



**KEEP THE ISLAND CLEAN!**  
Put litter in its place.

# Roadside Litter Survey Report 2003



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## **Executive Summary**

This is the second consecutive year that a survey of roadside litter has been conducted at 45 sites across Prince Edward Island. The survey data collected last year established a baseline of information.

The results of the 2003 survey show that the amount of litter has increased in all categories. The small survey of three sites for cigarette butts also showed an increase over last year. The general composition of the litter has essentially remained the same with plastic, paper and cups the leading types of waste collected. When cigarette butts are compared against the other data from only those three sites, they form over 70% of the items collected.

Rural areas are higher in drink cups and beverage containers of various types while the urban setting is higher in plastic bags, paper and plastic waste. Confectionary packaging waste was similar in both settings.

No comparison was made regarding Waste Watch since all areas are now serviced by the program.

## **Background**

This study was commissioned by the Provincial Department of Fisheries, Aquaculture and Environment and is designed to look specifically at the issue of roadside litter in Prince Edward Island. The department is working with a multi-stakeholder committee to address the issue of littering through regulation and/or education and awareness.

The PEI Litter Awareness Committee is comprised of the following organizations:

- ✓ Island Waste Management Commission
- ✓ PEI Liquor Control Commission
- ✓ Seaman's Beverages
- ✓ Tourism PEI
- ✓ Tourism Industry Association of Prince Edward Island
- ✓ Southeast Environmental Association
- ✓ City of Charlottetown
- ✓ PEI Department of Fisheries, Aquaculture and Environment
- ✓ Prince Edward Island Fluid Milk Processors
- ✓ Construction Association of PEI
- ✓ Federated Women's Institute of Prince Edward Island
- ✓ Federation of Prince Edward Island Municipalities
- ✓ PEI Department of Transportation and Public Works
- ✓ Canadian Council of Grocery Distributors
- ✓ Canadian Restaurant and Foodservice Association
- ✓ National Association of Tobacco and Confectionary Distributors

SEA would like to recognize the support of the PEI Department of Fisheries, Aquaculture and Environment. We would also like to acknowledge the hard work of our staff - Ryan Cain, Liz Carr, Cindee Higinbotham, Barry Judson, Wade Lewis, and Amanda MacIntyre - who collected the data (garbage). Thanks to David Boyce for the data analysis and reporting.

## **Survey Methodology**

### Overview

The methodology used for this survey is a cross section of other surveys completed. The methodology utilizes the standard definitions and procedures that have become more common place.

A survey of litter along PEI roadsides was conducted in July 1990. It used roads totalling a length of 515 kilometres as a representative sample for the province. Along these highways, a total of 138 sites of 500 metres each were sampled. It is unclear from the methodology how these sites were determined and why a total of 138 sites were sampled. Since major highways were used in the previous work, they will also form a part of this survey.

### Litter Definition

This survey will focus on visible litter which is defined as:

“Litter is an article of human made or human transported solid waste that has been deposited or disposed of in an improper place. This excludes natural flora and fauna, dog and cat litter, agricultural products and tree bark. Articles below bottle cap size (1 inch diameter) such as cigarette butts are excluded. All fragments of a broken glass container, mirror or similar brittle object are counted as one item.” (Ontario Litter, 1990, p. 29)

Three sites representing a different county and a different setting (rural/urban), will be randomly selected to include cigarette butts in the data recorded. No other litter smaller than 1 inch diameter will be included at these sites.

### Site Length and Width

Each survey site will be 100 metres in length with both sides of the road surveyed accounting for 200 metres of linear area surveyed. The width of sites surveyed will be determined by the characteristics present at the survey site. The measurement of the width is calculated from the edge of the pavement and extends to the presence of a litter catch point. These features include fences, tall grass or a hedgerow. The maximum site width for a site is 10 metres.

### Site Selection

Sites were originally selected at random but were also representative of primary, secondary and clay roads across the urban, suburban and rural setting on PEI. This year was a repeat of the original 45 sites selected in 2002.

A total number of 45 sites was determined as desirable with one third from each of the urban, suburban and rural areas. This was also divided to allow for an equitable number of sites between

each of the counties. Since Waste Watch is now Island wide, all areas have full curbside collection for waste, compost and recyclables.

#### Site Alteration Criteria

Once a site has been selected, it will not be rejected due to lack or excess of litter. If a site contains less desirable criteria, it will be moved 500 metres to the northwest to avoid the obstruction. The less desirable criteria includes:

- ✓ Bridge - as part of survey site or the majority of the roadside is submerged.
- ✓ Construction - a site where the presence of construction and/or demolition debris is obvious due to construction activity.
- ✓ Security and safety - addresses concern for the safety of the survey crew. This includes dangerous bank conditions, blind road corners, or a site containing material deemed to be hazardous.
- ✓ Waste management facility - survey site is adjacent to a legally authorized waste disposal or recycling facility.
- ✓ Women's Institute cleanup - Survey site has obviously been cleaned up as part of the program. Bags are lined up along the roadside.

#### Enforcement Action

Sites containing hazardous materials or what can be deemed to be illegal dumping will be reported immediately to the PEI Department of Fisheries, Aquaculture and Environment via their toll free number (1-800-565-1633). Staff will take photos of the incident area if conditions are so as not to pose a risk to safety.

#### Sampling Time Frame

Spring time was selected as the sampling time frame to allow for the maximum amount of waste to be found. The sampling will be completed after the snow has left the roadside. The sampling will take a couple of weeks and be completed in advance of the annual Women's Institute roadside cleanup to ensure, to the best of our abilities, that the results are not impacted.

#### Quality Control

Surveyors will be trained to conduct the survey through hands on training. This will take place at three survey sites under full supervision. Results will also be reviewed and compiled on a daily basis. At least five digital photographs will be taken at each site to record the quantity and type of litter representative of the site. It will also be used to help qualify unknown types of litter for data recording purposes.

Surveys will be conducted in teams of at least two with one collecting waste and the other marking the survey sheets. Data recorders will remain constant from the beginning of the survey to the end to ensure consistency in recording.

All litter collected at each site will be bagged for appropriate disposal at a local waste management facility in the part of the province where it was collected.

### Reporting Methodology

The final report will contain the following elements:

- Executive Summary - Outlining the results of the survey.
- Methodology - An overview of the methods used to collect the data and determine the survey sites will be presented.
- Results - Presentation of the results amalgamated collectively for all 45 sites. Results will be presented in graphs as general categories of product types collected. Analysis of the data will also be broken out by region and by the demographics of the sites.
- Discussion - Limited interpretation of the results will be offered including any confounding issues that may have served to alter the results from the normally anticipated circumstances.
- Appendices - A sample of the data survey sheets and a compendium of the information collected per site will be attached. The information presented per site will include a location description of the survey site and any influencing factors that may account for the observed results.



## **Discussion**

The survey did not take long to complete since it was not required to identify brands as part of the survey. Each site took an average of 30 minutes to complete once the site was identified and marked for survey. Late snowfalls and a residual of snow in some ditches did make it difficult to get the survey underway. Provincial road crews were also out working earlier than normal conducting roadside cleanups along the major arterial highways. Fortunately, none of the sites were impacted prior to surveying.

The time frame of spring was designed to allow for the least alteration in content of roadside litter. All of the waste discarded from the fall and winter would still be present while able to be found among the grass and shrubs in the ditch. The timing of the survey was critical with late snow falls covering the work area and getting at the material in advance of the annual Women's Institute roadside cleanup. It was also noted that bottle collectors had already begun to take material out of the ditches for several weeks as the snow retreated. It is this collection/cleanup service that some local residents provide that may alter the sites and therefore the data from its original, intended condition.

Three of the 45 sites were also examined for cigarette butts. The results for each site were 670, 1166 and 288 butts collected at each. This item was smaller than the products outlined for collection in the survey criteria, but it was felt that it was important to have a handle on this component of litter. While the volume is not very significant, the numbers far exceed other products collected for each survey area. While a time consuming item to find, collect and count, it is recommended that this item become a component of future litter surveys.

## **Results**

Within the survey there were 22 specific categories and 10 general categories to classify waste items collected. The products found most often during the survey were food containers associated with take out service. This fact makes most sense given that these are the waste products most commonly associated with automotive traffic.

Compared to other areas in North America, the roadside litter in PEI is comparable in terms of its composition. The volume appears to be less. This is most likely attributable to the roadside cleanup implemented each spring by the Women's Institute.

Note: Results are for numbers of items and not total volume. All percentages presented have been rounded off.

### Waste Sorting Categories

All waste was sorted into one of 32 different categories. The categories can be further sorted into five general product types. A list of the categories and *some examples* of each are listed below.

General Type	Category	Examples
Food Container	Cups	includes paper, plastic and styrofoam cups
	Lids	lids for cups
	Straws	
	Paper Food Pkg	typically a sandwich wrap
	Plastic Food Pkg	same as above
	Foil Food Pkg	typically burger wrappings
	Styrofoam Food Pkg	take out food platters, wrappings
	Sauce Pkg	small plastic and foil packs for ketchup and sauces
	Napkin	
	Cutlery	plastic knives, forks and spoons
Beverages	Can	soda (pop), juice or other beverage
	Plastic Bottle	pop, liquor, electrolyte drinks
	Glass Bottle	pop, liquor, juice (includes those found broken)
	Carton	typically milk products waxed carton
Confectionary	Chocolate	any candy bar wrapper
	Gum	any parts of the packaging for gum
	Chip Bag	
	Candy Wrap	all other forms of candy wrappings
Containers	Cigarette Pack	
	Tetra Pac	small drinking juice boxes
	Other Beverages	any other not covered under another category
	Plastic Bag	typically shopping bags
Uncategorized	Cardboard	
	Paper	this may include the bag from take out service
	Plastic	

Uncategorized (continued)	Glass	
	Styrofoam	
	Cloth	textiles
	Metal	
	C&D Debris	construction and demolition debris
	Car Parts	tires, mufflers
	Garbage Bags	filled garbage bags

Figure 1. Overview of waste found Island-wide by general product category.

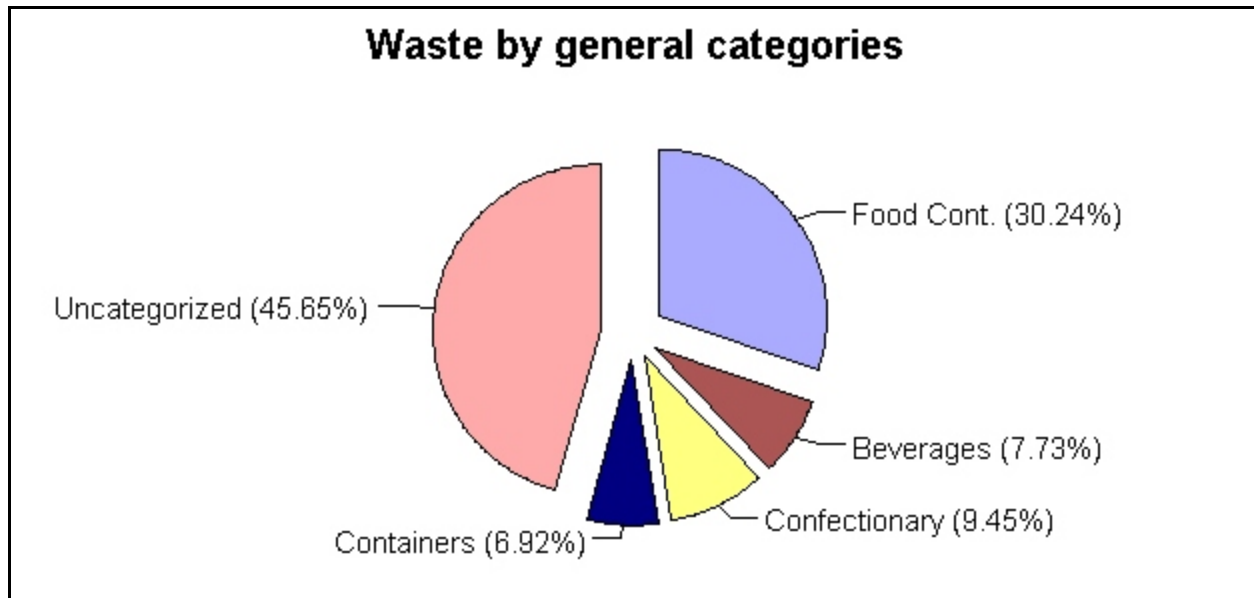
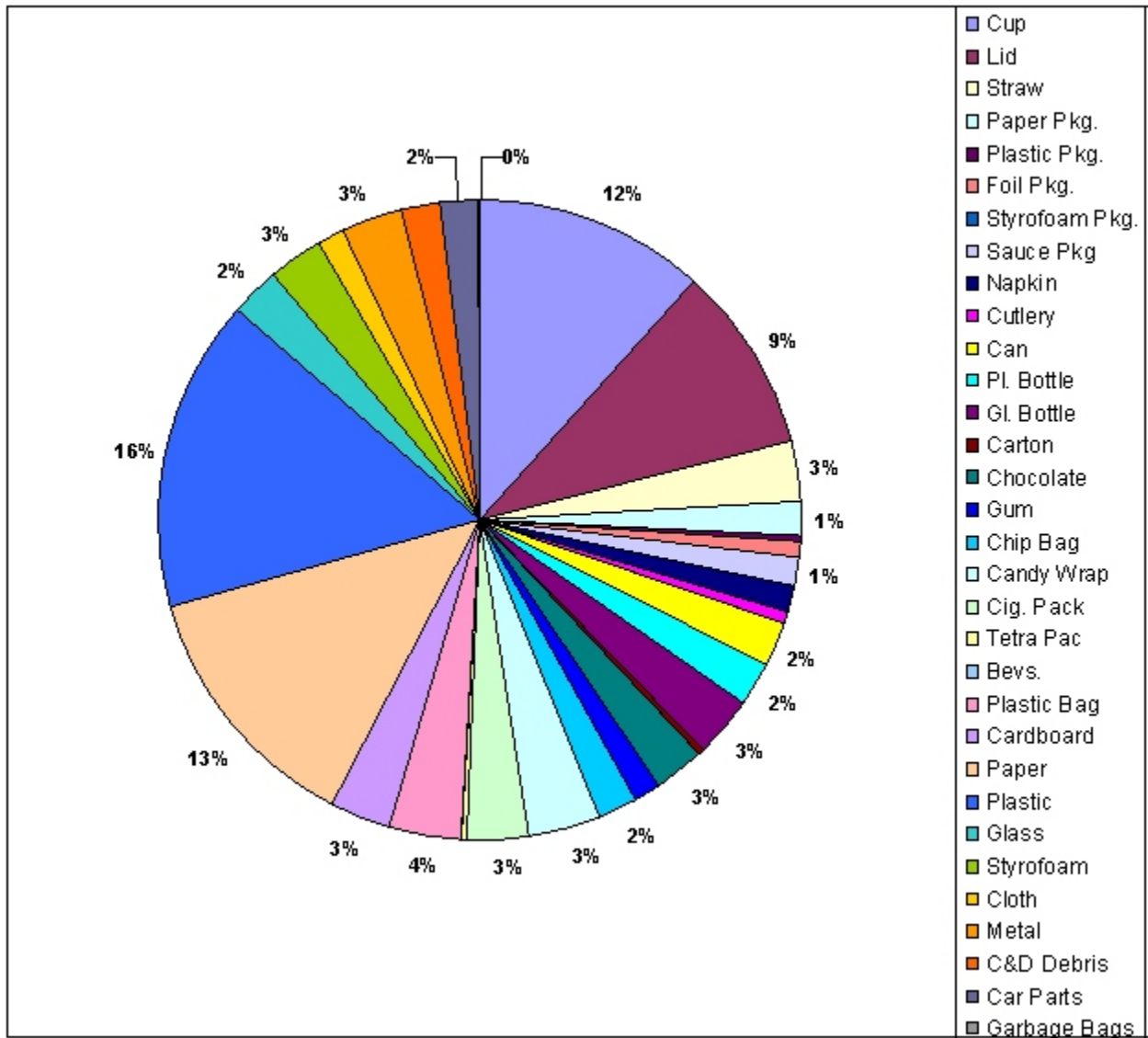


Figure 2. Overview of waste found Island-wide by product type.



Note: Values have been rounded to the nearest whole number. The value 0% represents a value between 0.01% and 0.49%.

Figure 3. Significant product types of waste found Island-wide.

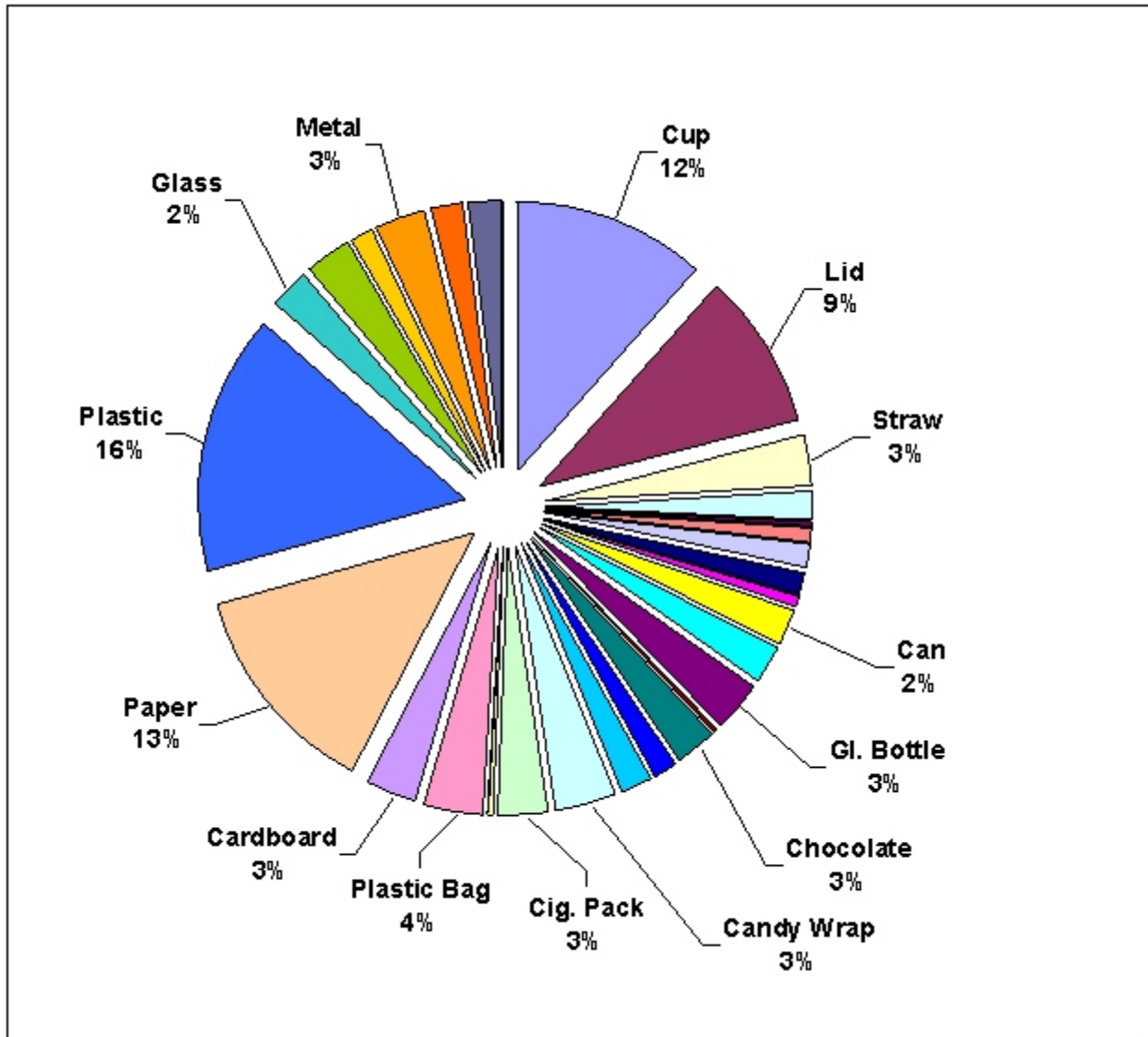
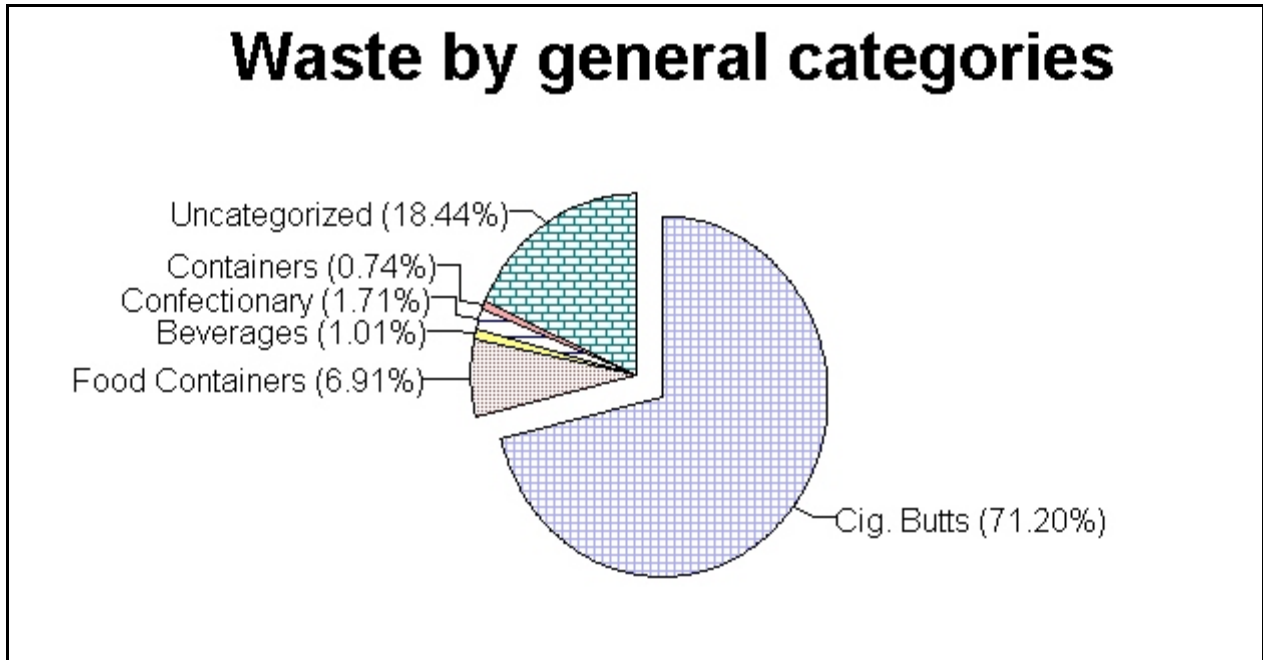


Figure 4. General waste categories for three selected sites including cigarette butts.

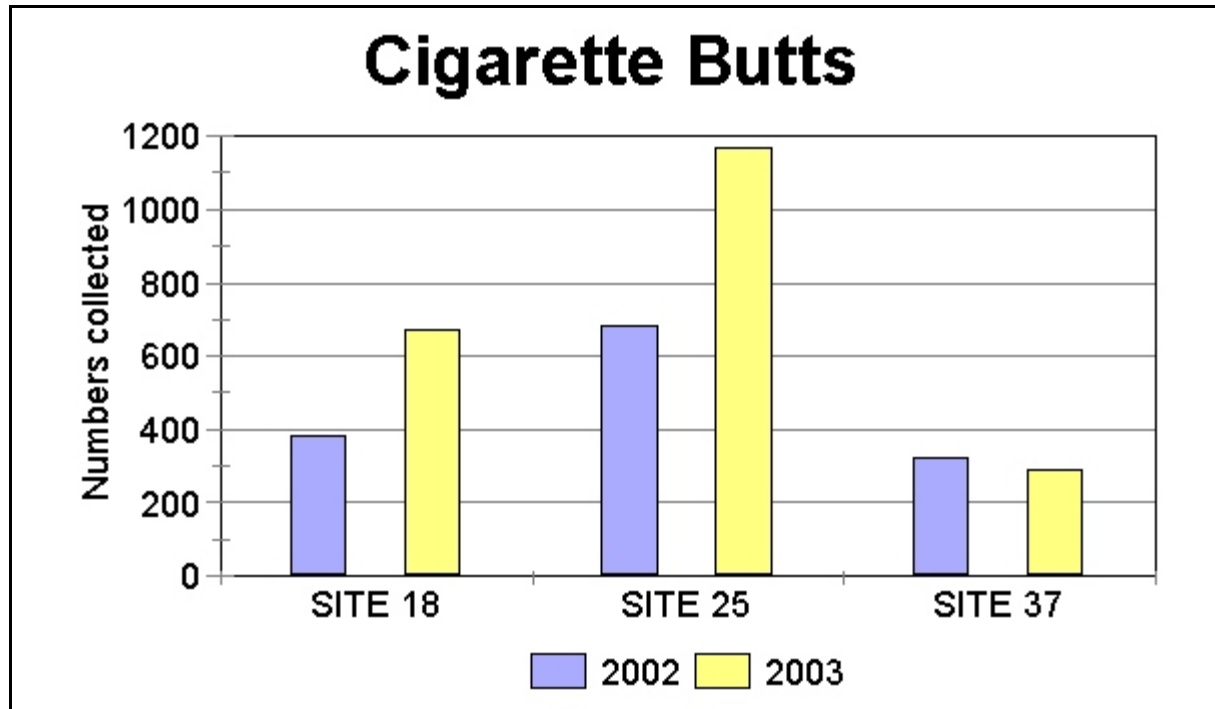


Cigarette Butts

Three of the 45 sites were also examined for cigarette butts. The results for each site in 2002 were 383, 681, and 320 butts collected. The results for 2003 at the same sites are 670, 1166 and 288 respectively. The graph above shows the results found at the three sites. This item was smaller than the products outlined for collection in the survey criteria, but it was felt that it was important to have a handle on this component of litter.

While the volume is not very significant, the numbers far exceed other products collected for each survey area. Some of the high numbers by product type for cigarette butts were attributed last year to the fact that these items may not be readily collected during a regular roadside cleanup and therefore represent an accumulation of more than one year. The graph below shows that there is significant accumulation over one year since each of these sites was cleaned in 2002. While a time consuming item to find, collect and count, it is recommended that this item form an expanded part of future litter surveys.

Figure 5. Comparison of quantities of cigarette butts collected at three selected sites.



### Waste Watch

The Waste Watch program is a source separation program for waste management that requires all households and businesses to put materials into one of three streams: recyclables, compost, and waste. The program is mandatory with residents paying for the service on their property tax bill while business owners have the options of self service or contracting a third party to haul the material away for appropriate disposal.

Waste Watch has been expanded to all areas of the province. A comparison of survey sites serviced and not serviced by the program was included in the 2002 survey. Since there are no points for comparison, the analysis has been excluded from the 2003 survey.

### Rural and Urban

The initial plan for the study was to dissect regions by rural, urban and suburban areas. This proved difficult to measure for PEI. One cannot distinguish where the urban area ends and the suburban

begins. As such, areas were categorized as rural or urban. No sites were collected directly in the downtown core of either Summerside or Charlottetown.

The results last year showed a significant difference between the rural and urban areas both in terms of the quantity and variety of litter found. It appeared that many urban areas were cleaner than their rural counterparts. This no longer seems to be the case. Below is the comparison of the material found.

Figure 6. Average of food container items found per site in rural versus urban areas.

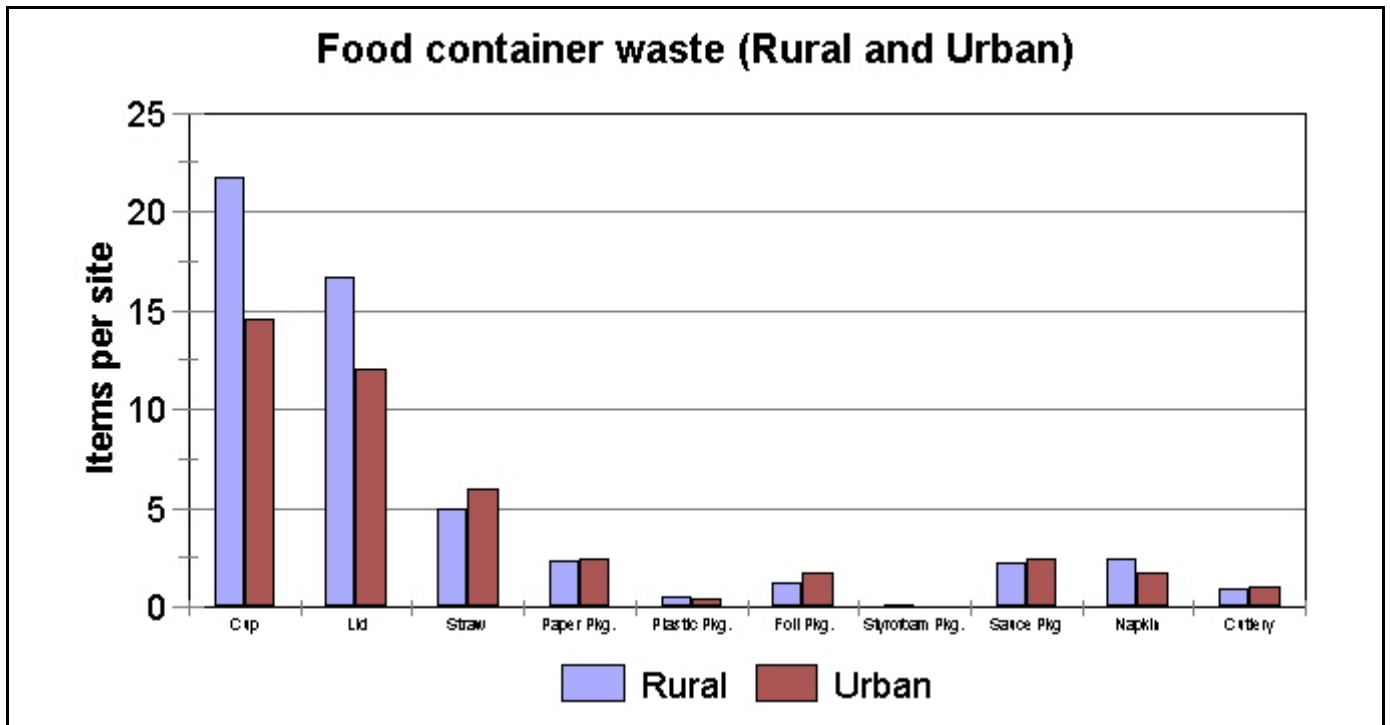




Figure 7. Average of beverage and confectionary items found per site in rural versus urban areas.

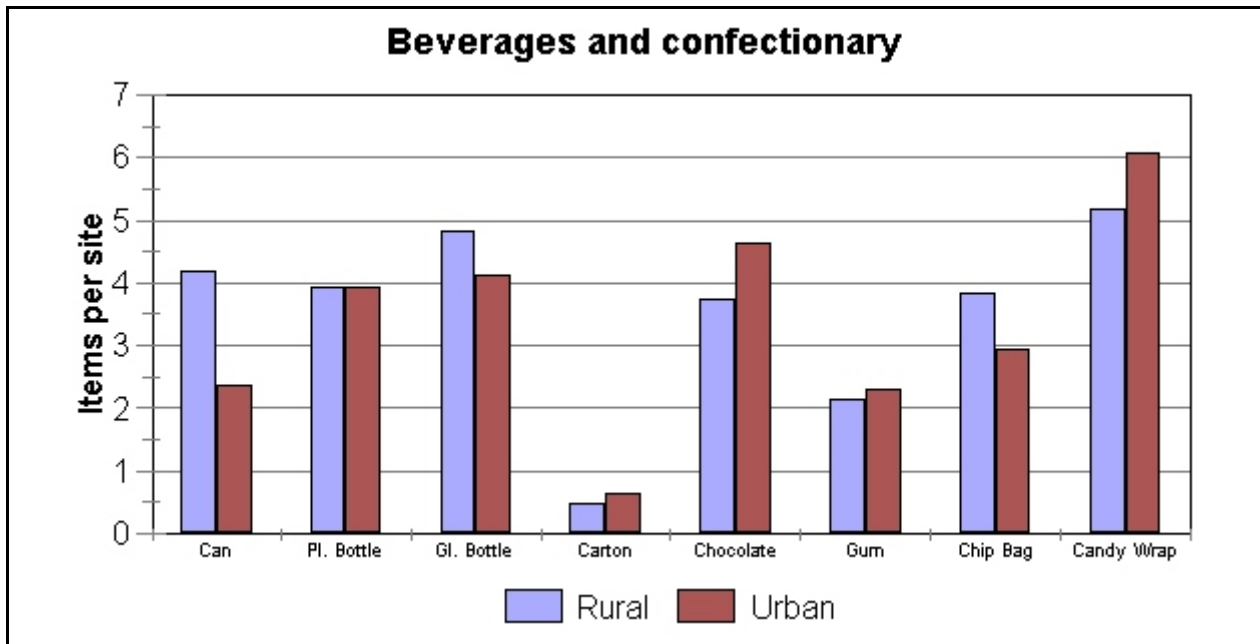
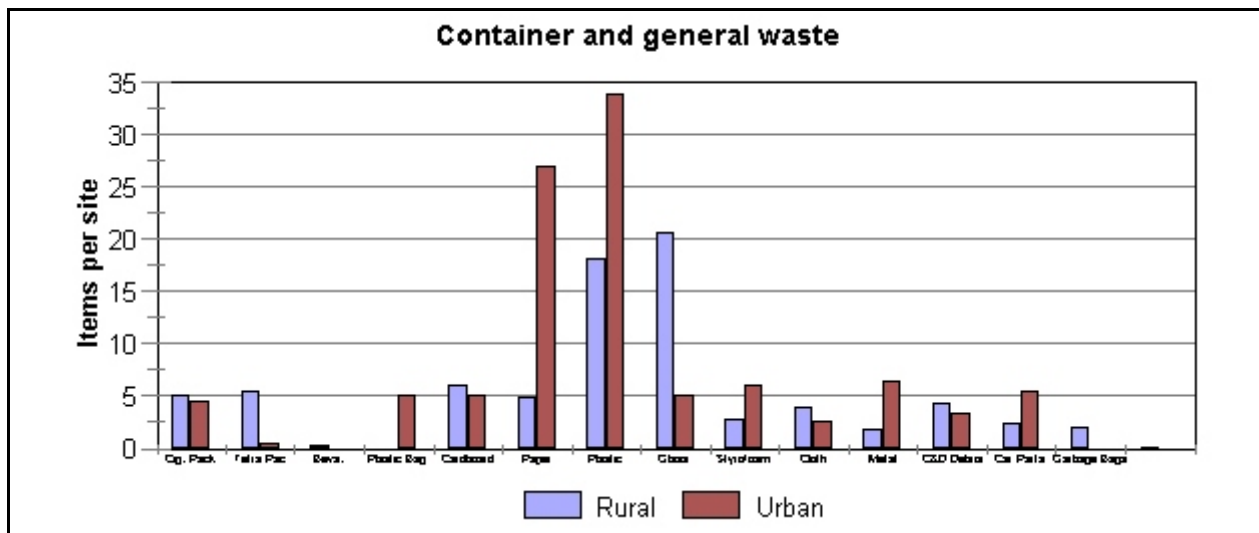


Figure 8. Average of Container and General waste items found per site in rural versus urban areas.



There are several factors that can account for the results of material found in rural and urban areas. Many of the rural sites are within a short driving distance of many community centres. On average they were about five kilometres from a settlement that could be classed as urban (for PEI anyway). The composition of the material found suggests its origins are from the urban areas.

The above information shows that cups, lids, tetra packs, cans, glass and garbage bags were found in more significant numbers in the rural areas than in the urban areas. Many of these products are associated with beverages. Meanwhile, plastic bags, general paper and plastic waste were higher in the urban setting. Confectionary product waste was similar in both settings.

### **Other Jurisdictions**

There are a few other jurisdictions in North America which have made the results of their surveys public. While the raw data is not known, the compilation of information can be compared to that found here on Prince Edward Island. The results show that the litter in Prince Edward Island is similar in composition to that of other jurisdictions. Food packaging, especially those originating from food service establishments is the most predominant form of litter. The same was found to be true not only in Nova Scotia and New Brunswick surveys, but also in the previous Prince Edward Island survey completed in 1990.

Since the information for PEI was not collected by volume, it is difficult to make a true comparison to other regions but it appears that the volume collected is less than that found in the neighbouring provinces. It is likely that this can be attributed to successful annual cleanups by various Island organizations and not necessarily to the higher consciousness of Island drivers.

### **Enforcement Action**

Only once during the survey were provincial enforcement staff called to investigate a site. Several intact and complete garbage bags were found adjacent to a survey site. These do not show up in the survey itself, however, the terms of the methodology required the staff to engage enforcement officials to take action.

Figure 9. Comparison of 2002 and 2003 general waste categories collected.

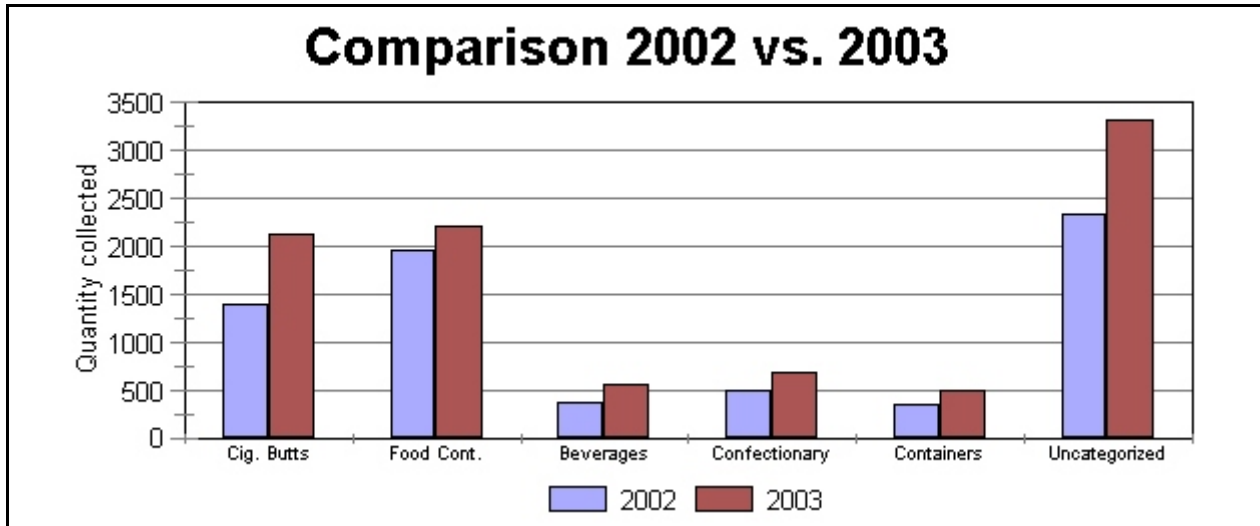
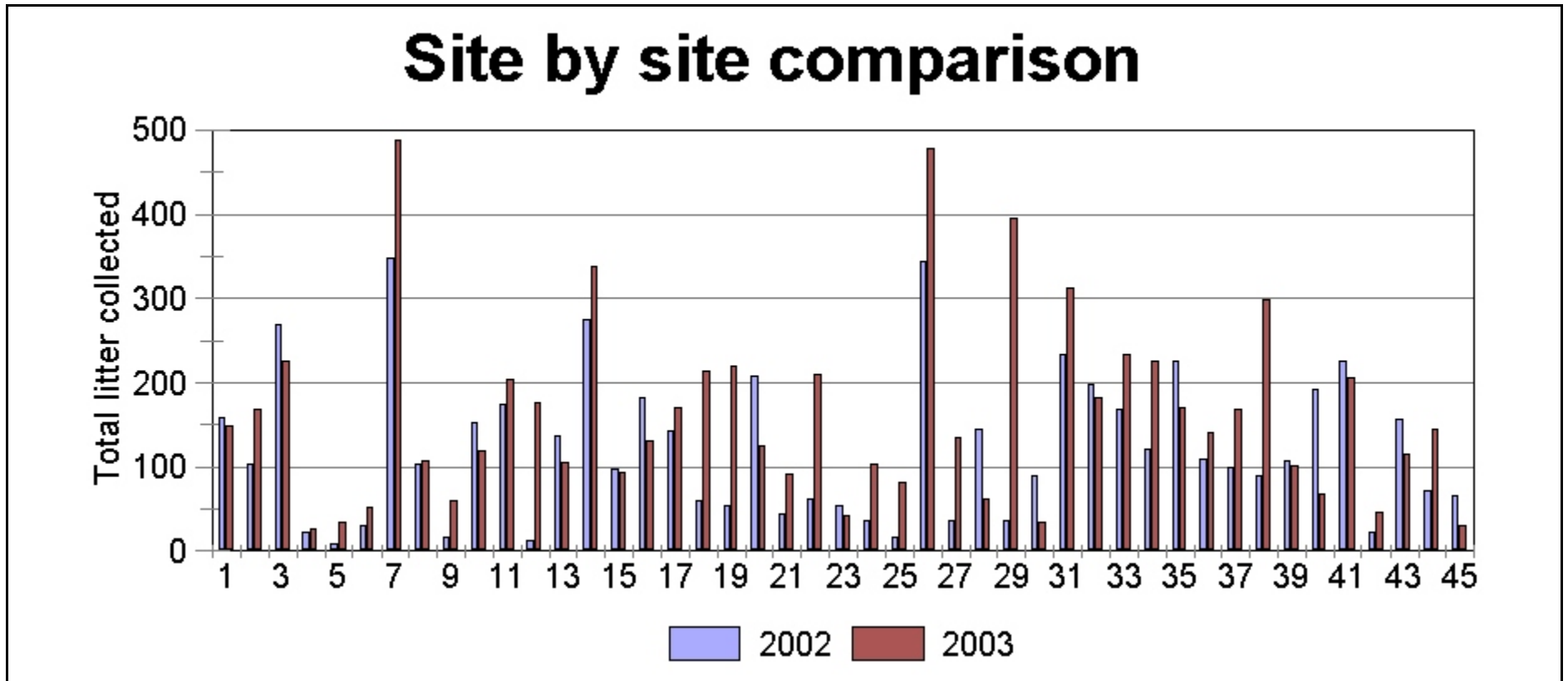


Figure 10. Site by site comparison of waste collected in 2002 and 2003.



## Appendix 'A'

### Survey Locations

<u>No.</u>	<u>Site</u>	<u>County</u>	<u>Setting</u>
1	Wilmot	Kings	Rural
2	Orwell	Kings	Rural
3	Peters Road	Kings	Rural
4	Avondale	Queens	Rural
5	Morell	Kings	Urban
6	Sturgeon	Kings	Rural
7	Hazelbrook	Queens	Rural
8	Dunstaffnage	Queens	Rural
9	Rte 246	Queens	Rural
10	Primrose	Kings	Rural
11	Fortune	Kings	Rural
12	Five Houses	Kings	Rural
13	St Peters	Kings	Urban
14	Lwr Montague	Kings	Rural
15	Cardigan	Kings	Urban
16	Souris	Kings	Rural
17	Kilmuir	Kings	Rural
18	Pooles Corner	Kings	Urban
19	48 Road	Kings	Rural
20	Vernon	Kings	Urban
21	St. Roch	Prince	Rural
22	St Peters Rd	Queens	Urban
23	Rte 104 - Indian River	Prince	Rural
24	Rte 150	Prince	Rural
25	Rte 11 - Abram's Village	Prince	Urban
26	Bypass Rd	Queens	Urban
27	Rte 142	Prince	Rural
28	Rte 2 - Springfield	Queens	Rural
29	Rte 2 - Up fr. Bloomfield Corner	Prince	Urban
30	Rte 224 - St Anns	Queens	Rural
31	Brookfield	Queens	Rural
32	Brackley Pt Road	Queens	Urban
33	Desable	Queens	Rural
34	Inverness/Portage	Prince	Rural
35	Kensington	Prince	Urban
36	Kinkora	Prince	Urban
37	Rte 2 - Summerside	Prince	Urban
38	Central St - S'side	Prince	Urban
39	Miscouche	Prince	Urban
40	New London	Queens	Rural
41	St Hubert	Prince	Rural
42	Rte 12 - Poplar Grove	Prince	Urban
43	Cornwall	Queens	Urban
44	North Tryon	Prince	Rural
45	Summerville Rte 420	Kings	Rural

**Appendix 'B'**  
**Average Units per Site**  
 (100 metres both sides)

<b>PRODUCT</b>	<b>2002 Avg.</b>	<b>2003 Avg.</b>	<b>PRODUCT</b>	<b>2002 Avg.</b>	<b>2003 Avg.</b>
Cups	14.58	19.02	Chip Bag	2.62	3.49
Lids	11.29	14.91	Candy Wrap	2.84	5.51
Straws	5.51	5.31	Cigarette Pack	4.58	5.16
Paper Food Pkg	2.31	2.38	Tetra Pac	0.33	0.33
Plastic Food Pkg	0.33	0.44	Other Beverages	0.13	0
Foil Food Pkg	3.47	1.38	Plastic Bag	2.60	5.71
Styrofoam Food Pkg	0.40	0.09	Cardboard	2.84	4.93
Sauce Pkg	1.58	2.31	Paper	14.18	21.44
Napkin	3.02	2.16	Plastic	18.16	25.67
Cutlery	1.13	0.91	Glass	3.11	3.67
Can	2.78	3.49	Styrofoam	3.16	4.78
Plastic Bottle	2.56	3.93	Cloth	1.82	2.16
Glass Bottle	2.18	4.56	Metal	4.02	5.09
Carton	0.69	0.53	C&D Debris	1.58	2.78
Chocolate	4.07	4.09	Car Parts	2.82	3.31
Gum	1.51	2.20	Garbage Bags	0.04	0.02

<b>Product</b>	<b>2002 Avg.</b>	<b>2003 Avg.</b>
Cigarette Butts (3 sites only)	461.33	708.00

**Appendix 'C' - Site by site comparison**

<u>Site #</u>	<u>Location</u>	<u>County</u>		<u>Litter Collected</u>	
				<u>2002</u>	<u>2003</u>
1	Wilmot	Kings	Rural	159	149
2	Orwell	Kings	Rural	104	168
3	Peters Road	Kings	Rural	268	225
4	Avondale	Queens	Rural	22	27
5	Morell	Kings	Urban	9	34
6	Sturgeon	Kings	Rural	30	52
7	Hazelbrook	Queens	Rural	348	487
8	Dunstaffnage	Queens	Rural	104	108
9	Rte 246 - Stanchel	Queens	Rural	16	59
10	Primrose	Kings	Rural	152	119
11	Fortune	Kings	Rural	175	203
12	Five Houses	Kings	Rural	13	177
13	St Peters	Kings	Urban	137	105
14	Lwr Montague	Kings	Rural	275	338
15	Cardigan	Kings	Urban	97	94
16	Souris	Kings	Rural	182	130
17	Kilmuir	Kings	Rural	143	171
18	Pooles Corner	Kings	Urban	60	214
19	48 Road	Kings	Rural	55	219
20	Vernon	Kings	Urban	207	124
21	St. Roch	Prince	Rural	44	91
22	St Peters Rd	Queens	Urban	62	210
23	Rte 104 - Indian River	Prince	Rural	54	42
24	Rte 150	Prince	Rural	37	103
25	Rte 11 - Abram's Village	Prince	Urban	17	82
26	Bypass Rd	Queens	Urban	343	477
27	Rte 142	Prince	Rural	37	134
28	Rte 2 - Springfield	Queens	Rural	144	61
29	Rte 2 - Up fr. Bloomfield Corner	Prince	Urban	36	396
30	Rte 224 - St Anns	Queens	Rural	89	35
31	Brookfield	Queens	Rural	233	312
32	Brackley Pt Road	Queens	Urban	198	183
33	Desable	Queens	Rural	168	233
34	Inverness/Portage	Prince	Rural	120	226
35	Kensington	Prince	Urban	226	170
36	Kinkora	Prince	Urban	109	141
37	Rte 2 - Summerside	Prince	Urban	100	168
38	Central St - S'side	Prince	Urban	90	299
39	Miscouche	Prince	Urban	107	102
40	New London	Queens	Rural	192	67
41	St Hubert	Prince	Rural	225	205
42	Rte 12 - Poplar Grove	Prince	Urban	22	47
43	Cornwall	Queens	Urban	156	116
44	North Tryon	Prince	Rural	71	145
45	Summerville Rte 420	Kings	Rural	65	31

### Appendix 'D' Sample Survey Sheet

Site# \_\_\_\_\_

Samplers \_\_\_\_\_

Date/Time \_\_\_\_\_

Samplers \_\_\_\_\_

Beginning Point: .....

End Point: .....

#### Data Sheet

Cup	Lid	Straw	Food Container (paper/foil?)	Sauce pkg.	Napkin	Cutlery

Can	Plastic Bottle	Glass Bottle	Carton



<b>Chocolate</b>	<b>Gum</b>	<b>Chip Bag</b>	<b>Candy Wrap</b>

<b>Cig. Pack</b>	<b>Tetra Pac</b>	<b>Bevs.</b>	<b>Plastic Bag</b>

<b>Cardboard</b>		
<b>Paper</b>		
<b>Plastic</b>		
<b>Glass</b>		
<b>Styrofoam</b>		
<b>Cloth</b>		
<b>Metal</b>		
<b>Construction Debris</b>		
<b>Car Parts</b>		
<b>Full garbage bags</b>		

NOTES: .....

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