



RECYCLE NB

# New Brunswick Roadside Litter Audits

2022 Results (Final Report)



February 2023 - 22-4642



February 1, 2023

Recycle NB  
277 Main Street  
Fredericton, New Brunswick  
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Attention: Recycle NB

*New Brunswick Roadside Litter Audits – 2022 Results (Draft Report)*

Dillon Consulting Limited (Dillon) is pleased to present Recycle NB with the results from the 2022 roadside litter audits. This report summarizes the information collected during the roadside litter audits that took place from October 5 to November 10, 2022. Through this report, we believe that we have sufficiently provided an overview of the current accumulation and composition of litter at New Brunswick's pre-selected litter site locations. These results have been compared to 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".

Elisabeth Mance, M.Sc., P.Eng.  
Project Manager, Associate

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# Executive Summary

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Recycle NB retained Dillon Consulting Limited to conduct roadside litter audits throughout New Brunswick. The audits took place from October 5 to November 10, 2022, and included 50 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 New Brunswick. 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.

Large litter was observed at all audit sites, with a total of 2,411 pieces observed or an average of 19.6 pieces per site. The most common primary categories for large litter observed were Other Miscellaneous (47%), Confectionary/Snack (12%), Construction Debris (8%) and Paper/Fibre Materials (8%). The most common sub-categories of large litter observed were Plastic Packaging – Other (11%) and Miscellaneous Plastic (10%), both of which are sub-categories of Other Miscellaneous.

Litter with identifiable brands represented 18% of the total large litter collected. Of these, the most common brands observed were Tim Hortons (14%), AB in Bev (14%), McDonald's (6%), Frito-Lay/PepsiCo (6%) and Cadbury/Mondelez International Inc. (5%). It is noted that the results from the 2022 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 this study were compared to other North American municipalities where a comparable litter audit methodology was employed. These included Toronto, Edmonton, Winnipeg, San Francisco, Vancouver, Halifax and the Province of Nova Scotia as a whole. New Brunswick's average large litter count (19.6 pieces) was comparable to those of the other jurisdictions, where averages ranged from 7.2 to 37.8 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 (with the exception of Nova Scotia), the audit sites within the urban areas of Fredericton, Moncton and Saint John were isolated to allow for a more representative comparison. The average large litter results for Fredericton were relatively low, with an average large litter count of 16.0, whereas the average large litter counts for Moncton and Saint John were high at 31.9 and 36.2, respectively.

The small litter audit involved examining three sections within each audit site. The total quantity of small litter observed was 381 pieces or 3.1 pieces per site. This extrapolates to an average small litter count of approximately 186 pieces per site. The average small litter counts for the sites located in the urban Fredericton and Moncton areas were 3.2 and 5.0, respectively. These average small litter counts are low

compared to the comparison jurisdictions noted above, ranging from an average of 7.0 to 25.5. The urban area of Saint John was comparable, with an average small litter count of 8.2. The most common categories of small litter observed were Cigarette Butts/Debris (33%), Paper (15%), Other Material (10%) and Hard Plastic (10%).

Overall litter counts (large and small), as reported above, were correlated to urban and rural land uses. The analysis indicated that urban sites contained greater quantities of both large and small litter, compared to rural sites. Urban sites had an average large litter count of 21.2, whereas rural sites had an average large litter count of 17.1. Furthermore, urban sites had an average small litter count of 4.1, whereas rural sites had an average small litter count of 1.5.

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 when compared to the 2012 litter study 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

Recycle NB 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 New Brunswick. The results of the litter audit provide data to inform education initiatives and anti-litter campaigns.

The audits took place from October 5 to November 10, 2022, and included 50 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 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;
- Comparison of results to audits from other provinces and municipalities; and,
- Analysis and reporting of results.



## 2.0 Methodology

Dillon staff completed litter assessments on a total of 123 sites between October 5 and November 10, 2022. This section of the report provides an overview of the roadside litter audit methodology.

### 2.1 Site Selection

For the 2022 survey, 50 pre-selected audit locations were chosen randomly. The number of locations selected per Regional Service Commission (RSC) were based on population density, with a minimum of one urban and one rural location per RSC. At each of the 50 audit locations, four sample sites were identified for potential auditing. A minimum of one sample site was complete at each location, where additional sites were completed as time permitted.

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 50 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, active construction site, etc.). A summary of the locations and sample sites is provided below in Table 1.

**Table 1: Sampling Location and Site Summary**

Location	Samples to Audit	Samples Completed if time Permitted
50 Locations	Sample Site 1	Sample Sites 2, 3, 4

A complete list of the 2022 litter audit sites is provided in Appendix A and are illustrated on Figures 1 to 13 in Appendix B. A summary of the number of sites completed per RSC is provided in Table 2. In total, 123 sites were audited between October 5 and November 10, 2022. This included 50 primary sites, and 73 secondary sites.

Table 2: Survey Sites by Regional Service Commission

Regional Service Commission		Number of Primary Sites	Number of Additional Sites	Total Number of Sites
1	Northwest	3	5	8
2	Restigouche	2	3	4
3	Chaleur	2	1	4
4	Acadian Peninsula	3	4	7
5	Greater Miramichi	3	2	5
6	Kent	2	2	4
7	Southeast	12	18	30
8	Kings	2	4	6
9	Fundy	8	12	19
10	Southwest	2	4	6
11	Fredericton	9	14	23
12	Western Valley	2	4	6
Total		50	73	123

## 2.2 Conducting the Litter Audit

The 2022 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 (commercial, residential, industrial, parkland, institutional, farm, undeveloped);
- Area attributes;
- Fast food/retail stores within site;
- Visual rating (1-4) of the cleanliness of the site;
- Litter catchment points;
- Grass height;
- Stop sign/traffic light within site;
- Bus stop within site;
- Litter bins within site;
- Evidence of litter clean-up;
- Distribution of litter (scattered, piles, evidence of litter clean-up, etc.); and
- Evidence of hurricane damage.

It is noted that an additional item was added to the site survey form to document any visual evidence of impact from Hurricane Fiona, which impacted the province of New Brunswick on September 7, 2022.

A sample site survey form is provided in Appendix C.

## 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 categorized at each of the 123 sites. A first and second pass was completed and the litter observed was counted and recorded on a litter data form (Appendix C). Dillon identified 13 main categories and 109 sub-categories for large litter (See Table 3). Examples for each sub-category of large litter are provided in Appendix D.

**Table 3: Large Litter Categories**

<b>Paper/Fibre Materials</b> 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)	<b>Beverage Containers</b> 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)	<b>Food Wrappers/Containers</b> 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 <b>Other Packaging</b> 67 Foil Pouches
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7 Receipts/Bus Tickets	39 Refundable Plastic Beverage Containers (alcohol)	68 Aseptic
8 Bundled Flyers	40 Refundable Plastic Beverage Containers (non-alcohol)	69 Broken Glass Container
<b>Take-Out Extras</b>	41 Refundable Aseptic Beverage Containers (alcohol)	70 Six pack plastic rings
9 Condiment Packaging	42 Refundable Gable Top Beverage Containers (non-alcohol)	71 Foil Containers
10 Plastic Utensils	43 Refundable Gable Top Beverage Containers (alcohol)	72 Cardboard boxes
11 Branded Towels/Napkins	44 Refundable Aseptic Beverage Containers (non-alcohol)	73 Paperboard
12 Paper Fast Food Plates	45 Milk & Milk Product Containers – Plastic	74 Paper Beverage Cases
13 Poly Fast Food Plates	46 Milk & Milk Product Containers – Gable Top	75 Other Plastic Shells/Boxes
14 Other Plastic Fast Food Plates	47 Milk & Milk Product Containers – Glass	<b>Other Miscellaneous</b>
15 Plates – Other Materials	<b>Containers</b>	76 Plastic Packaging – Other
16 Straws	48 Plastic Jars/Bottles/Lids	77 Plastic/Composite –Other
17 Paper Trays	49 Glass Jars/Bottles	78 Foil Materials/Foil Pieces
<b>Confectionary/Snack</b>	50 Steel Cans	79 Misc. Paper
18 Gum Wrappers	51 Aluminum Cans	80 Misc. Plastic
19 Candy Bar Wrappers	52 Container Lids	81 Misc. Boxboard
20 Candy Pouches	53 Aerosol Cans	82 Misc. Cardboard
21 Sweet Packaging (describe)	<b>Bags</b>	83 Misc. Glass
22 Other Confectionary (Describe)	54 Plastic Bags - Branded	84 Vehicle & Metal Road Debris
23 Snack Food Packaging	55 Paper Bags - Branded	85 Tire & Rubber Debris
24 Chip Packaging	56 Paper Bags – Fast Food	86 Home Articles
<b>Tobacco and Cannabis</b>	57 Plastic Bags – Unbranded	87 Organic Waste – Food Waste
25 Cigarette/Cigar Debris	58 Paper Bags – Unbranded	88 Clothing, Textile, or Other Cloth
26 Tobacco Other (packs, matches, cellophane, lighters)	59 Zipper/Sandwich Bags	89 Bagged Pet Waste
27 Cannabis Packaging		90 Urine Bottles
28 Vaping Products		91 Cosmetics
<b>Cups</b>		<b>Medical Waste</b>
29 Plastic Drinking Cups		92 Disposable Gloves
30 Paper Cups (cold)		93 Masks
31 Composite Cups (hot)		94 Disinfecting Wipes
32 Polystyrene Cups (foam)		95 Hand Sanitizer Bottles
33 Other Paper Cups		96 Other
34 Cup Lids/Pieces/Sleeves		<b>Construction Debris</b>
		97 Wood
		98 Metal
		99 Concrete
		100 Gypsum (Drywall)
		101 Shingles
		102 Masonry
		103 Plaster
		104 Asphalt
		105 Insulation
		106 Paper
		107 Plastic
		108 Glass and Ceramics
		109 Miscellaneous C&D Material

## 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 large litter audit. This effort will assist Recycle NB 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 centimeters 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 width 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 4).

**Table 4: 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 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 17-1, 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 2022 litter audit as well as an assessment of New Brunswick's results against those of other municipalities. Sections 3.1 and 3.2 present large litter results and small litter results, respectively. Visual assessments of audit sites are presented in Section 3.3.

## 3.1

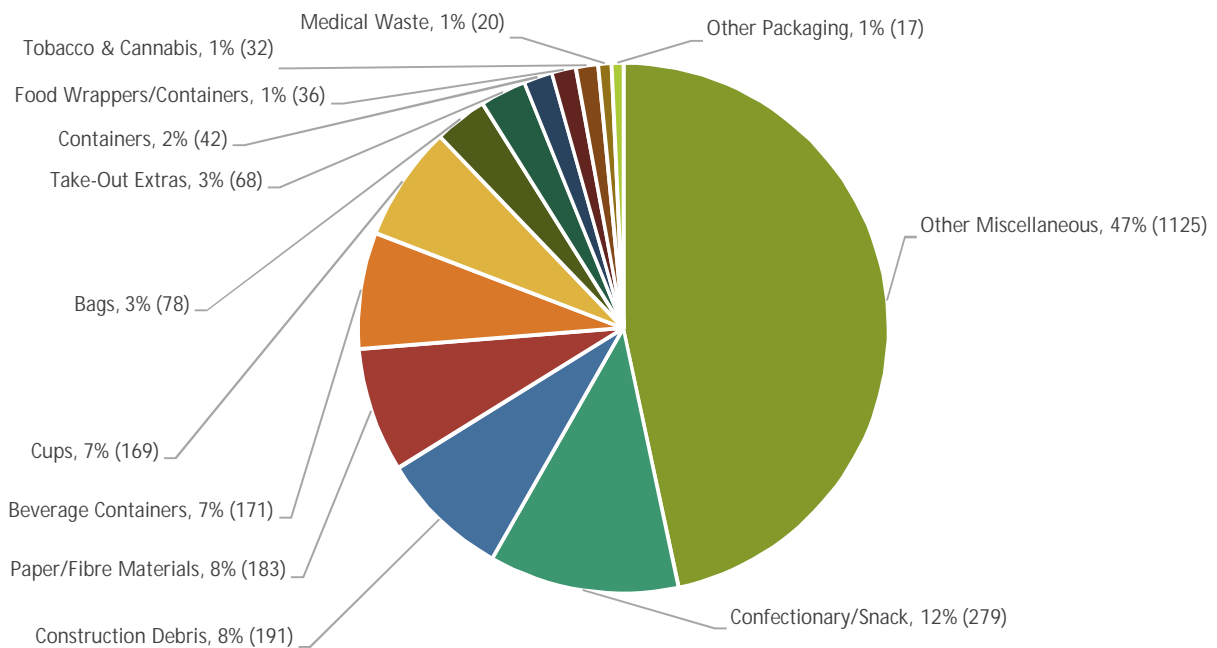
### Large Litter Results

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 2022, a total of 2,411 large litter items were observed, with an average of 19.6 pieces per site. The average number of large litter items per metre of roadway audited was 0.33 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 (47%). Other Miscellaneous litter included items such as miscellaneous paper, plastic, as well as household items and cosmetics. Confectionary/Snack (12%), Construction Debris (8%) and Paper/Fibre Materials (8%) were the next most common categories of litter recorded.



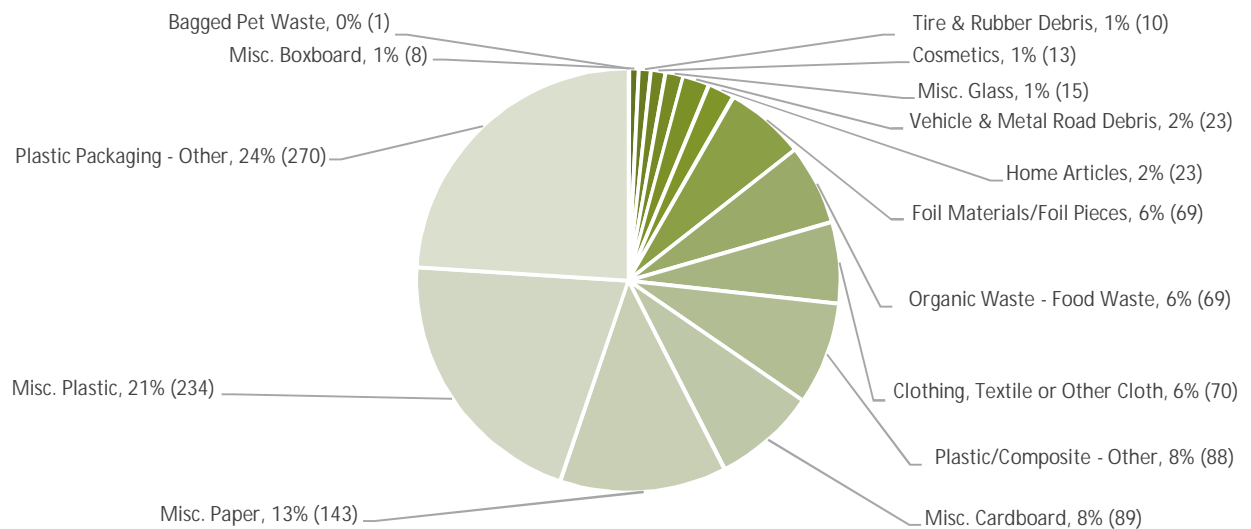
**Figure 1: Large Litter Items by Category**

### 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 109 sub-categories is provided in the subsections below. The subsections are presented in order of the largest category observed to the smallest category observed.

#### Other Miscellaneous (47%)

Other Miscellaneous was the largest category observed in 2022 and represented 47% of all large litter. The primary sub-categories assessed in 2021 included: Plastic Packaging – Other (24%), Miscellaneous Plastic (21%) and Miscellaneous Paper (13%). These three primary sub-categories represented materials (packaging, plastic and paper) that did not fit into any other specific sub-categories and/or could not be identified. Figure 2 illustrates the breakdown of this category.

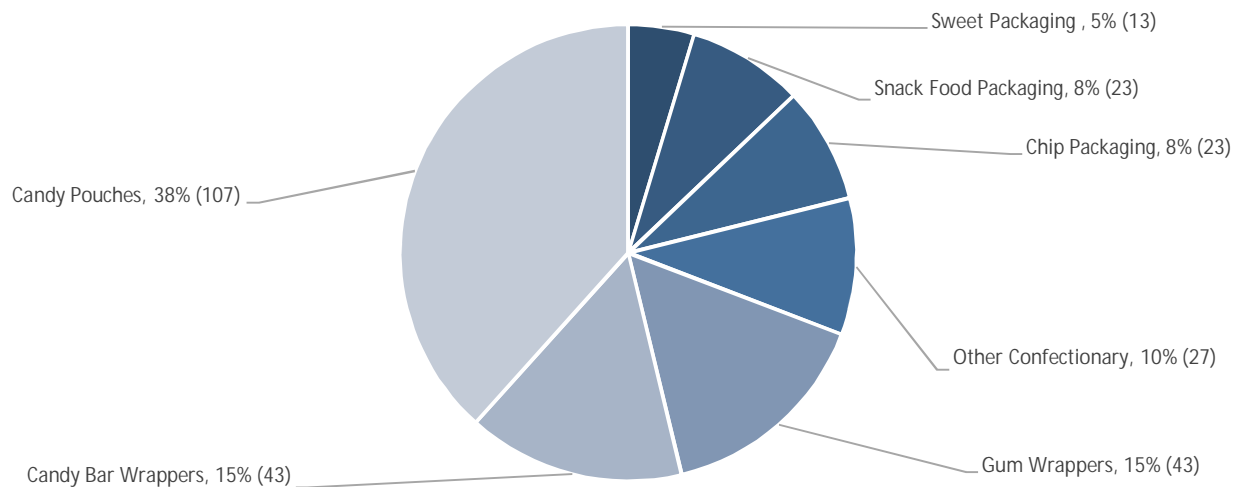


**Figure 2: Other Miscellaneous Composition**



### Confectionary/Snack (12%)

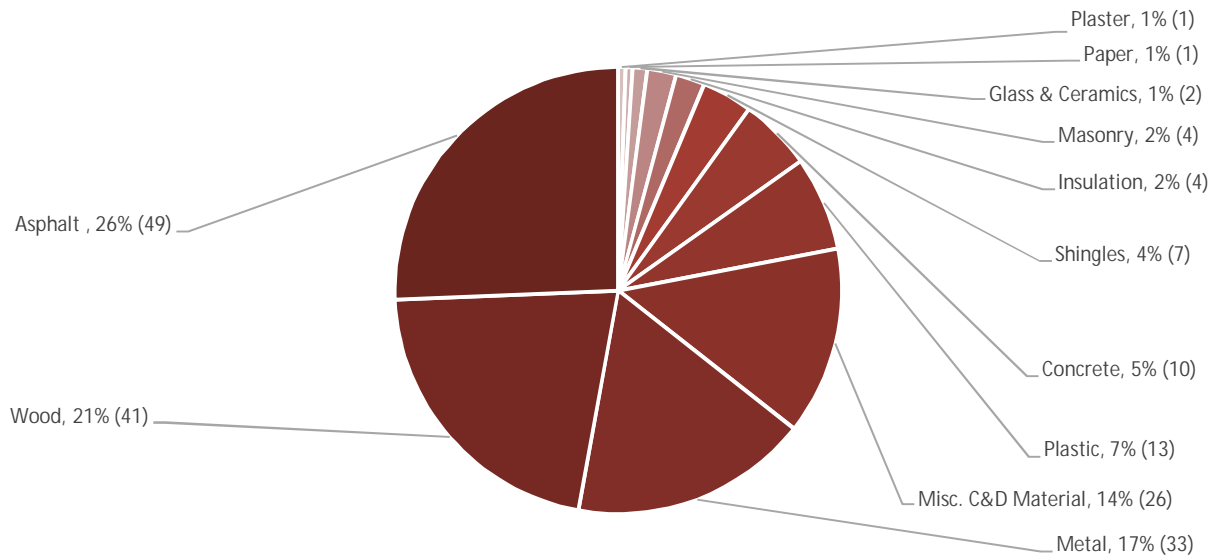
Confectionary/Snack was the second largest category observed in the 2022 roadside litter audits, representing 12% of the total large litter. Candy Pouches was the largest subcategory (38%), followed by Candy Bar Wrappers (15%) and Gum Wrappers (15%). Figure 3 illustrates the breakdown of the Confectionary/Snack category.



**Figure 3: Confectionary/Snack Composition**

### Construction Debris (8%)

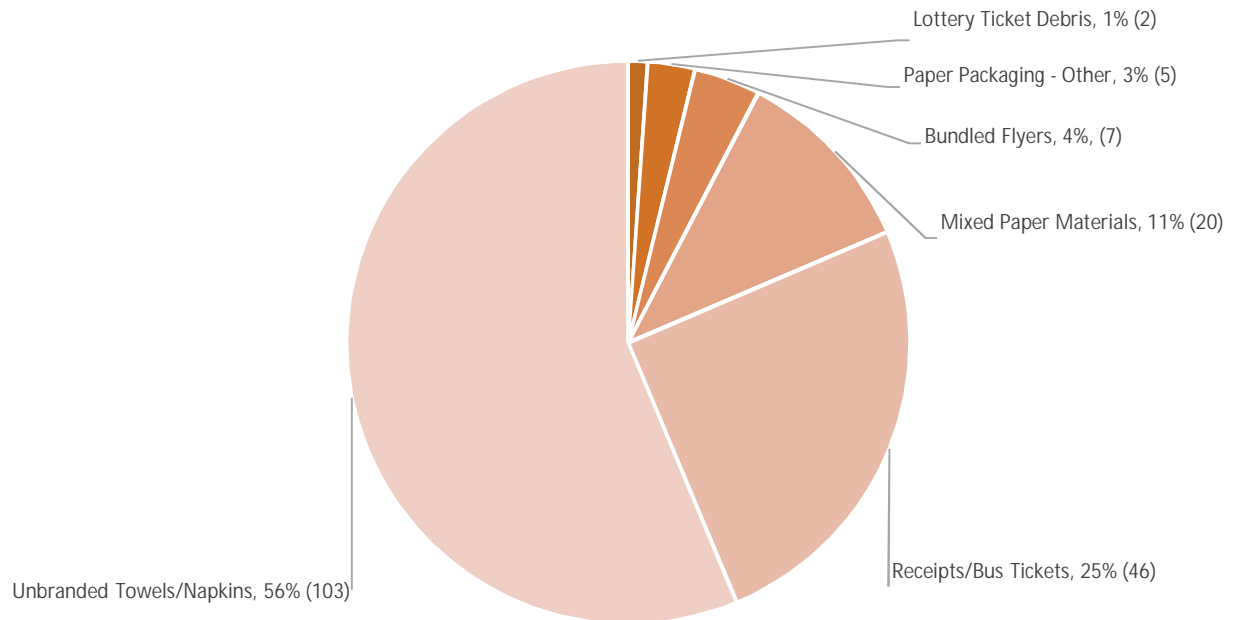
Construction Debris was the third largest category observed in the 2022 roadside litter audits and represented 8% of all large litter. Figure 4 illustrates the breakdown of this category. The sub-categories that comprised the majority of the Construction Debris were Asphalt (26%), Wood (21%) and Metal (17%). It is noted that the Miscellaneous C&D Material (14%) sub-category was comprised of construction and demolition debris materials that did not fit into the other categories. Examples of items found in this sub-category include duct tape and flagging tape.



**Figure 4: Construction Debris Composition**

### Paper/Fibre Materials (8%)

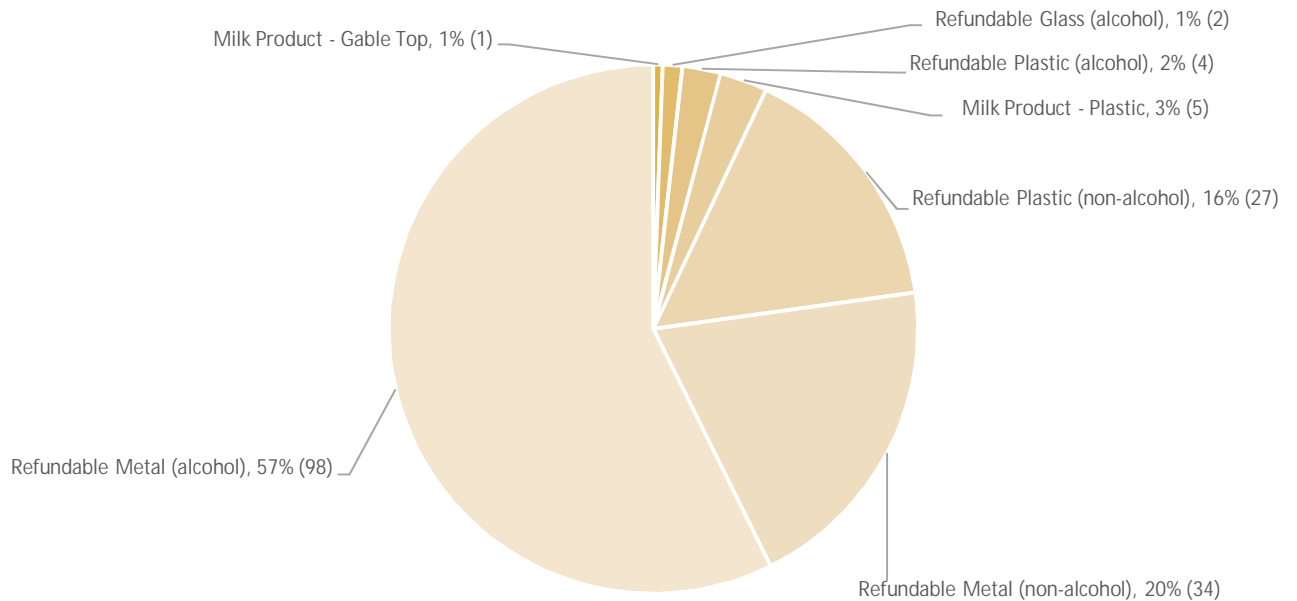
Paper/Fibre Materials also represented 8% of all large litter observed in 2022. The most frequently observed sub-categories for Paper/Fibre Materials were Unbranded Towels/Napkins (56%) and Receipts/Bus Tickets (25%). Figure 5 illustrates a breakdown of the results for the Paper/Fibre Materials sub-category.



**Figure 5: Paper/Fibre Materials Composition**

### Beverage Containers (7%)

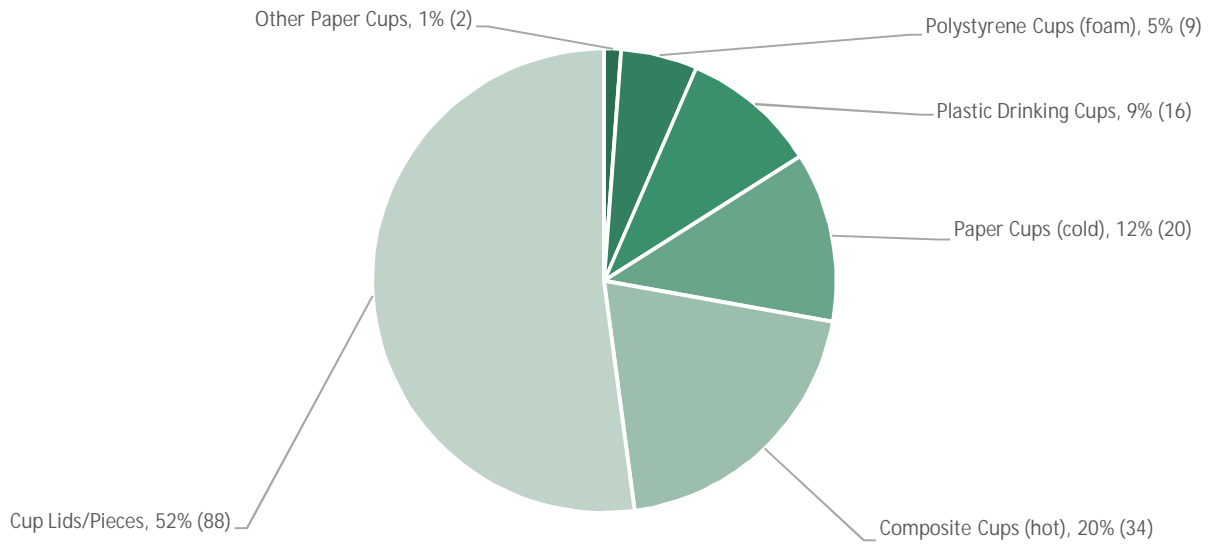
Beverage Containers represented 7% of all large litter observed in the 2022 roadside litter audit. The largest sub-categories evaluated for Beverage Containers were Refundable Metal (alcohol) (57%), Refundable Metal (non-alcohol) (20%), and Refundable Plastic (non-alcohol) (16%). Figure 6 provides the detailed breakdown of this category.



**Figure 6: Beverage Containers Composition**

### Cups (7%)

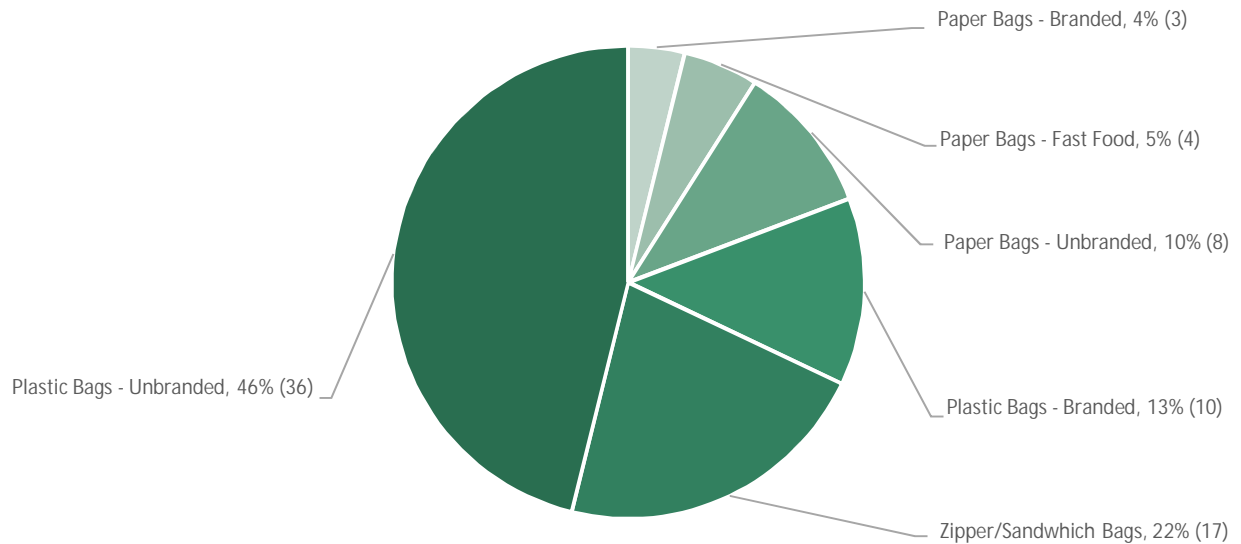
Cups also accounted for 7% of all large litter observed in the 2022 audits. The largest sub-categories evaluated for Cups were Cup Lids/Pieces (52%), Composite Cups (hot) (20%) and Paper Cups (cold) (12%). Figure 7 illustrates the breakdown of the Cups category.



**Figure 7: Cups Composition**

### Bags (3%)

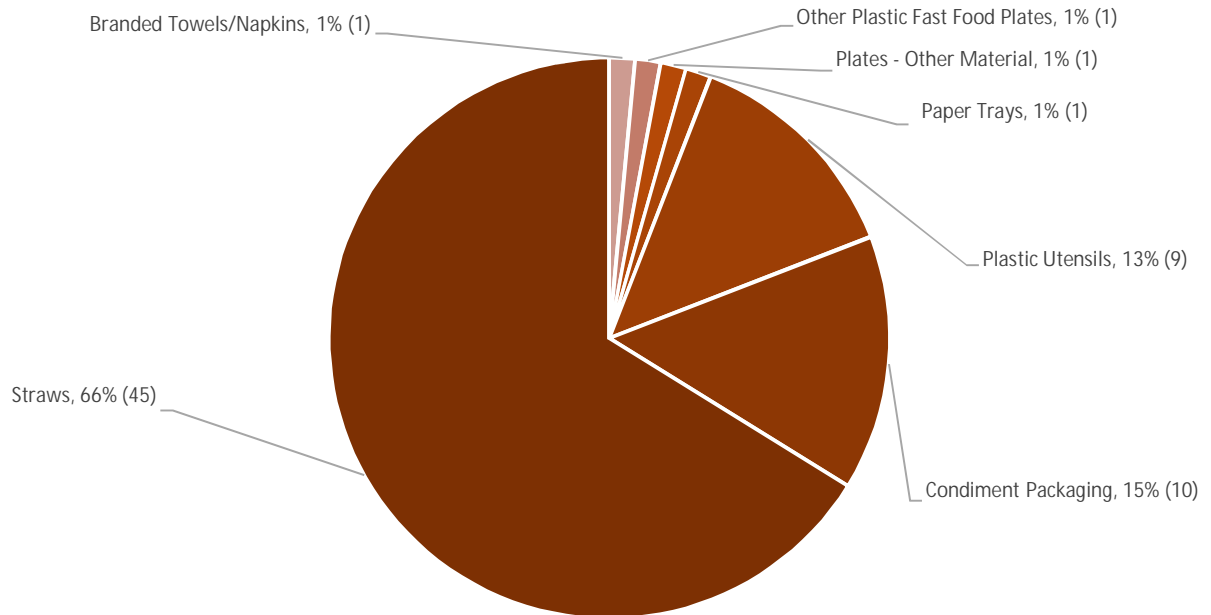
Bags represented 3% of all large litter observed in 2022. The largest sub-categories evaluated were Plastic Bags – Unbranded (plastic bags without an identifiable source) (46%), Zipper Bags/Sandwich Bags (22%) and Plastic Bags - Branded (13%). Figure 8 illustrates the composition of the Bags category. It is noted that New Brunswick does not have a province-wide ban on plastic bags; however, the regions of Moncton and Saint John have by-laws in place banning the use of plastic bags. The percentage of bags in the cities of Moncton and Saint John were 1% and 3%, respectively.



**Figure 8: Bags Composition**

### Take-Out Extras (3%)

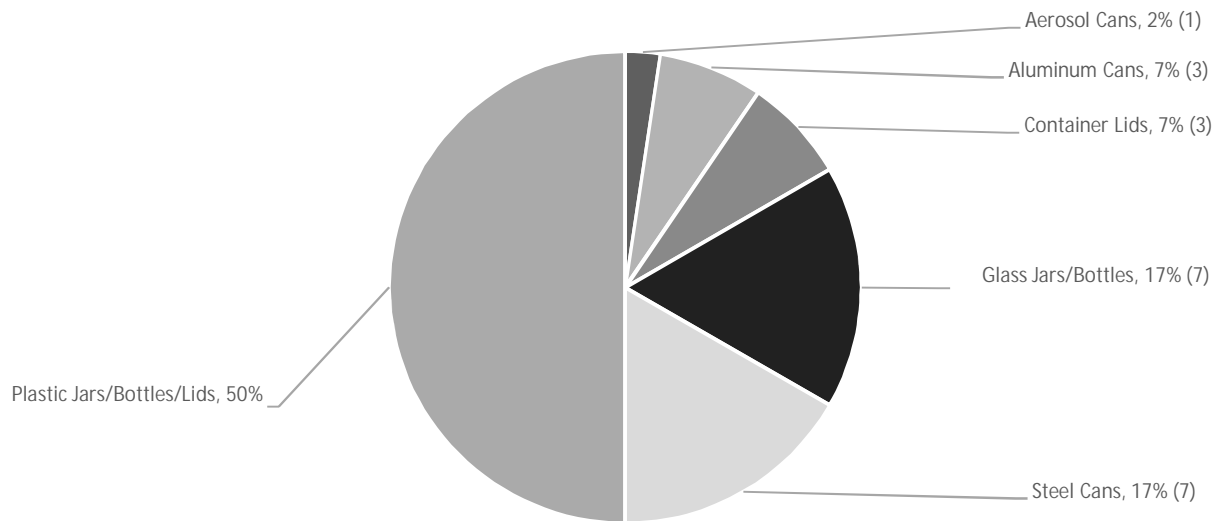
Take-Out Extras also accounted for 3% of the large litter observed. This category predominantly consisted of Straws (66%), followed by Condiment Packaging (15%) and Plastic Utensils (13%). Figure 9 illustrates the breakdown of sub-categories for the Take-Out Extras category.



**Figure 9: Take-Out Extras Composition**

### Containers (2%)

Containers accounted for 2% of the overall large litter observed for the 2022 audits. The Containers category predominantly consisted of Plastic Jars/Bottles/Lids (50%), followed by Steel Cans (17%) and Glass Jars/Bottles (17%). Figure 10 illustrates the results of the Containers category.

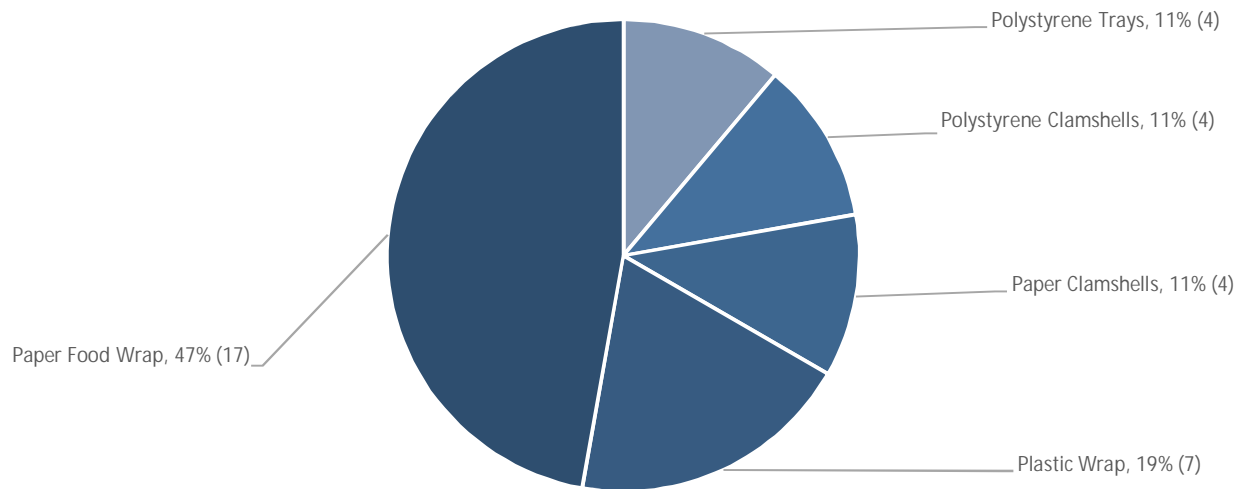


**Figure 10: Containers Composition**



### Food Wrappers/Containers (1%)

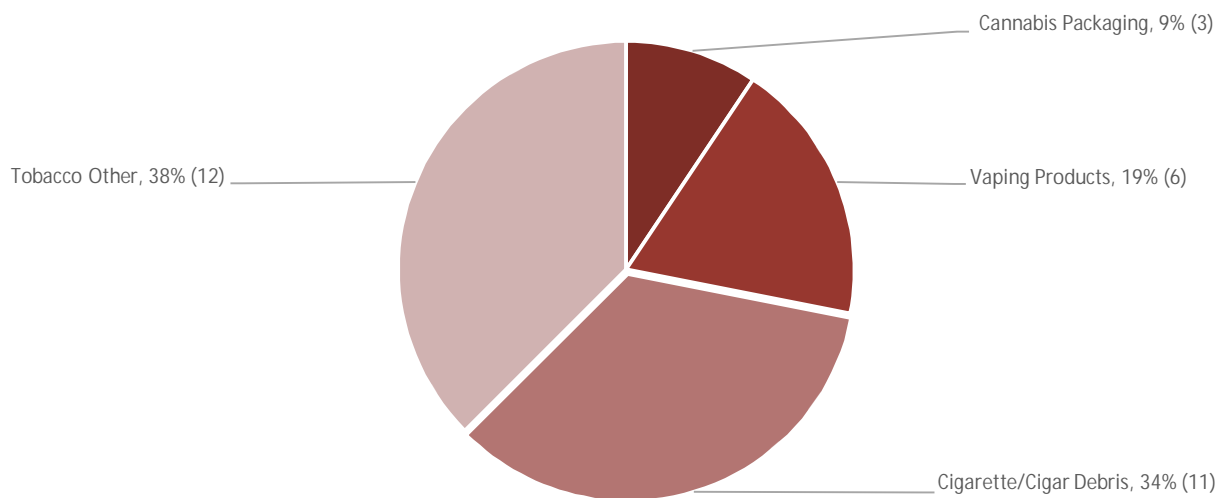
Food Wrappers/Containers accounted for 1% of the large litter observed. Food Wrappers/Containers was largely comprised of Paper Food Wrap (47%) and Plastic Wrap (19%). Figure 11 illustrates the breakdown of this category.



**Figure 11: Food Wrappers/Containers Composition**

### Tobacco and Cannabis (1%)

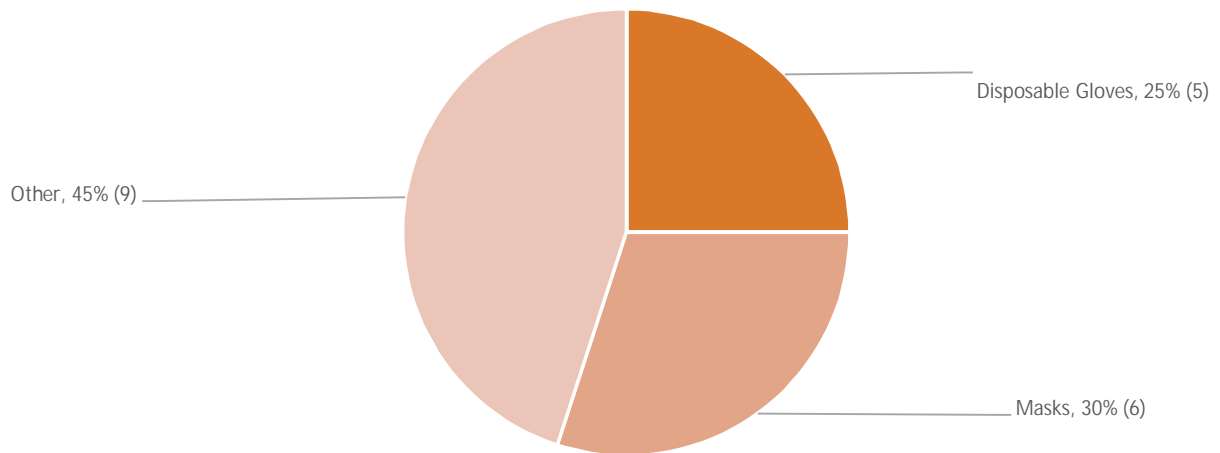
Tobacco and Cannabis also accounted for 1% of the large litter observed. The primary sub-categories assessed were Tobacco Other (38%) and Cigarette/Cigar Debris (34%). The sub-category Tobacco Other includes cigarette packaging, cellophane wrapping, matches and lighters. It is also important to note that all cigarette butts observed are included within small litter counts. This category also includes vaping products, which accounted for 19% of the overall category. Figure 12 illustrates the breakdown of the Tobacco and Cannabis category.



**Figure 12: Tobacco and Cannabis Composition**

### Medical Waste (1%)

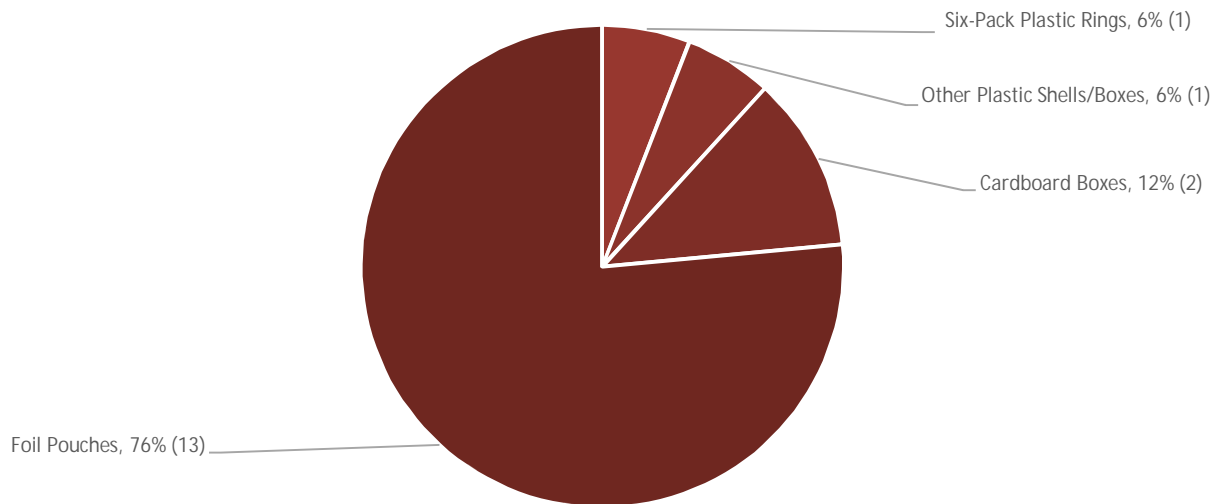
Medical Waste also represented 1% of the large litter items observed. Within this category, 45% was Other, which included miscellaneous medical waste such as puffers, pill bottles/vials and band aids. This category also consisted of masks (30%) and disposable gloves (25%). It is anticipated that the COVID-19 pandemic would have led to an increase in litter in this category in recent years. Figure 13 illustrates the breakdown of the Medical Waste category.



**Figure 13: Medical Waste Composition**

### Other Packaging (1%)

In the 2022 audits, Other Packaging also represented 1% of all large litter observed. This category was predominantly composed of Foil Pouches (76%). The breakdown of Other Packaging is illustrated in Figure 14.



**Figure 14: Other Packaging Composition**

### 3.1.3 Large Litter by Sub-category

The most common sub-categories of large litter observed were Plastic Packaging – Other (11%), Miscellaneous Plastic (10%) and Miscellaneous Paper (6%). These three sub-categories fall under the Other Miscellaneous category, making up 27% of the category. Other Miscellaneous represented 47% of all large litter surveyed in 2022.

Table 5 illustrates the 20 most common large litter items observed (by sub-category) in the 2022 roadside litter audits. These 20 item types accounted for 73% of the total large litter items observed. The complete list of items is provided in Appendix F.

**Table 5: Top 20 Large Litter Items by Sub-Category**

Ranking	Sub-Category	Number Observed	Percentage of Total Large Litter Items Observed
1	Plastic Packaging - Other	270	11%
2	Misc. Plastic	234	10%
3	Misc. Paper	143	6%
4	Candy Pouches	107	4%
5	Unbranded Towels/Napkins	103	4%
6	Refundable Metal Beverage Containers (alcohol)	98	4%
7	Misc. Cardboard	89	4%
8	Cup Lids, Pieces lid, sleeves	88	4%
9	Plastic/Composite - Other	88	4%
10	Clothing, Textile, or Other Cloth	70	3%
11	Foil Materials/Foil Pieces	69	3%
12	Organic Waste - Food Waste	69	3%
13	Asphalt	49	2%
14	Receipts/Bus Tickets	46	2%
15	Straws	45	2%
16	Gum Wrappers	43	2%
17	Candy Bar Wrappers	43	2%
18	Wood	41	2%
19	Plastic Bags - Unbranded	36	1%
20	Composite Cups (hot)	34	1%
Total Top 20		1,765	73%

### 3.1.4 Large Litter by Sites

The ten litter sites having the greatest number of large litter pieces are listed below in Table 6. A full ranking of sites is provided in Appendix G.

The site with the most accumulated large litter was Site 33-2 with 143 pieces of large litter observed. Site 33-2 is located along a four-lane commercial street in Saint John, adjacent to a Tim Hortons. A traffic light was also present along the road, adjacent to the audit site. At the time of the audit, the curb and grass line were acting as litter catchment points. It was also noted that there was no Tim Hortons branded litter found at this site.

The second highest large litter count was recorded at Site 16-2 with 110 pieces. Site 16-2 is located along a four-lane commercial road in Moncton, adjacent to a Walmart and a number of other retail businesses. A traffic light was also present along the road adjacent to the audit site. At the time of the audit, the curb and grass line were acting as litter catchment points.

The site with the third highest accumulated large litter was Site 31-2 with 85 pieces of large litter. Site 31-2 is located in a light industrial area in Saint John. At the time of the audit, a fence, curb and grass line were acting as litter catchment points.

**Table 6: Large Litter Site Rankings**

Ranking	Site Number	Region Service Commission	Community	Number of Pieces of Large Litter
1	33-2	9 -Fundy	Saint John	143
2	16-2	7 - Southeast	Moncton	110
3	31-2	9 - Fundy	Saint John	85
4	36-1	9 - Fundy	Musquash	84
5	4-1	2 - Restigouche	Campbellton	75
6	42-1	11 - Fredericton	Hanwell	68
7	8-1	4 - Acadian Peninsula	Tracadie-Sheila	68
8	17-3	7 - Southeast	Moncton	62
9	31-3	9 - Fundy	Saint John	59
10	26-3	7 - Southeast	Beaubassin East	58

### 3.1.5 Large Litter by Land Use

Sites were categorized as rural or urban. Appendix H provides a breakdown of the number of sites that were categorized as urban versus rural, along with a breakdown of the large litter composition for these

two categories of sites. This analysis, summarized in Table 7, indicated that urban sites contained more large litter on average compared to rural sites.

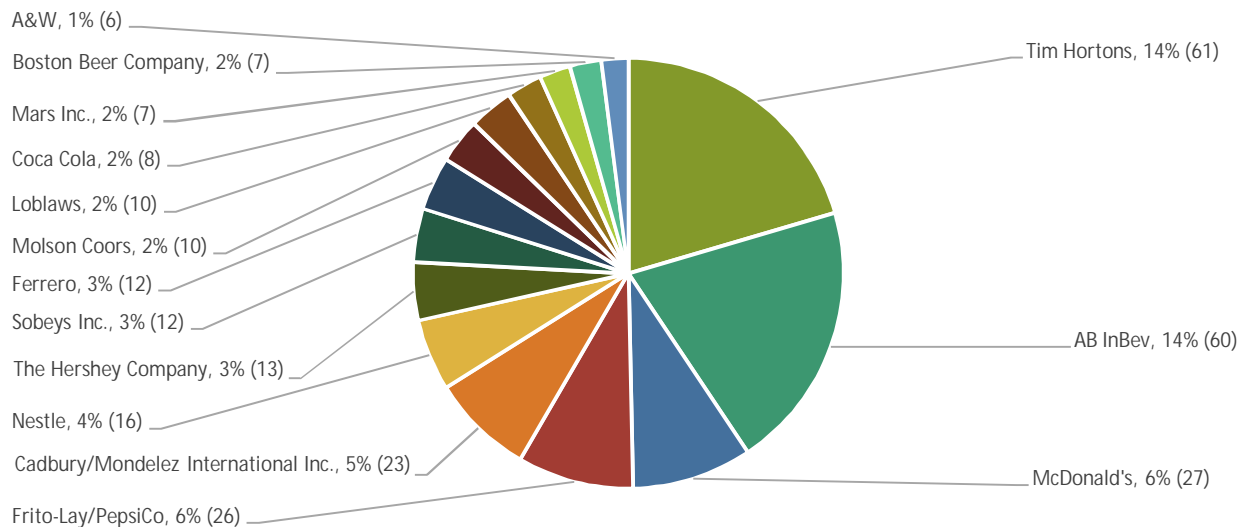
**Table 7: Large Litter by Land Use**

Land Use	Number of Litter Sites	Average Large Litter Count per Site
Rural	49	17.1
Urban	74	21.2

### 3.1.6

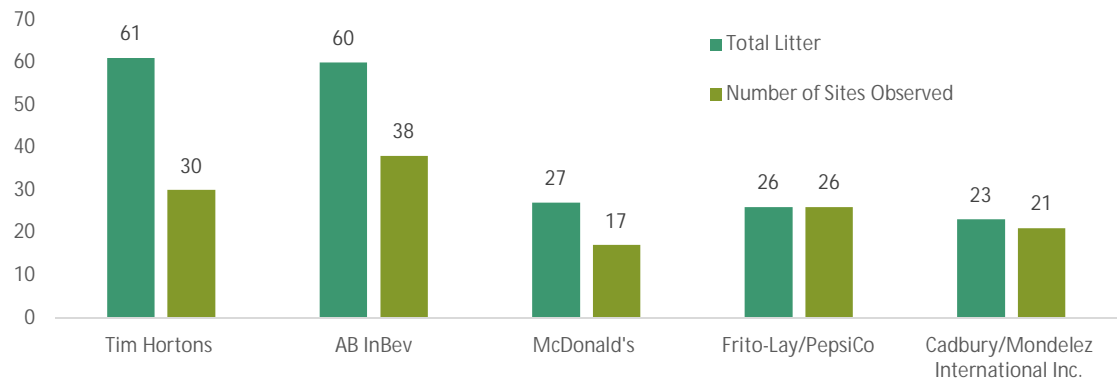
#### Large Litter by Brand

All brands observed during the large litter audits were identified and sorted by parent brand. Figure 15 illustrates the top 15 parent brands identified. The full list is provided in Appendix I. In total, 444 branded litter items were observed, representing 93 parent brands and 18% of the total large litter. The most common parent brands observed were Tim Hortons and AB InBev, each representing 14% of the total branded litter. 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 15: Top 15 Parent Brands**

Figure 16 shows the top five parent brands along with the number of audit sites at which they were identified. As illustrated on Figure 16, litter from the top five parent brands were distributed across multiple sites, and were not concentrated at only a few. This indicates that branded litter is a widespread concern across the province.

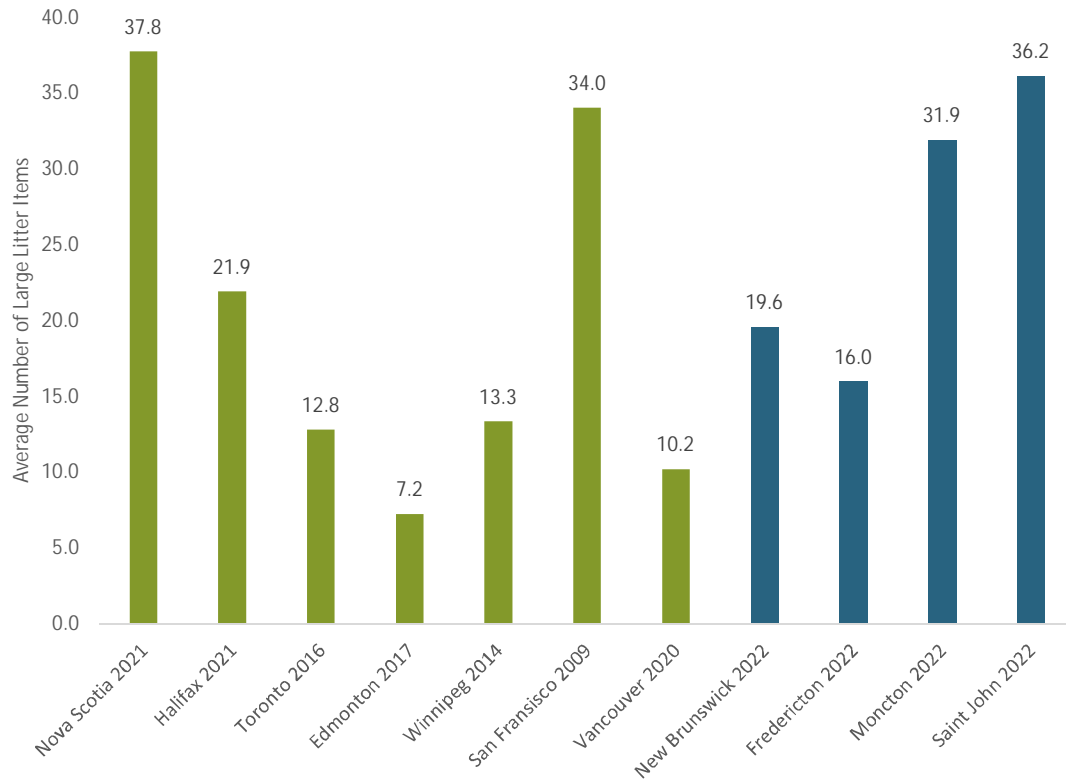


**Figure 16: Distribution of Top 5 Parent Brands**

### 3.1.7 Large Litter Results Compared to Other North American Municipalities

Large litter audits have been completed for several North American municipalities over the last few years. These assessments audited large litter in similar categories using a similar methodology as this study. Figure 17 illustrates the average number of large litter items per site for each municipality. It is noted that the comparison audits, with the exception of Nova Scotia, were completed for cities with regular (often daily) street cleaning, whereas this audit was undertaken for the Province of New Brunswick as a whole. For this reason, the average for all litter sites, as well as for just the sites located in the urban Fredericton, Moncton and Saint John areas were illustrated for comparison.



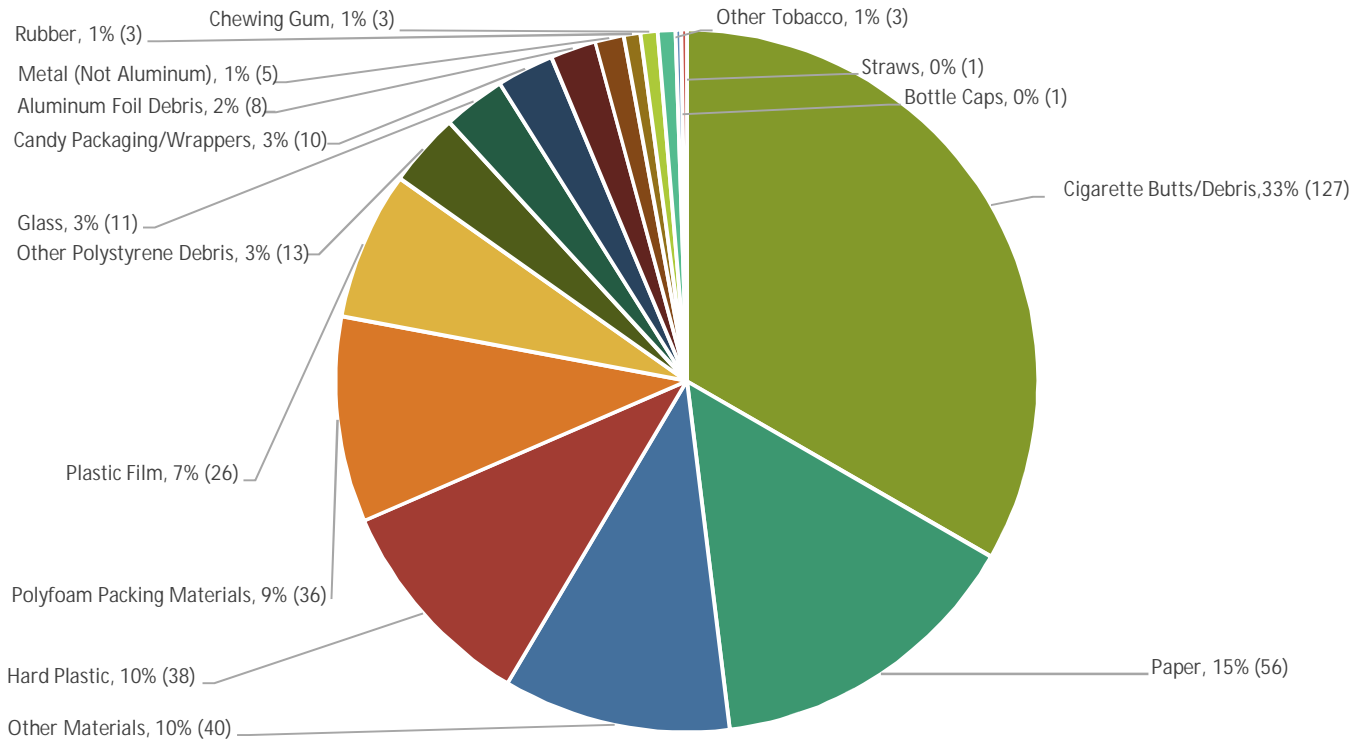


**Figure 17: Average Large Litter Count**

Additional comparison tables are provided in Appendix J. 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. This section reviews small litter by category and site. The total quantity of small litter observed was 381 pieces. This equates to an average of 3.1 pieces per audit, which can be extrapolated to approximately 186 pieces per site (or 3.1 pieces per metre of roadway audited). The most common categories of small litter observed were Cigarette Butts/Debris (33%), Paper (15%), Other Materials (10%) and Hard Plastic (10%). Figure 18 illustrates the results graphically.



**Figure 18: Small Litter Composition 2022**

### 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 K.

The site with the most accumulated small litter was Site 16-2 with 39 pieces of small litter observed. Site 16-2 is located in Moncton, adjacent to a Walmart. At the time of the audit, a curb and grass line were acting as litter catchment points.

The second highest small litter count was recorded at Site 30-2 with 37 pieces. Site 30-2 is located in Saint John, adjacent to commercial/institutional buildings, including the Canada Games Aquatic Centre. At the time of the audit, a curb and grass line were acting as litter catchment points.

The site with the third highest accumulated small litter was Site 8-1 with 23 pieces of small litter. Site 8-1 is located in Tracadie-Sheila, adjacent to a commercial area, which included a Tim Hortons, McDonald's and Atlantic Superstore. At the time of the audit, the curb was acting as a litter catchment point.

Of note, four of the top ten sites (16-2, 8-1, 31-3 and 42-1) were also within the top ten sites for large litter. Sites 16-2 and 8-1 were discussed above. Sites 31-3 and 42-1 were both comprised of high grass. However, Site 31-3 was in a residential area with hedges as a litter catchment point, whereas Site 42-1 was in an industrial area with a fence and roadside ditch as litter catchment points.

**Table 8: Small Litter Site Rankings**

Ranking	Site Number	Region	Community	Number of Pieces of Small Litter
1	16-2	7 - Southeast	Moncton	39
2	30-2	9 - Fundy	Saint John	37
3	8-1	4 - Acadian Peninsula	Tracadie-Sheila	23
4	31-3	9 - Fundy	Saint John	14
5	15-1	6 - Kent	Saint-Edouard-de-Kent	11
6	42-1	11 - Fredericton	Hanwell	10
7	16-3	7 - Southeast	Moncton	9
8	32-2	9 - Fundy	Saint John	9
9	41-2	11 - Fredericton	Fredericton	8
10	17-1	7 - Southeast	Saint John	8

### 3.2.2 Small Litter by Land Use

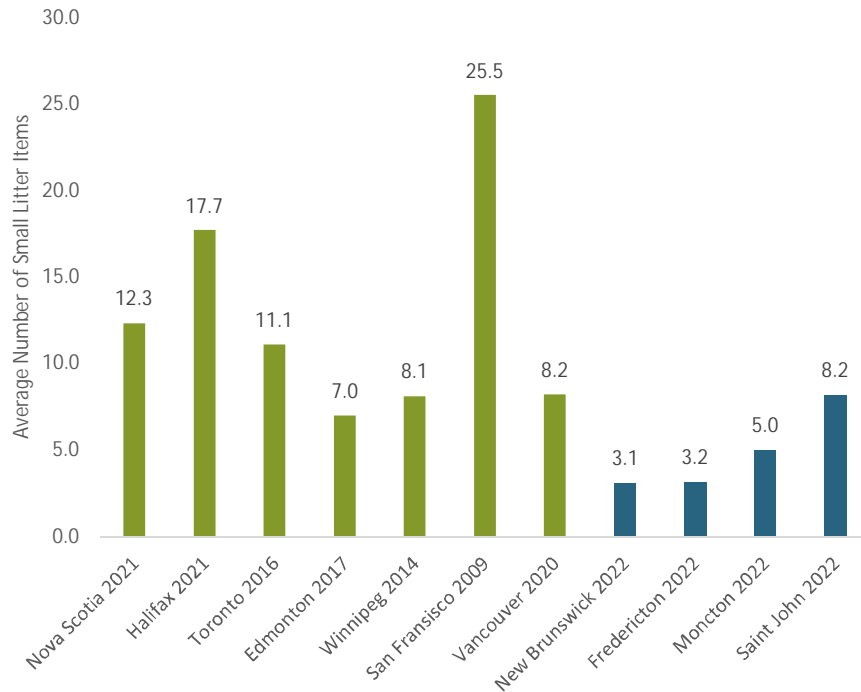
Sites were categorized as either urban or rural. Appendix L provides a breakdown of the number of sites that were categorized as urban versus rural, as well as a breakdown of small litter composition for each category. This analysis, summarized in Table 9, indicated that urban sites contained more small litter on average compared to rural sites.

**Table 9: Small Litter by Land Use**

Land Use	Number of Litter Sites	Average Large Litter Count per Site
Rural	49	1.5
Urban	74	4.1

### 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 a similar methodology as this study. Figure 19 illustrates the average number of small litter items per site for each municipality. Since the comparison audits were performed on cities (with the exception of Nova Scotia), data is provided for both the province of New Brunswick as a whole, as well as the audit sites located within the urban areas of Fredericton, Moncton, and Saint John.



**Figure 19: Average Small Litter Items per Site**

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

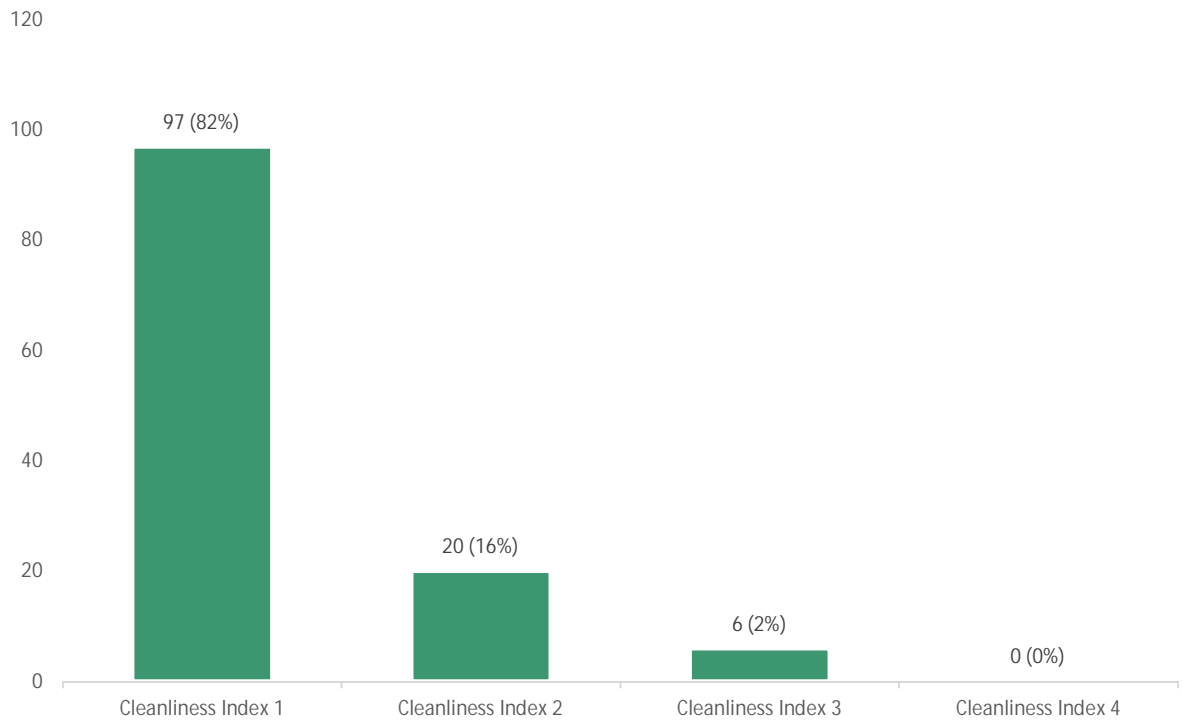
### 3.3 Visual Assessments of Litter Sites

As part of the site surveys, Dillon collected information regarding the area of the audit sites (Appendix O). 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 visual cleanliness rankings are provided in Appendix E.

As illustrated on Figure 21, 82% of sites were given the cleanliness index ranking of 1. An additional 16% were ranked as a 2, 2% were ranked as a 3 and 0% were ranked as having a cleanliness index of 4.



**Figure 20: Visual Assessment Ranking of All Litter Sites**

Overall, the sites audited had an average cleanliness index ranking of 1.3.

## 2012 Roadside Litter Audit

A previous litter survey was conducted in 2012, as presented in the 2012 Litter Survey Report (Recycle NB, 2012). This audit also counted accumulated litter, observing the types of waste and brands that were found. Similar to the 2022 audit, the 2012 audit pre-selected sites randomly. However, the 2022 audit site selection was based on the population of each RSC whereas the 2012 audit conducted one survey for every 20 km of roadway, including highways. The 2012 audit also utilized similar site boundary measurements with each site measuring 60 metres long, by 6 metres wide. Furthermore, the 2012 audit methodology categorized the types of waste that were found, by dividing litter into 14 main categories:

- Alcoholic Beverages;
- Automotive Parts;
- Bags;
- Beverage Containers;
- Construction and Demolition;
- Confectionary Products;
- Cups;
- Other Containers;
- Other Miscellaneous;
- Other Packaging;
- Paper and Fibre Materials;
- Printed Materials;
- Quick Service; and
- Tobacco Products.

Although many of these categories are similar to those in the 2022 audit, it is important to note that the litter observed in the 2012 audit was not divided into large and small litter. It is also important to note that in the 2012 audit, the Tobacco Products category did not include cigarette butts, and cigarette butts were excluded from the audit entirely. Over the period of a decade, some adjustments were required to some of the categories, including the addition of cannabis products following the legalization in Canada in 2018. A category for medical waste was also created following the COVID-19 pandemic in 2020. Despite similarities between the 2012 and 2022 audits, there are significant differences within the methodologies that do not allow for the results to be directly compared.

During the 2012 litter audit, a total of 7,270 pieces of litter were observed, with an average number of 17.2 pieces of litter per site. Based on the results, the most commonly identified category in 2012 was Quick Service, representing nearly 24% of the litter observed. Other Miscellaneous as well as Paper and Fibre Materials were also commonly observed, each representing nearly 13% of the total litter. With regards to branded litter, the most commonly observed brands were Tim Hortons (27%), McDonald's (7%) and Budweiser (7%).

## 5.0 Quality Assurance

Dillon employed quality assurance (QA) procedures within the litter audit methodology. These procedures related to operator input, litter categorization, 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 and the categorization of materials. Field team personnel also received training 'in the field' on sample audit sites to confirm proper counting and categorization 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

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 2022 roadside litter audit results, is a “snapshot” in time. These results only reflect the conditions of the period of time in which litter was observed. 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 from October 5 to November 10, 2022 are those reflected in this report.

Large litter was observed at all audit sites, with a total of 2,411 pieces observed or an average of 19.6 pieces per site. The most common primary categories for large litter observed were Other Miscellaneous (47%), Confectionary/Snack (12%), Construction Debris (8%) and Paper/Fibre Materials (8%). The most common sub-categories of large litter observed were Plastic Packaging – Other (11%) and Miscellaneous Plastic (10%), both of which are sub-categories of Other Miscellaneous.

Litter with identifiable brands represented 18% of the total large litter collected. Of these, the most common brands observed were Tim Hortons (14%), AB in Bev (14%), McDonald’s (6%), Frito-Lay/PepsiCo (6%) and Cadbury/Mondelez International Inc. (5%). It is noted that the results from the 2022 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 this study were compared to other North American municipalities where a comparable litter audit methodology was employed. These included Toronto, Edmonton, Winnipeg, San Francisco, Vancouver, Halifax and the Province of Nova Scotia as a whole. New Brunswick’s average large litter count (19.6 pieces) was comparable to those of the other jurisdictions, where averages ranged from 7.2 to 37.8 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 (with the exception of Nova Scotia), the audit sites within the urban areas of Fredericton, Moncton and Saint John were isolated to allow for a more representative comparison. The average large litter results for Fredericton were relatively low, with an average large litter count of 16.0, whereas the average large litter counts for Moncton and Saint John were high at 31.9 and 36.2, respectively.

The small litter audit involved examining three sections within each audit site. The total quantity of small litter observed was 381 pieces or 3.1 pieces per site. This extrapolates to an average small litter count of approximately 186 pieces per site. The average small litter counts for the sites located in the urban Fredericton and Moncton areas were 3.2 and 5.0, respectively. These average small litter counts are low compared to the comparison jurisdictions noted above, ranging from an average of 7.0 to 25.5. The urban area of Saint John was comparable, with an average small litter count of 8.2. The most common categories of small litter observed were Cigarette Butts/Debris (33%), Paper (15%), Other Material (10%) and Hard Plastic (10%).

Overall litter counts (large and small), as reported above, were correlated to urban and rural land uses. The analysis indicated that urban sites contained greater quantities of both large and small litter, compared to rural sites. Urban sites had an average large litter count of 21.2, whereas rural sites had an average large litter count of 17.1. Furthermore, urban sites had an average small litter count of 4.1, whereas rural sites had an average small litter count of 1.5.

## 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 Recycle NB or any of the RSCs throughout New Brunswick 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. Specific recommendations regarding future audits include the following:

- Future audits should follow the 2022 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;
- Plastic bags should continue to be audited to track the effect of the plastic bag bans in the Moncton and Saint John regions and compare these results to the rest of 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 20 pieces (1%) of the large litter audited in 2022 was categorized as Medical Waste (masks, disposable gloves, hand sanitizer bottles, etc.). Medical waste is an unfortunate result of the COVID-19 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

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The primary brands recorded in the province were Tim Hortons, AB in Bev, McDonald's, Frito Lay/PepsiCo and Cadbury/Mondelez International Inc. It is recommended to approach brands and companies as possible, to encourage their engagement in litter management.

# Appendix A

## *List of Audit Sites*

## Appendix A - List of Audit Sites

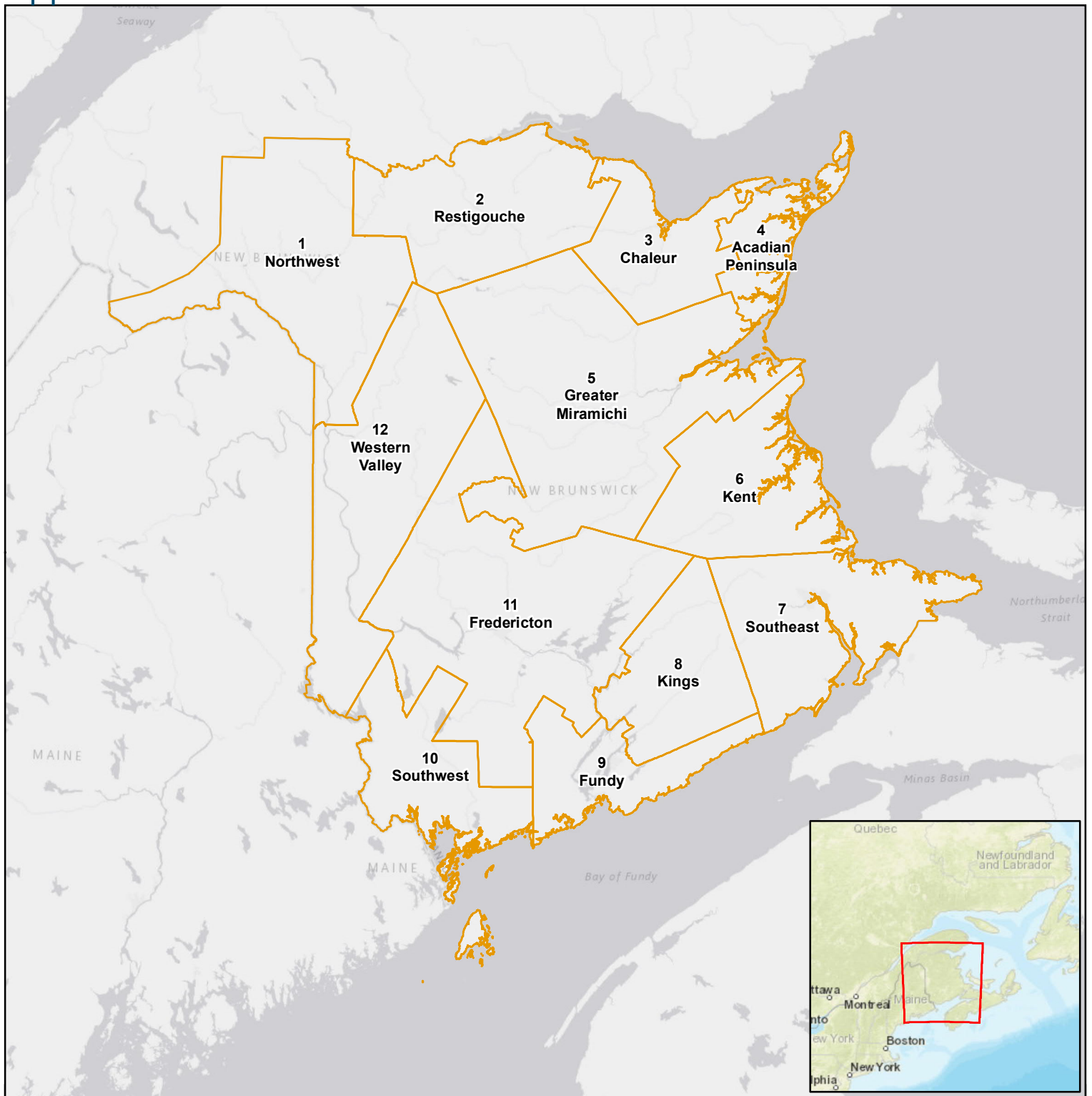
Table A1: List of Audit Sites

Regional Service Commission	Estimated Population	Number of Audit Locations	Site #	Sample Site 1			Sample Site 2			Sample Site 3			Sample Site 4								
				Starting Location	Direction	Urban/Rural	Starting Location	Direction	Starting Location	Direction	Starting Location	Direction									
1 Northwest	47,100	3	1	51 Avenue St Georges, Edmundston	NE on Avenue St Georges	Urban	261 Rue Victoria, Edmundston	NE on Rue Victoria	102 Chemin du Pouvoir, Edmundston	SE on Chemin du Pouvoir	186 34e Avenue	SE on 34e Avenue									
			2	223 Front Street, Grand Falls	SW on Front St	Urban	136 Church St, Grand Falls	NW on Church St	159 Pleasant Rd, Grand Falls	SW on Pleasant Rd	136 Bd Broadway, Grand Falls	NW on Bd Broadway									
			3	14 Ch. Rivière-Verte	N on Ch. Rivière-Verte	Rural	20 Chem. Soucy, Rivière-Verte	W on Chem. Soucy	13940 NB-144, Rivière-Verte	NE on NB-144	352 Chem. Davis, Rivière-Verte	S on Chem. Davis									
2 Restigouche	25,400	2	4	20 Duke St, Campbellton	SW on Duke St	Urban	78 NB-134, Campbellton	NW on NB-134	94 Dover St, Campbellton	W on Dover St	7 Arran St, Campbellton	NW on Arran St									
			5	31 Rue Marcoux, Balmoral	S on Rue Marcoux	Rural	122 Bernard Rd, Balmoral	NE on Bernard Rd	77 NB-275, Balmoral	NE on NB-375	326 Craig Rd, Charlo	NW on Craig Rd									
3 Chaleur	31,400	2	6	793 Archibald Rd, Belledune	SW on Archibald Rd	Rural	361 Archibald Rd, Belledune	S on Archibald Rd	100 Doyleville Rd	SW on Doyleville Rd	130 Jacquet River Dr, Belledune	SE on Jacquet River Dr									
			7	150 St Patrick St, Bathurst	E on St Patrick St	Urban	150 St George St, Bathurst	SW on St George St	550 Main Street, Bathurst	S on Main St	603 King Ave, Bathurst	S on King Ave									
4 Acadian Peninsula	47,000	3	8	3425 Rue Principale, Tracadie-Shellia	N on Rue Principale	Urban	552 Rivière-a-La-Truite St	NE on Rivière-a-la-Truite St	3763 Rue Luce, Tracadie-Shellia	S on Rue Luce	3388 Rue de la Chapelle, Tracadie-Shellia	SW on Rue de la Chapelle									
			9	168 All. Grande Allée, Caraquet	E on All. Grande Allée	Urban	140 W St Peter Blvd, Caraquet	SW on W St Peter Blvd	201 Rue Blanchard, Caraquet	W on Rue Blanchard	30 Rue Cormier, Caraquet	W on Rue Cormier									
			10	3097 Ch. Four Roads, Inkerman	SE on Ch. Four Roads	Rural	1005 NB-113, Inkerman	SE on NB-113	64 NB-350, Pokemouche	NE on NB-350	700 Chem. Pallot, Inkerman	NW on Chem. Pallot									
5 Greater Miramichi	37,600	3	11	390 Frances St, Miramichi	SE on Frances St	Urban	279 Newcastle Blvd, Miramichi	NE on Newcastle Blvd	260 Jane St, Miramichi	NE on Jane St	80 Elizabeth St, Miramichi	NW on Elizabeth St									
			12	31 MacLaggan Dr, Blackville	NE on MacLaggan Dr	Rural	37 Lockstead Rd, Blackville	SW on Lockstead Rd	128 Main St, Blackville	NW on Main St	227 NB-8	N on NB-8									
			13	5062 NB-108, Millerton	NE on NB-108	Rural	230 Parker Rd, Millerton	SW on Parker Rd	410 Williamstown Rd, Miramichi	SW on Williamstown Rd	41 Westwood Dr, South Esk	NE on Westwood Dr									
6 Kent	33,900	2	14	29 Court St, Richibucto	E on Court St	Urban	146 Rue Acadie, Richibucto	SE on Rue Acadie	9286 NB-134, Richibucto	NW on NB-134	138 Cunard St, Richibucto	NW on Cunard St									
			15	2 Ch. Côte Ste Anne, Saint-Edouard-de-Kent	NE on Côte Ste Anne	Rural	1961 Chemin St Gabriel, Saint-Anne-de-Kent	NE on Chemin St Gabriel	23 NB-505, Saint-Anne-de-Kent	NW on NB-505	831 NB-505, Richibucto-Village	SE on NB-505									
			16	80 Mapleton Rd, Moncton	S on Mapleton Rd	Urban	25 Plaza Blvd, Moncton	NW on Plaza Blvd	115 Walsh St, Moncton	NE on Walsh St	320 NB-128, Moncton	NE on NB-128									
7 Southeast	176,900	12	17	93 Shannon Dr, Moncton	SE on Shannon Dr	Urban	251 Twin Oaks Dr, Moncton	S on Twin Oaks Dr	27 Holland Rd, Moncton	NW on Holland Rd	16 Evergreen Dr, Moncton	SE on Evergreen Dr									
			18	99 Wynwood Dr, Moncton	W on Wynwood Dr	Urban	99 McAuley Dr, Moncton	S on McAuley Dr	131 Mill Rd, Moncton	S on Mill Rd	505 Rue du Collège, Moncton	S on Rue du Collège									
			19	740 Rue Boudreau, Dieppe	S on Rue Boudreau	Urban	17 Tranquille St, Dieppe	NW on Tranquille St	937 Melanson Rd, Dieppe	SE on Melanson Rd	233 Bedard St, Dieppe	S on Bedard St									
			20	540 Pinewood Dr, Riverview	E on Pinewood Dr	Urban	425 Pine Glen Rd, Riverview	SW on Pine Glen Rd	115 Henderson Ave, Riverview	N on Henderson Ave	425 Coverdale Rd, Riverview	SE on Coverdale Rd									
			21	505 MacNaughton Ave, Moncton	E on MacNaughton	Urban	115 Harrisville Blvd, Moncton	NE on Harrisville Blvd	775 Frenette Ave, Moncton	W on Frenette Ave	140 Granite Dr, Moncton	E on Granite Dr									
			22	36 Saffron Dr, Irishtown	NE on Saffron Dr	Rural	19 Josee Dr, Irishtown	SW on Josee Dr	755 Ammon Rd, Irishtown	SE on Ammon Rd	94 Scotch Settlement Rd, Irishtown	E on Scotch Settlement Rd									
			23	85 Rue Festival, Shediac	S on Rue Festival	Urban	90 Weldon St, Shediac	SW on Weldon St	69 Rue Gallagher, Shediac	NE on Rue Gallagher	387 Main St, Shediac	W on Main St									
			24	228 Chem. Vienneau, Cormier-Village	W on Chem. Vienneau	Rural	582 NB-945, Beaubassin East	NW on NB-945	329-NB 945, Beaubassin East	WSE on NB-945	382 Chemin Bas-Cap-Pelé, Beaubassin	N on Chemin Bas-Cap-Pelé									
			25	Upper Cape Rd corner of NB-960, Upper Cape	N on Upper Cape Rd	Rural	Corner of NB-960 and Vacation Ln, Upper Cape	NE on NB-960	Corner of NB-960 and Job Allen Rd, Upper Cape	NW on Job Allen Rd	1279 NB-960, Upper Cape	NE on NB-960									
			26	NB-950W corner of Shemogue Harbour Shore Rd., Petit-Cap	N on NB950W	Rural	2366 NB-950, Shemogue	SE on NB-950	14 Chemin de Lile, Beaubassin East	SW on Chemin de Lile	2112 NB-950, Petit-Cap	NE on NB-350									
			27	Forestdale Rd. corner of Main Street, Riverside-Albert	N on Forestdale Rd.	Rural	5985 NB-915, Riverside-Albert	S on NB-915	6060 Main St, Beaver Brook	NE on NB-114	5738 King St, Riverside-Albert	NW on King St									
8 Kings	20,400	2	28	10 Peter St, Sussex	S on Peter St	Urban	448 Main St, Sussex	SW on Main Street	46 Magnolia Ave, Sussex	SE on Magnolia Ave	126 Maple Ave, Sussex	NW on Maple Ave									
			29	Taylor Rd corner of NB-890W, Studholm Parish	NW on Taylor Rd.	Rural	1130 Knightville Rd, Knightville	NW on Knightville Rd	7 Whites Mountain Rd, Whites Mountain	NE on Whites Mountain Rd	Corner of NB-890 and Mountain Rd, Newtown	NE on Mountain Rd									
9 Fundy	123,000	8	30	110 Water St, Saint John	N on Water Street	Urban	50 Union St, Saint John	NW on Union St	48 Broad St, Saint John	SW on Broad St	163 Carmarthen St, Saint John	S on Carmarthen St									
			31	430 Grandview Ave, Saint John	NE on Grandview Ave	Urban	825 Bayside Dr, Saint John	SW on Bayside Dr	191 Red Head Rd, Saint John	S on Red Head Rd	93 Champlain Dr, Saint John	S on Champlain Dr									
			32	102 Courtenay Ave, Saint John	NE on Courtenay Ave	Urban	58 McDonald St, Saint John	SW on McDonald St	607 Loch Lomond Rd, Saint John	SE on Loch Lomond Rd	98 Coburg St, Saint John	N on Coburg St									
			33	105 Burpee Ave, Saint John	SE on Burpee Ave	Urban	152 Parks St, Saint John	S on Parks St	22 Rocky Terrace, Saint John	S on Rocky Terrace	115-101 Winter Street, Saint John	E on Winter St									
			34	663 Franklin Dr, Quispamsis	N on Franklin Dr	Urban	5 Sleepy Hollow Ln, Quispamsis	NW on Sleepy Hollow Ln	6-26 Rynton Crescent, Quispamsis	SW on Rynton Crescent	23 Elliot Rd, Quispamsis	SW on Elliot Rd									
			35	W Quaco Rd corner of New Line Rd, West Quaco	NW on W Quaco Rd	Rural	Corner of W Quaco Rd and Lighthouse Rd, West Quaco	NW on Lighthouse Rd	66 Mosher Hill Rd, West Quaco	N on Mosher Hill Rd	52 Main St, West Quaco	NW on Main Street									
			36	Stillwater Rd corner of Dam Rd, Musquash	S on Stillwater Rd	Rural	16 Thompson Dr, Musquash	NE on Thompson Dr	31 Malcolm Meehan Rd, Musquash	N on Malcolm Meehan Rd	126 W Branch Rd, Musquash	S on W Branch Rd									
10 Southwest	27,800	2	37	1441 Old Black River Rd, Saint John	S on Old Black River Rd	Rural	Corner of Bayside Dr and Proud Rd, Saint John	NW on Proud Rd	Corner of Cottage Rd and Berrymann St, Saint John	SW on Cottage Rd	Corner of Bayside Dr and Red Head Rd, Saint John	W on Red Head Rd									
			38	45 Union St, Saint Stephen	E on Union St	Urban	84 Queen St W, Saint Stephen	E on Queen St	56-50 Prince William St, Saint Stephen	W on Prince William St	300-280 Milltown Blvd, Saint Stephen	SW on Milltown Blvd									
			39	Upper Waweig Rd corner of McCready Rd, Waweig	N on Upper Waweig Rd	Rural	152 Upper Waweig Rd	SW on Waweig Rd	Waweig River Rd, corner of 760	Giles Rd, corner of 760	SW on Giles Rd										
11 Fredericton	131,600	9	40	504 Queen St, Fredericton	SE on Queen St	Urban	736 King St, Fredericton	NE on King St	120 Westmorland St, Fredericton	NW on Westmorland St	259 Brunswick St, Fredericton	NE on Brunswick St									
			41	205 Cambridge Cr, Fredericton	NE on Cambridge Cr	Urban	215 Woodbridge St, Fredericton	S on Woodbridge St	19 Bristol St, Fredericton	SW on Bristol St	134 Ascot Dr, Fredericton	S on Ascot Dr									
			42	82 Timothy Ave S, Hanwell	N on Timothy Ave	Urban	116 Greenview Dr, Hanwell	N on Greenview Dr	40 Casewood Dr, Hanwell	SE on Casewood Dr	75 Valcour Dr	SW on Valcour Dr									
			43	463 Broad St, Fredericton	S on Broad St	Urban	267 Longwood Dr, Fredericton	NE on Longwood Dr	63 Lexington Ln, Fredericton	E on Lexington Ln	502 Douglas Ave, Fredericton	S on Douglas Ave									
			44	Kee Rd corner of NB-616, Keswick Ridge	NE on Kee Rd	Rural	Corner of Rocky Rd and NB-616, Keswick Ridge	SE on Rocky Rd	350 Tripp Settlement Rd, Keswick Ridge	NE on Tripp Settlement Rd	22 Holyoke Ln, Keswick Ridge	NW on Holyoke Ln									
			45	81 MacDonald Ave, Oromocto	E on MacDonald Ave	Urban	1265 Onondaga St, Oromocto	NE on Onondaga St	76 Broad Rd, Oromocto	NE on Broad Rd	Corner of Waasis Rd and Miramichi Rd, Oromocto	E on Waasis Rd									
			46	Church Rd corner of Bartlett Ln, Maugeville	N on Church Rd	Rural	911 NB-105, Maugeville	NE on NB-105	1631 NB-105	SW on NB-105	2 NB-102, Oromocto	SE on NB-102									
			47	Clary Hill Rd corner of Pleasant Valley Rd, Nashwaak Bridge	NE on Clary Hill Rd	Rural	Corner of Pleasant Valley Rd and Fraser R, Nashwaak Bridge	SW on Fraser Rd	Corner of Pleasant Valley Rd and Ross Rd, Nashwaak Bridge	E on Ross Rd	Corner of NB 107 and Nashwaak W Rd, Nashwaak Bridge	S on Nashwaak W Rd									
12 Western Valley	34,000	2	48	Lime Kiln Rd corner of Silva Ln, Stanley	W on Lime Kiln Rd	Rural	22 Irishtown Rd, Stanley	SW on Irishtown Rd	Corner of English Settlement Rd and Red Rock Rd, Stanley	SW on Red Rock Rd	14 Giants Glen Rd, Stanley	NE on Giants Glen Rd									
			49	214 Barrett St, Perth-Andover	N on Barrett St	Urban	59 Hillcrest Dr, Perth-Andover	SW on Hillcrest Dr	55 McCarthy St, Perth-Andover	S on McCarthy St	15 Parkland Dr, Perth-Andover	SW on Parkland Dr									
50	136 Greenfield Rd, Greenfield	N on Greenfield Rd	Rural	11 Hilltop Crescent, Greenfield	SW on Hilltop Crescent	385 NB-110, Florenceville-Bristol	NE on NB-110	219 Greenfield Rd, Greenfield	S on Greenfield Rd												
<b>Totals</b>																					
				Total Urban			28			Total Rural			22			Total			50		
				Audited Site						Replaced Primary Site											
				Rural Site						Urban Site											

# Appendix B

## ***Site Locations***

# Appendix B – Site Locations



## NEW BRUNSWICK ROADSIDE LITTER AUDIT

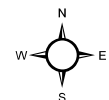
 Regional Service Commission Boundary

## OVERVIEW MAP FIGURE 1



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:2,500,000

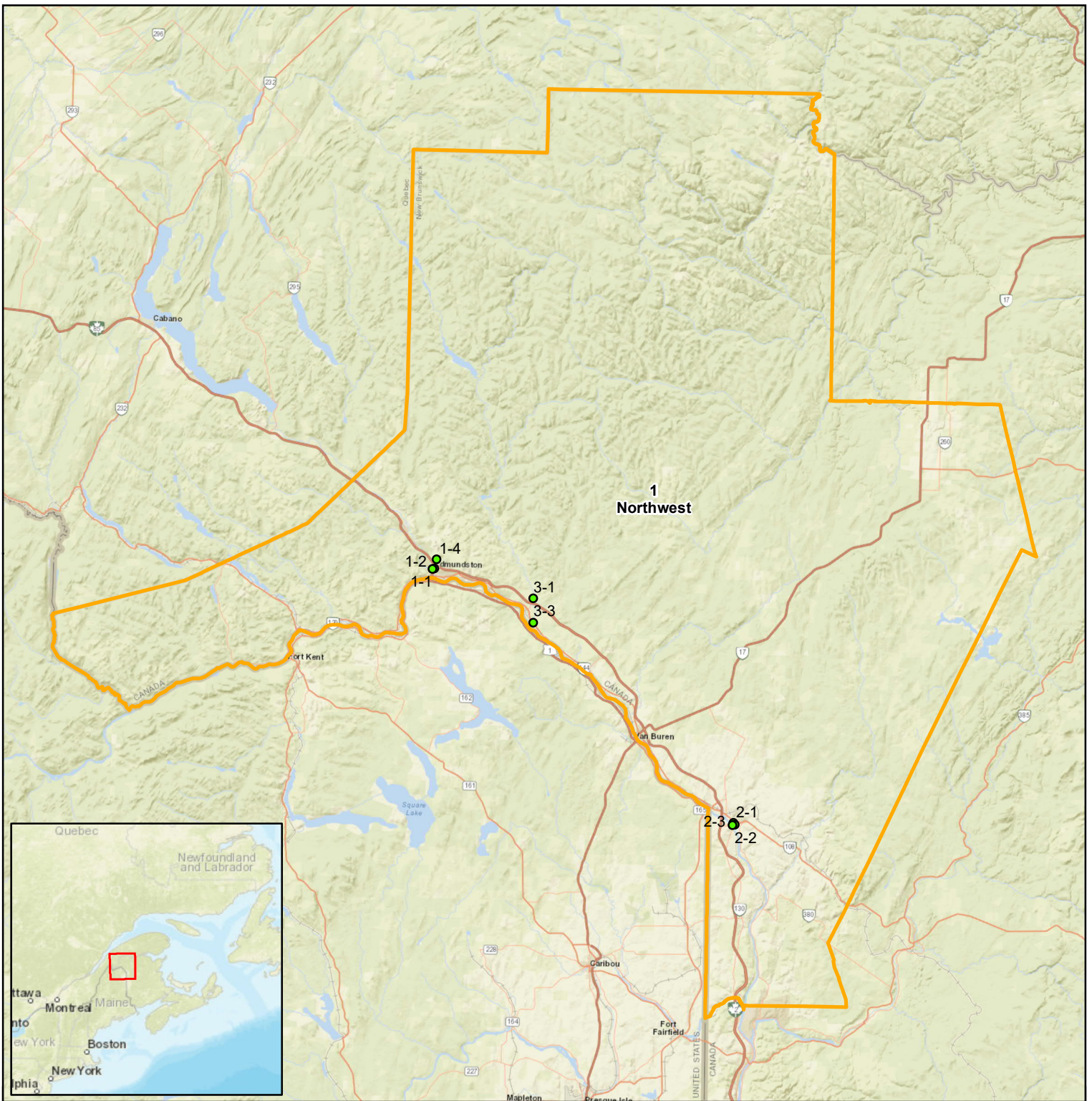
0 20 40 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06





# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

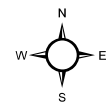
## NORTHWEST REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 2



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:784,375.63

0 5 10 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

## RESTIGOUCHE REGIONAL SERVICE COMMISSION AUDIT SITES

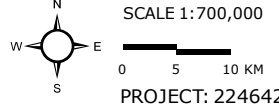
FIGURE 3



**DILLON  
CONSULTING**

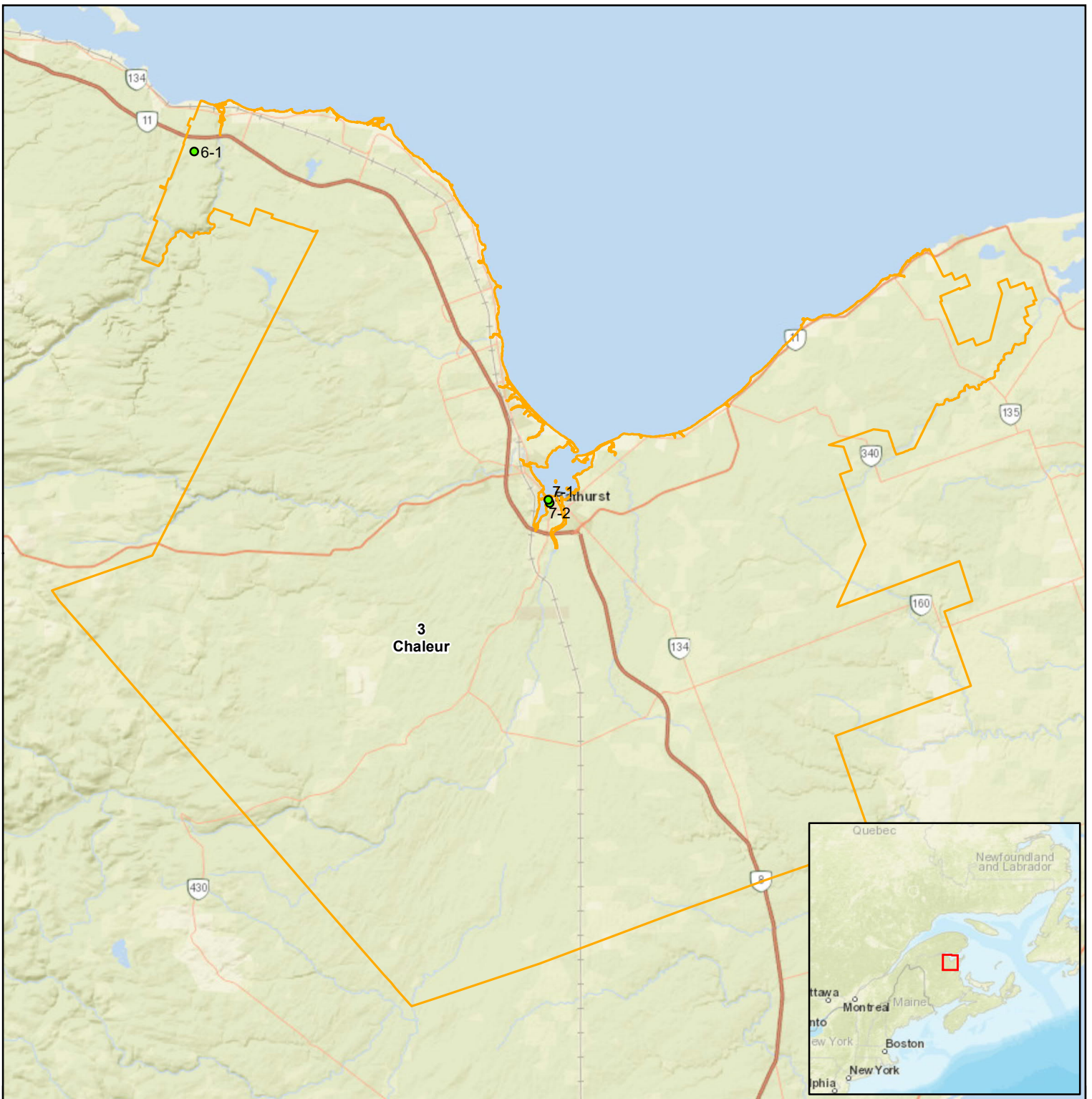
MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:700,000  
0 5 10 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

## CHALEUR REGIONAL SERVICE COMMISSION AUDIT SITES

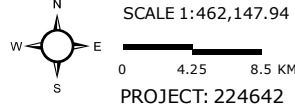
FIGURE 4



**DILLON  
CONSULTING**

MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:462,147.94  
0 4.25 8.5 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

## ACADIAN PENINSULA REGIONAL SERVICE COMMISSION AUDIT SITES

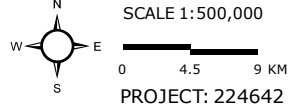
FIGURE 5



**DILLON  
CONSULTING**

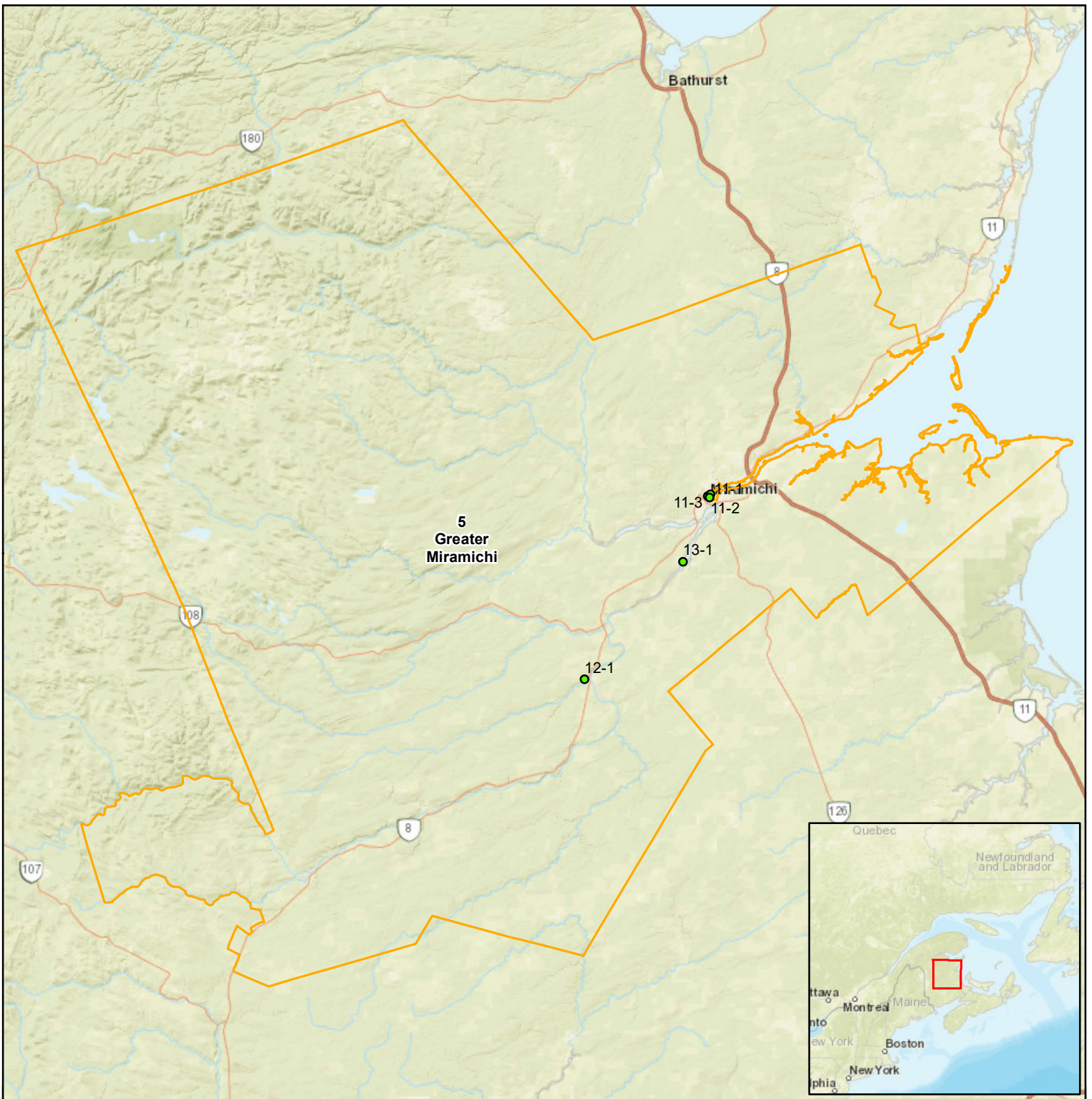
MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:500,000  
0 4.5 9 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

## GREATER MIRAMICHI REGIONAL SERVICE COMMISSION AUDIT SITES

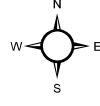
**FIGURE 6**



**DILLON  
CONSULTING**

MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

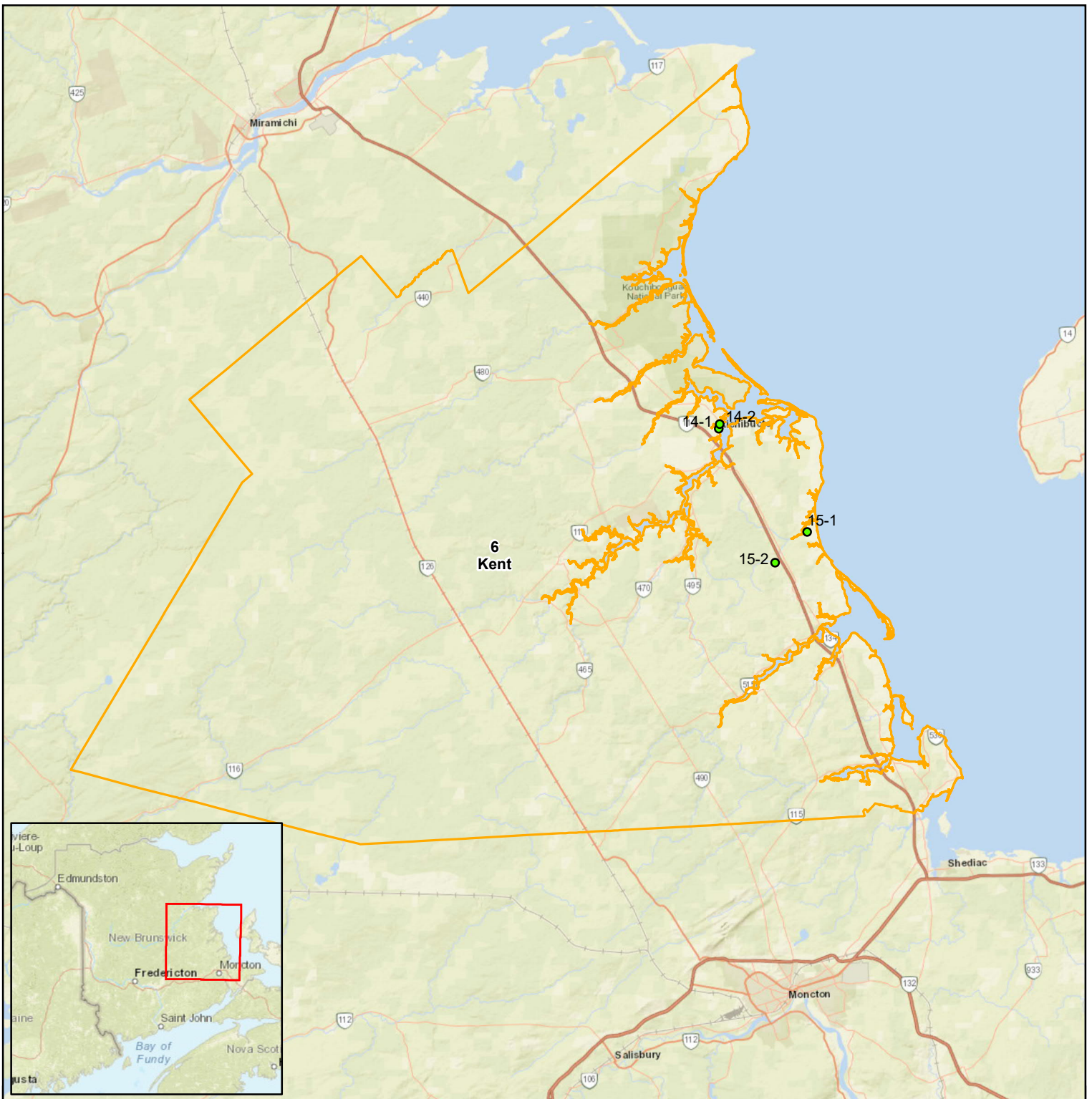
MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:875,000

0 5 10 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

## KENT REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 7

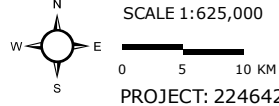
- Audit Sites
- Regional Service Commission Boundary



**DILLON  
CONSULTING**

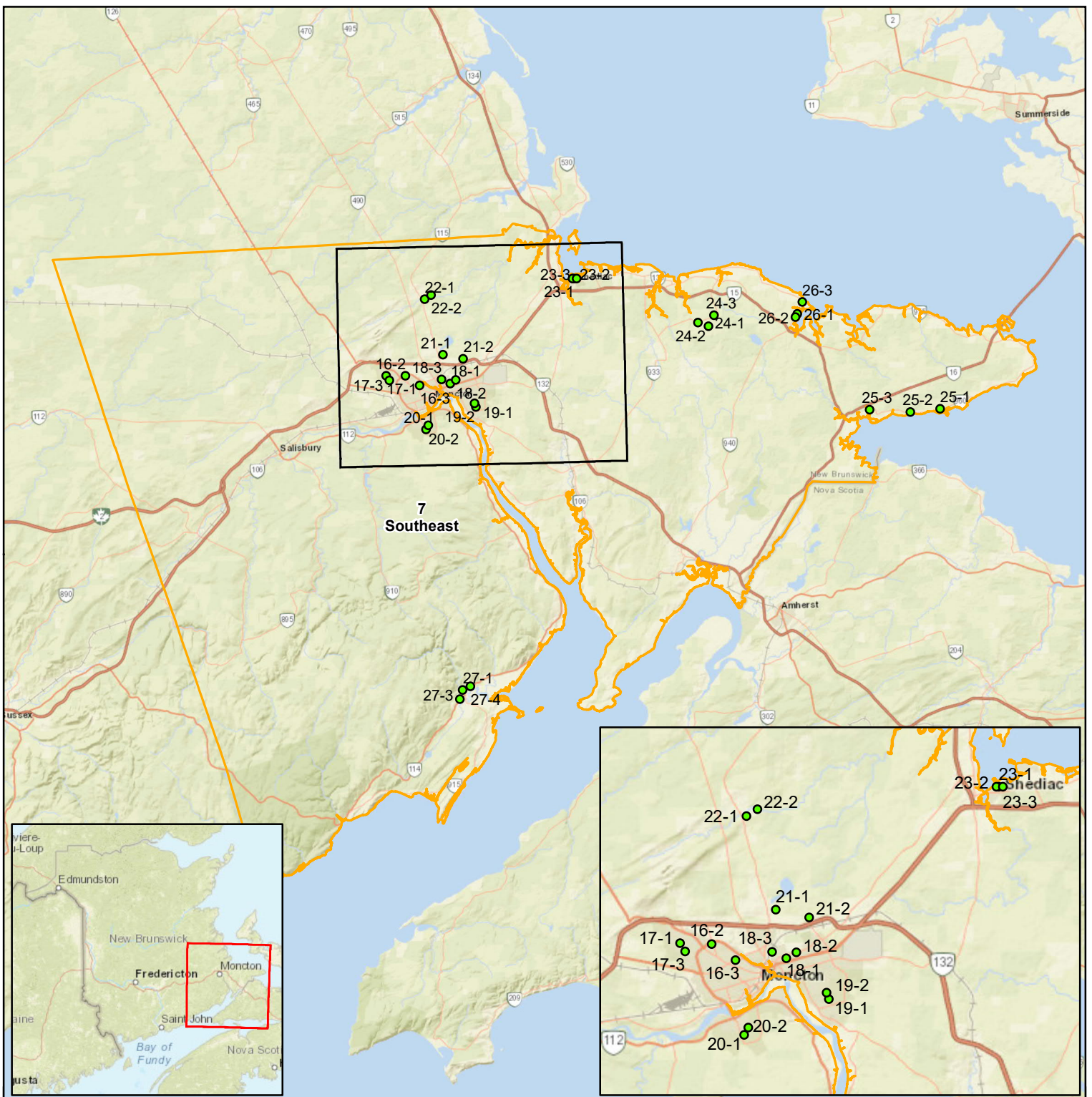
MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:625,000  
0 5 10 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06



# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

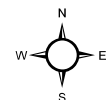
## SOUTHEAST REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 8



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic

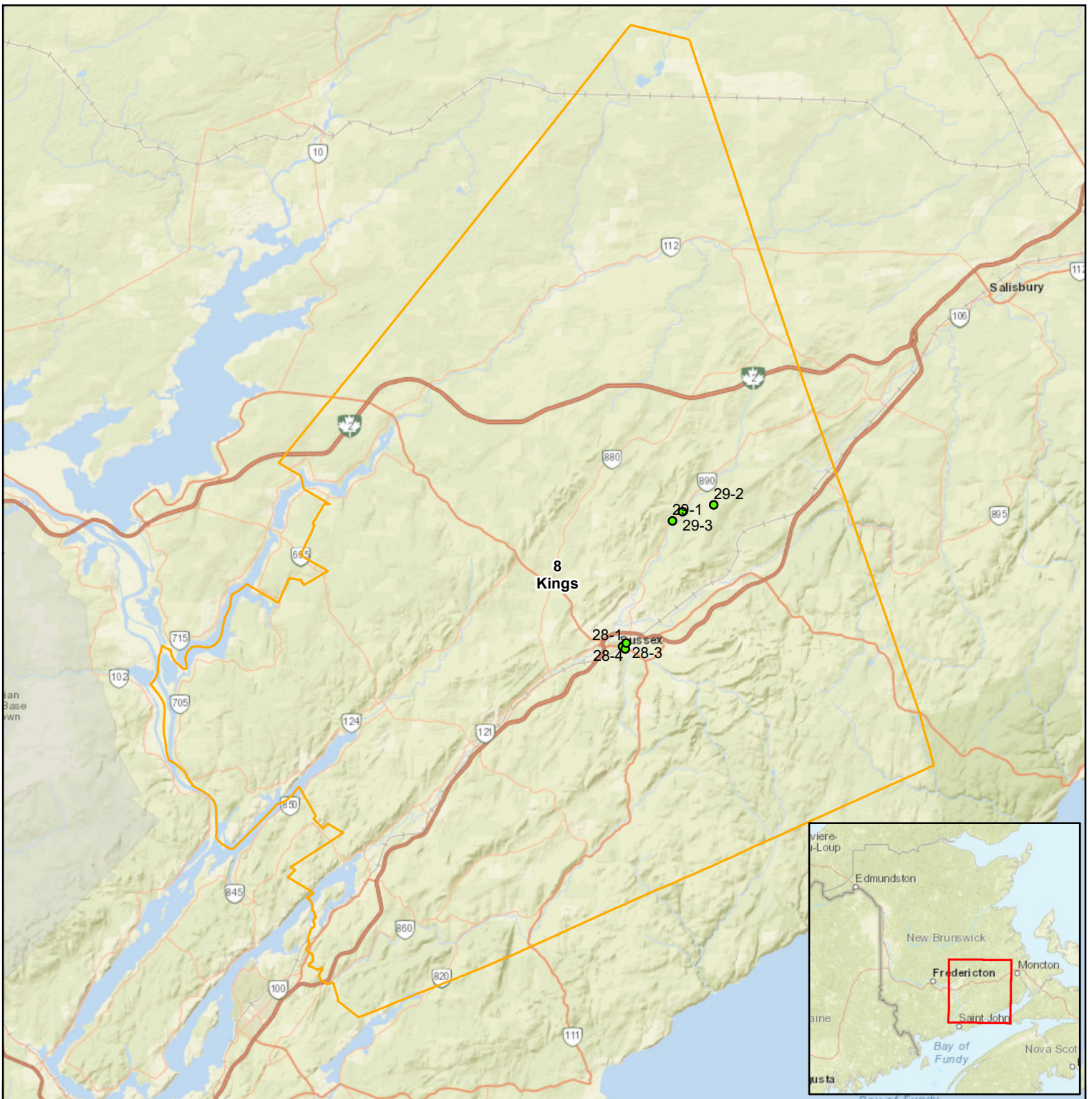


SCALE 1:699,703.53

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06




# NEW BRUNSWICK ROADSIDE LITTER AUDIT

**KINGS REGIONAL SERVICE  
COMMISSION AUDIT SITES**

FIGURE 9

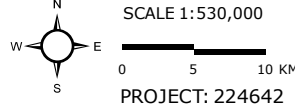
- Audit Sites
- Regional Service Commission Boundary



**DILLON  
CONSULTING**

MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

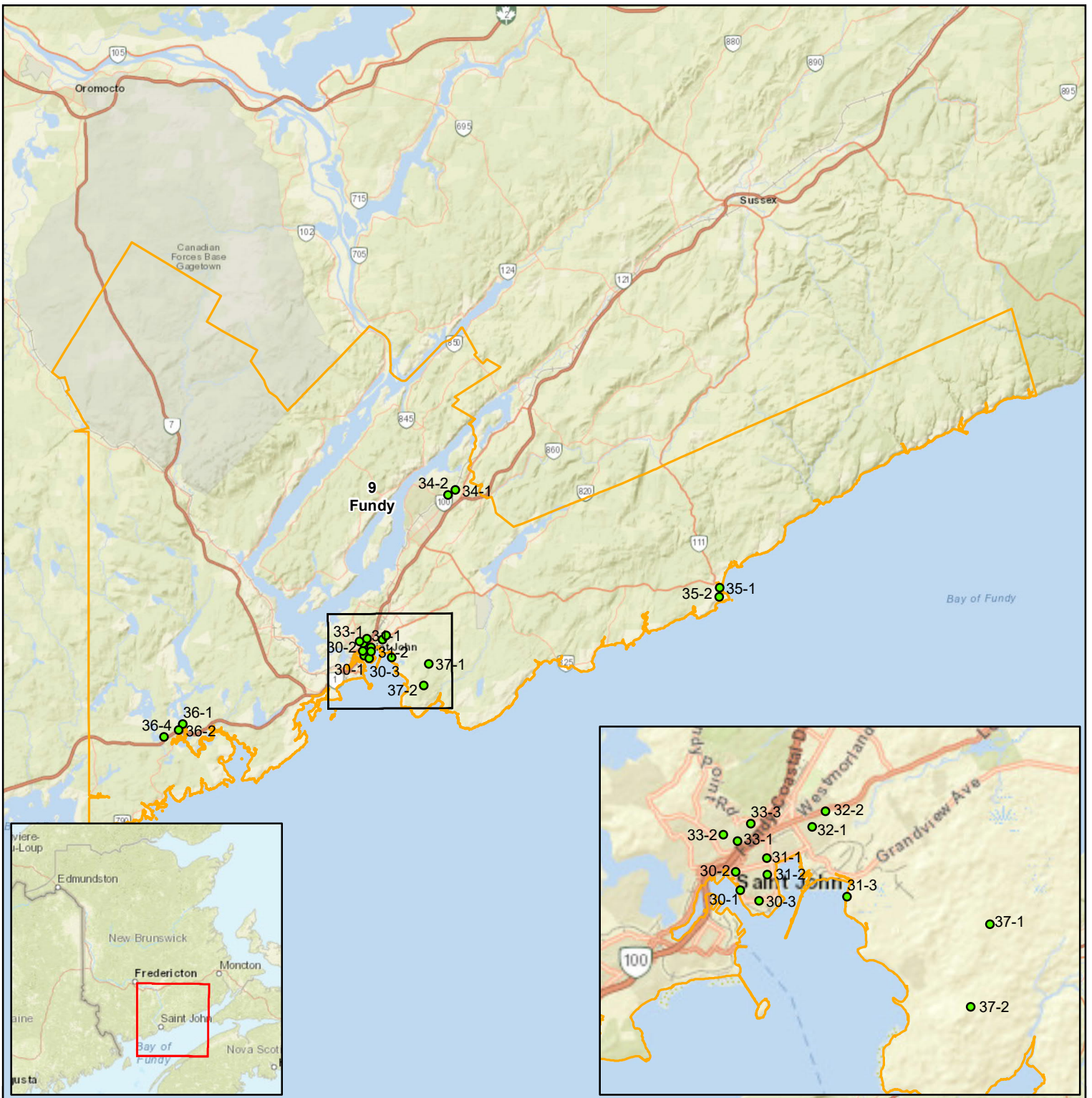
MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:530,000  
0 5 10 KM

PROJECT: 224642  
STATUS: DRAFT  
DATE: 2022-12-06





# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

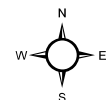
## FUNDY REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 10



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:612,269.84

0 5 10 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06



# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

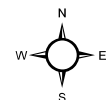
## SOUTHWEST REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 11



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



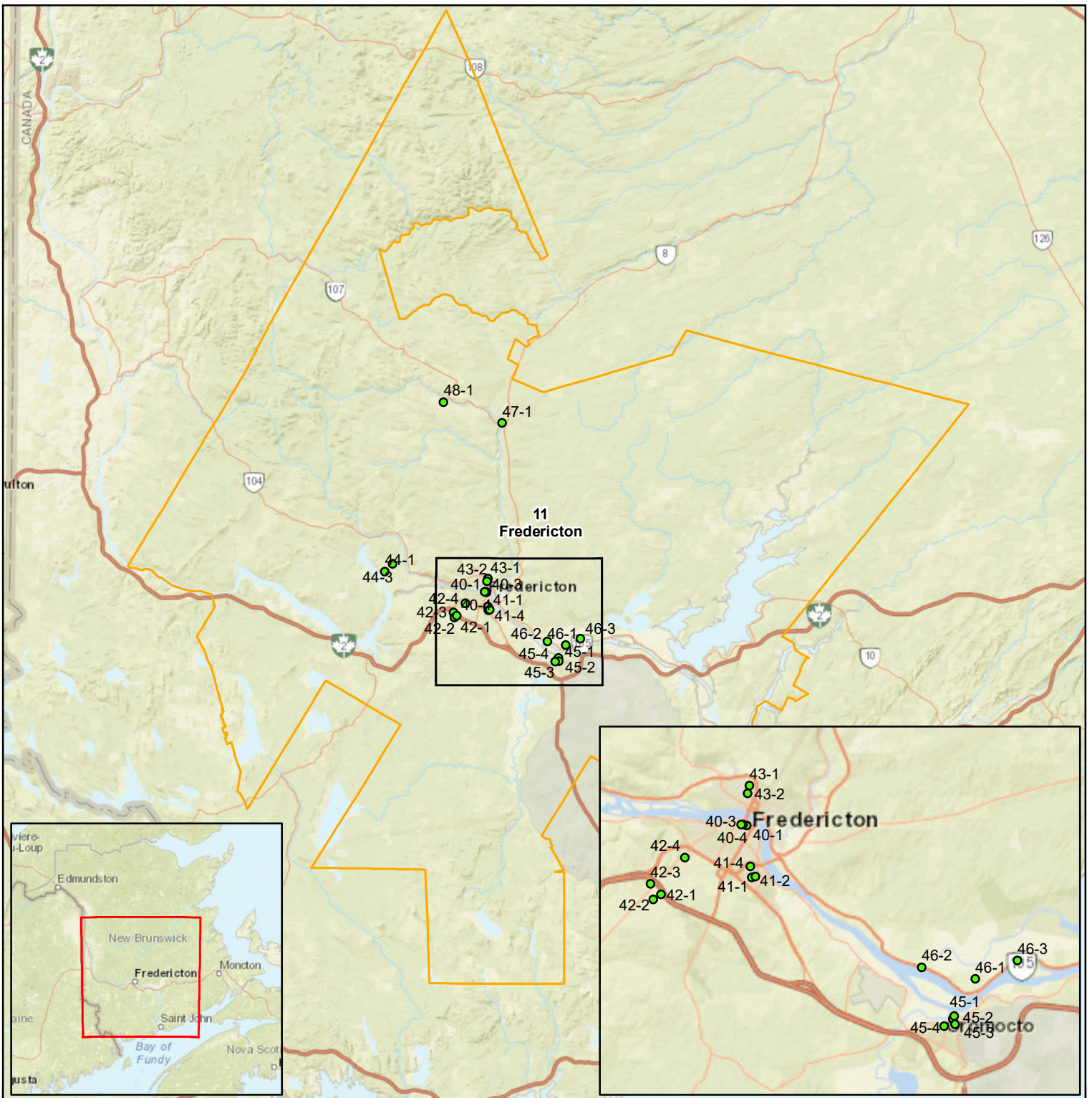
SCALE 1:750,000

0 5 10 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06



# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

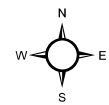
## FREDERICTON REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 12



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



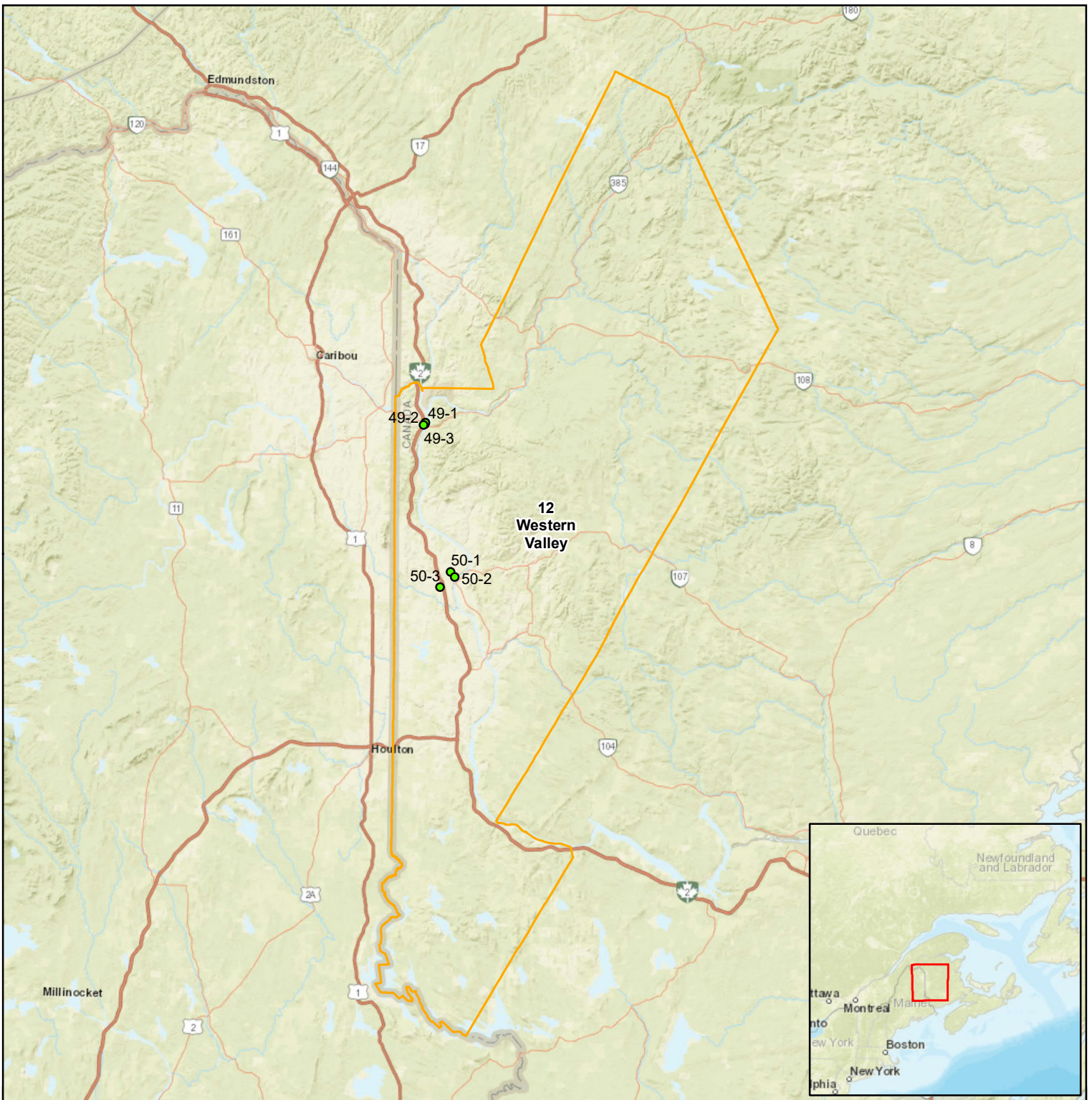
SCALE 1:1,000,000

0 5 10 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06



# NEW BRUNSWICK ROADSIDE LITTER AUDIT

- Audit Sites
- Regional Service Commission Boundary

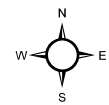
## WESTERN VALLEY REGIONAL SERVICE COMMISSION AUDIT SITES

FIGURE 13



MAP DRAWING INFORMATION:  
DATA PROVIDED BY GeoNB, ESRI

MAP CREATED BY: SCM  
MAP CHECKED BY: EM  
MAP PROJECTION: NAD 1983 CSRS NB Stereographic



SCALE 1:1,130,000

0 10 20 KM

PROJECT: 224642

STATUS: DRAFT

DATE: 2022-12-06

# Appendix C

## *Forms*

# Appendix C - Forms

## Site Surveyor 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)

Surveyors 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: \_\_\_\_\_

Number of Lanes:  2  4  other (explain): \_\_\_\_\_

Is the roadway divided: Y / N

Area Attributes:

(Check all that apply):  Commercial  Residential  Industrial  Parkland  Institutional (schools, hospitals, etc.)  Farm  Undeveloped

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

Name of Fast food Restaurant:	Convenience/Retail Store:	Stop sign or Traffic light:	Bus stop within sight:	Bus stop within Survey Area:
		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  Ditch  Other (explain in details)

Details: \_\_\_\_\_

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

(1 little-to-no-litter, 4 large amounts of litter)

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: \_\_\_\_\_

Evidence of hurricane damage: Y / N Details: \_\_\_\_\_



# Large Litter Audit Form

Date and Time \_\_\_\_\_

Survey Team \_\_\_\_\_

Site ID/Name \_\_\_\_\_

Category	Sub-Category	Pass 1	Pass 2	Brand
Paper/Fibre Materials	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			
Take-Out Extras	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			
Confectionary/Snack	17. Paper Trays			
	18. Gum Wrappers			
	19. Candy Bar Wrappers			
	20. Candy Pouches			
	21. Sweet Packaging (Describe)			
	22. Other Confectionary (Describe)			
	23. Snack Food Packaging			
Tobacco and Cannabis	24. Chip Packaging			
	25. Cigarette/Cigar Debris			
	26. Tobacco Other (Packs, Matches, Cellophane, Lighters)			
	27. Cannabis Packaging			
Cups	28. Vaping Products			
	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			
Beverage Containers	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 Aseptic Beverage Containers (Non-Alcohol)			
	43. Refundable Gable Top Beverage Containers (Alcohol)			
	44. Refundable Gable Top Beverage Containers (Non-Alcohol)			
Containers	45. Milk & Milk Product Containers – Plastic			
	46. Milk & Milk Product Containers – Gable Top			
	47. Milk & Milk Product Containers – Glass			
	48. Plastic Jars/Bottles/Lids			
	49. Glass Jars/Bottles			
	50. Steel Cans			
Bags	51. Aluminum Cans			
	52. Container Lids			
	53. Aerosol Cans			
	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			



## Large Litter Audit Form

Food Wrappers/ Containers	60. Paper Food Wrap			
	61. Paper/Foil Composite Wrap			
	62. Plastic Wrap			
	63. Polystyrene Trays			
	64. Polystyrene Clamshells			
	65. Paper Clamshells			
Other Packaging	66. Other Material Trays			
	67. Foil Pouches			
	68. Aseptic			
	69. Broken Glass Container			
	70. Six Pack Plastic Rings			
	71. Foil Containers			
	72. Cardboard boxes			
Other Miscellaneous	73. Paperboard			
	74. Paper Beverage Cases			
	75. Other Plastic Shells/Boxes			
	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			
Medical Waste	87. Organic Waste – Food Waste			
	88. Clothing, Textile, or Other Cloth			
	89. Bagged Pet Waste			
	90. Urine Bottles			
	91. Cosmetics			
Construction Debris	92. Disposable Gloves			
	93. Masks			
	94. Disinfecting Wipes			
	95. Hand Sanitizer Bottles			
	96. Other			
	97. Wood			
	98. Metal			
	99. Concrete			
	100. Gypsum (Drywall)			
	101. Shingles			
	102. Masonry			
	103. Plaster			
104. Asphalt				
105. Insulation				
106. Paper				
107. Plastic				
108. Glass & Ceramics				
109. Miscellaneous C&D Material				

# Appendix D

## ***Examples of Large Litter Sub-Categories***

# Appendix D – Examples of Large Litter Sub-Categories

Table D1: Large Litter by Sub-Category

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

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)
Other Miscellaneous	74	Paper Beverage Cases	Paper beverage that are not cups
	75	Other Plastic Shells/Boxes	Plastic clamshells/containers not included in the other categories
	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
Medical Waste	88	Clothing, Textile, or Other Cloth	Gloves (winter & work)
	89	Bagged Pet Waste	Bagged dog 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	Wood	Wood stakes
	98	Metal	
	99	Concrete	
	100	Gypsum (Drywall)	Pieces of drywall
	101	Shingles	
	102	Masonry	Brick
	103	Plaster	
	104	Asphalt	Asphalt debris
	105	Insulation	
	106	Paper	
	107	Plastic	
108	Glass and Ceramics		
109	Miscellaneous C&D Material	Flagging tape, duct tape	

# Appendix E

## *Photographic Records of Sites*

# Appendix E – Photographic Records of Sites

Site 17-1 (Visual Cleanliness Rating of 1)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Site 40-3 (Visual Cleanliness Rating of 2)



Photo 1: Beginning of Litter Site



Photo 2: Middle of Litter Site



Photo 3: End of Litter Site

Site 8-1 (Visual Cleanliness Rating of 3)



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***

# Appendix F – Large Litter by Sub-Category

Table F1: Large Litter by Sub-Category

Ranking	Sub-category	Count	Percentage of Total Large Litter Items Observed
1	Plastic Packaging - Other	270	11%
2	Misc. Plastic	234	10%
3	Misc. Paper	143	6%
4	Candy Pouches	107	4%
5	Unbranded Towels/Napkins	103	4%
6	Refundable Metal Beverage Containers (alcohol)	98	4%
7	Misc. Cardboard	89	4%
8	Cup Lids, Pieces lid, sleeves	88	4%
9	Plastic/Composite - Other	88	4%
10	Clothing, Textile, or Other Cloth	70	3%
11	Foil Materials/Foil Pieces	69	3%
12	Organic Waste - Food Waste	69	3%
13	Asphalt	49	2%
14	Receipts/ Bus Tickets	46	2%
15	Straws	45	2%
16	Gum Wrappers	43	2%
17	Candy Bar Wrappers	43	2%
18	Wood	41	2%
19	Plastic Bags - Unbranded	36	1%
20	Composite Cups (hot)	34	1%
21	Refundable Metal Beverage Containers (non-alcohol)	34	1%
22	Metal	33	1%
23	Other Confectionary (Describe)	27	1%
24	Refundable Plastic Beverage Containers (non-alcohol)	27	1%
25	Miscellaneous C&D Material	26	1%
26	Snack Food Packaging	23	1%
27	Chip Packaging	23	1%
28	Vehicle & Metal Road Debris	23	1%
29	Home Articles	23	1%
30	Plastic Jars/Bottles/Lids	21	1%
31	Mixed Paper Materials (magazines, stationary paper)	20	1%
32	Paper Cups (cold)	20	1%
33	Zipper/Sandwich Bags	17	1%
34	Paper Food Wrap	17	1%
35	Plastic Drinking Cups	16	1%
36	Misc. Glass	15	1%

Ranking	Sub-category	Count	Percentage of Total Large Litter Items Observed
37	Sweet Packaging (Describe)	13	1%
38	Foil Pouches	13	1%
39	Cosmetics	13	1%
40	Plastic	13	1%
41	Tobacco Other (packs, matches, cellophane, lighters)	12	0%
42	Cigarette/Cigar Debris	11	0%
43	Condiment Packaging	10	0%
44	Plastic Bags - Branded	10	0%
45	Tire & Rubber Debris	10	0%
46	Concrete	10	0%
47	Plastic Utensils	9	0%
48	Polystyrene Cups (foam)	9	0%
49	Other	9	0%
50	Paper Bags - Unbranded	8	0%
51	Misc. Boxboard	8	0%
52	Bundled Flyers	7	0%
53	Glass Jars/Bottles	7	0%
54	Steel Cans	7	0%
55	Plastic Wrap	7	0%
56	Shingles	7	0%
57	Vaping Products	6	0%
58	Masks	6	0%
59	Paper Packaging - Other	5	0%
60	Milk & Milk Product Containers - Plastic	5	0%
61	Disposable Gloves	5	0%
62	Refundable Plastic Beverage Containers (alcohol)	4	0%
63	Paper Bags - Fast Food	4	0%
64	Polystyrene Trays	4	0%
65	Polystyrene Clamshells	4	0%
66	Paper Clamshells	4	0%
67	Masonry	4	0%
68	Insulation	4	0%
69	Aluminum Cans	3	0%
70	Container Lids	3	0%
71	Paper Bags - Branded	3	0%
72	Lottery Ticket Debris	2	0%
73	Cannabis Packaging	3	0%
74	Other Paper Cups	2	0%
75	Refundable Glass Beverage Containers (alcohol)	2	0%

Ranking	Sub-category	Count	Percentage of Total Large Litter Items Observed
76	Cardboard Boxes	2	0%
77	Glass and Ceramics	2	0%
78	Branded Towels/Napkins	1	0%
79	Other Plastic Fast Food Plates	1	0%
80	Plates - Other Material	1	0%
81	Paper Trays	1	0%
83	Milk & Milk Product Containers - Gable Top	1	0%
84	Aerosol Cans	1	0%
85	Six-Pack Plastic Rings	1	0%
86	Other Plastic Shells/Boxes	1	0%
87	Bagged Pet Waste	1	0%
88	Plaster	1	0%
89	Paper	1	0%
90	Printed Materials - Cost Newspaper	0	0%
91	Printed Materials - Free Newspaper	0	0%
92	Paper Fast Food Plates	0	0%
93	Poly Fast Food Plates	0	0%
94	Refundable Aseptic Beverage Containers (alcohol)	0	0%
95	Refundable Gable Top Beverage Containers (non-alcohol)	0	0%
96	Refundable Gable Top Beverage Containers (alcohol)	0	0%
82	Refundable Glass Beverage Containers (non-alcohol)	0	0%
97	Refundable Aseptic Beverage Containers (non-alcohol)	0	0%
98	Milk & Milk Product Containers - Glass	0	0%
99	Paper/Foil Composite Wrap	0	0%
100	Other Material Trays	0	0%
101	Aseptic	0	0%
102	Broken Glass Container	0	0%
103	Foil Containers	0	0%
104	Paperboard	0	0%
105	Paper Beverage Cases	0	0%
106	Urine Bottles	0	0%
107	Disinfecting Wipes	0	0%
108	Hand Sanitizer Bottles	0	0%
109	Gypsum (Drywall)	0	0%

# Appendix G

## ***Large Litter by Site***

# Appendix G – Large Litter by Site

Table G1: Large Litter by Site

Ranking	Site	Number of Pieces of Large Litter	Regional Service Commission
1	33-2	143	9 -Fundy
2	16-2	110	7 - Southeast
3	31-2	85	9 - Fundy
4	36-1	84	9 - Fundy
5	4-1	75	2 - Restigouche
6	42-1	68	11 - Fredericton
7	8-1	68	4 - Acadian Peninsula
8	17-3	62	7 - Southeast
9	31-3	59	9 - Fundy
10	26-3	58	7 - Southeast
11	27-3	54	7 - Southeast
12	17-1	52	7 - Southeast
13	31-1	47	9 - Fundy
14	10-1	45	4 - Acadian Peninsula
15	7-1	45	3 - Chaleur
16	45-2	44	11 - Fredericton
17	15-1	44	6 - Kent
18	47-1	40	11 - Fredericton
19	46-1	38	11 - Fredericton
20	40-4	37	11 - Fredericton
21	20-1	37	7 - Southeast
22	21-2	36	7 - Southeast
23	34-1	36	9 - Fundy
24	40-1	35	11 - Fredericton
25	12-1	35	5 - Greater Miramichi
26	45-1	35	11 - Fredericton
27	37-1	35	9 - Fundy
28	23-3	31	7 - Southeast
29	21-1	28	7 - Southeast
30	16-3	27	7 - Southeast
31	18-3	26	7 - Southeast
32	50-3	25	12 - Western Valley
33	6-3	24	3 - Chaleur*
34	36-2	22	9 - Fundy
35	4-3	19	2 - Restigouche
36	11-2	18	5 - Greater Miramichi
37	20-2	18	7 - Southeast

Ranking	Site	Number of Pieces of Large Litter	Regional Service Commission
38	23-1	18	7 - Southeast
39	27-1	18	7 - Southeast
40	8-2	17	4 - Acadian Peninsula
41	6-1	17	3 - Chaleur
42	37-2	17	9 - Fundy
43	41-2	16	11 - Fredericton
44	22-1	16	7 - Southeast
45	25-1	16	7 - Southeast
46	29-1	16	8 - Kings
47	24-2	15	7 - Southeast
48	26-1	15	7 - Southeast
49	26-2	15	7 - Southeast
50	29-3	15	8 - Kings
51	32-2	15	9 - Fundy
52	28-1	14	8 - Kings
53	5-1	13	2 - Restigouche
54	39-4	13	10 - Southwest
55	30-1	13	9 - Fundy
56	27-4	12	7 - Southeast
57	32-1	12	9 - Fundy
58	35-2	12	9 - Fundy
59	24-3	11	7 - Southeast
60	30-2	11	9 - Fundy
61	40-3	10	11 - Fredericton
62	13-1	10	5 - Greater Miramichi
63	8-3	10	4 - Acadian Peninsula
64	42-2	10	11 - Fredericton
65	14-1	10	6 - Kent
66	28-4	10	8 - Kings
67	44-3	9	11 - Fredericton
68	1-1	9	1 - Northwest
69	36-4	9	9 - Fundy
70	38-2	9	10 - Southwest
71	39-3	9	10 - Southwest
72	19-2	9	7 - Southeast
73	29-2	9	8 - Kings
74	43-1	8	11 - Fredericton
75	11-1	8	5 - Greater Miramichi
76	45-3	8	11 - Fredericton
77	10-3	7	4 - Acadian Peninsula

Ranking	Site	Number of Pieces of Large Litter	Regional Service Commission
78	1-4	7	1 - Northwest
79	50-2	7	12 - Western Valley
80	38-1	7	10 - Southwest
81	22-2	7	7 - Southeast
82	15-2	7	6 - Kent
83	30-3	7	9 - Fundy
84	34-2	7	9 - Fundy
85	7-2	6	3 - Chaleur
86	5-4	6	2 - Restigouche
87	1-2	6	1 - Northwest
88	19-1	6	7 - Southeast
89	23-2	6	7 - Southeast
90	24-1	6	7 - Southeast
91	9-3	5	4 - Acadian Peninsula
92	2-3	5	1 - Northwest
93	49-3	5	12 - Western Valley
94	48-1	5	11 - Fredericton
95	11-3	4	5 - Greater Miramichi
96	3-3	4	1 - Northwest
97	45-4	4	11 - Fredericton
98	25-3	4	7 - Southeast
99	14-2	4	6 - Kent
100	28-3	4	8 - Kings
101	35-1	4	9 - Fundy
102	41-1	3	11 - Fredericton
103	2-1	3	1 - Northwest
104	2-2	3	1 - Northwest
105	38-4	3	10 - Southwest
106	42-4	3	11 - Fredericton
107	18-1	3	7 - Southeast
108	33-1	3	9 - Fundy
109	33-3	3	9 - Fundy
110	44-1	2	11 - Fredericton
111	3-1	2	1 - Northwest
112	49-1	2	12 - Western Valley
113	50-1	2	12 - Western Valley
114	46-2	2	11 - Fredericton
115	46-3	2	11 - Fredericton
116	43-2	2	11 - Fredericton
117	9-1	1	4 - Acadian Peninsula



Ranking	Site	Number of Pieces of Large Litter	Regional Service Commission
118	49-2	1	12 - Western Valley
119	39-1	1	10 - Southwest
120	18-2	1	7 - Southeast
121	41-4	0	11 - Fredericton
122	42-3	0	11 - Fredericton
123	25-2	0	7 - Southeast

# Appendix H

## ***Large Litter by Land Use***

# Appendix H – Large Litter by Land Use

Table H1: Large Litter Composition by Land Use

Small Litter Category	Urban	Rural	Total	Percentage
Paper/Fiber Materials	143	40	183	8%
Take-Out Extras	54	14	68	3%
Confectionary/Snack	221	58	279	12%
Tobacco & Cannabis	19	13	32	1%
Cups	80	89	169	7%
Beverage Containers	50	121	171	7%
Containers	21	21	42	2%
Bags	37	41	78	3%
Food Wrappers/Containers	20	16	36	1%
Other Packaging	11	6	17	1%
Other Miscellaneous	783	342	1125	47%
Medical Waste	12	8	20	1%
Construction Debris	121	70	191	8%
Total	1572	839	2411	100%
Avg. # of Large Litter per Site	21.2	17.1	19.6	-

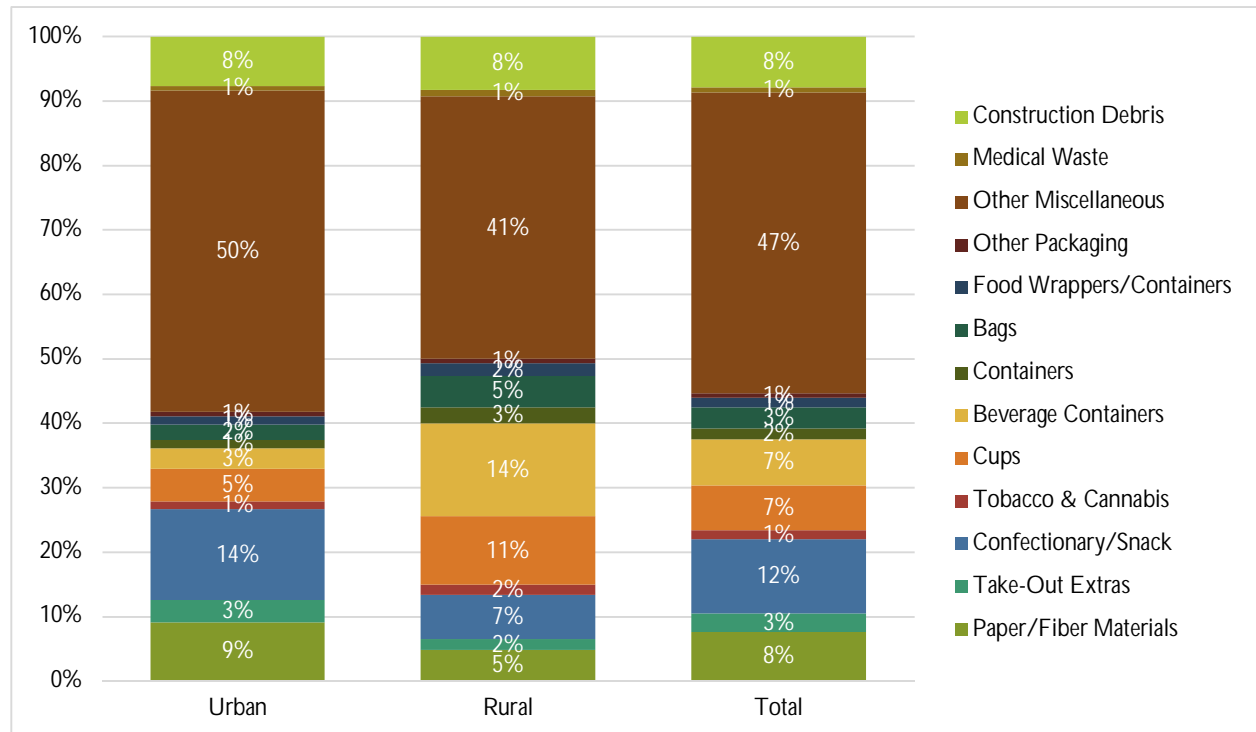


Figure H1: Large Litter Composition by Land Use

# Appendix I

## ***Large Litter by Brand***

# Appendix I – Large Litter by Brand

Table I1: Large Litter by Brand

Parent Brand	Total	Percentage
Tim Hortons	61	14%
AB InBev	60	14%
McDonald's	27	6%
Frito-Lay/PepsiCo	26	6%
Cadbury/Mondelez International Inc.	23	5%
Nestle	16	4%
The Hershey Company	13	3%
Sobeys Inc.	12	3%
Ferrero	12	3%
Molson Coors	10	2%
Loblaws	10	2%
Coca Cola	8	2%
Mars Inc.	7	2%
Boston Beer Company	7	2%
A&W	6	1%
Kellogg's	5	1%
Saputo	5	1%
Canadian Tire Corporation	5	1%
Perfetti Van Melle	4	1%
Kraft Heinz	4	1%
Starbucks	4	1%
Heineken	4	1%
National Grape Cooperative Association	4	1%
Keurig Dr. Pepper	4	1%
Dare	4	1%
Allo	3	1%
Agropur Dairy Co-Operative Family	3	1%
Diageo	3	1%
Dollarama	3	1%
Walmart	3	1%
Robin's Donuts	3	1%
Subway	3	1%
Wendy's	3	1%
Costco	3	1%
Smarties Candy Company	3	1%
Dart Container	3	1%
Arnott's Biscuits	2	0%

Parent Brand	Total	Percentage
Phillip Morris International	2	0%
Atlantic Lottery Corporation	2	0%
Circle K	2	0%
Dairy Queen	2	0%
General Mills	2	0%
Old Dutch Foods	2	0%
Proctor and Gamble	2	0%
Kisko Products	2	0%
CO-OP	2	0%
Alvoar	2	0%
Morinaga & Company	2	0%
Ricola Ltd.	2	0%
4Fun	1	0%
Aegis Brands	1	0%
August Storck KG	1	0%
Leon's Furniture	1	0%
Car-Freshner Corporation	1	0%
Burger King	1	0%
Wonder Brands Inc.	1	0%
Harvey's	1	0%
Riverside Natural Foods	1	0%
Regal Confections	1	0%
Red Bull GmbH	1	0%
Lassonde Industries Inc.	1	0%
Garrison Brewing Company	1	0%
Bacardi Limited	1	0%
Johnson & Johnson	1	0%
Mattel Inc.	1	0%
La Kaffa International Co Ltd	1	0%
Colgate-Palmolive	1	0%
Recipe Unlimited	1	0%
FedEx	1	0%
Eska Inc.	1	0%
J.M Smucker Company	1	0%
McCormick & Company	1	0%
Greystone Brewing	1	0%
Calbee America's	1	0%
Ultima Foods	1	0%
Kerr's	1	0%
Comeau's Sea Foods Ltd.	1	0%

Parent Brand	Total	Percentage
MDR Brands	1	0%
Mother Parkers	1	0%
Moritz	1	0%
MTY Food Group	1	0%
Reitmans Canada Ltd	1	0%
Sargento Foods Inc.	1	0%
Newell Brands	1	0%
Sapporo Brewery	1	0%
Conagra Brands	1	0%
TD Bank	1	0%
Tata Consumer Products	1	0%
Tootsie Roll Industries	1	0%
Trou du Diable	1	0%
United Parcel Service	1	0%
Whitetail Institute	1	0%
Mark Anthony Group	1	0%

## Appendix J

### ***Large Litter Results Compared to Other North American Municipalities***



# Appendix J – Large Litter Results Compared to Other North American Municipalities

Table J1: New Brunswick Large Litter Audit Results Compared with Audit Results of Other Cities (by Percent Breakdown)

Category	New Brunswick 2022	Fredericton 2022	Moncton 2022	Saint John 2022	Nova Scotia 2021	Halifax 2021	Toronto 2016	Edmonton 2017	Winnipeg 2014	San Francisco 2009	Vancouver 2020
Beverage Containers	7%	3%	2%	5%	8%	4%	6%	1%	10%	3%	3%
Other Packaging	1%	1%	1%	0%	4%	3%	1%	N/A	5%	3%	1%
Cups	7%	2%	3%	9%	13%	8%	11%	18%	6%	6%	10%
Bags	3%	4%	1%	3%	6%	3%	4%	3%	6%	6%	6%
Other Packaging (Boxes)	N/A	N/A	N/A	N/A	N/A	N/A	9%	4%	2%	3%	2%
Other Containers	2%	3%	1%	1%	1%	1%	1%	8%	1%	2%	1%
Food Wraps/ Containers	1%	2%	1%	2%	12%	15%	3%	4%	1%	4%	2%
Take Out Extras	3%	2%	2%	3%	4%	4%	2%	9%	13%	4%	8%
Trays	N/A	N/A	N/A	N/A	N/A	N/A	0%	N/A	N/A	0%	0%
Confectionary/ Snack	12%	12%	9%	22%	11%	11%	5%	6%	6%	8%	6%
Cloth	N/A	N/A	N/A	N/A	N/A	N/A	2%	N/A	1%	1%	1%
Other Miscellaneous Packaging	N/A	N/A	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	0%
Paper/Fiber Material	8%	10%	9%	4%	9%	11%	29%	7%	7%	32%	20%
Tobacco & Cannabis Products	1%	2%	0%	3%	2%	1%	6%	5%	8%	4%	3%
Other Miscellaneous	47%	42%	67%	37%	21%	31%	20%	19%	31%	24%	31%
Medical Waste	1%	1%	1%	0%	3%	3%	N/A	N/A	N/A	N/A	5%
Additional Categories	N/A	N/A	N/A	N/A	N/A	N/A	0%	1%	N/A	N/A	N/A



Table J2: New Brunswick Large Litter Audit Results Compared with Audit Results of Other Cities  
(Average Number of Items per Site)

Category	New Brunswick 2022	Fredericton 2022	Moncton 2022	Saint John 2022	Nova Scotia 2021	Halifax 2021	Toronto 2016	Edmonton 2017	Winnipeg 2014	San Francisco 2009	Vancouver 2020
Beverage Containers	1.4	0.5	0.7	1.6	3.0	0.9	0.7	0.1	1.5	1.3	0.3
Other Packaging	0.1	0.2	0.3	0.1	1.6	0.7	1.2	N/A	0.8	1.9	0.1
Cups	1.4	0.3	0.9	3.1	5.1	1.8	1.4	1.3	1.0	3.0	1.0
Bags	0.6	0.6	0.5	1.1	2.2	0.7	0.6	0.2	0.8	1.4	0.6
Other Packaging Containers	N/A	N/A	N/A	N/A	N/A	N/A	0.1	0.3	0.3	0.7	0.3
Food Wrappers/ Containers	0.3	0.3	0.3	0.6	4.7	3.3	0.4	0.3	1.8	1.2	0.2
Take Out Extras	0.6	0.3	0.7	0.9	1.6	0.9	0.3	0.6	0.0	1.4	0.8
Trays	N/A	N/A	N/A	N/A	N/A	N/A	0.1	N/A	N/A	0.2	0.0
Confectionary/Snack	2.3	1.9	3.0	8.0	4.3	2.3	0.7	0.4	0.9	3.2	0.6
Cloth	N/A	N/A	N/A	N/A	N/A	N/A	0.2	N/A	0.2	0.4	0.1
Other Miscellaneous Packaging	N/A	N/A	N/A	N/A	N/A	N/A	0.0	N/A	N/A	N/A	0.0
Paper/Fiber Material	1.5	1.6	2.8	1.5	3.6	2.5	3.7	0.5	1.0	7.8	2.0
Tobacco & Cannabis	0.3	0.3	0.2	0.9	0.8	0.3	0.7	0.4	1.1	1.4	0.3
Other Miscellaneous	9.1	6.7	21.3	13.5	7.9	6.7	2.6	1.4	4.1	9.5	3.2
Medical Waste	0.2	0.1	0.2	0.1	N/A	N/A	0.0	0.1	N/A	N/A	N/A
Additional Categories	N/A	N/A	N/A	N/A	1	0.7	N/A	N/A	N/A	N/A	N/A
Household Articles	N/A	N/A	N/A	N/A	N/A	N/A	0.0	1.1	N/A	N/A	0.5
Construction Debris	1.6	2.8	0.7	4.4	1.7	0.8	N/A	N/A	N/A	N/A	N/A
Total	19.6	16.0	31.9	36.2	37.9	21.9	12.8	7.2	13.3	34.0	10.2

# Appendix K

## ***Small Litter by Site***

# Appendix K – Small Litter by Site

Table K1: Small Litter by Site

Ranking	Site	Number of Pieces of Small Litter	Regional Service Commission
1	16-2	39	7 - Southeast
2	30-2	37	9 - Fundy
3	8-1	23	4 - Acadian Peninsula
4	31-3	14	9 - Fundy
5	15-1	11	6 - Kent
6	42-1	10	11 - Fredericton
7	16-3	9	7 - Southeast
8	32-2	9	9 - Fundy
9	41-2	8	11 - Fredericton
10	17-1	8	7 - Southeast
11	31-2	8	9 - Fundy
12	7-1	6	3 - Chaleur
13	36-1	6	9 - Fundy
14	31-1	6	9 - Fundy
15	40-1	5	11 - Fredericton
16	11-2	5	5 - Greater Miramichi
17	8-2	5	4 - Acadian Peninsula
18	8-3	5	4 - Acadian Peninsula
19	45-1	5	11 - Fredericton
20	40-4	5	11 - Fredericton
21	20-1	5	7 - Southeast
22	23-2	5	7 - Southeast
23	30-1	5	9 - Fundy
24	34-1	5	9 - Fundy
25	12-1	4	5 - Greater Miramichi
26	10-3	4	4 - Acadian Peninsula
27	4-3	4	2 - Restigouche
28	5-1	4	2 - Restigouche
29	5-4	4	2 - Restigouche
30	45-2	4	11 - Fredericton
31	38-2	4	10 - Southwest
32	26-1	4	7 - Southeast
33	28-1	4	8 - Kings
34	29-3	4	8 - Kings
35	32-1	4	9 - Fundy
36	37-1	4	9 - Fundy
37	41-1	3	11 - Fredericton

Ranking	Site	Number of Pieces of Small Litter	Regional Service Commission
38	40-3	3	11 - Fredericton
39	11-3	3	5 - Greater Miramichi
40	10-1	3	5 - Greater Miramichi
41	7-2	3	3 - Chaleur
42	4-1	3	2 - Restigouche
43	38-1	3	10 - Southwest
44	21-2	3	7 - Southeast
45	22-1	3	7 - Southeast
46	17-3	3	7 - Southeast
47	14-1	3	6 - Kent
48	30-3	3	9 - Fundy
49	48-1	3	11 - Fredericton
50	6-1	2	3 - Chaleur
51	50-1	2	12 - Western Valley
52	45-4	2	11 - Fredericton
53	38-4	2	10 - Southwest
54	42-2	2	11 - Fredericton
55	21-1	2	7 - Southeast
56	19-1	2	7 - Southeast
57	19-2	2	7 - Southeast
58	26-3	2	7 - Southeast
59	33-1	2	9 - Fundy
60	33-2	2	9 - Fundy
61	35-1	2	9 - Fundy
62	37-2	2	9 - Fundy
63	47-1	2	11 - Fredericton
64	44-1	1	11 - Fredericton
65	43-1	1	11 - Fredericton
66	13-1	1	5 - Greater Miramichi
67	9-3	1	4 - Acadian Peninsula
68	1-1	1	1 - Northwest
69	1-2	1	1 - Northwest
70	2-2	1	1 - Northwest
71	2-3	1	1 - Northwest
72	49-1	1	12 - Western Valley
73	50-3	1	12 - Western Valley
74	45-3	1	11 - Fredericton
75	36-2	1	9 - Fundy
76	39-4	1	10 - Southwest
77	42-4	1	11 - Fredericton

Ranking	Site	Number of Pieces of Small Litter	Regional Service Commission
78	18-3	1	7 - Southeast
79	20-2	1	7 - Southeast
80	23-1	1	7 - Southeast
81	23-3	1	7 - Southeast
82	24-3	1	7 - Southeast
83	25-3	1	7 - Southeast
84	27-3	1	7 - Southeast
85	34-2	1	9 - Fundy
86	44-3	0	11 - Fredericton
87	41-4	0	11 - Fredericton
88	42-3	0	11 - Fredericton
89	11-1	0	5 - Greater Miramichi
90	9-1	0	4 - Acadian Peninsula
91	6-3	0	3 - Chaleur
92	3-1	0	1 - Northwest
93	3-3	0	1 - Northwest
94	1-4	0	1 - Northwest
95	2-1	0	1 - Northwest
96	49-2	0	12 - Western Valley
97	49-3	0	12 - Western Valley
98	50-2	0	12 - Western Valley
99	46-1	0	11 - Fredericton
100	46-2	0	11 - Fredericton
101	46-3	0	11 - Fredericton
102	36-4	0	9 - Fundy
103	39-1	0	10 - Southwest
104	39-3	0	10 - Southwest
105	43-2	0	11 - Fredericton
106	18-1	0	7 - Southeast
107	18-2	0	7 - Southeast
108	22-2	0	7 - Southeast
109	24-1	0	7 - Southeast
110	24-2	0	7 - Southeast
111	25-1	0	7 - Southeast
112	25-2	0	7 - Southeast
113	26-2	0	7 - Southeast
114	27-1	0	7 - Southeast
115	27-4	0	7 - Southeast
116	14-2	0	6 - Kent
117	15-2	0	6 - Kent

Ranking	Site	Number of Pieces of Small Litter	Regional Service Commission
118	28-3	0	8 - Kings
119	28-4	0	8 - Kings
120	29-1	0	8 - Kings
121	29-2	0	8 - Kings
122	33-3	0	9 - Fundy
123	35-2	0	9 - Fundy



# Appendix L

## ***Small Litter by Land Use***

# Appendix L – Small Litter by Land Use

Table L1: Small Litter Composition by Land Use

Small Litter Category	Urban	Rural	Total	Percentage
Cigarette Butts/Debris	109	18	127	33%
Bottle Caps	3	0	3	1%
Straws	5	0	5	1%
Candy Packaging and Wrappers	6	2	8	2%
Polyfoam Packing Materials (i.e., Foam Peanuts)	5	6	11	3%
Other Polystyrene Debris (i.e., Poly Foam Pieces)	48	8	56	15%
Glass	20	6	26	7%
Paper	0	1	1	0%
Plastic Film	21	17	38	10%
Hard Plastic	0	1	1	0%
Aluminum/Foil Debris	6	4	10	3%
Rubber	1	2	3	1%
Metal (not aluminum)	34	2	36	9%
Chewing Gum	11	2	13	3%
Other Material	35	5	40	10%
Total	307	74	381	100%
Avg. # of Small Litter per Site	4.1	1.5	3.1	-

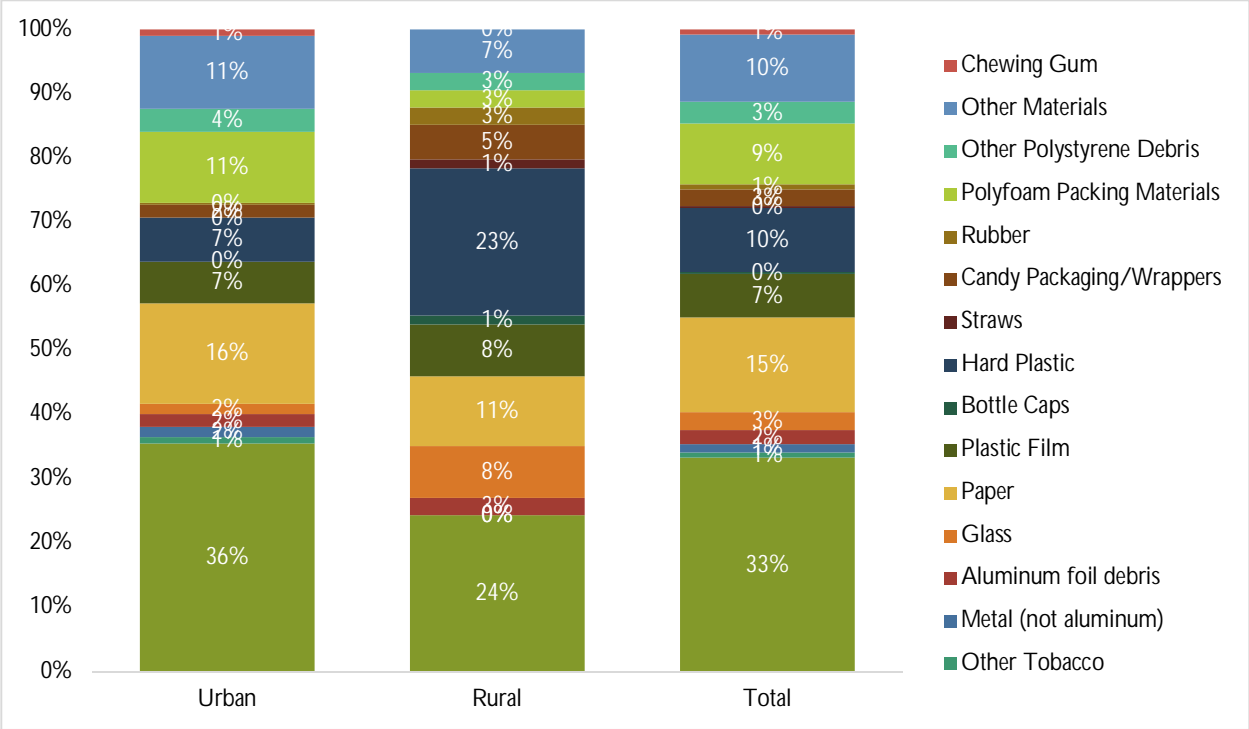


Figure L1: Small Litter Composition by Land Use

## Appendix M

### ***Small Litter Results Compared to Other North American Municipalities***



Table M2: New Brunswick Small Litter Audit Results Compared with Audit Results of Other Cities  
(Average Number of Items per Site)

Category	New Brunswick 2022	Fredericton 2022	Moncton 2022	Saint John 2022	Nova Scotia 2021	Halifax 2021	Toronto 2016	Edmonton 2017	Winnipeg 2014	San Francisco 2009	Vancouver 2020
Cigarette Butts/Debris	1.0	0.8	1.8	2.6	2.8	3.8	2.6	2.4	3.5	3.2	2.0
Other Tobacco	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.5	0.0
Bottle Caps	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Straws	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Candy Packaging and Wrappers	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.4	0.0	0.4	0.3
Polyfoam Packing Materials (i.e., Foam Peanuts)	0.3	0.1	0.2	2.8	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Other Polystyrene Debris (i.e., Poly Foam Pieces)	0.1	0.2	0.0	0.2	0.6	1.1	0.1	0.4	0.0	0.4	0.1
Glass	0.1	0.1	0.1	0.2	0.8	0.2	0.8	0.4	0.6	6.0	0.9
Paper	0.5	0.6	1.2	0.4	1.5	2.4	2.4	1.3	1.2	2.1	1.4
Plastic Film	N/A	N/A	N/A	N/A	1.6	1.5	0.4	0.2	0.6	0.6	0.2
Hard Plastic	0.2	0.3	0.3	0.7	2.5	5.5	0.8	0.7	0.9	1.5	0.7
Aluminum/Foil Debris	0.3	0.5	0.4	0.5	0.5	0.2	0.2	0.0	0.3	0.3	0.3
Rubber	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Metal (not aluminum)	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.6	0.1
Chewing Gum	0.0	0.0	0.2	0.1	0.2	0.2	3.0	0.8	0.3	8.2	1.6
Food and Food Scraps	0.0	0.2	0.0	0.0	N/A	N/A	0.2	0.1	0.0	0.0	0.1
Other Material	N/A	N/A	N/A	N/A	1.1	2.3	0.0	0.1	0.1	1.2	0.2
Total	N/A	N/A	N/A	N/A	12.3	17.7	11.1	7.0	8.1	25.5	8.2

# Appendix N

## *Site Survey Results*







Date	Site ID	Site Name/Address	Start Time	End Time	Side of the Street (NSEW)	GPS Coordinates - Start of Site	GPS Coordinates - End of Site	Site Type (Fixed/Variable)	Width 1 - Start of Site (m)	Width 2 - Middle of Site (m)	Width 3 - End of Site (m)	Number of Lanes	Divided Roadway	Area Attributes	Grass Height	Fast Food	Convenience/Retail Store	Stop Sign/Traffic Light	Bus Stop (within sight)	Bus Stop (within survey area)	Traffic Calming Device	Receptacle within 50 m radius of site boundary	Catch Point	Litter Distribution	Evidence of Litter Clean-Up	Comments	Visual Ranking of Site (1-4)	Evidence of Hurricane Damage	# of Photos Taken	Additional Comments
04-Nov	15-1	2 Ch. Côte Ste Anne, Saint-Édouard-de-Kent	9:35 AM	10:00 AM	East	46-34°18.080"N, 64-44°4.705"W	46-34°19.717"N, 64-44°2.594"W	Fixed	5	5	5	2	No	Residential, Undeveloped	> 6"	N/A	N/A	Yes	No	No	No	No	Grass Line, Ditch	Scattered	No	N/A	3	No	3	
04-Nov	15-2	1961 Chemin St Gabriel, Saint-Anne-de-Kent	10:15 AM	10:30 AM	Northwest	46-32°26.179"N, 64-47°1.327"W	46-32°26.503"N, 64-47°3.675"W	Fixed	5	5	5	2	No	Residential, Farm	< 3"	N/A	N/A	No	No	No	No	No	Grass Line	Scattered	No	N/A	1	No	3	
10-Nov	28-1	10 Peter St, Sussex	8:55 AM	9:09 AM	Southwest	45-43°22.117"N, 65-30°32.088"W	45-43°20.167"N, 65-30°32.391"W	Fixed	5	5	5	2	No	Commercial, Residential	Sidewalk	N/A	N/A	No	No	No	No	No	Curb	Scattered	No	N/A	1	No	3	
10-Nov	28-3	46 Magnolia Ave, Sussex	9:25 AM	9:40 AM	Southeast	45-43°15.465"N, 65-30°19.942"W	45-43°13.353"N, 65-30°14.445"W	Fixed	5	5	5	2	No	Residential, Institutional	N/A	N/A	N/A	No	No	No	No	No	N/A	Scattered	No	N/A	1	No	3	Library, Royal Canadian Legion - Parking lot
10-Nov	28-4	126 Maple Ave, Sussex	9:52 AM	10:07 AM	East	45-43°33.204"N, 65-30°16.643"W	45-43°33.976"N, 65-30°14.364"W	Fixed	5	5	5	2	No	Residential, Institutional	< 3"	N/A	N/A	No	No	No	No	No	Curb, Grass Line	Scattered	No	N/A	1	No	3	Early Learning Centre
10-Nov	29-1	Taylor Rd corner of NB-890W, Studholm Parish	10:55 AM	11:15 AM	Northwest	45-49°58.141"N, 65-26°38.919"W	45-49°59.026"N, 65-26°41.158"W	Fixed	5	5	5	2	No	Residential, Farm	> 6"	N/A	N/A	Yes	No	No	No	No	Ditch	Scattered	No	N/A	1	No	3	
10-Nov	29-2	1130 Knightville Rd, Knightville	11:28 AM	11:47 AM	Northeast	45-50°47.161"N, 65-23°30.869"W	45-50°48.114"N, 65-23°28.473"W	Fixed	5	5	5	2	No	Farm, Undeveloped	< 3", 3"-6", > 6"	N/A	N/A	No	No	No	No	No	Grass Line, Ditch	Scattered	No	N/A	1	No	3	
10-Nov	29-3	7 Whites Mountain Rd, Whites Mountain	12:13 PM	12:32 PM	North	45-50°27.596"N, 65-25°52.966"W	45-50°28.793"N, 65-25°53.098"W	Fixed	5	5	5	2	No	Residential, Farm	3"-6"	N/A	N/A	Yes	No	No	No	No	Ditch	Scattered	No	N/A	1	No	3	
08-Nov	30-1	110 Water St, Saint John	9:05 AM	9:20 AM	North	45-16°9.556"N, 66-3°42.928"W	45-16°11.320"N, 66-3°43.737"W	Fixed	5	5	5	2	No	Commercial	Sidewalk	N/A	N/A	No	No	No	No	No	Curb, Grass Line	Scattered	No	N/A	1	No	3	
08-Nov	30-2	50 Union St, Saint John	9:30 AM	9:55 AM	Northwest	45-16°26.792"N, 66-3°49.232"W	45-16°26.842"N, 66-3°45.145"W	Variable	5	5	4	3	No	Commercial, Institutional	< 3"	N/A	N/A	Yes	No	No	No	No	Curb, Grass Line	Scattered	No	N/A	1	No	3	Canada Games Aquatic Centre, wall made site variable
09-Nov	30-3	48 Broad St, Saint John	9:40 AM	9:54 AM	West	45-15°59.747"N, 66-3°17.723"W	45-15°59.181"N, 66-3°20.438"W	Fixed	5	5	5	2	No	Commercial, Residential	Sidewalk	N/A	N/A	Yes	No	No	No	Yes	Curb, Grass Line	Scattered	No	N/A	1	No	3	
07-Nov	31-1	430 Grandview Ave, Saint John	2:50 PM	3:07 PM	Northeast	45-16°39.713"N, 66-0°37.309"W	45-16°40.453"N, 66-0°34.352"W	Fixed	5	5	5	2	No	Industrial	< 3"	N/A	N/A	Yes	No	No	No	No	Ditch	Scattered	No	N/A	3	No	3	
07-Nov	31-2	825 Bayside Dr, Saint John	3:24 PM	3:48 PM	Southeast	45-16°24.238"N, 66-0°36.638"W	45-16°23.268"N, 66°0.34.120"W	Variable	5	4.25	5	2	No	Industrial, Undeveloped	< 3"	N/A	N/A	No	No	No	No	No	Fence, Curb, Grass Line	Scattered	No	N/A	2	No	3	
09-Nov	31-3	191 Red Head Rd, Saint John	10:15 AM	10:35 AM	South	45-16°3.519"N, 66-1°20.071"W	45-16°1.659"N, 66-1°20.659"W	Variable	5	4	5	2	No	Residential	> 6"	N/A	N/A	No	No	No	No	No	Hedge	Scattered	No	N/A	2	No	3	
07-Nov	32-1	102 Courtenay Ave, Saint John	4:05 PM	4:25 PM	East	45-17°8.911"N, 66-2°6.963"W	45-17°9.584"N, 66-2°5.008"W	Fixed	5	5	5	2	No	Residential	< 3"	N/A	N/A	Yes	No	No	No	No	Curb	Scattered	No	N/A	1	No	3	
07-Nov	32-2	58 McDonald St, Saint John	4:40 PM	4:51 PM	Southeast	45-17°23.576"N, 66-1°48.958"W	45-17°21.799"N, 66-1°47.771"W	Fixed	5	5	5	2	No	Commercial	< 3"	Tim Horton's	N/A	Yes	No	No	No	No	Curb, Grass Line	Scattered	No	N/A	1	No	3	Saint John Transit
07-Nov	33-1	105 Burpee Ave, Saint John	1:35 PM	1:50 PM	Southeast	45-16°55.694"N, 66-3°47.050"W	45-16°55.073"N, 66-3°45.564"W	Variable	4.5	4	3.8	2	No	Residential, Institutional	< 3"	N/A	N/A	Yes	No	No	No	No	Curb	Scattered	No	N/A	1	No	3	Ruth Ross Residence
07-Nov	33-2	152 Parks St, Saint John	2:05 PM	2:30 PM	South	45-17°1.639"N, 66-4°5.884"W	45-16°59.939"N, 66-4°4.608"W	Fixed	5	5	5	2	No	Residential, Institutional, Undeveloped	< 3", 3"-6", > 6"	N/A	N/A	Yes	No	No	No	No	Grass Line, Tree Line	Scattered	No	N/A	3	No	3	School
08-Nov	33-3	22 Rocky Terrace, Saint John	10:54 AM	11:07 AM	Southwest	45-17°12.195"N, 66-3°28.970"W	45-17°11.186"N, 66-3°31.336"W	Variable	5	5	3	2	No	Residential	< 3", Sidewalk	N/A	N/A	Yes	No	No	No	No	Curb, Grass Line	Scattered	No	N/A	1	No	3	
09-Nov	34-1	663 Franklin Dr, Quispamsis	2:00 PM	2:23 PM	North	45-26°14.267"N, 65-55°44.265"W	45-26°16.073"N, 65-55°44.270"W	Variable	5	4.6	5	2	No	Residential	< 3", 3"-6", > 6"	N/A	N/A	Yes	No	No	No	No	Grass Line, Ditch	Scattered	No	N/A	1	No	3	
09-Nov	34-2	5 Sleepy Hollow Ln, Quispamsis	2:35 PM	2:47 PM	Northwest	45-25°56.177"N, 65-56°22.391"W	45-25°56.984"N, 65-56°20.576"W	Fixed	5	5	5	2	No	Residential	3"-6"	N/A	N/A	Yes	No	No	No	No	Ditch	Scattered	No	N/A	1	No	3	
08-Nov	35-1	W Quaco Rd, Corner of New Line Rd, West Quaco	11:06 AM	11:21 AM	Northwest	45-20°6.578"N, 65-32°54.450"W	45-20°7.831"N, 65-32°56.692"W	Fixed	5	5	5	2	No	Residential	< 3"	N/A	N/A	No	No	No	No	No	Grass Line, Ditch	Scattered	No	N/A	1	No	3	
08-Nov	35-2	Corner of W Quaco Rd and Lighthouse Rd, West Quaco	11:30 AM	11:55 AM	Southeast	45-19°33.458"N, 65-32°57.564"W	45-19°34.061"N, 65-32°54.976"W	Variable	5	5	4	2	No	Residential, Undeveloped	3"-6"	N/A	N/A	Yes	No	No	No	No	Ditch	Scattered	No	N/A	1	No	3	
08-Nov	37-1	1441 Old Black River Rd, Saint John	3:03 PM	3:20 PM	South	45-15°37.565"N, 65-58°8.960"W	45-15°35.896"N, 65-58°7.480"W	Fixed	5	5	5	2	No	Residential, Undeveloped	< 3"	N/A	N/A	No	No	No	No	No	Ditch	Scattered	No	N/A	2	No	3	
09-Nov	37-2	Corner of Bayside Rd and Proud Rd, Saint John	1:15 PM	1:30 PM	Southwest	45-14°19.909"N, 65-58°34.743"W	45-14°18.134"N, 65-58°37.297"W	Variable	5	5	3	2	No	Undeveloped	> 6"	N/A	N/A	No	No	No	No	No	Tree Line, Ditch	Scattered	No	N/A	2	No	3	
07-Nov	47-1	Clary Hill Rd corner of Pleasant Valley Rd, Nashwaak Bridge	9:40 AM	10:08 AM	East	46-14°34.337"N, 66-36°27.531"W	46-14°33.061"N, 66-36°27.553"W	Fixed	5	5	5	2	No	Residential, Undeveloped	< 3", 3"-6", > 6"	N/A	N/A	Yes	No	No	No	No	Grass Line, Ditch	Scattered	No	N/A	3	No	3	
07-Nov	48-1	Lime Kiln Rd corner of Silva Ln, Stanley	10:30 AM	10:45 AM	West	46-16°38.892"N, 66-44°53.909"W	46-16°38.695"N, 66-44°51.604"W	Fixed	5	5	5	2	No	Residential, Institutional	3"-6"	N/A	N/A	No	No	No	No	No	Ditch	Scattered	No	N/A	1	No	3	