traffic Light	Bus Stop Within Site	Bus Stop Within Survey Area	Traffic Calming	Litter Bin	Details on Litter Bin	Catch Points	Litter Visual Index	Clean Up	Details of Clean Up	Litter Disbursement	Additional Comments
1-1	6/18/2021	Irisweg Dr & Melanson Ln	South	0443766, 4932284	0443782, 4932228	5	5	5	Minor City Street	Residential	Mostly gravel	No	N/A	No	Yes	No	No	No	No	N/A	Grass Line	1	No	N/A	Scattered throughout entire site	
2-1	6/18/2021	2890 NS-333	North	0440972, 4931665	0441025, 4931697	5	5	5	Major City Street	Residential	3"-6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	
2-4	6/15/2021	Terrence Bay Rd	North	0439762, 4930421	0439739, 4930466	5	4.5	4.5	Rural	Residential, Rural	>6"	No	N/A	No	Yes	No	No	No	No	N/A	Hedge, Tree Line, Tall Grass	2	No	N/A	Scattered throughout entire site	
3-1	6/15/2021	E Dover Rd	North	X	X	2.5	3	3	Rural	Residential, Parkland, Baseball Park	N/A	No	N/A	No	No	No	No	No	Yes	Within baseball park	Tree Line	1			Scattered throughout entire site	Limited width due to tree line. Baseball/Basketball Park + Playground adjacent to assessment area
3-3	6/15/2021	6378 NS-333	West	0430297, 4929105	0430229, 4929120	5	5	5	Rural Road	Rural Residential	N/A	No	N/A	No	No	No	No	No	No	N/A	Tree Line	2	No	N/A	Scattered throughout entire site	Litter throughout site boundary
4-2	6/29/2021	1868 NS-324	North	0388327, 4921855	0388285, 4921855	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	2	No	N/A	Scattered throughout entire site	Safety concerns/limitations at 4-1
5-1	6/29/2021	626 King Street	South	0378905, 4915049	0378946, 4915005	2	5	5	Major City Street	Commercial	3"-6"	No	N/A	No	Yes	No	No	No	Yes	msw, recycling, org	Fence, Curb	2	No	N/A	Litter in piles but throughout site	
6-1	6/29/2021	3328 NS-332	North	0396253, 4906073	0396263, 4906121	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Ditch	1	No	N/A	Scattered throughout entire site	
7-1	6/29/2021	NS Trunk 8	North	0353320, 4895155	0353297, 4895302	5	5	5	Rural	Commercial, Residential, Parkland	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	3	No	N/A	Scattered throughout entire site	Road has residential properties, a provincial park, and a landfill. All outside the assessment area, but relatively close by.
8-2	6/28/2021	248 NS Trunk 3	South	0334545, 4855433	0334579, 4855382	5	4	4	Rural	Residential	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line	1	No	N/A	Scattered throughout entire site	Variable due to tree line
9-1	6/28/2021	Charles Crosby Dr & Elm St	North	0732963, 4858974	0732905, 4858993	4	4	5	Minor City Street	Residential	<3"	No	N/A	No	Yes	No	No	No	No	N/A	Curb, Grass Line	1	No	N/A	Scattered throughout entire site	Other side of street CI = 3
9-4	6/28/2021	245 Pleasant St	North	0732367, 4858351	0732386, 4858416	5	5	5	Minor City Street	Commercial	>6"	No	N/A	No	No	No	No	No	Yes	Waste and recycling bins	Curb, Grass Line	1	No	N/A	Scattered throughout entire site	
10-1	07/13/2021	543 NS Trunk 1	NE	0320211, 4968107	0320276, 4968139	5	5	5	Major Rural Street	Residential	3"-6"	No	Tim's and gas station nearby, but not in sight	No	No	No	No	No	No	N/A	Grass Line	2	No	Resident mentioned Tim's litter is worse during the school year	Scattered throughout entire site	Quiet road, very little traffic. Fair bit of visible litter in other sections of the road.
10-2	07/13/2021	8265 Evangeline Tr	East	03166415, 4966996	0316474, 4967007	5	5	5	Major Rural Street	Residential	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	Significant small litter (mainly cigarette butts) along grass line. Some residential garbage bins.
11-1	07/21/2021	West Dalhousie Rd	West	0325138, 4953599	0325083, 4953621	5	5	5	Minor rural street	No visible homes, community centre near the end of the street	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	2	No	N/A	Scattered throughout entire site	Modified location slightly for parking & traffic concerns
12-1	07/14/2021	1390 NS-201	NE	0349954, 4981209	0350013, 4981229	5	3	3	Minor Rural Street	Residential	>6"	No	N/A	No	No	No	No	No	No	N/A	Hedge, Grass Line, Ditch from mid-end of site full of thick bushes (mostly thorn bushes)	2	No	N/A	Scattered throughout entire site	Fair bit of traffic. Noticeable litter in the area. Resident said a lot of people throw litter out (particularly fast food items) in the area, likely due to lack of houses around. They also mentioned finding full garbage bags (illegal dumping) and dead animals (not wild)- someone dumped a dead sheep.
12-3	07/14/2021	892 Main St	East	0347481, 4984055	0347535, 4984089	5	5	5	Major City Street	Residential	<3"	No	Tim's & gas station further down the road, but not in sight	No	No	No	No	No	No	N/A	Curb, Grass Line	1	Yes	Yards appear to be well kept	Litter largely in one area	Heavy traffic. Visually rated 2, but litter found indicates 3. Large quantity of large litter.
13-1	07/13/2021	719 English Mountain Rd	NW	0380522, 4986252	0380462, 4986239	5	5	5	Minor Rural Street	Residential	<3" and >6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	2	Yes	Resident indicated that they clean the area	Mostly in overgrown (wooded) area	Very little large litter, mostly small litter. Heavy traffic.
14-1	07/14/2021	8235 NS-221	West	0381161, 2999421	0381104, 4999411	5	5	5	Minor Rural Street	Residential/Far m land	>6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Ditch, farm field	2	No	N/A	Scattered throughout entire site	Litter hidden in bushes. Heavy traffic. From start-middle of the site is open-litter visibly blown outside of assessment area.
15-1	07/14/2021	310 Belcher St	West	0383882, 4993466	0383831, 4993445	5	5	5	Major City Street	Residential	3"-6"	No	N/A	No	Yes	No	No	No	No	N/A	Hedge, Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	Heavy traffic. Well maintained area.
16-1	07/15/2021	11654 NS Trunk 1	SW	0397266, 4995091	0397216, 4995058	4	2.5	3.5	Major Rural Street	Residential	>6"	No	N/A	Yes	No	No	No	No	No	N/A	Grass Line, Ditch	1			Pile of flyers in one area (at the bottom of a driveway)	Heavy traffic. Garbage day.
17-1	07/15/2021	4911 Chester Rd	South	0409005, 4978883	0408984, 4978826	5	5	5	Minor Rural Street	Residential	3"-6"	No	N/A	No	No	No	No	No	No	N/A	Grass Line, Tree Line	1	No	N/A	Scattered throughout entire site	Some traffic. Damaged metal sign & post in the ditch between properties 8235 & 8225 NS-221.

Site Survey Results

18-1	6/16/2021	2337 Hammonds Plains Rd	South	0436835, 4953857	0436771, 4953844	5	5	5	Major City Street	Commercial, Residential	>6"	No	N/A	No	No	No	No	No	N/A	Ditch	1	No	N/A	Scattered throughout entire site	Steep bank, deep ditch	
18-3	6/16/2021	665 Pockwock Rd	East	0434772, 4955685	0434813, 4955641	5	5	5	Minor City Street	Residential	>6" in ditch	No	N/A	No	No	No	No	No	N/A	Ditch	1	Yes	Member of public said it was cleaned last year	Scattered throughout entire site		
19-1	6/19/2021	57 Raymond Dr	West	0446347, 4958099	0446289, 4958077	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Curb	1	No	N/A	Scattered throughout entire site		
20-1	6/16/2021	22 Ridgevale Dr	South	0448652, 4953167	0448519, 4953123	5	5	5	Minor City Street	Residential, Parkland	<3"	No	N/A	No	Yes	No	No	Yes	In park adjacent to site	Curb	1	No	N/A	Scattered throughout entire site		
20-2	7/9/2021	Ahmadi Cres	North	0445050, 4950935	0445058, 4950999	5	3	5	Minor City Street	Residential	3"-6"	No	N/A	No	No	No	No	No	N/A	Curb, Hedge, Tree Line	1	No	N/A	Scattered throughout entire site	Significant amount of litter observed outside of assessment area	
21-1	6/14/2021	3425 Kempt Road	East	0447360, 4943430	0451590, 4945572	5	5	5	Major City Street	Commercial	<3"	Yes	McDonalds, Swiss Chalet, Harveys	No	No	No	No	No	N/A	Curb, Building, Shrubs, Grade	1	No	N/A	Scattered throughout entire site		
21-2	6/11/2021	127 Chain Lake Drive	West	0457344, 4947344	0447509, 4943435	5	5	4	Major City Street	Commercial	<3"	No	N/A	No	No	No	No	No	N/A	Long grass near end, boulders	1	Yes	N/A	Litter largely in one area		
22-1	6/14/2021	Coburg Rd / Thornville Ave	North	0452406, 4942752	0452549, 4942719	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Fence, Hedge	1	No	N/A	Scattered throughout entire site		
22-3	6/14/2021	Bayers Rd	East	0450547, 4944631	0450611, 4944608	5	5	5	Major City Street	Residential	3"-6"	No	N/A	Yes	Yes	Yes	Yes	No	Yes	Mesh bin by bus stop	Curb, Hedge, retaining wall	1	No	N/A	Scattered throughout entire site	
23-1	6/14/2021	2051 Macdonald St	North	0451487, 4943348	0451462, 4943383	5	5	5	Minor City Street	Residential, Parkland	<3"	No	N/A	No	Yes	No	No	Yes	Mesh Metal Bin	Curb	1	No	N/A	Scattered throughout entire site		
23-3	6/14/2021	Evans Ave	South	0449418, 4945365	0449477, 4945342	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Curb	1	No	N/A	Scattered throughout entire site		
24-1	6/15/2021	South St	East	0454206, 4942930	0454263, 4942949	4.1	4.3	4.3	Major City Street	Residential, Graveyard	3"-6"	No	N/A	No	Yes	Yes	No	No	Yes	Mesh bin @ bus stop across the road	Fence	1	No	N/A	Scattered throughout entire site	
25-1	7/9/2021	1977 Upper Water St	East	0454357, 4944426	0454401, 4944382	5	5	5	Minor City Street	Commercial	<3"	No	N/A	No	Yes	Yes	Yes	No	Yes	In public sitting area (not at bus stop)	Curb, Hedge, Grass Line	2	No	N/A	Scattered throughout entire site	Garbage day.
26-1	6/30/2021	61 Athorpe Dr	South	0457640, 4946641	0457659, 4946587	5	5	5	Minor City Street	Commercial	<3"	Yes	Wendys, McDonalds	Yes	No	No	No	No	N/A	Curb	1	No	N/A	Scattered throughout entire site		
27-1	7/8/2021	28 Wyndholme Ave	West	0455877, 4946802	0455841, 4946766	5	5	4	Minor City Street	Residential	<3"	No	N/A	No	Yes	No	No	No	N/A	Fence, Curb, Hedge	1	No	N/A	Scattered throughout entire site		
28-1	6/30/2021	95 Ritcey Cres	South	0462576, 4947183	0462599, 4947121	5	4	4.7	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Fence, Grass Line, Ditch	1	No	N/A	Scattered throughout entire site		
28-2	07/09/2021	28 White Birch Lane	NW	0459504, 4945179	0459465, 4945216	5	5	3.5	Minor City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Curb, Grass Line, Tree Line	1	No	N/A	Scattered throughout entire site	Fair bit of traffic. Significant number of cigarette butts around a driveway. Steep bushy ditches, limited accessibility.	
29-1	6/30/2021	2411 Crowell Rd	North	0474771, 4944092	0474785, 4944149	5	4.2	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	1	No	N/A	Scattered throughout entire site		
30-1	7/8/2021	215 Cutler Ave	West	0455493, 4952377	0455449, 4952416	5	5	5	Minor City Street	Commercial	<3"	No	N/A	No	No	No	No	No	N/A	Fence, Curb	2	No	N/A	Litter largely in one area		
30-2	7/8/2021	45 Borden Ave	South	0452176, 4950297	0452214, 4950250	5	5	5	Minor City Street	Commercial	<3"	No	N/A	No	No	No	No	No	N/A	Curb	2	No	N/A	Scattered throughout entire site		
31-1	6/18/2021	4304 NS Trunk 14	West	0445647, 4991612	0445579, 4991598	3.7	3	3.8	Rural Rd	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line	1	No	N/A	Scattered throughout entire site		
31-3	6/18/2021	NS-354	South	0444064, 4993181	0444055, 4993128	5	5	5	Rural Rd	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	2	No	N/A	Scattered throughout entire site		
32-1	6/21/2021	4 MacLean St	South	0479798, 5023388	0479815, 5023334	5	5	5	Minor City Street	Residential	>6"	No	N/A	No	Yes	No	No	No	N/A	Grass Line	2	No	N/A	Scattered throughout entire site		
33-1	6/17/2021	Lynn Rd	North	0413844, 5045183	0413885, 5045242	5	5	5	Rural	Residential	N/A	No	N/A	No	No	No	No	No	N/A	Shrubs & Ditch	1	No	N/A	Scattered throughout entire site	"Fine for Dumping" sign in site	
34-1	6/17/2021	1 Flemming St	South	0407526, 5076532	0407560, 5076478	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	Yes	No	No	No	N/A	N/A	1	Yes	Resident noted major clean up every earth day, and cleanup as needed for larger items along tree line (outside of site width)	Scattered throughout entire site		
34-2	6/17/2021	1539 NS-6	North	0403837, 5074513	0403890, 5074550	5	5	5	Major City Street	Commercial	>6"	No	N/A	Yes	No	No	No	No	N/A	Shrubs	2	No	N/A	Scattered throughout entire site		
35-1	6/17/2021	279 Lake Rd	East	0458213, 5057954	0458271, 5057959	5	5	5	Rural Rd	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Tree Line, Ditch	2	No	N/A	Scattered throughout entire site		
36-1	07/05/2021	Old Pictou Rd & Allen Rd	West	0497286, 5064357	0497229, 5064340	3.9	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Fence, Grass Line, Tree Line, Ditch	1	No	N/A	Scattered throughout entire site		

Site Survey Results

37-1	07/05/2021	509 Mountain Rd	North	0528995, 5048902	0529050, 5048931	5	5	4	Minor City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line	1	No	N/A	Scattered throughout entire site	
37-2	7/7/2021	130 Vista Dr	East	0525665, 5046366	0525716, 5046342	5	5	5	Minor City Street	Commercial	<3"	No	N/A	No	No	No	No	No	N/A	Curb, Grass Line	2	No	N/A	Scattered throughout entire site	Limited width due to tree line. Baseball/Basketball Park + Playground adjacent to assessment area
38-1	07/05/2021	789 Thorburn Rd	East	0536415, 5046251	0536474, 5046241	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	
39-1	07/06/2021	43 Mount Cameron Cir	West	0580081, 5053401	0580022, 5053395	5	5	5	Minor City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Curb, Grass Line	1	Yes	Resident noted area does Earth Day litter clean up.	Scattered throughout entire site	
39-2	07/06/2021	2905 Old Hwy 104	North	0576524, 5050983	0576555, 5051033	5	5	5	Major City Street	Commercial, Residential	<3"	No	N/A	Yes	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	
40-1	07/07/2021	133 Main St	South	0617450, 5027728	0617410, 5027778	5	5	5	Rural	Commercial, Residential	3"-6"	No	N/A	Yes	Yes	No	No	Yes	Garbage and recycling near end of road	Curb, Grass Line, Gravel	1	No	N/A	Scattered throughout entire site	
41-1	07/07/2021	28264 Marine Dr	South	0558485, 4977495	0558436, 4977457	5	5	5	Rural	Residential	3"-6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Tree Line, Ditch	3	No	N/A	Litter largely in one area	Grass mowed recently. Large litter likely shredded.
42-1	7/7/2021	Cameron Settlement Rd	East	0538257, 5014891	0538316, 014884	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Hedge, Grass Line, Tree Line	1	No	N/A	Almost no litter.	Litter dumping just outside of site boundary
43-1	7/8/2021	1117 NS 336	North	0507797, 5001362	0507876, 5001404	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Ditch	1	No	N/A	Scattered throughout entire site	
44-1	7/8/2021	13240 NS 224	West	0484328, 4988649	0484277, 4988621	5	5	5	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	Vacant lots. Significant litter in tree line across the road.
45-1	6/25/2021	42 Paint St	North	0630036, 5052811	0630037, 5052889	5	5	5	Minor City Street	Commercial	>6"	No	N/A	Yes	No	No	No	No	N/A	Grass Line, Ditch	4	No	N/A	Litter in piles but throughout site	
45-3	6/24/2021	21 Mac Quarrie Dr	West	0628043, 5053230	0627999, 5053272	5	5	3.1	Minor City Street	Residential	<3"	No	N/A	No	Yes	No	No	No	N/A	Curb, Hedge	2	No	N/A	Scattered throughout entire site	
46-1	6/24/2021	12104 NS-4	East	0674120, 5061366	0674178, 5061377	5	5	5	Rural Rd	Commercial, Residential	>6"	No	N/A	Yes	No	No	No	No	N/A	Grass Line, Ditch	2	No	N/A	Scattered throughout entire site	
47-1	6/24/2021	Hwy 247 (E of Doyle Rd)	East	0679931, 5050747	0679968, 5050795	5	5	5	Rural Rd	Residential	3"-6"	No	N/A	No	No	No	No	No	N/A	Tree Line, Ditch	1	No	N/A	Scattered throughout entire site	
48-1	6/22/2021	89 Union St	North	0729737, 5122048	0729727, 5122107	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Hedge	1	No	N/A	Litter largely in one area	Litter mostly caught in thorn bushes
49-1	6/23/2021	2365 Hillside Rd	South	0717174, 5096398	0717130, 5096361	5	5	5	Rural Rd	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Tree Line, Ditch	2	No	N/A	Scattered throughout entire site	
50-1	06/22/2021	234 Newlands Ave	North	0715928, 5110630	0715918, 5110688	5	5	5	Minor City Street	Residential	<3"	No	N/A	No	No	No	No	No	N/A	Curb, Hedge	1	Yes	Mid-Spring	Scattered throughout entire site	
50-4	6/23/2021	157 Kimberly Dr	North	0715099, 5109741	0715057, 5109781	5	5	5	Minor City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Tree Line	2	No	N/A	Scattered throughout entire site	
51-1	06/22/2021	51 Stuart St	East	0718512, 5111482	0718568, 5111459	2.6	5	5	Minor City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Tree Line	1	No	N/A	Scattered throughout entire site	
51-3	6/23/2021	173 Esplanade	South	0716388, 5113674	0716431, 5113635	5	5	5	Major City Street	Commercial, Residential, Parkland	<3"	No	N/A	No	Yes	No	No	No	N/A	Fence, Curb	1	No	N/A	Scattered throughout entire site	
52-1	6/23/2021	5147 NS Trunk 22	West	0731384, 5099431	0731288, 5099371	5	5	5	Rural Rd	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Ditch	3	No	N/A	Scattered throughout entire site	
53-1	6/21/2021	799 NS 205	North	0675190, 5108554	0675229, 5108601	5	5	5	Major City Street	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Grass Line, Ditch	1	No	N/A	Scattered throughout entire site	
54-1	6/22/2021	SW Margaree Rd	East	0642975, 5126938	0643028, 5126904	5	5	5	Rural	Residential, Cemetery, Church	<3"	No	N/A	No	Yes	No	No	No	N/A	Ditch	1	No	N/A	Scattered throughout entire site	
55-1	6/21/2021	Glenora Rd	South	0632366, 5065711	0632470, 5065686	5	4	4	Rural	Residential	>6"	No	N/A	No	No	No	No	No	N/A	Tree Line, Ditch	1	No	N/A	Scattered throughout entire site	
56	07/12/2021	147 First Ave, Conway NS	North	0281282, 4944832	0281270, 4944891	5	5	5	Minor City Street	Residential	3"-6"	No	N/A	No	Yes	No	No	No	N/A	Curb, Grass Line	4	No	N/A	Scattered throughout entire site	