

**A Characterization of Nova Scotian Litter**

**A Litter Survey  
July & August 1998**

**Presented by:**

**Nova Scotia Youth Conservation Corps.**

**&**

**Nova Scotia Department of the Environment**

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## **EXECUTIVE SUMMARY**

### **Background**

During summer, 1998, the Department of the Environment sponsored a Youth Corp Team to conduct a litter study across Nova Scotia. The study, under the direction of the Solid Waste-Resource Implementation Committee, was designed and completed by five Youth Corp Team members.

The purpose of the study was three-fold:

- to characterize litter in Nova Scotia (by item and brand), in order to develop litter abatement programs;
- to clean survey areas; and
- to provide baseline data for future litter surveys.

### **Study Methodology**

Three types of areas were surveyed across Nova Scotia. They were: main streets; rural highways; and recreational areas. A random selection was made to determine the sites to be surveyed. However, sites were surveyed only if there were significant amounts of litter, since one of the goals was characterization. Most randomly chosen sites had sufficient litter.

Sites were chosen across the entire province, in each of the seven solid waste regions developed in the Nova Scotia Solid Waste-Resource Management Strategy. Representative samples were sought for each region.

Visible litter was targeted for this survey. Individual litter was counted as one item. For example, a cup with a lid and straw was counted as one piece of litter. However, when a lid was found on its own, it too was considered as one item. Broken glass, when found in one area, also was counted as one item. None of the litter was weighed, and only items larger than a bottle cap were counted. Cigarette butts were excluded.

In addition to an individual count, each piece of litter was also classified according to item (i.e. cup, lid, napkin), its category (six were used: fast food; beverage container, snack food, tobacco, grocery store and miscellaneous), and its original brand owner (a visible company name).

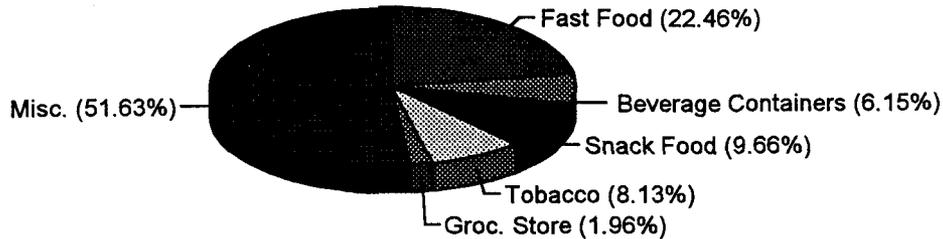
### **Results**

The main results of the study are shown in three tables:

- Total composition, including miscellaneous.
- Total composition excluding miscellaneous.
- Ten most common brand names found on litter items.

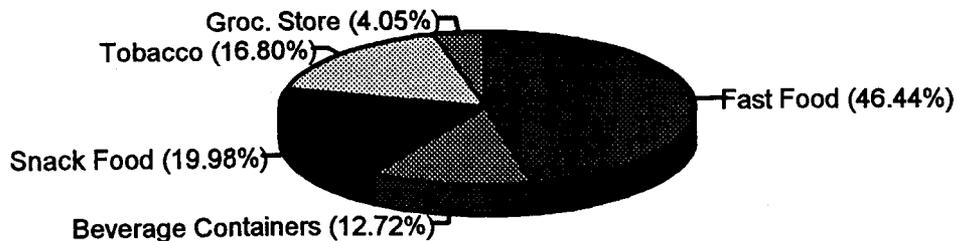
During the study, 7,750 piece of litter were collected, and classified into one of six categories. The table below shows these results:

### Total Composition With Miscellaneous



The table below is similar to the one above, except the Miscellaneous category has been excluded. Most of the miscellaneous litter was simply unidentifiable due to decomposition. However, it likely originated from one of the categories shown below.

### Total Composition Excluding Miscellaneous



Identifiable litter was also classified according to brand names. The ten most common brand names found during the survey are ranked below.

#### Ten Most Common Brand Names

Rank	Brand Name	Total # Items	% of Total Litter (excluding miscellaneous)
1	Tim Horton's	821	22.0%
2	McDonalds	380	10.1%
3	Player's	223	6.0%
4	Hostess	205	5.5%
5	Humpty Dumpty	110	2.9%
6	Export A	104	2.8%
7	Sobeys *	98	2.6%
8	Hershey	91	2.4%
9	Pepsi	82	2.2%
10	Coke	77	2.1%

\* Sobeys brand plastic bags, beverage containers and chip bags.

Another interesting finding is that there were almost 50% more non-deposit beverage containers than deposit bearing containers. The deposit refund system now collects about 75% of all containers sold. This has resulted in a dramatic increase in the number of containers that are recycled, which is helping to reduce the volume of beverage container litter in Nova Scotia.

#### Conclusion

Litter is a hindrance to the scenic beauty of our province. It is deadly to wildlife, attractive to pests and can even be hazardous to human health. While many people don't know the amount of fines that can be levied for littering, most realize it is illegal and socially unacceptable. Despite these facts, some Nova Scotians continue to litter.

Anti-littering strategies have one main goal: to stop litter. However, a strategy must rely on a number of elements. These include education, stewardship and enforcement. Individuals, industry and government all share responsibility to implement these elements.

It is believed that the findings of this survey will help Nova Scotia develop a strategy to reduce litter. By working together and sharing responsibilities, Nova Scotia will become a cleaner and more beautiful place to call home.

## **PREFACE**

Each time you take a stroll in a park or drive along a highway you will see litter. Litter is one of the outcomes of a consumer society. The packaging from fast food restaurants and snacks foods is often "thrown away" because much of it is worthless garbage, except for a small portion of valuable recyclables. Litter is one of the most neglected outcomes of consumerism because its effects on humans are difficult to measure. It is often associated with a community's collective attitude toward the environment they live in. Few people can attribute litter to health problems, but many believe that litter takes away from the beauty of our lands. Furthermore, litter is a hazard to wildlife through entanglement, ingestion, and amplification up the food chain.

The scenic beauty of Nova Scotia is important. In an effort to keep Nova Scotia clean, the Adopt-a-Highway Program and Clean Nova Scotia work together with several government departments. Beach Sweeps, anti-littering campaigns and new waste management strategies have abated the litter problem in some areas. For the most part, these community partners and government departments have achieved great successes; however, despite these efforts, litter continues to accumulate.

## **1.0 INTRODUCTION**

This report discusses the composition of litter in Nova Scotia. The study was conducted for the Nova Scotia Department of Environment in July and August of 1998. The goal of the project is to provide information on litter so stewardship programs can be implemented between industry and the province. Secondary objectives include cleaning the survey areas and providing baseline data for future litter surveys.

## **2.0 METHODOLOGY**

### **2.1 Litter Definition**

A total of 40 sites were surveyed with 7750 pieces of litter counted. Since litter is primarily a hindrance to the scenic beauty of Nova Scotia, the survey focused on visible litter.

Visible litter, for the purpose of the survey, is defined as follows:

*"Litter is an article of human made or human transported solid waste that had been deposited or disposed of in an*

*improper place. 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)

## 2.2 Allocation of Sample Sites

The main objective of the study was to characterize litter in Nova Scotia. Therefore, it was necessary to choose sites that yield significant quantities of litter. Three types of sites were studied:

- rural highways;
- main streets; and
- parks and recreational areas.

The province's document **Solid Waste-Resource Management: A Strategy for Nova Scotia** was used as a foundation for site selection. The Strategy divides the province into seven solid waste regions (see Appendix 1). The number of survey sites for each region was chosen based on population. Approximately one site was surveyed for every 20,000 people (see Figure 1 below).

At all potential sites, a preliminary survey was completed to determine whether sufficient visible litter existed. Sites with less than 35 pieces of litter were rejected. However in most areas, finding sufficient litter was not difficult. No more than two garbage bags of litter were collected at each site since classifying the litter was a time consuming activity. Further, unsafe sites (blind crests, sharp turns) were rejected.

The three types of sites are defined as follows:

**1. Rural Highways:** Survey sites on Rural Highways were arbitrarily selected from a map. Due to safety considerations, 100 series highways were excluded from the survey. Typically, the closest road intersecting the 100 series highway near a city or town, was chosen. Once a site was selected it was marked to measure approximately 200 linear meters. Litter was collected on both sides of the measured roadway. Beginning and end points were established using stationary/permanent objects.

**2. Main Streets:** Survey sites in high traffic areas in cities, towns and villages, were arbitrarily selected from a map. Once a site was selected it was marked to measure approximately 200 linear meters (both sides of the roadway are represented). Beginning and end points were established using stationary/permanent objects.

**3. Parks and Recreational Areas:** Survey sites in municipal and provincial parks, were arbitrarily selected from a map. These areas were generally larger than the two other types of sites in order for adequate litter counts to be made (more than 35 items) Beginning and end points were established using stationary/permanent objects.

**Figure 1: Survey Site Distribution**

Region	Population (1997 Census Projections)	Rural Highway	Rec. Area	Main Streets	TOTAL # OF SITES
1	163,103	2	2	2	6
2	81,661	2	1	2	5
3	108,098	3	2	1	6
4	360,430	2	6	5	13
5	85,191	1	1	1	3
6	90,397	2	1	1	4
7	59,037	1	1	1	3
<b>TOTAL</b>	<b>947, 917</b>	<b>13</b>	<b>14</b>	<b>13</b>	<b>40</b>

### 2.3 Field Techniques

With photographs taken, and beginning and end points recorded a count of the items in the site commenced (See Appendix 2 for a summary of sites and Appendix 3 for a complete description of each site). A group of five NSYCC staff walked the survey site picking up visible litter. After the litter was collected, the bags were emptied and the litter was counted. Additional considerations such as nearby stores (fast food outlets, convenience stores, grocery stores, etc.), the number of garbage cans at the site, and whether or not there was an anti-litter campaign in the area were noted during the survey.

At each site, a data sheet was used to record each piece of litter collected. (See Appendix 4 for a sample data sheet). When broken glass was found in one area it was counted as one item. Large and dangerous items were flagged and pick-up was arranged with the Department of Transportation and Public Works. Recyclable items were placed in blue bags and taken to enviro-depots.

### 3.0 TERMINOLOGY

#### 3.1 Definitions:

The following definitions serve as useful tools in interpreting the results:

**Category:** a designation for specific type of litter, i.e., fast food.

**Brand:** a company name that was visible on the litter item.

**Item:** a type of litter, for example, a straw.

**Site:** a survey area, for example, rural highway.

#### 3.2 The Six Categories and Their Items:

The litter collected can be divided into six main categories:

1. **Fast Food:** Contains items like cups, lids, plates, straws, paper bags, sauce packs, napkins, cutlery, containers, cup trays and plastic bags. These items are typically bought from take-outs, drive thrus and franchises.

2. **Beverage Containers:** Cans, plastic bottles, glass bottles, cartons, labels, plastic bags for beverages and cups.

3. **Snack Food:** Chocolate wrappers, gum wrappers, chip bags and candy wrappers.

4. **Tobacco Products:** Cigarette packs, cigarette foil and plastic.

5. **Grocery Store Products:** Beverage containers, plastic bags and chip bags.

6. **Miscellaneous items:** Paper, plastic, glass, Styrofoam, tin foil, metal, cardboard, construction debris, cloth, other, lottery tickets and wood.

### 4.0 RESULTS AND DISCUSSION:

Five aspects of litter are considered in this survey:

- **Categorization:** The litter is classified into one of six

categories which are: fast food, beverage containers, snack foods, tobacco, grocery stores, and miscellaneous. See Section 4.1 (Figures 2-3).

- **Brand Identification:** The litter is further classified according to the brand name appearing on visible labels, within each of the six categories. An attempt was made to identify corporate names that might own several brand names (for example, "Effem Foods" manufactures Mars Bars, Snickers, M&Ms, Skittles, Bounty, and Dove). However, this was not possible in all cases. See Section 4.2 (Figures 4-9).
- **Item Identification:** The litter is classified according to the type of items found within each of the six categories. See Section 4.3 (Figures 10-14).
- **Site-Type Comparison:** The three types of litter sites (main steets, rural highways and parks) are compared. See Section 4.4 (Figures 15-17).
- **Ten Most Common Brand Names:** The ten most common brand names found during the survey are listed in Section 4.5 (Figure 18).

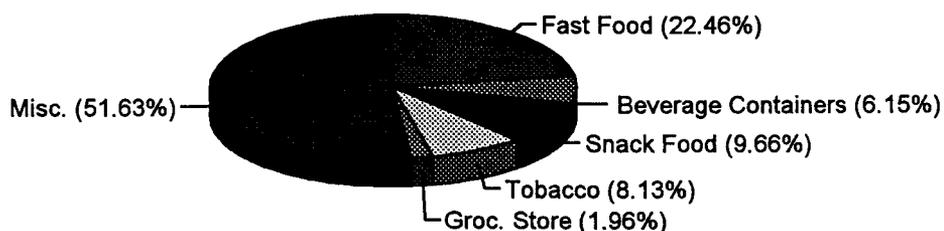
The statistical analysis was performed using a Quattro Pro 6.01 spreadsheet. Any brand name item equal to or less than 1% of the total litter in its given category was deemed statistically insignificant and excluded from the analysis. This being the case, there is a slight difference between the total litter counted and the amount of brand name litter. The margin of error is 0.97%.

#### 4.1 Total Litter Composition by Category

During the study, 7,750 piece of litter were collected, and classified into one of six categories. The table below shows these results:

### Total Composition- With Miscellaneous

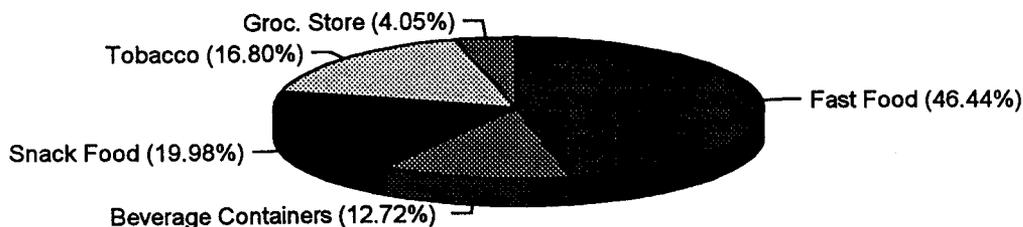
Figure 2



The next chart excludes miscellaneous (unidentifiable) litter. As is shown, Fast Food composes almost half of the identifiable litter (Figure 3 below), which is nearly a quarter of all collected litter. From Figure 10, it is known that about 44% of Fast Food litter is cups (non-deposit beverage containers). Therefore it is interesting to note that, while about 20% of identifiable litter is Non-Deposit containers, only 12.72% is Deposit containers. Consider also that many Non-Deposit containers are decomposable while deposit containers are not.

### Total Composition- Excluding Misc.

Figure 3

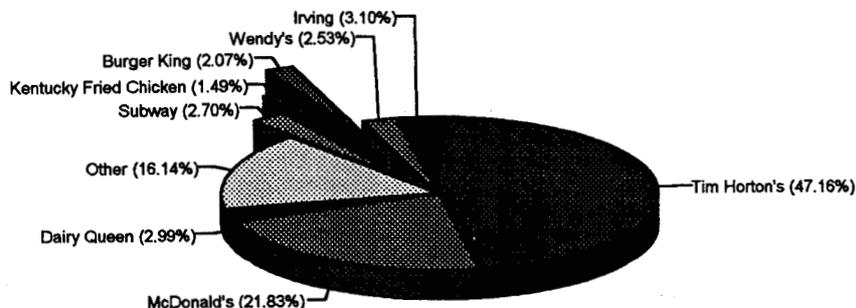


#### 4.2 Totals by Brand

In the fast food category (Figure 4 below), Tim Horton's and McDonalds litter comprised nearly two-thirds of fast food litter found. This overwhelming majority may be due to their large market share of the popular fast food industry. The "other" slice represents the many smaller fast food stores across the province.

### Fast Food Litter by Brand

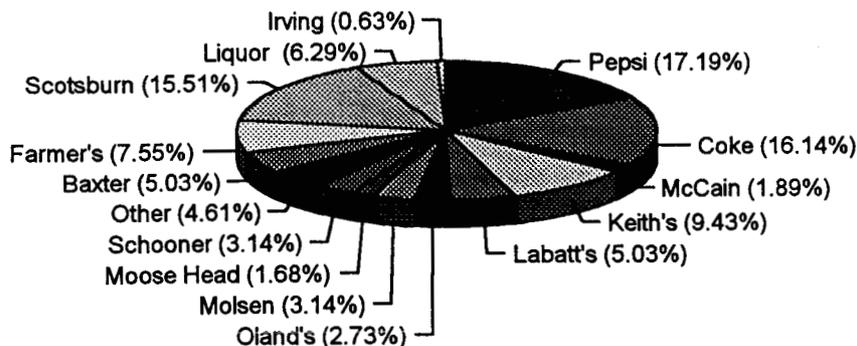
Figure 4



Pepsi and Coke (Figure 5 below) comprise a remarkably similar amount of the litter found. There could be a correspondence with market share and popularity among Nova Scotians. Scotsburn made up the majority of dairy related litter. Among beer producers Keith's ranked first of litter in this category.

### Beverage Containers by Brand

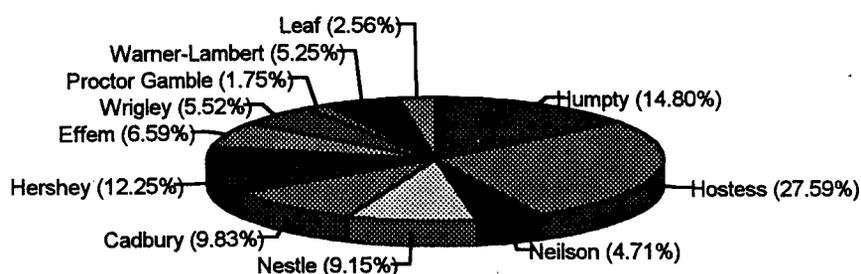
Figure 5



Humpty Dumpty and Hostess Frito-Lays (Figure 6 below), comprise over forty percent of snack food litter. Since foil-backed chip bags take a long time to bio-degrade, they remain in the environment more than other forms of snack food litter. Some of the company names shown are not immediately recognizable. However their products are more well known: Effem foods manufactures "Mars Bars", "Snickers", "M&M's", "Skittles", "Bounty" and "Dove"; Warner Lambert manufactures "Trident" and "Dentene" gums; and Leaf manufactures "Mr. Freeze."

## Snack Food Litter by Brand

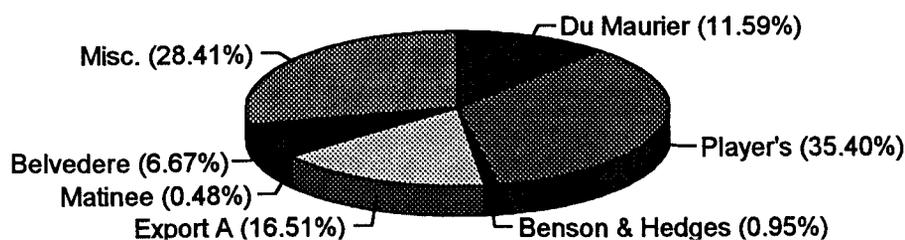
Figure 6



Player's (Figure 7 below), comprised the overwhelming majority of cigarette packages found, both in numbers and frequency. Miscellaneous refers to the plastic and tin foil that does not trace back to any specific brand. But one may assume that each brand represented here would be responsible for a percentage of the miscellaneous category.

## Tobacco Litter by Brand

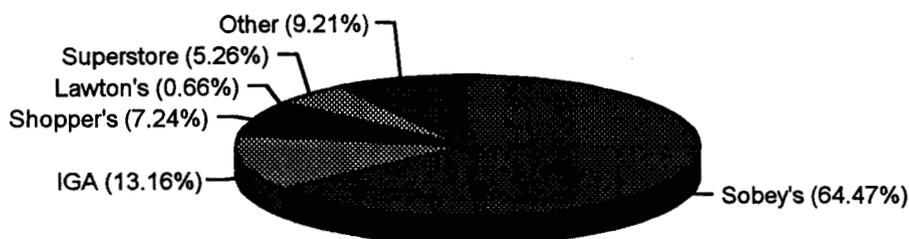
Figure 7



The slice labelled "other" in the Grocery category (Figure 8 below), refers to corner store plastic bags and other companies that use similar bags for their products.

## Grocery Store Litter by Brand

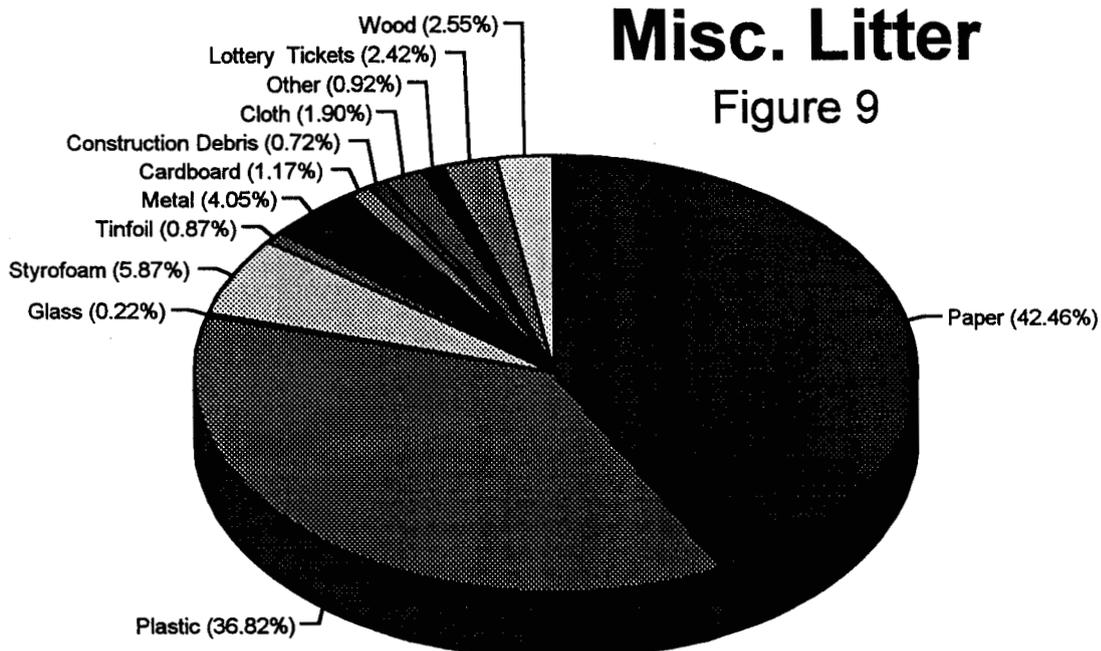
Figure 8



Although Misc. (Figure 9 below), represents a significant portion of the litter found, a great deal of it may have been refuse which originally could have been included in the other categories. One reason for not being able to identify this litter is because the names have bio-degraded.

## Misc. Litter

Figure 9

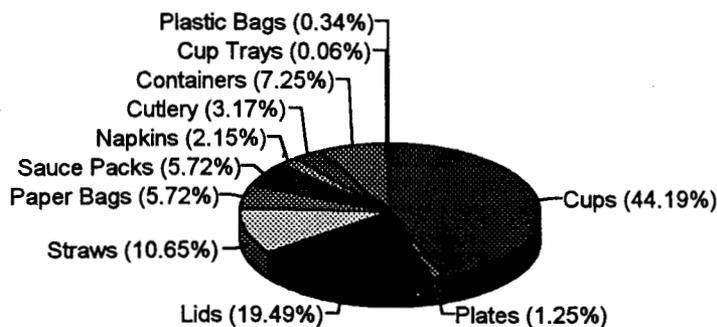


### 4.3 Totals by Item

Most survey sites contained fast food cups, lids and straws (See Figure 10 below). It is interesting to note that about 74% of all Fast Food litter is cups, lids and straws.

## Fast Food Litter Totals by Item

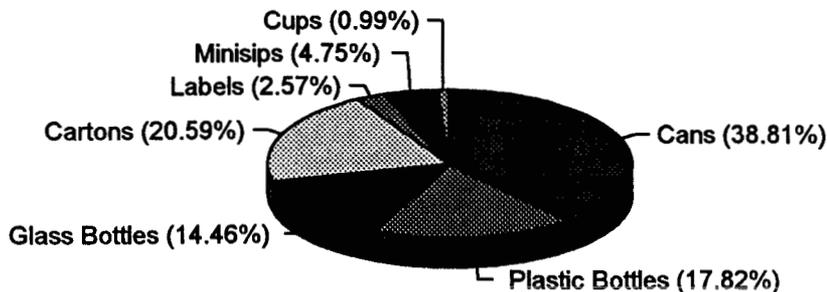
Figure 10



A significant portion of beverage container litter consists of cans and plastic bottles (See Figure 11 below). It should be noted that a large number of cans and plastic bottles found were old or damaged and deemed unfit for recycling. The "labels" slice of the pie refers to loose beverage container labels. Mini-sips are plastic drink packets.

## Beverage Container Totals by Item

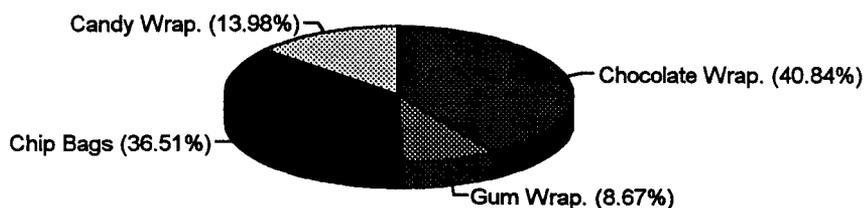
Figure 11



It is important to note that this study recorded the number of litter found, not its mass or volume. As stated before, chip bags make a significant portion of this snack food litter because they take a long time to bio-degrade (See Figure 12 below).

### Snack Food Totals by Item

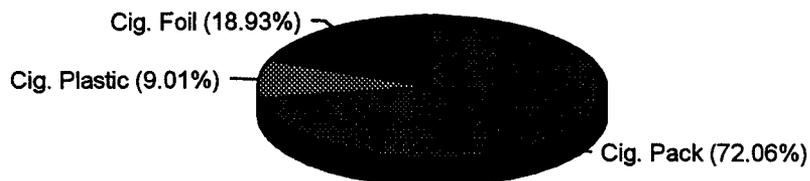
Figure 12



It should be noted that cigarette foil and especially cigarette plastic is difficult to distinguish from other foils and plastic (See Figure 13 below). Cigarette "butts" are excluded from the survey.

### Tobacco Litter Totals by Item

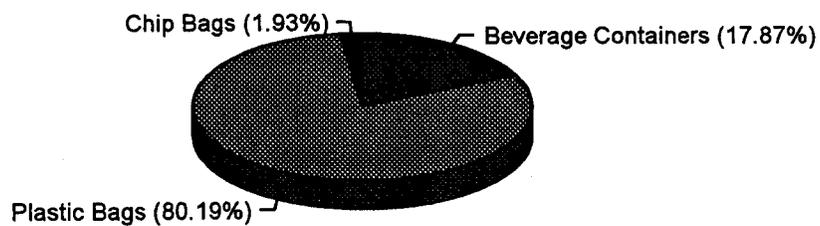
Figure 13



Many of the items purchased at grocery stores are not items produced by them. This being the case, grocery store bags are the most traceable form of litter in this category (See Figure 14 below).

## Grocery Store Litter Totals by Item

Figure 14

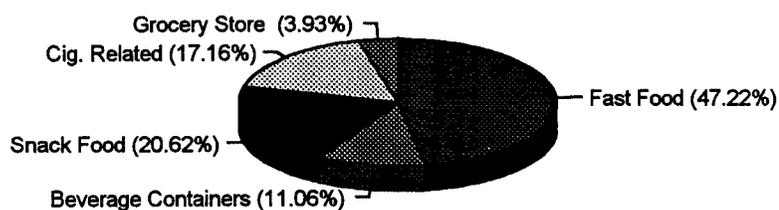


#### 4.4 Site Type Totals by Category:

The following three graphs represent the three types of sites selected for this study (See Figures 15-17). Each is broken down by category. The site-type graphs reflect the provincial totals.

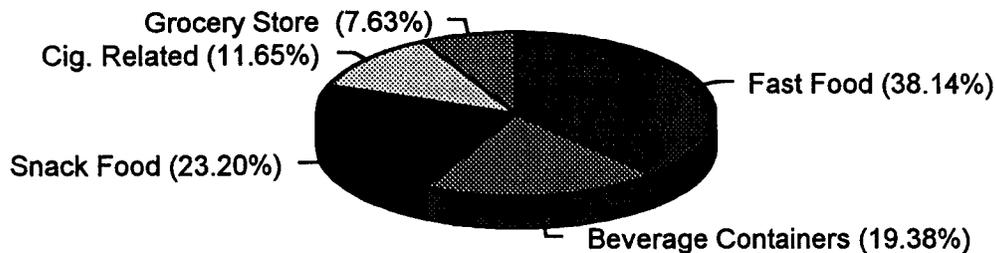
### Main Street Litter

Figure 15



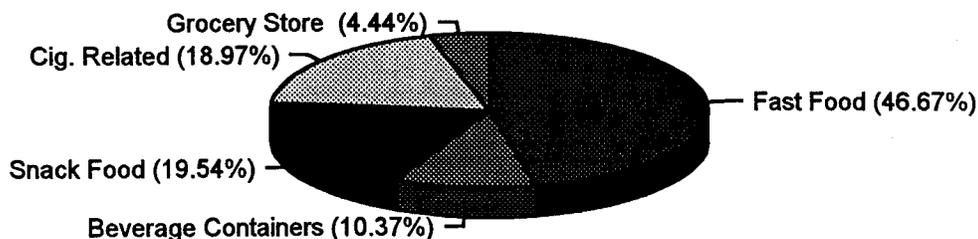
### Parks and Rec. Area Litter

Figure 16



## Rural Highway Litter

Figure 17



Among the rural highway and main street sites, the amount of litter in all five categories remained relatively constant. Beverage containers and grocery store litter was proportionally higher in parks, compared to highways and main streets.

### 4.5 Ten Most Common Brand Names

The table below (Figure 18) shows the top ten litter sources by brand, regardless of litter category.

Figure 18: Ten Most Common Brand Names

Rank	Brand Name	Total # Items	% of Total Litter (excluding misc.)
1	Tim Horton's	764	22.0
2	McDonalds	358	10.2
3	Player's	206	6.0
4	Hostess	186	5.3
5	Humpty Dumpty	107	3.1
6	Export A	99	3.0
7	Sobey's	97	2.8
8	Hershey	83	2.3
9	Coke	75	2.1
10	Pepsi	73	2.0

#### **4.6 Regional Analysis**

An analysis comparing the 7 regions showed little variation in percentages of items littered and brand identification. Therefore, it can be assumed that each region has similar values to the provincial values.

#### **5.0 STRATEGIES FOR LITTER REDUCTION**

In the 40 sites surveyed, only 3 anti-littering signs were located within a 2 kilometre radius. No correlation was observed between the amount of litter found and the presence of anti-litter signs. However, if more anti-littering signs were visible, perhaps the amount of litter would decrease. In addition, many of the parks and recreational areas surveyed lacked garbage cans and recycling bins. More receptacles could help reduce litter.

#### **6.0 CONCLUSION**

Litter, especially food waste, can attract pests, scavengers and insects. It is a hindrance to the scenic beauty of the province, and also can be a hazard to wildlife that ingest it, or become entangled in it. In some instances, litter can be a human health hazard. Residents become discouraged by litter around their neighborhoods, while tourists receive a negative image that might discourage them from returning.

Legislation exists which makes it illegal to litter. Hefty fines can be levied against anyone caught in the act of littering. While the amount of the fines are not commonly known, most people realize that littering is not only illegal but is socially unacceptable.

Nova Scotians, however, continue to litter. Certainly, the lack of trash containers in many areas will prompt some people to litter. Yet those in vehicles can easily deposit their garbage at any service station. However, some motorists still continue to toss their trash on the side of the road.

In order to stop or reduce litter, an anti-littering strategy is required. Anti-littering strategies have one main goal: to stop litter. However, a strategy must rely on a number of elements. These include education and awareness, stewardship and enforcement. Individuals, industry and government all share responsibility to implement these elements.

Nova Scotia has some anti-littering programs and infrastructure already in place. These programs must be continued and possibly

expanded. An Adopt-a-Highway program has existed for a number of years which aims to keep our roads clean. The Clean Nova Scotia Foundation has always carried out anti-littering programs as one of the cornerstones of its agenda. Legislation already exists which makes it illegal to litter.

It is believed that the findings of this survey will help Nova Scotia develop a strategy to reduce litter. It is also believed that this survey can be used as a baseline for future studies so it is possible to know whether or not the elements of the strategy are working to solve the litter problem. By working together and sharing responsibilities, Nova Scotia will become a cleaner and more beautiful place.

## 7.0 GENERAL OBSERVATIONS

During the survey some patterns of litter accumulation were noticed. While not scientifically based, these are general observations on the littering behaviour of Nova Scotians:

- More litter was found on the side of rural roads leading away from urban centers than from the side of the road leading to the urban centers.
- Litter would increase in number as one approached a stopping area, such as a stop sign or traffic light.
- Many stores which sold beverage containers did not clean up within 150 m of their building, as is required by law. They often did not have a recycle bin visible to the public, and usually did not know about these bylaws.
- More litter was found on exit ramps coming off of 100-series highways than on entry ramps.
- Parks contained more alcoholic beverage containers than main streets or rural highways.
- It appears that people are more likely to litter when in rural areas.
- Litter can be very habitual; within a small area, we found 14 bottles of Red Tassel vodka along side many Player's cigarette packs. Could this be the same person's daily routine?
- The deposit-refund system is reducing the amount of beverage container litter as more containers are recycled.

## 8.0 BIBLIOGRAPHICAL NOTE

From government reports to independent studies, litter has been discussed in detail. One of the most notable names in litter is Daniel B. Syrek, director of *The Institute for Applied Research*. Syrek's study *California Litter*, was one of the first state wide litter studies conducted in the United States. The object of the report was to measure trends and compare litter rates. Syrek is a recognized authority on litter having co-coordinated at least 55 litter surveys in North America.

Syrek's methods and statistical analysis are interesting. There is a great deal of statistical reporting in his documents. Coefficients and correction formulas are used to discuss the impact of population, traffic and weather on littering rates within the state. Since the design of his project is ambitious and his findings accurate, he has been a source of information for several other litter studies.

In collaboration with municipal and government organizations, Syrek has helped produce two Canadian litter surveys, *Ontario Litter: 1990* and *Newfoundland Litter Survey: 1992*. Using a methodology similar to his California study, Syrek finds that litter control procedure developed in the United States could, if properly implemented, reduce litter and the costs of litter control.

Other documents on litter include *The Minister's Task Force on Litter Abatement: 1988*. This document contains strategies on litter abatement, as well as methods on how to implement changes in law reform and public awareness. Other interesting information is contained in **Clean Nova Scotia** reports on their beach sweep programs. Some information contained in their annual report and *The Nova Scotia Pick Me Up Report* was used as a guide for this survey.

### 8.1 Bibliography

Note: Most of the documents listed below can be obtained from Clean Nova Scotia's Library in Halifax.

Canadian Soft Drink Association and The Soft Drink Bottlers of Newfoundland, "Newfoundland Litter Survey 1992," March 1993.

Clean Nova Scotia Foundation, "The Great Nova Scotia Pick Me Up: Report," 1992.

\_\_\_\_\_, "The Great Nova Scotia Pick Me Up: Report," 1993.

Clean Nova Scotia, "Annual Report," July 1996.

Keep America Beautiful, "Community Clean-up Campaign Check List," (brochure).

Keep Australia Beautiful Council (KAB), "Helpful Hints For A KAB," (brochure).

Keep New Zealand Beautiful, "Beautiful Towns Programme," 1987.

Minister's Task Force on Litter Abatement, "Conclusions and Recommendations," Province of Nova Scotia, October, 1988.

Minister's Task Force on Litter Abatement, "Report," Province of Nova Scotia, October, 1988.

Nova Scotia Department of the Environment, "Environmental Enhancement Summer Employment Program", 1988.

\_\_\_\_\_, "Solid Waste-Resource Management: A Strategy for Nova Scotia," October, 1995.

Parker, Roy and graduate students, "Halifax Shoreline Litter Survey," School of Resource and Environmental Studies, Dalhousie University, 1989.

Syrek, Daniel B., "California Litter," The Institute for Applied Research, 1986.

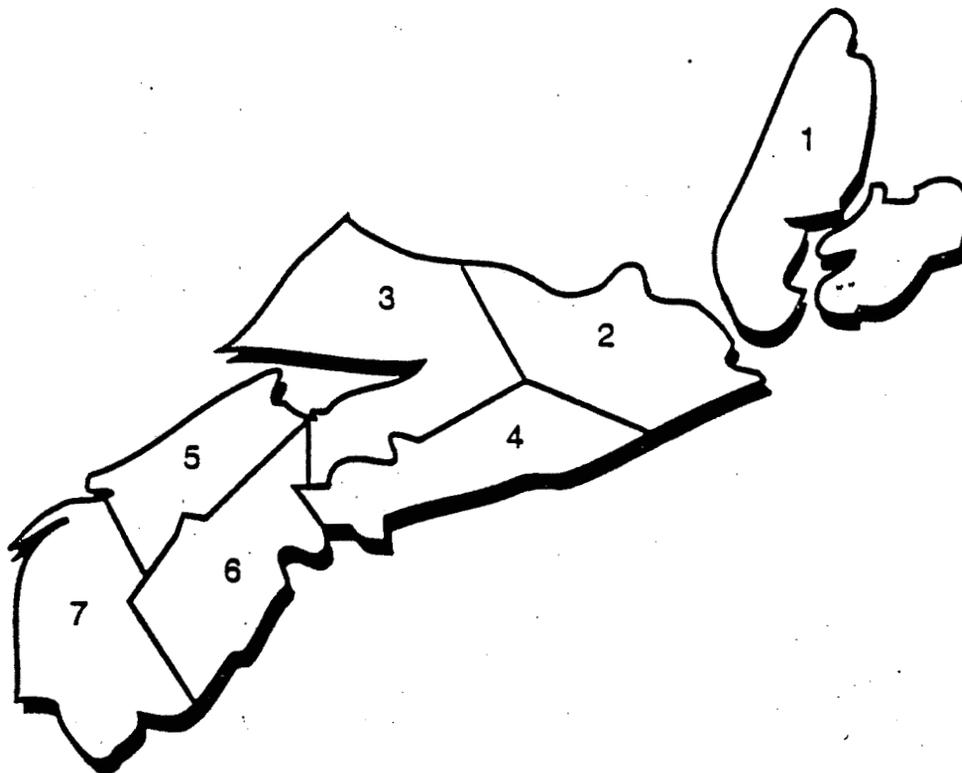
Syrek, Daniel B. and Resource Integration Systems Ltd., "Ontario Litter: 1990," The Institute for Applied Research, January 14, 1990.



## **Appendix 1: Solid Waste Management Regions**



**Figure 1. Solid Waste Resource Management Regions**



- |                |   |
|----------------|---|
| 1. Cape Breton | Counties of Cape Breton, Inverness, Victoria and Richmond     |
| 2. Eastern     | Counties of Antigonish, Pictou and Guysborough                |
| 3. Northern    | Counties of Colchester and Cumberland, District of East Hants |
| 4. Halifax     | County of Halifax   |
| 5. Valley      | Counties of Annapolis and Kings                               |
| 6. South Shore | Counties of Lunenburg and Queens, District of Hants West      |
| 7. Western     | Counties of Digby, Shelburne and Yarmouth                     |



## **Appendix 2: Summary of Survey Sites**



**Completed Sites**

**Region/Site #      Location**

4/1	Bedford Moirs Park	HRM- Park
4/2	Kearney Lake	HRM- Park
4/3	Dartmouth Commons	HRM- Park
4/4	Westphal Highway (#7)	HRM -Main St.
4/5	Roaches Pond Ballfield Park (Spryfield)	HRM- Park
4/6	Mayor St. - Spryfield	HRM- Main St.
2/7	#4 East	New Glasgow- Rural Rd.
2/8	South Harbour Side	Antigonish- Rural Rd.
2/9	West St.	Antigonish- Main St.
2/10	Trenton Park	New Glasgow- Park
2/11	Trenton Main St.	New Glasgow- Main St.
4/12	#2 from Lantz	Elmsdale- Rural Rd.
4/13	Shubie Canal	Elmsdale- Park
4/14	#7	Musquodoboit- Main St.
4/15	East Petpeswick Rd.	Musquodoboit- Rural Rd.
4/16	Martinique Rd.	Musquodoboit- Park
4/17	Sackville Main St.	HRM- Main St.
4/18	Lacewood Drive	HRM- Main St.
3/19	Route #2	Amherst- Rural Rd.
3/20	Route #236	Truro- Rural Rd.
3/21	Willow Rd.	Truro- Main St.
3/22	Shubenacadie exit ramp area	Shubenacadie- Park
3/23	Lion's Ballfield	Shubenacadie- Park
3/24	Route #224	Shubenacadie- Rural Rd.

**Completed Sites**

Region/Site #      Location

7/25	Main St.	Yarmouth- Main St.
7/26	Frost Park	Yarmouth- Park
7/27	Route #3	Shelburne- Rural Rd.
6/28	Route #8	Liverpool- Rural Rd.
6/29	Victoria Rd.	Bridgewater- Main St.
6/30	Kinsman's Ballfield	Bridgewater- Park
6/31	Route #325	Bridgewater- Rural Rd.
1/32	Colby School	Sydney- Park
1/33	Mira River Campground	Sydney- Park
1/34	George St.	Sydney- Main St.
1/35	Route #22	Sydney- Rural Rd.
1/36	Route #19, exit 7	Baddeck- Rural Rd.
1/37	Route #4	Port Hawksbury- Main St.
5/38	Route #1- West	Kentville- Rural Rd.
5/39	Corner of Prince and Main	Hantsport- Park
5/40	Main St.	Windsor- Main St.

Note: In the first column, titled "Region/Site #," the first number refers to the solid waste region in which the site is located. See Appendix 1 for a list of solid waste regions. The second number simply indicates the order in which the sites were completed.

## **Appendix 3: Description of Survey Sites**



### Summary of Survey Sites

Each table below represents a description of a single survey area. There are 40 tables since there were 40 survey sites. Note that the first number shown for "Photograph #," refers to the region in which the site is located, while the second number simply refers to the order in which the sites were completed.

Table 1. Region 1-Main Street

Location	Port Hawkesbury-Highway #4
Area	150m
Beginning Point	Wandyln Inn
End Point	Irving Garage
Litter Sources within 2km	Gas Stations, Hotels, Corner Stores
Garbage Bins in Area	2 BFI Bins
Anti-Litter Signs in Area	None
Special Considerations	Very windy and wet area
Photograph #	1/37

Table 2. Region 1-Rural Highway

Location	Cabot Trail Route #19 off TransCanada Exit#7
Area	200m
Beginning Point	Sign on right side after exit #7 - "Cheticamp Sporting Camp"
End Point	First speed limit sign on right side after exit #7 ("Maximum 80km")
Litter Sources within 2km	None
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-More litter on right side of road after exit #7 from the TransCanada -found two full bags of garbage
Photograph #	1/36

Table 3. Region 1-Recreational Area

Location	Mira River Campgrounds
Area	200m <sup>2</sup>
Beginning Point	Edge of Lake
End Point	Gravel Road
Litter Sources within 2km	1 Restaurant
Garbage Bins in Area	9
Anti-Litter Signs in Area	None
Special Considerations	Seaside Area, Picnic and Camping
Photograph #	1/33

Table 4. Region 1-Rural Highway

Location	Route #22 near Sydney
Area	200m
Beginning Point	White House on left exiting Sydney- #1915
End Point	Fire Station on left exiting Sydney
Litter Sources within 2km	Tim Hortons
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	1/35

Table 5. Region 1-Main St.

Location	George Street, Sydney
Area	100m
Beginning Point	Needs Convenience Store
End Point	Mira River Elementary School on right when exiting downtown
Litter Sources within 2km	Gas Stations, Corner Stores
Garbage Bins in Area	1 BFI Bin
Anti-Litter Signs in Area	None
Special Considerations	-very windy open area -lots of garbage found by dumpster
Photograph #	1/34

Table 6. Region 1-Recreational Area

Location	Colby School, Sydney on Cabot Road
Area	50m2
Beginning Point	Litter accumulated next to fence
End Point	Litter accumulated around playground
Litter Sources within 2km	Gas Stations, Corner Stores
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	-Garbage seems to blow out of open garbage bins near the playground -found many popsicle-related items
Photograph #	1/32

Table 7. Region 2-Main Street

Location	Trenton Main Street (near New Glasgow)
Area	200m
Beginning Point	B&B Auto Repair Ltd.
End Point	Church Monument towards Trenton Park
Litter Sources within 2km	Corner Stores, Gas Stations, Liquor Store, Tim Hortons, Restaurants
Garbage Bins in Area	4
Anti-Litter Signs in Area	None
Special Considerations	-Parking lot across from Needs Convenience store contained a lot of garbage and lottery tickets
Photograph #	2/11

Table 8. Region 2-Recreational Area

Location	Trenton Park Campground
Area	250m <sup>2</sup>
Beginning Point	Perimeter of Main Area-pool, campground & playground
End Point	Parking Lot
Litter Sources within 2km	None
Garbage Bins in Area	20
Anti-Litter Signs in Area	None
Special Considerations	Cleaned Regularly
Photograph #	2/10

Table 9. Region 2-Main Street

Location	West Street (#4 East), Antigonish
Area	200m
Beginning Point	Intersection between West and #104
End Point	Apartment Building on Left from main highway opposite tourist bureau
Litter Sources within 2km	Tim Hortons, McDonalds, Subway, Restaurants, Gas Stations
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	Construction Site
Photograph #	2/9

Table 10. Region 2-Rural Highway

Location	Southside Harbour Road, Antigonish
Area	200m
Beginning Point	Fire Hydrant on right side of road as exit highway #104
End Point	House #173 on mailbox & the 911 number is P234
Litter Sources within 2km	None
Garbage Bins in Area	Each resident has a bin
Anti-Litter Signs in Area	None
Special Considerations	Most litter is found on right when exit highway
Photograph #	2/8

Table 11. Region 2-Rural Highway

Location	Route #4 junction with TransCanada, New Glasgow
Area	200m
Beginning Point	Highway ramp to rural road exit
End Point	50m past Big Cove Camp Entrance
Litter Sources within 2km	None
Garbage Bins in Area	1 garbage can, 1 BFI bin
Anti-Litter Signs in Area	1
Special Considerations	-Garbage can at entrance to camp was overflowing -Found 3 car parts
Photograph #	2/7

Table 12. Region 3-Rural Highway

Location	Route #224, Shubenacadie
Area	200m
Beginning Point	Silo
End Point	Cow Crossing Sign
Litter Sources within 2km	None
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	3/24

Table 13. Region 3-Recreational Area

Location	Shubenacadie Lions Ballfield Park
Area	250m2
Beginning Point	Ballfield Fences
End Point	Road
Litter Sources within 2km	Local Restaurants, Corner Stores
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	3/23

Table 14. Region 3-Recreational Area

Location	Shubenacadie Park, main exit off the #2
Area	220m2
Beginning Point	Perimeter of Park
End Point	None
Litter Sources within 2km	Restaurants
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	3/22

Table 15. Region #3-Main Street

Location	Willow Road, Truro
Area	175m
Beginning Point	Intersection with Lower Truro Road
End Point	Nissan Garage
Litter Sources within 2km	Tim Hortons, Garage
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	-Found 3 Car parts
Photograph #	3/21

Table 16. Region #3-Rural Highway

Location	Route #236, Truro
Area	150m2
Beginning Point	Sign- "Truro Heights" on right side as exiting Truro
End Point	Sign- "Truro Heights" on left as exiting Truro
Litter Sources within 2km	Tim Hortons, Wendys, Gas Stations, McDonalds, Restaurants
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-A lot of trash in vacant lot --Found roll of carpet & 2 car parts
Photograph #	3/20

Table 17. Region #3-Rural Highway

Location	Route #2, Amherst
Area	200m
Beginning Point	Street Sign- "Springhill 21km & Parrsboro 68km"
End Point	Sign advertising cottages
Litter Sources within 2km	Superstore, Sobeys, Subway
Garbage Bins in Area	None
Anti-Litter Signs in Area	1
Special Considerations	Found 3 car parts
Photograph #	3/19

Table 18. Region #4-Recreational Area

Location	Kearney lake Public Beach, Halifax
Area	200m <sup>2</sup>
Beginning Point	Perimeter of woods around park
End Point	Waterfront
Litter Sources within 2km	Confection Truck in Summer, Cas Stations, Tim Hortons, Restaurants
Garbage Bins in Area	10
Anti-Litter Signs in Area	None
Special Considerations	-Beach, Picnic area, Playground, Walking Trails -Found many popsicle items
Photograph #	4/2

Table 19. Region 4-Main Street

Location	Lacewood Drive, near Bayers Lake, Hlfx
Area	75m
Beginning Point	Mainland Commons Sign on left as exiting the city
End Point	75m towards Bayers Lake
Litter Sources within 2km	Tim Hortons, Harveys, Superstore, Construction Sites, McDonalds, Subway, Mr. Sub, Restaurants
Garbage Bins in Area	1 BFI Bin
Anti-Litter Signs in Area	None
Special Considerations	-Extremely dirty area -Plenty of construction debris -Busy road in residential/commercial area
Photograph #	4/18

Table 20. Region 4-Main Street

Location	Sackville Main Street
Area	200m
Beginning Point	Intersection with Hillcrest Avenue
End Point	Irving Gas Station on right as exit the city
Litter Sources within 2km	Gas Stations, Bedford Fast Food Chains
Garbage Bins in Area	1 BFI Bin
Anti-Litter Signs in Area	None
Special Considerations	-Found construction debris and 3 car parts
Photograph #	4/17

Table 21. Region 4-Recreational Area

Location	Martinique Beach, Musquodoboit
Area	200m
Beginning Point	Outdoor changing room along entry road
End Point	Outdoor washrooms along entry road
Litter Sources within 2km	None
Garbage Bins in Area	6
Anti-Litter Signs in Area	None
Special Considerations	-Picnic Area, Beach
Photograph #	4/16

Table 22. Region 4-Rural Highway

Location	East Petpeswick Road, Musquodoboit
Area	200m
Beginning Point	Flemings House - #1468
End Point	McNeil House
Litter Sources within 2km	None
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-Found 2 cans of fuel
Photograph #	4/15

Table 23. Region 4-Main Street

Location	(#7) Main Street, Musquodoboit
Area	200m
Beginning Point	Esso Station on left side from Tourist Bureau
End Point	House #7813 on right side from Tourist Bureau
Litter Sources within 2km	Gas Stations, Corner Stores, Restaurants
Garbage Bins in Area	3 garbage cans, 1 BFI bin, 1 recycling bin
Anti-Litter Signs in Area	None
Special Considerations	-Found 1 Car part -Found many pizza plates
Photograph #	4/14

Table 24. Region #4-Recreational Area

Location	Shubenacadie Canal Park, HRM
Area	200m
Beginning Point	Entrance Sign- "Shubenacadie Canal"
End Point	Waterfront
Litter Sources within 2km	Corner Store, Pizza Place
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	-Historic site, Tennis Courts, Playground
Photograph #	4/13

Table 25. Region 4-Rural Highway

Location	Route #2, Enfield
Area	200m
Beginning Point	20m south of red house #6594
End Point	Yellow house #6628
Litter Sources within 2km	Big Stop
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	4/12

Table 26. Region 4-Main Street

Location	Mayor Avenue & Layton Road, Spryfield- parallel to Main Street
Area	200m
Beginning Point	Yellow Child Playing Sign on Mayor Avenue
End Point	End of Mayor Avenue next to Apartment Building
Litter Sources within 2km	Tim Hortons, Subway, McDonalds, Dairy Queen, Robins Donuts, Petro Canada
Garbage Bins in Area	2
Anti-Litter Signs in Area	None
Special Considerations	-Found 1 Milk Crate, 1 Shopping Cart
Photograph #	4/6

Table 27. Region #4-Recreational Area

Location	Roaches Pond Field, Spryfield-off Main Street
Area	200m2
Beginning Point	2 culverts on gravel road
End Point	Parking Lot
Litter Sources within 2km	Corner Store
Garbage Bins in Area	1
Anti-Litter Signs in Area	None
Special Considerations	-Found 1 Bike & Political Campaign Signs -Park is cleaned once a week
Photograph #	4/5

Table 28. Region #4-Recreational Area

Location	Bedford Park near Moirs (Tourist Bureau), off Bedford Highway
Area	200m2
Beginning Point	Parking Lot
End Point	75m up the trail
Litter Sources within 2km	Tim Hortons, Liquor Store, Sobeyes, Restaurants, Dairy Queen, Grabba Jabba
Garbage Bins in Area	2
Anti-Litter Signs in Area	None
Special Considerations	-Found many small bricks and car parts -Found many pizza plates
Photograph #	4/1

Table 29. Region #4-Main Street

Location	Wesphalt Main Street, Dartmouth, next to Ball Field and Community College
Area	200m
Beginning Point	River
End Point	Pepsi Sign on left side of road as exiting Dartmouth
Litter Sources within 2km	McDonalds, Tim Hortons, Pizza Hut, Sobeys, Swiss Chalet, Subway, Burger King, Shopping Mall
Garbage Bins in Area	2 in Ball Park
Anti-Litter Signs in Area	None
Special Considerations	-Playground and Construction Site
Photograph #	4/4

Table 30. Region 4-Recreational Area

Location	Dartmouth Centennial Park (Commons), Across street from wildlife park
Area	300m <sup>2</sup>
Beginning Point	Perimeter of fence
End Point	Ball Field
Litter Sources within 2km	McDonalds, Subway, Corner Store, Gas Stations
Garbage Bins in Area	4 Garbage Cans, 2 BFI Bins
Anti-Litter Signs in Area	None
Special Considerations	-Picnic Tables, 2 Schools, Ballpark, Playground -Cleaned regularly
Photograph #	4/3

Table 31. Region #5-Main Street

Location	Main Street, Windsor
Area	200m
Beginning Point	Burgertime Restaurant
End Point	Guardrail
Litter Sources within 2km	Subway, Sobeys, McDonalds, Tim Hortons, Corner Store, Restaurants
Garbage Bins in Area	None
Anti-Litter Signs in Area	1
Special Considerations	High Traffic
Photograph #	5/40

Table 32. Region #5-Rural Highway

Location	Route #1 West, Kentville
Area	200m
Beginning Point	Sign "Glengarry Pines Golf Course"
End Point	200m towards Bridge
Litter Sources within 2km	None
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	None
Photograph #	5/38

Table 33. Region #5-Recreational Area

Location	Corner of Prince and Main Park in Hantsport
Area	175m <sup>2</sup>
Beginning Point	Perimeter of Park
End Point	Center of Park
Litter Sources within 2km	Corner Stores
Garbage Bins in Area	3
Anti-Litter Signs in Area	None
Special Considerations	-Adopt-A-Highway signs in vicinity
Photograph #	5/39

Table 34. Region #6-Rural Highway

Location	Route #325, Bridgewater
Area	200m
Beginning Point	Junction with Rural Road
End Point	Convenience Store
Litter Sources within 2km	Gas Stations, Corner Stores, Grocery Store
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-Side of road exiting town was much dirtier than other side
Photograph #	6/31

Table 35. Region #6-Recreational Area

Location	Kinsmen Ballfield Bridgewater
Area	200m <sup>2</sup>
Beginning Point	Perimeter of Park
End Point	None
Litter Sources within 2km	Restaurants
Garbage Bins in Area	3
Anti-Litter Signs in Area	None
Special Considerations	-Walking Trails, Public Pool, Playground -Found many popsicle items
Photograph #	6/30

Table 36. Region #6-Main Street

Location	Victoria Road, Bridgewater
Area	200m
Beginning Point	Intersection with Pearl Street
End Point	50m past the bridge on Victoria Street
Litter Sources within 2km	McDonalds, Tim Hortons, Irving Big Stop, Restaurants
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-Found 1 bag of garbage and 2 car parts
Photograph #	6/29

Table 37. Region #6-Rural Highway

Location	Route #8 off of exit #19, Liverpool
Area	200m
Beginning Point	Exit #19 off of #103
End Point	North on #8 for 200m
Litter Sources within 2km	Tim Hortons, McDonalds, Sobeys, Gas Stations
Garbage Bins in Area	None
Anti-Litter Signs in Area	None
Special Considerations	-Found construction debris and 2 car parts
Photograph #	6/28

Table 38. Region #7-Rural Highway

Location	Route #3 from exit #25 on the #103
Area	250m
Beginning Point	Route #3 junction with the Main Road from Exit
End Point	50m before "Welcome to Shelburne" Sign
Litter Sources within 2km	Grocery Store, Gas Station
Garbage Bins in Area	1
Anti-Litter Signs in Area	1
Special Considerations	-One side of the ditch had heavy vegetation -Found 1 car part and 1 carpet -Found many liquor store and lottery items
Photograph #	7/27

Table 39. Region #7-Recreational Area

Location	Frost Park, Yarmouth on Main Street
Area	300m <sup>2</sup>
Beginning Point	Perimeter of Park
End Point	Town Streets
Litter Sources within 2km	Restaurants, Subway
Garbage Bins in Area	5
Anti-Litter Signs in Area	None
Special Considerations	-Cleaned Regularly
Photograph #	7/26

Table 40. Region #7-Main Street

Location	Main Street, Yarmouth
Area	200m
Beginning Point	Junction of Main Street and Walker Street on right as exiting town
End Point	Junction of Main Street and Hibernia Street on right as exiting town
Litter Sources within 2km	Tim Hortons, Wendys, McDonalds, Gas Stations, Restaurants
Garbage Bins in Area	2
Anti-Litter Signs in Area	None
Special Considerations	-Recreation Park on left side as exiting town
Photograph #	7/25

## **Appendix 4: Sample data sheet**



### Data Sheet

BRAND	Cup	Lid	Straw	Con.	Sauce	Napkin	Cutlery
Tims							
McDs							
D.Q.							
B.King							

BRAND	Can	Plastic Bottle	Glass Bottle	Carton
Pepsi				
Coke				
Keith				
Oland				
Molsen				
Moose head				
Labatt				
Scots-burn				
Baxter				
Farmer				
Other				

Brand	Chocolate	Gum	Chip Bag	Candy Wrap
Humpty D.				
Hostess				
Cadbury				
Effem				
Neilson				

Nestle				
Hershey				
Wrigley				
Proc.Gam				
Warn.Lam				
Other				

BRAND	Cig. Pack/Tetra Pac	Bevs.	Plastic Bag
Du Maurier			
Players			
B&H			
Export A			
Matinee			
Cig. Plastic			
Cig.Tin			
Sobeys			
IGA			
Shoppers			
Other			

Cardboard	
Paper	
Plastic	
Glass	
Styrofoam	
Cloth	
Metal	
Consruct. Debris	
Car Parts	