



Litter Strategy Monitoring Wave 44 – March 2009 Report

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Section 1

Introduction

This document has been prepared by McGregor Tan Research to report on Wave 44 of the quarterly KESAB Litter Monitor. Surveys for the current Wave were conducted in South Australia during February 2009.

Background

Regular monitoring of the litter stream is necessary in order to maintain a clear picture of its components, such as the various material types that contribute to the litter stream as well as the distribution of litter across different area types. Keep South Australia Beautiful (KESAB) had been monitoring the State's litter stream for many years, but the level of detail required during the South Australian Government's moratorium on changes to Container Deposit Legislation was considerably greater than previously recorded.

An expanded monitoring program commenced in February 1998, and McGregor Tan Research was commissioned at that time to undertake the actual count and to report regularly on the outcomes. This expanded program was continued throughout 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 and is planned to continue.

With the exception of August 2002, counts have been conducted quarterly, carried out in February, May, August and November of each year. Throughout the Monitor, care has been taken to maintain the data in a form compatible with KESAB's requirements.

During each Wave of the survey, litter counts are undertaken at 151 sites across South Australia. In conjunction with the national litter count, a review of all South Australian sites showed that 11 of the sites surveyed were disproportionately represented in the data. These original sites were found to be unusual in nature, and were replaced with 11 revised sites.

The data collection form utilised for the count was jointly developed by McGregor Tan Research and KESAB. A copy of this form is provided in Appendix 2.

In January 2003, Container Deposit Legislation (CDL) was extended to cover most beverages under 1 litre, such as juice cartons, fruit boxes, flavoured milk cartons, etc. As a result, a new method of analysing the data had to be adopted so that the changes to the CDL, and the effect on the total litter stream could be evaluated.

Prior to the August 2004 Litter Count, the data collection form was re-evaluated and re-designed to take into account the changes to the CDL and also to incorporate new categories for litter items that were previously coded as 'other' or in an inappropriate category. The changes that were made to the data collection form include:

- Plastic bags were separated into 3 types of litter:
 - Supermarket type lightweight shopping bags
 - Heavier glossy, typically branded carry bags
 - Sacks, sheeting and other bags
- Bottle and can tops were moved and separated from the Miscellaneous Category into both 'plastic bottle top' and 'metal bottle and can tops'.
- The following four litter types were also added to the Plastic category:
 - Bread bag tags
 - Lollipop sticks
 - Spoons/ cutlery
 - Drink pouches
- The Metal Cans category name was changed to Metal.
- Foil take away was moved from Miscellaneous to Metal.
- Cigarette butts were separated from the Miscellaneous Category.
- Two extra items were added to the Paper/paperboard category:
 - Paper bags
 - Shopper docket & related shopping paper

In previous waves, the data collection form separated each litter type into CDL and non-CDL categories. However, extended Container Deposit Legislation (CDL) has now meant that the litter categories alone (e.g. Flavoured milk, < 1 litre) can be used to establish whether or not beverage containers are covered under CDL or not.

In order to determine the effectiveness of the current CDL (as of January 2003), and for comparative purposes, it was necessary to re-calculate the number of current CDL items from the waves prior to the extension. References to CDL items in Waves prior to Wave 17 (waves 1-16) therefore denote beverage containers that are *currently* covered by CDL – not the items that *were* covered by the legislation prior to this time.

During the Wave 29 Monitor estimates of the volumes for each litter item category were defined. The assignments of volume estimates to each litter item category were based on actual measurements of containers/ items, the condition that these items were most commonly

found (which was based on the audits of at least three Waves), and the most common or average size of the items that were found within each category.

The auditors were an important part of the volume formulation process, and these persons were able to record the number, size and type of different items within each category over a number of waves. Volumes ascribed to each item represented the average size for that category across all site types.

The final volume attributed to each litter item category furthermore took into account the fact that some items were often found crushed and weathered. For example, some drink cans and cartons are often crushed and/ or weathered when they are identified by the auditors and counted. The same volume measurements have been used for all subsequent Waves.

This document reports on Wave 44 of the longitudinal study. The litter count was conducted during February 2009. Section 2 of this report outlines the litter characteristics of the 151 sites, which include 11 revised sites (replacing 11 of the original 151). Appendix 1 contains charts tracking results back across all prior Monitors, and includes weighted results to facilitate meaningful comparison of results established at the 151 original sites with results derived from the 151 revised sites.

Section 2

Wave 43

Executive Summary

The following Executive Summary covers the findings of the March 2009 (Wave 44) KESAB Litter Monitor. Where possible, results have been tracked against those derived from any previous Waves which incorporated revised sites.

*It must be noted that during the February 2009 count, one highway site was not included due to road works which made the task of litter measurement impossible. As a result, only 150 sites were measured in this survey, down from the standard total of 151. The site not included was the Sturt Highway, Gawler site.

This site contributed 362 items to the litter stream, based on the figures for May 2008.

There were two sites re-included and counted in February 2009 that had been excluded in the November 2008 count, one highway site and one beach. The sites re-included were, the Port Wakefield Road, Globe Derby Park site and the Moana Beach site. These sites contributed a combined total of 130 items to the litter stream.

Items Counted

A total of 14,442 litter items were counted across the 150 South Australian sites during Wave 44. Although these figures were slightly up from the previous Monitor (13,622), only 148 sites were counted in November 2008. These figures still represent a significant decrease in the litter count from previous monitors in May 2008 (17,400), February 2008 (18,281) and November 2007 (16,084).

The decrease in items from the November 2008 Monitor is demonstrated most strongly amongst the following litter items:

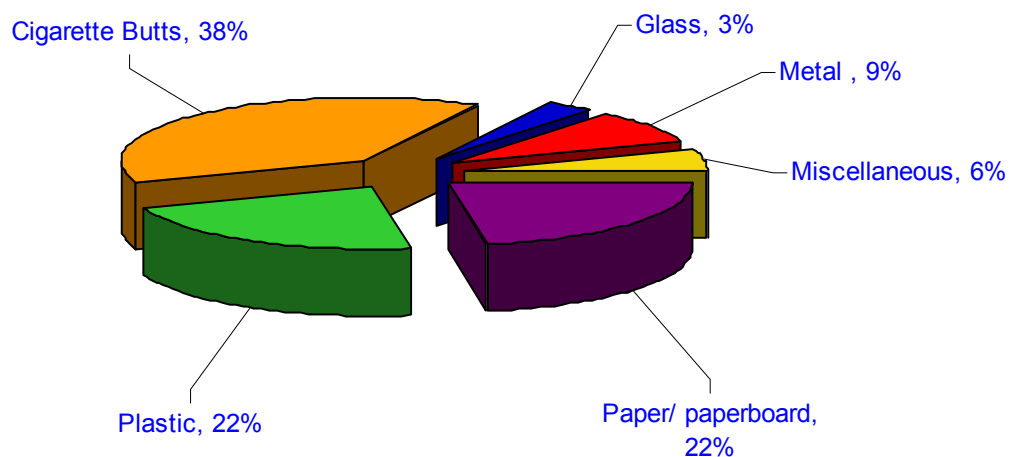
- PAPER/PAPERBOARD – Junk mail/ free circulars 64 items, down from 98 in Wave 43 (35% decrease)
- PLASTIC - Take away & cups 195 items, down from 265 in Wave 43 (26% decrease)
- PAPER/PAPERBOARD – Shopper docket & related shopping paper (i.e. lists) 81 items, down from 110 in Wave 43 (26% decrease)
- PAPER/PAPERBOARD - Packages & boxes 196 items, down from 258 in Wave 43 (24% decrease)
- PAPER/PAPERBOARD - Cups/take away containers 236 items, down from 304 in Wave 43 (22% decrease)
- PLASTIC – Lollipop sticks 101 items, down from 127 in Wave 43 (20% decrease)
- METAL – Metal pieces 253 items, down from 306 in Wave 43 (17% decrease)

Conversely, there was an increase in several litter items, these included:

- METAL – Other foil 271 items, up from 177 in Wave 43 (53% increase)
- PLASTIC – Styrene foam boxes, sheets etc 162 items, up from 127 in Wave 43 (28% increase)
- PAPER/PAPERBOARD – Cigarette packets 273 items, up from 224 in Wave 43 (22% increase)
- METAL – Metal bottle tops and can pull rings 508 items, up from 443 in Wave 43 (15% increase)
- CIGARETTE BUTTS 5,521 items, up from 4,863 in Wave 43 (14% increase)
- PLASTIC – Plastic bottle tops 396 items, up from 348 in Wave 43 (14% increase)
- PAPER/PAPERBOARD – Other paper (including tissues) 1939 items, up from 1714 in Wave 43 (13% increase)

Cigarette butts accounted for the largest proportion of all litter items counted (38%, up from 36% in Wave 43, 37% in Wave 42).

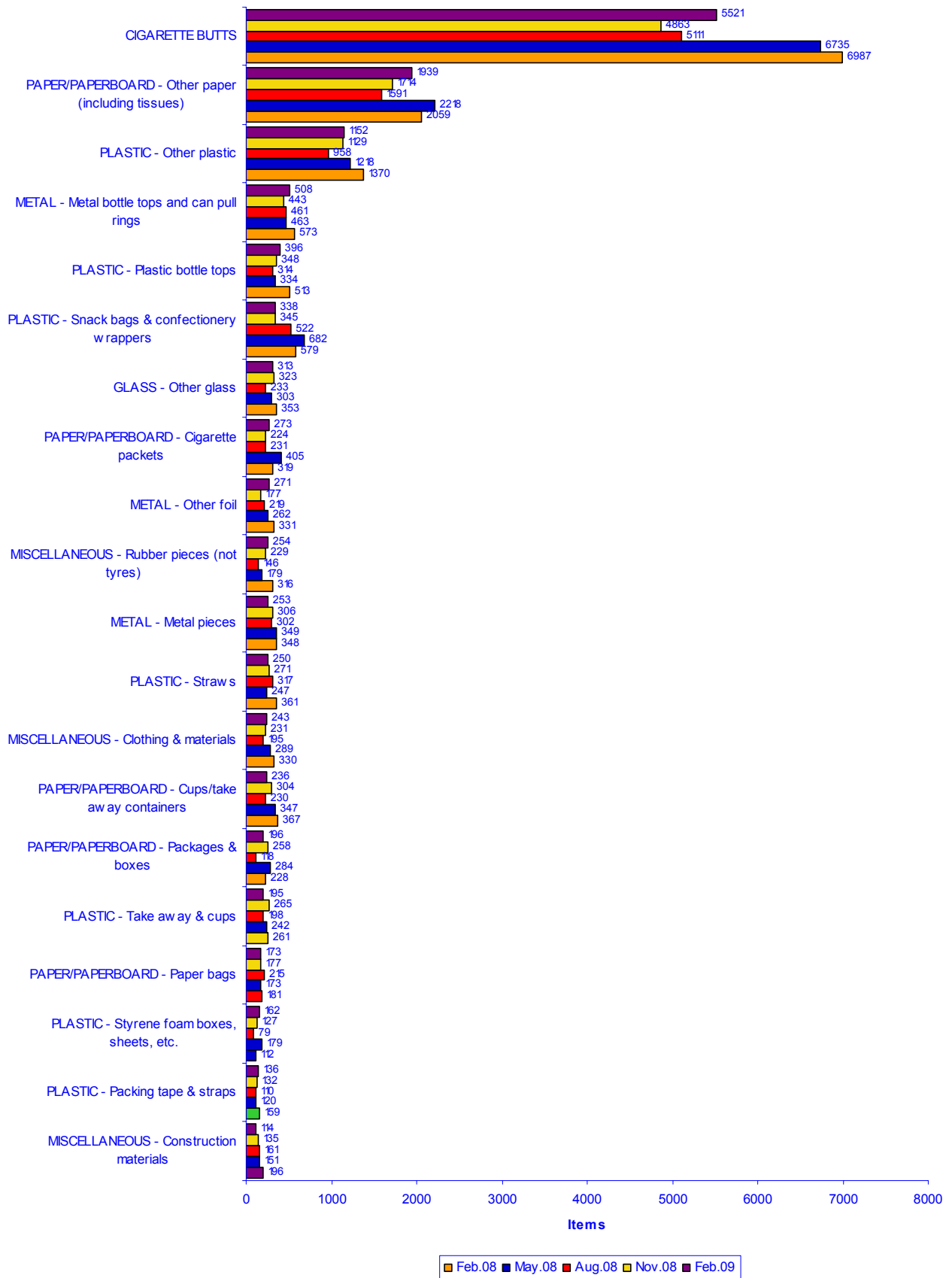
Items as Proportions of Total by Material Type



The top 20 ranking of litter items were similar to the results for previous Waves, the only new item entering the top 20 however, was PLASTIC – Styrene foam boxes, sheets etc.

With new entrants there are always those items that exit from the top 20 list, in this Wave this was PLASTIC – Lollipop sticks.

TOP 20 CATEGORIES - HIGHEST COUNTS



Litter Volume

The total volume of litter counted in February 2009 amounted to 1.957 cubic metres.

This figure is similar to the estimated litter volume figure established during the November 2008 (2.038m³) and August 2008 Monitors (2.048 m³). It is significantly lower from the estimated litter volume figure established during the May 2008 Monitor (2.422 m³), and also remains lower than the February 2008 (2.211 m³) and November 2007 (2.295m³) estimates.

The current estimated litter volume figure is 11% lower than the estimate recorded at the same time in the previous year (2.211m³ in February 2008).

Plastic litter items (41%, down from 26% in Wave 43) accounted for the largest proportion of litter volume in February 2009. The increase in volume was accounted for mainly due to an increase in industrial containers, these represented 72% of the plastic litter volume

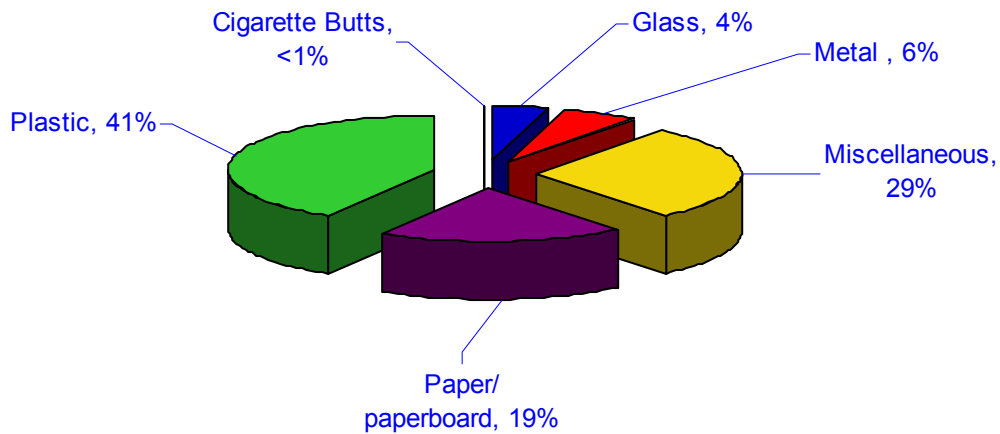
Miscellaneous items (29%, down from 41% in Wave 43) represented the second largest proportion of litter volume for February 2009. The main reason behind the decrease was due to a decrease in the recorded volume of illegally dumped items, illegally dumped items formed the overwhelming majority (90%) of the miscellaneous litter volume.

Paper/ paperboard items (19%, down from 22% in Wave 43) also accounted for high levels of volume, and together these with plastic and miscellaneous items represented the bulk (89%) of the total volume of identified litter.

Other material types represented the following proportions of the total volume of litter items counted:

- Metal (6%, the same as Wave 43)
- Glass (4%, the same as Wave 43)
- Cigarette butts (<1%, unchanged from Wave 43)

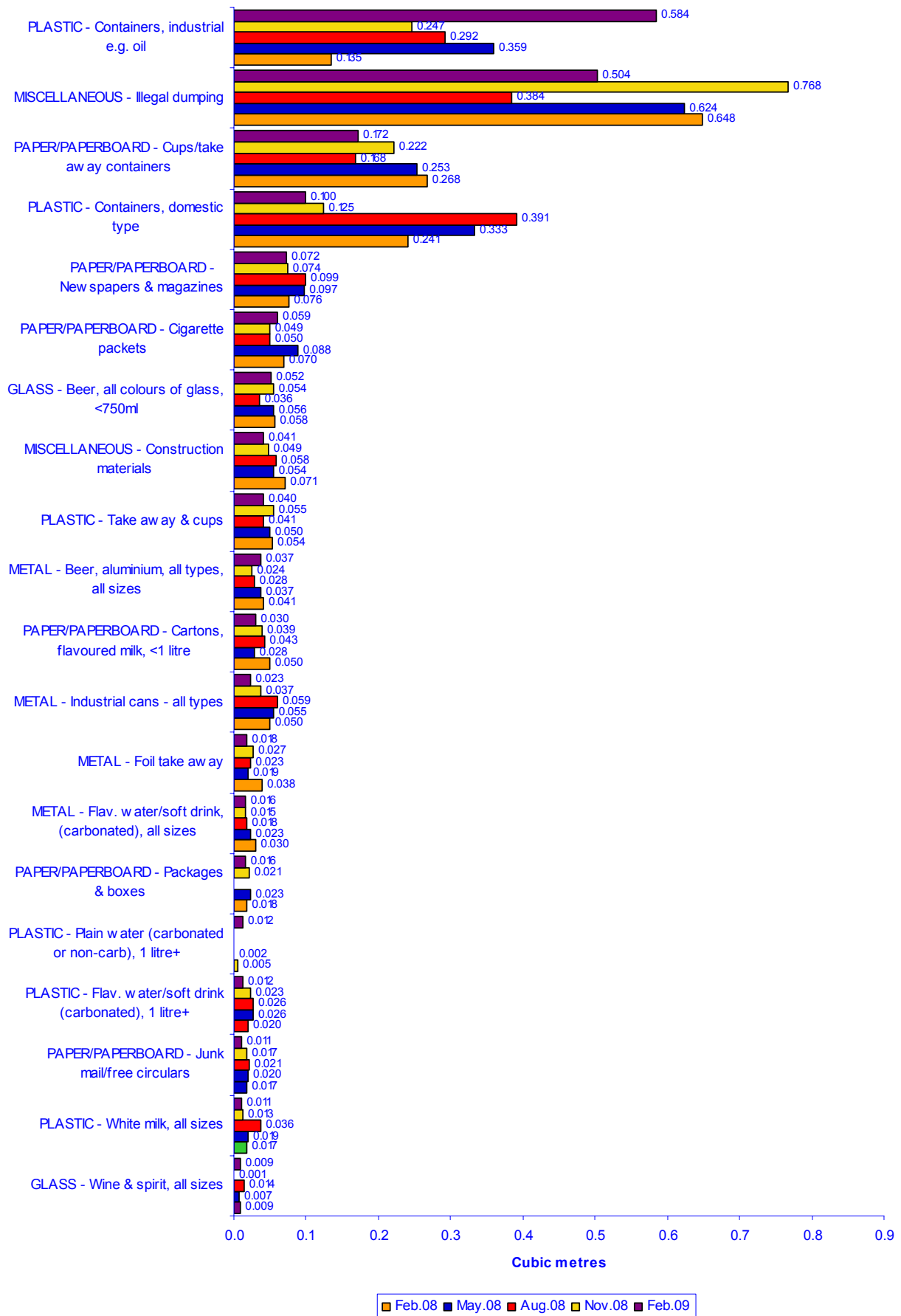
Litter Volume as Proportion of Total Volume



The two most voluminous item categories in Wave 44 were plastic - containers, industrial e.g. oil (0.584, up from 0.247m³ in Wave 43) and illegal dumping (0.504m³, a decrease of 34% from 0.768m³ in Wave 43).

Other items which were associated with the largest estimated litter volumes included:

- Paper/ paperboard - Cups/ take away containers (0.172m³, down from 0.222m³ in Wave 43)
- Plastic – containers, domestic type (0.100m³, down from 0.125m³ from in Wave 43)
- Paper/ paperboard – Newspapers/ magazines (0.072m³, down from 0.74m³ in Wave 43)

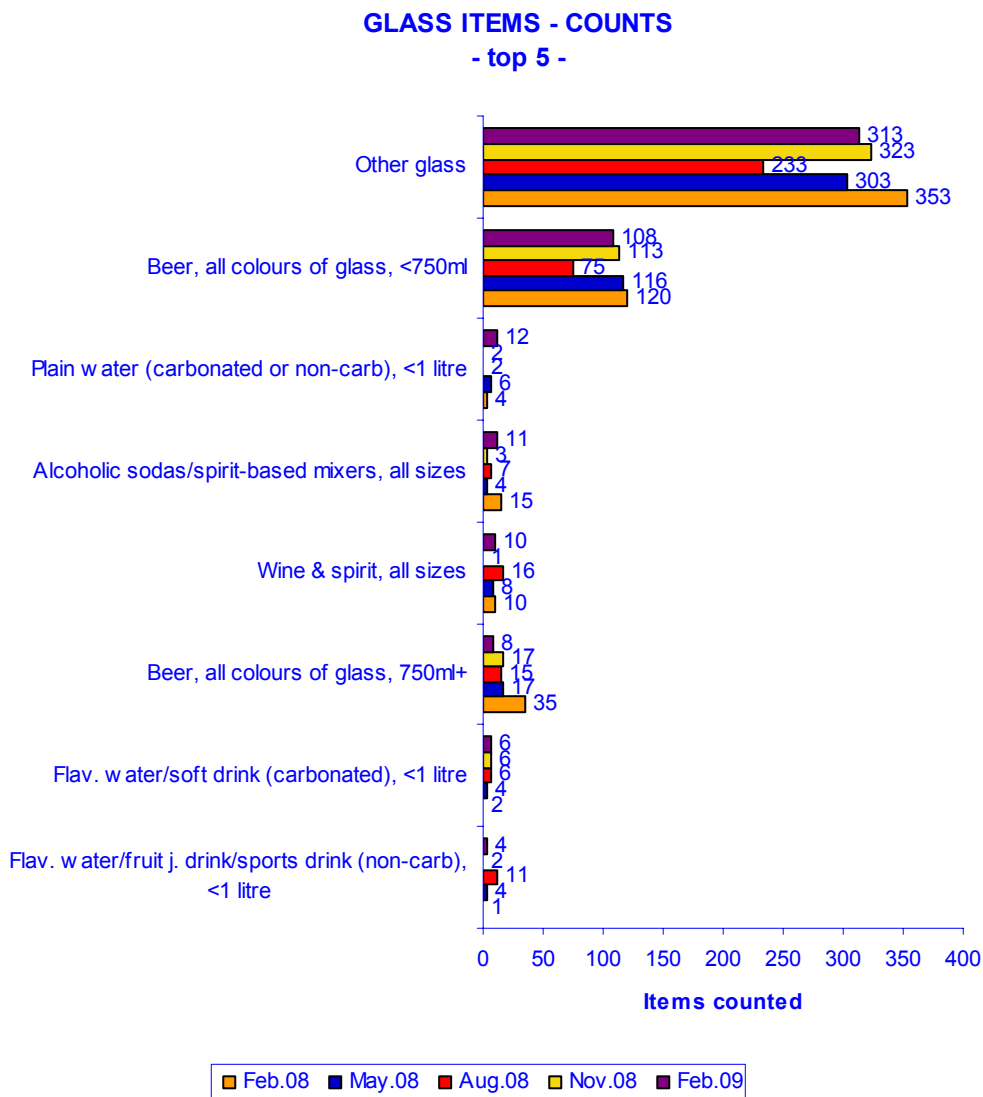
TOP 20 CATEGORIES - LARGEST VOLUMES


3.1 *Glass*

Items

A total of 472 (down from 476 in Wave 43) glass litter items were counted during Wave 44. The most frequently recorded glass items included:

- Other glass (313 items, down from 323 in Wave 43)
- Beer, all colours of glass <750ml (108 items, down from 113 in Wave 43)
- Plain water(carbonated or non-carbonated) <1litre (12 items, up from 2 items in Wave 43)
- Alcoholic sodas/ spirit-based mixers , all size (11 items, up from 3 items in Wave 43)
- Wine and spirits, all sizes (10 items, up from 1 item in Wave 43)



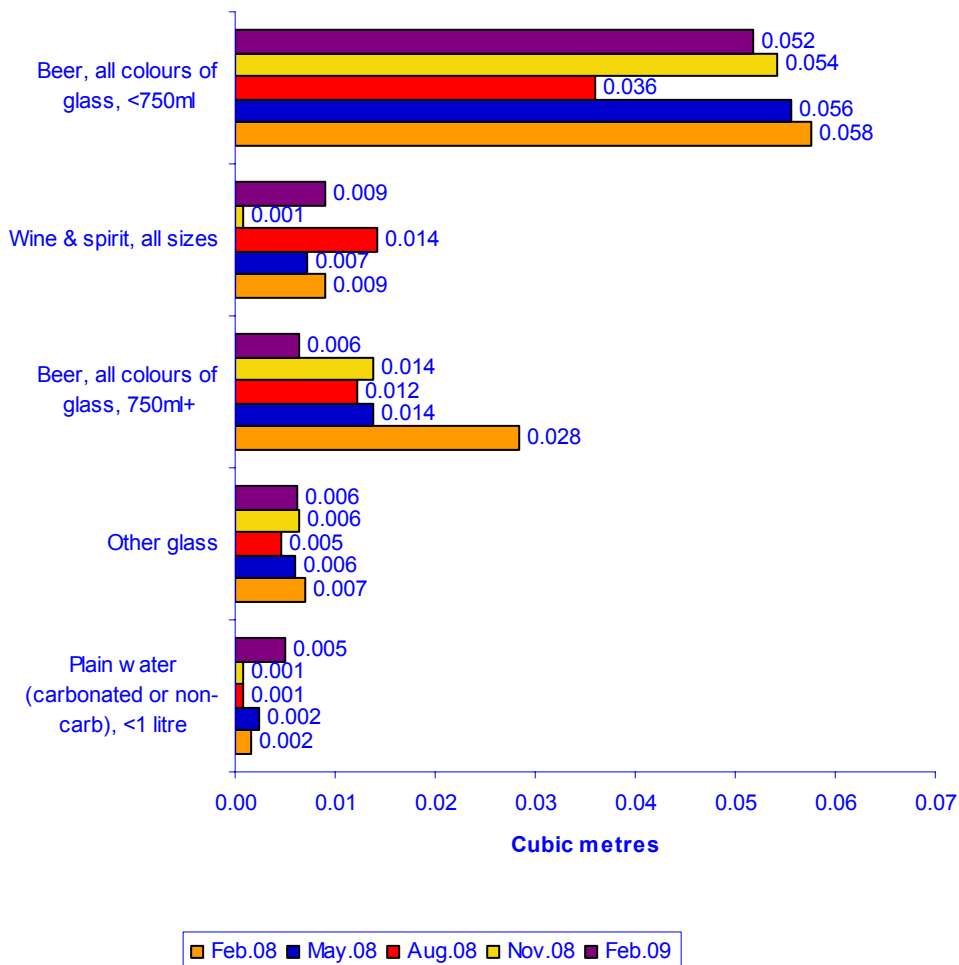
Volume

Glass litter items accounted for 0.088m³ (up from 0.086m³ in Wave 42) in estimated litter volume.

Glass items which contributed the largest volumes to the total included:

- Beer, all colours of glass, <750 ml (0.052 m³, down from 0.054m³ in Wave 43)
- Wine and spirits, all sizes (0.009m³, up from 0.001m³in Wave 43)
- Beer, all colours of glass, 750+ ml (0.007m³, up from 0.014m³ in Wave 43)
- Other glass (0.006m³, the same as in Wave 43)
- Plain water (carbonated or non-carbonated), <1 litre (0.005m³, up from 0.001m³ in Wave 43)

GLASS ITEMS - VOLUMES
- Top 5 -



3.2 Metal

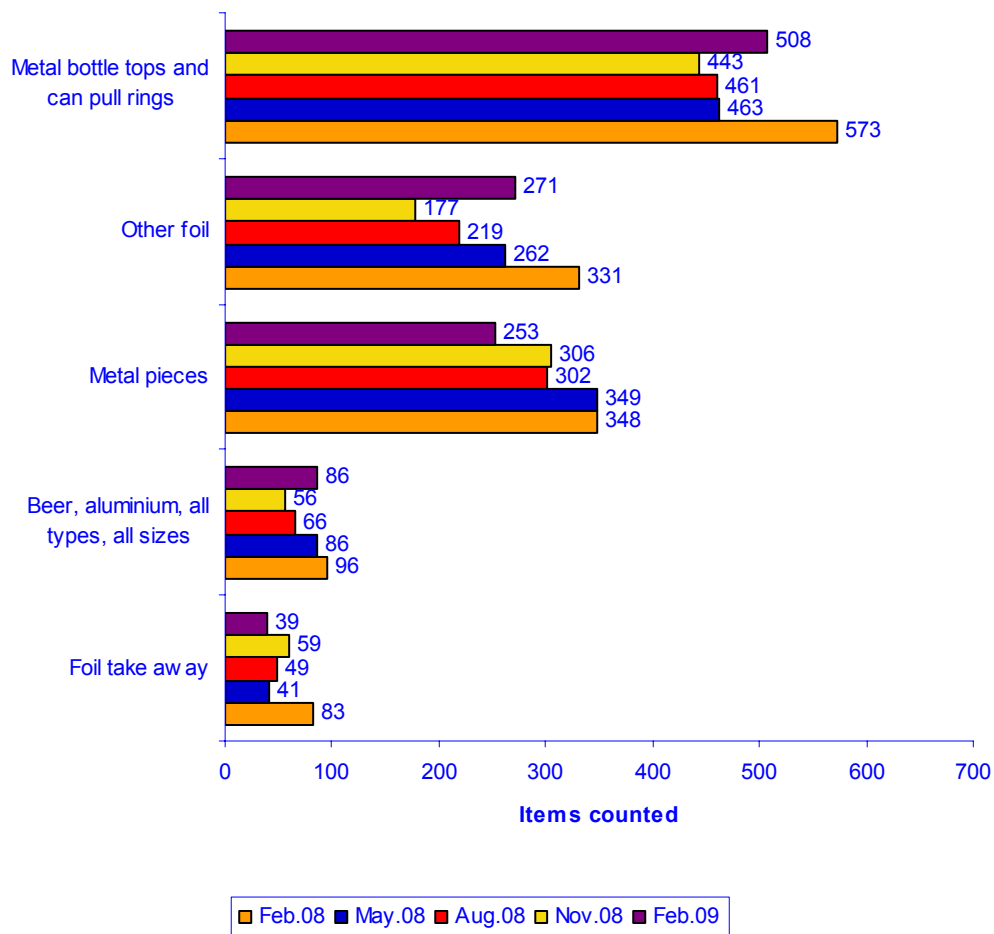
Items

A total of 1,239 (up from 1,125 in Wave 43) metal litter items were counted during February 2009.

The most frequently counted metal litter items included:

- Metal bottle tops and can pull rings (508 items, up from 443 in Wave 43)
- Other foil (271 items, up from 177 in Wave 43)
- Metal pieces (253 items, down from 306 in Wave 43)
- Beer, aluminium, all types, all sizes (86 items, up from 56 items in Wave 43)
- Foil Take away (39 items, down from 59 in Wave 43)

METAL ITEMS - COUNTS - Top 5



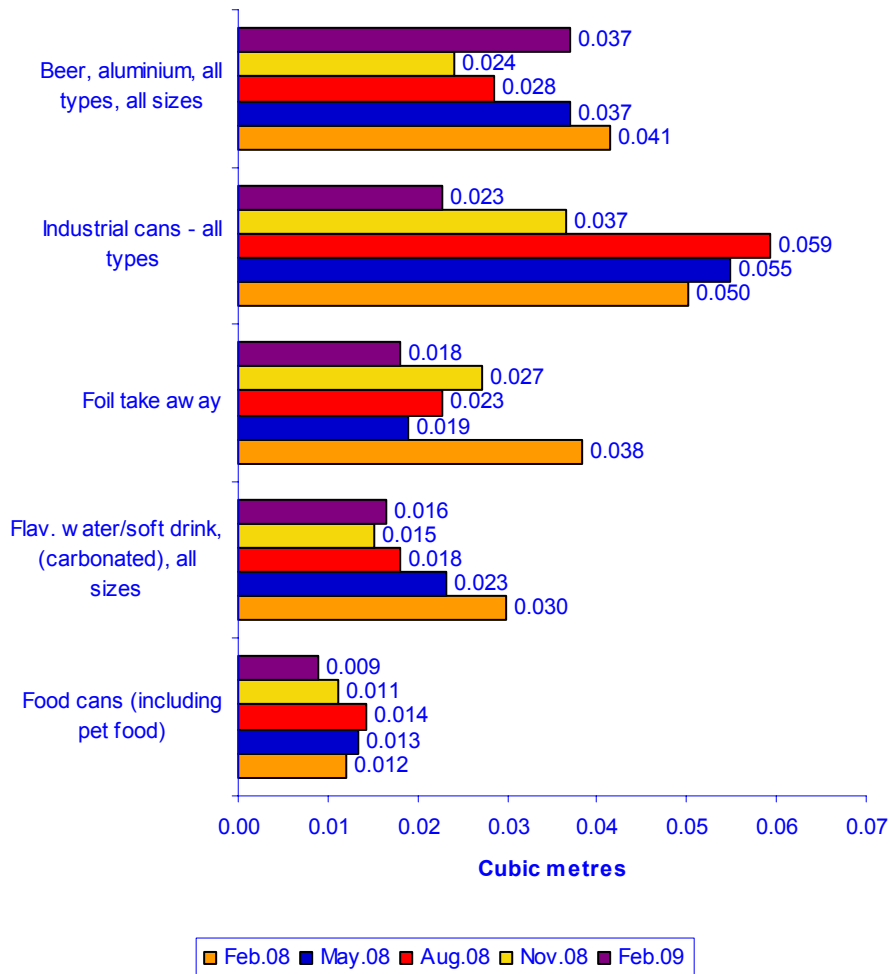
Volume

Metal litter items accounted for a total estimated litter volume of 0.120m³ (down from 0.129m³ in Wave 43).

Metal items associated with the largest estimated volumes of litter during Wave 44 included:

- Beer, aluminium, all types, all sizes (0.037m³, up from 0.024m³ in Wave 43)
- Industrial cans – all types (0.023m³, down from 0.037m³ in Wave 43)
- Foil/ take away (0.018m³, down from 0.027m³ in Wave 43)
- Flavoured water/ soft drink (carbonated), all sizes (0.016m³, up from 0.015m³ in Wave 43)
- Food cans, including pet food (0.009m³, down from 0.011m³ in Wave 43)

METAL ITEMS - VOLUMES - Top 5



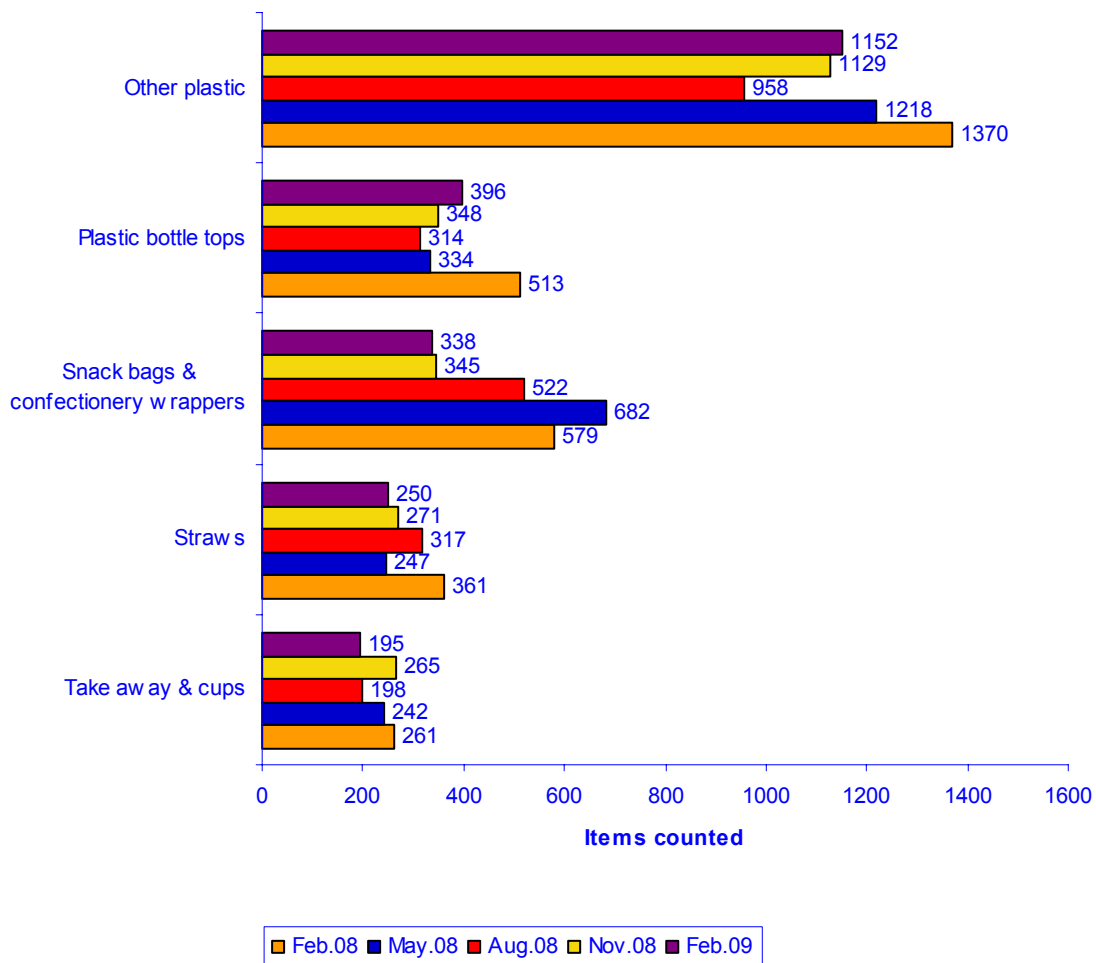
3.3 Plastic

Items

A total of 3,179 (down from 3,205 in Wave 43) plastic litter items were counted during Wave 44. The most frequently counted plastic litter items included:

- Other plastic (1,152 items, up from 1,129 in Wave 43)
- Plastic bottle tops (396 items, up from 348 in Wave 43)
- Snack bags & confectionery wrappers (338 items, down from 345 in Wave 43)
- Straws (250 items, down from 271 in Wave 43)
- Take away & cups (195 items, down from 265 in Wave 43)

PLASTIC ITEMS - COUNTS - Top 5

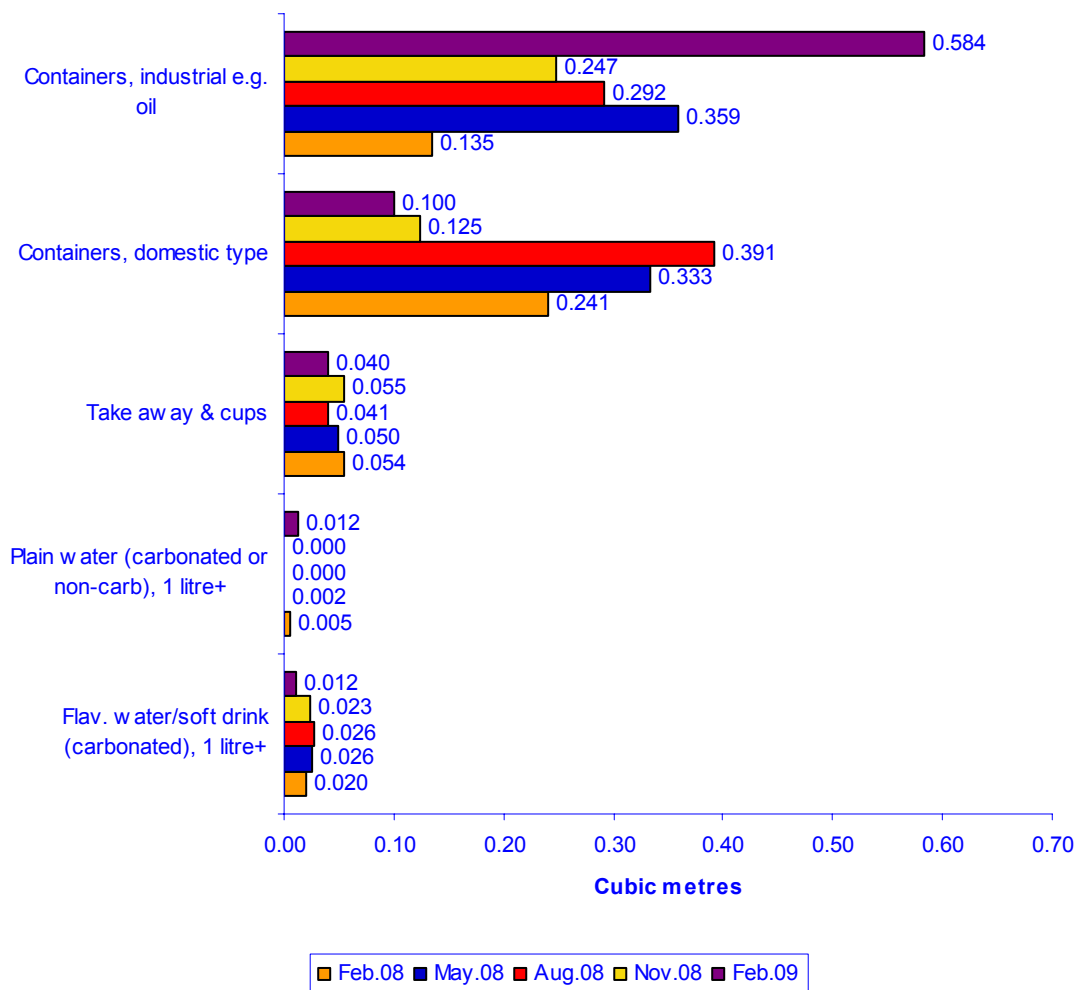


Volume

Plastic items were associated with an estimated litter volume of 0.811m³ (up from 0.532m³ in Wave 43). Items which represented the largest volumes within the Wave 44 litter count included:

- Containers, industrial e.g. oil (0.584m³, up from 0.247m³ in Wave 43)
- Containers, domestic type (0.100m³, down from 0.125m³ in Wave 43)
- Take away & cups (0.040m³, down from 0.055m³ in Wave 43)
- Plain water (carbonated or non carbonated), 1 litre+ (0.012m³, down from 0m³ in Wave 43)
- Flavoured water/soft drink (carbonated), 1 litre+ (0.012m³, down from 0.023m³ in Wave 43)

PLASTIC ITEMS - VOLUMES - Top 5



3.4 Paper/ Paperboard

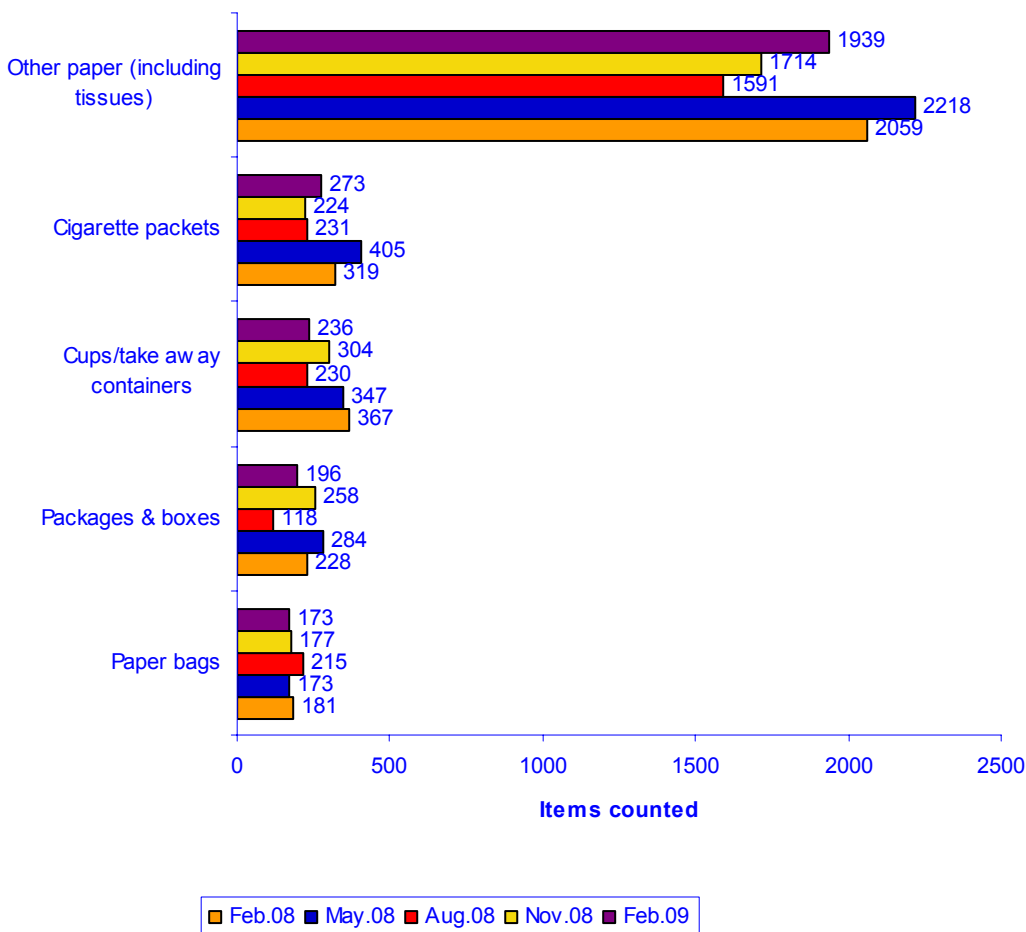
Items

A total of 3,191 (down from 3,135 in Wave 43) paper/ paperboard litter items were recorded during Wave 44.

The most frequently identified items within this material type were:

- Other paper – including tissues (1,939 items, up from 1,714 in Wave 43)
- Cigarette packets (273, up from 224 in Wave 43)
- Cups/ take away containers (236 items, down from 304 in Wave 43)
- Packages & boxes (196 items, down from 258 in Wave 43)
- Paper bags (173 items, down from 177 in Wave 43)

PAPER/ PAPERBOARD ITEMS - COUNTS - Top 5



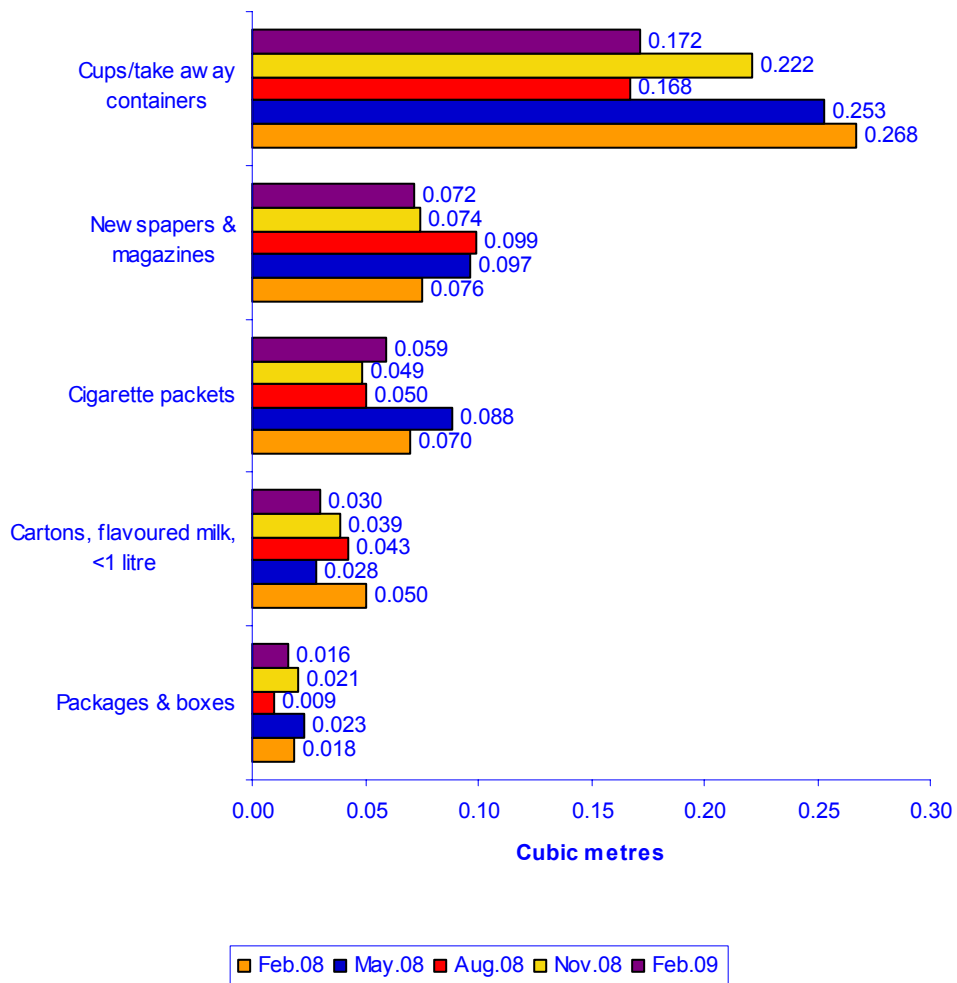
Volume

Paper/ Paperboard items accounted for 0.378m³ in estimated litter volume (down from 0.453m³ in Wave 43).

Paper/ paperboard items which contributed the largest volumes to the total included:

- Cups/take away containers (0.172m³, down from 0.222m³ in Wave 43)
- Newspapers & magazines (0.072m³, down from 0.074m³ in Wave 43)
- Cigarette packets (0.060m³, up from 0.049m³ in Wave 43)
- Cartons, flavoured milk, <1 litre (0.030m³, down from 0.039m³ in Wave 43)
- Packages & boxes (0.016m³, up from 0.021m³ in Wave 43)

PAPER/ PAPERBOARD ITEMS - VOLUMES - Top 5



3.5 *Miscellaneous*

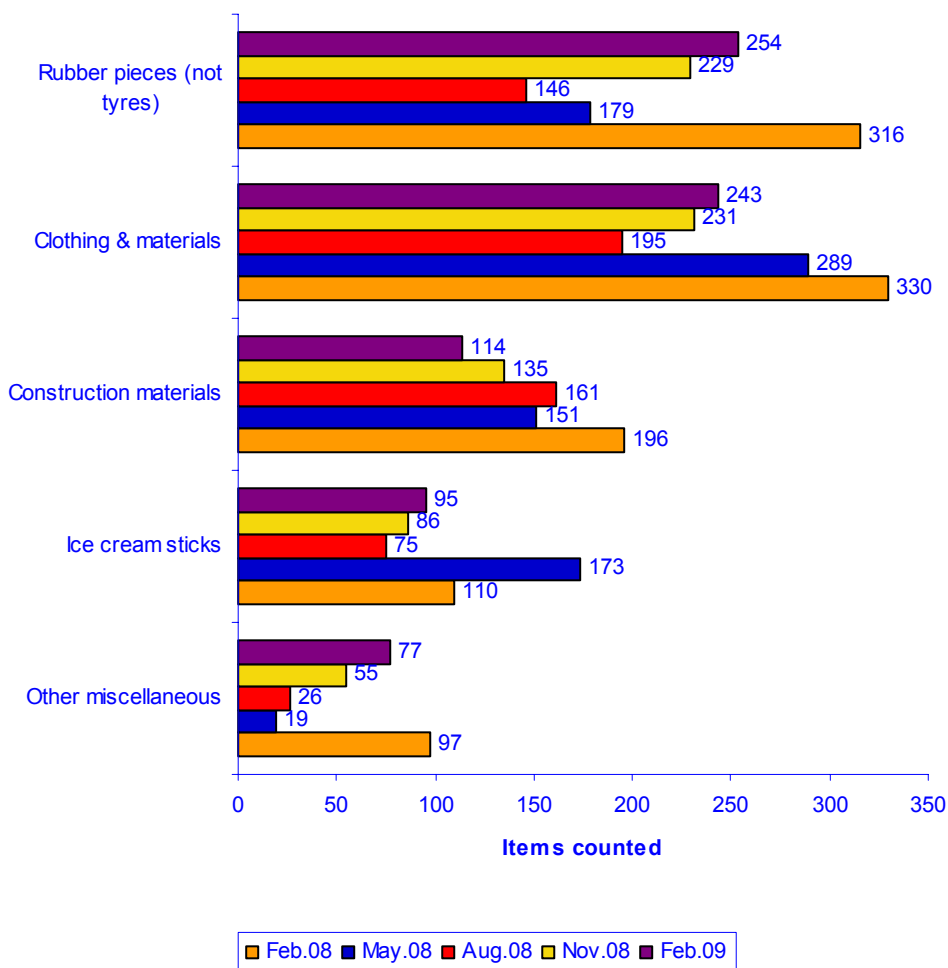
Items

A total of 840 (up from 818 in Wave 43) miscellaneous litter items were counted during Wave 44 in February 2009.

The most frequently recorded items included:

- Rubber pieces – not tyres (254 items, up from 229 in Wave 43).
Rubber pieces in this category include vehicle rubber mouldings, hose pipes and tubing, bicycle handle bar grips and casings, pram mouldings and strips.
- Clothing & materials (243 items, up from 231 in Wave 43)
- Construction materials (114 items, down from 135 in Wave 43)
- Ice cream sticks (95 items, up from 86 in Wave 43)

MISCELLANEOUS ITEMS - COUNTS - Top 5



Volume

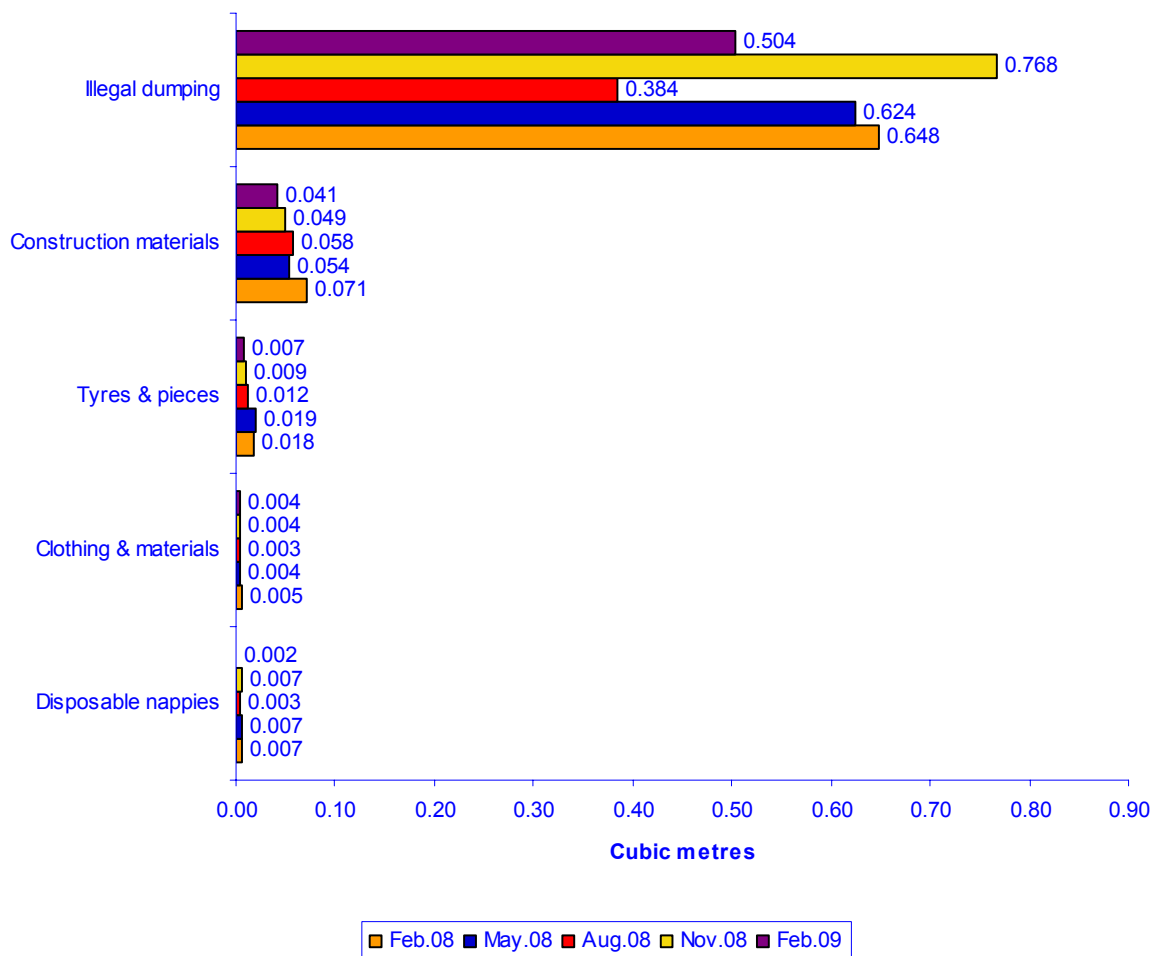
Miscellaneous litter was associated with an estimated litter volume of 0.559m³ (down from 0.837m³ in Wave 43).

Illegal dumping was remained the major contributor to the total volume of miscellaneous items, with an estimated total volume of 0.504m³ (down from 0.768m³ in Wave 43).

Other miscellaneous items which contributed to the litter stream volume included:

- Construction materials (0.041m³, down from 0.049m³ in Wave 43)
- Tyres & pieces (0.007m³, down from 0.009m³ in Wave 43)
- Clothing and materials (0.004m³, the same as Wave 43)
- Disposable nappies (0.002 m³, down form 0.007 m³, in Wave 43)

MISCELLANEOUS ITEMS - VOLUMES - Top 5



3.6 *Cigarette Butts*

Items

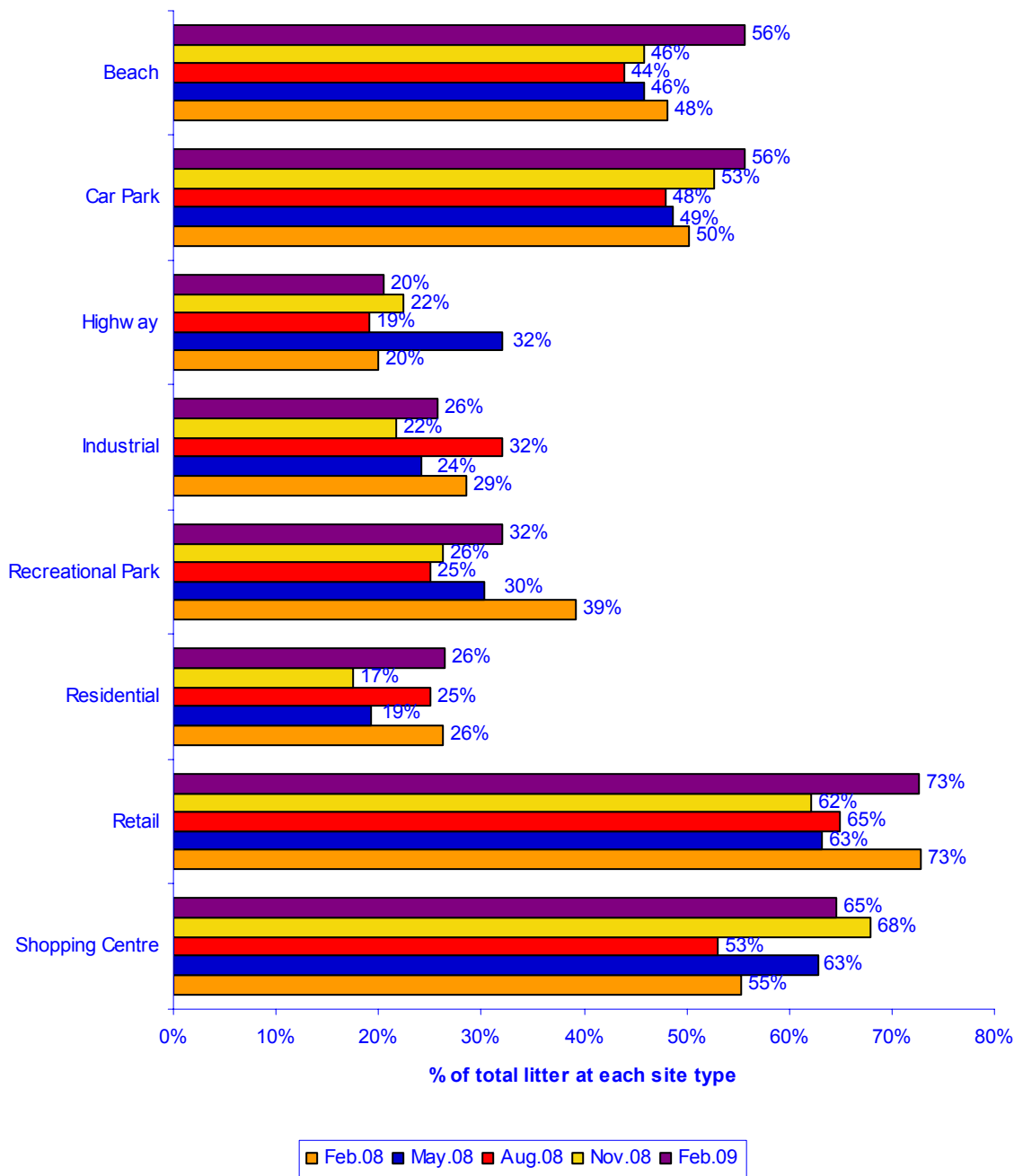
The total number of butts recorded during Wave 44 amounted to 5,521 (up from 4,863 in Wave 43).

Almost three quarters (73%, up from 62% in Wave 43) of the litter items counted at retail sites were cigarette butts, they also contributed to almost two thirds (65%, down from 68% in Wave 43) of the items counted at shopping centres sites.

More than half (56%, up from 53% in Wave 43) of the litter items counted at car park sites and beaches (56%, up from 46% in Wave 43) were cigarette butts.

The proportion of cigarette butts increased as a proportion of the total litter items counted at recreational parks sites (32%, up from 26% in Wave 43), residential sites (26%, up from 17% in Wave 43) and industrial sites (26%, up from 22% in Wave 43). Conversely, cigarette butts decreased from 22% to 20% at highway sites in Wave 44.

CIGARETTE BUTT COUNTS AS PROPORTIONS OF TOTAL LITTER COUNT AT EACH SITE TYPE



Volume

Despite cigarette butts being the most numerous litter item, they accounted for less than 1% of the total volume of litter recorded during the current Wave.

3.7 Dispersion of Litter by Site Type

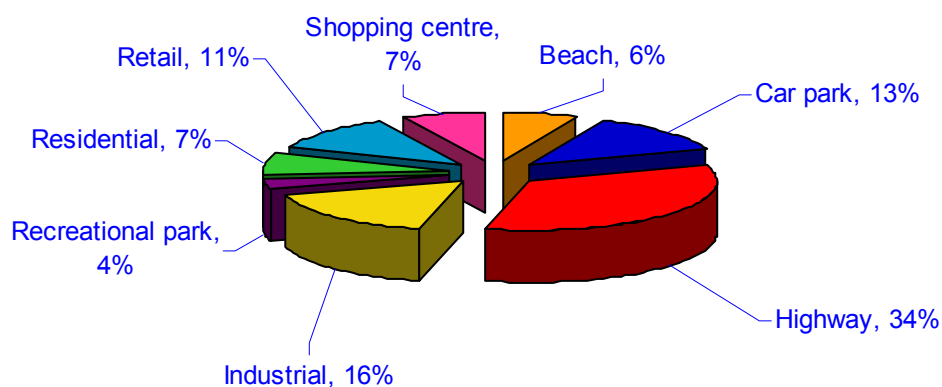
Items

Highways represented the most significant contributor to the total number of items counted during Wave 44 with more than one third (34%, the same as in Wave 43) of the total litter items counted at highway locations.

Other sites contributed the following proportions of the total number of litter items counted during February 2009:

- Car Park (13%, down from 15% in Wave 43)
- Industrial (16%, down from 17% in Wave 43)
- Retail (11%, the same as Wave 43)
- Shopping Centre (7%, the same as Wave 43)
- Residential (7%, up from 6% in Wave 43)
- Recreational Park (4%, the same as Wave 43)
- Beach (6%, the same as Wave 43)

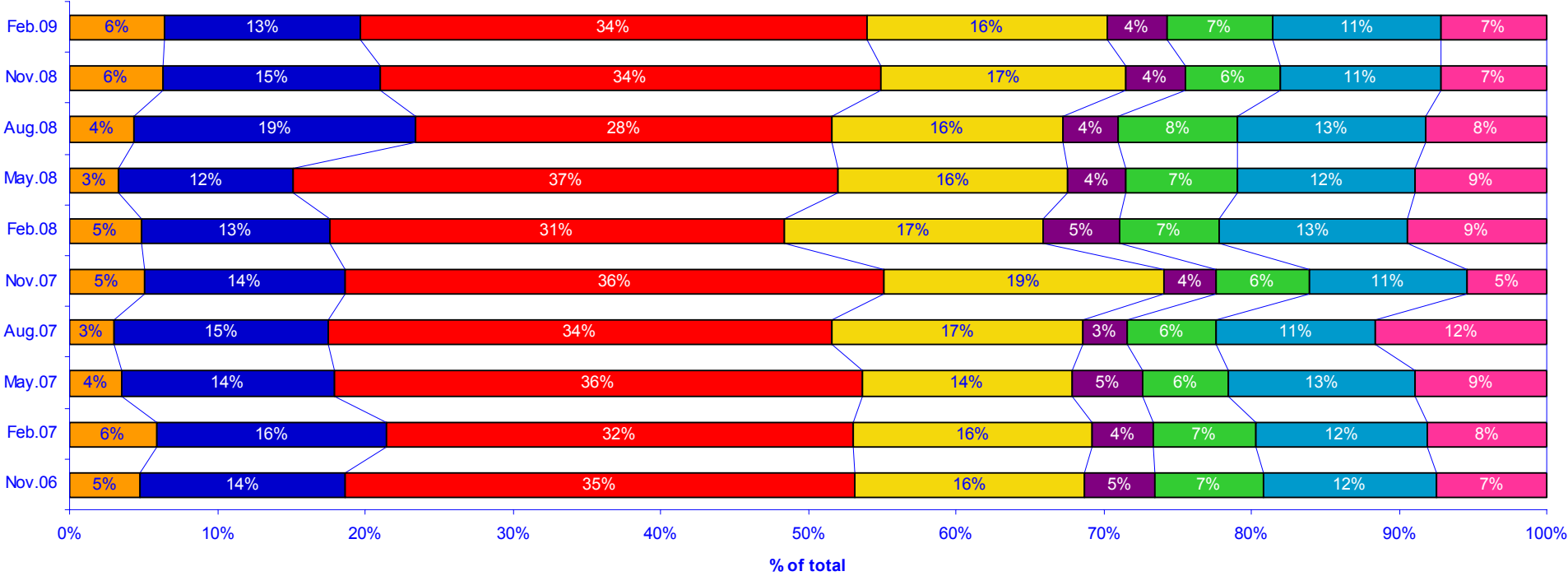
PROPORTION OF TOTAL LITTER ITEMS COUNTED WITHIN SITE TYPE



A comparison of the proportions of litter items found at each site type with the proportions of sites represented within each site type category clearly indicates that highway locations contributed disproportionately large amounts to the total number of litter items counted in the November 2008 study. Specifically, although highway sites represented only 17% of the total number of sites surveyed (adjusted for the one highway site not included), such sites contributed 34% (the same as Wave 43) of the total litter items counted during Wave 44.

Conversely, residential locations, beaches, shopping centres and recreational parks contributed smaller proportions of litter items to the total litter count than would be anticipated based upon the representation of such sites within the overall sample of locations. Specifically, residential areas (which incorporated 17% of the sites surveyed) contributed only 7% (up from 6% in Wave 43) of the total litter items counted in South Australia during February 2009, whilst beaches (11% of sites surveyed) only contributed 6% (the same as Wave 43) of the total litter counted. Shopping centres (9% of sites surveyed) contributed 7% (the same as Wave 43), and recreational parks (9% of sites surveyed) only contributed 4% (also unchanged from Wave 43) towards the overall figure.

PROPORTION OF TOTAL LITTER ITEMS COUNTED WITHIN SITE TYPE
 - tracking -



■ Beach
 ■ Car Park
 ■ Highway
 ■ Industrial
 ■ Recreational Park
 ■ Residential
 ■ Retail
 ■ Shopping Centre

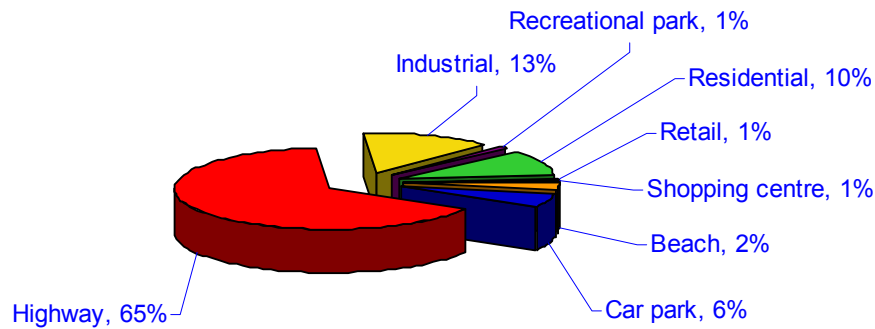
Volume

Almost two thirds (65%, up from 50% in Wave 43) of the total volume of litter estimated during Wave 44 was associated with litter items which were recorded at highway locations.

Industrial sites (13%, down from 30% in Wave 43) and residential sites (10%, up from 8% in Wave 43) together contributed just under 23% of the total litter volume.

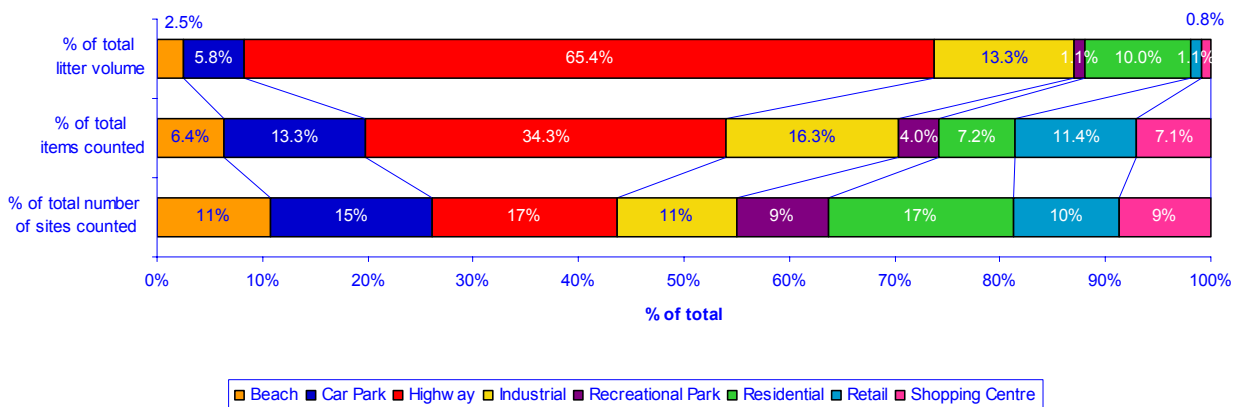
Car Parks (6%, up from 5% in Wave 43) contributed lower litter volume levels, while other sites contributed only relatively negligible amounts to the total volume of litter recorded during February 2009.

PROPORTION OF TOTAL LITTER VOLUME BY SITE TYPE



A comparison of the litter volume, number of litter items and proportion of sites represented within location types shows that highways and industrial locations contributed a larger number and volume of litter items than would be expected given their representations within the sample.

NUMBER AND VOLUME OF LITTER BY SITE TYPE AS PROPORTIONS OF TOTALS



3.8 ***CDL Beverage Containers***

The overwhelming majority (97%, unchanged from Wave 43) of litter items counted in February 2009 were non-beverage items.

The total number of CDL beverage containers counted increased to 429 (up from 383 in Wave 43).

CDL beverage containers accounted for 93% (up from 91% in Wave 43) of all beverage containers counted during Wave 44.

Data Summary - Items

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Items											
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS	
CIGARETTE BUTTS		NBEV	515	1069	1015	604	183	275	1194	666	3649	1872	5521	
GLASS	Alcoholic sodas/spirit-based mixers, all sizes	CDL			9			2			6	5	11	
	Beer, all colours of glass, <750ml	CDL		1	56	37		12	1	1	74	34	108	
	Beer, all colours of glass, 750ml+	CDL			6	2					6	2	8	
	Cider/fruit based etc.	CDL											0	
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL			3	1					2	2	4	
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL											0	
	Flav. water/soft drink (carbonated), <1 litre	CDL			3					2	1	4	2	6
	Flav. water/soft drink (carbonated), 1 litre+	CDL												0
	Fruit juice, <1 litre	CDL												0
	Fruit juice, 1 litre+	CDL												0
	Other glass	NBEV	5	15	176	73	3	31	8	2	224	89	313	
	Plain water (carbonated or non-carb), <1 litre	CDL			5	2	3		2		5	7	12	
	Plain water (carbonated or non-carb), 1 litre+	CDL												0
	Wine & spirit, all sizes	BEV			3	6		1			9	1	10	
Wine cooler, all sizes	CDL												0	
TOTAL			5	16	261	121	6	46	13	4	330	142	472	
METAL	Aerosols - pressure packs	NBEV		1	1	1		2			4	1	5	
	Alcoholic sodas & spirit-based mixers	CDL			12	1					11	2	13	
	Beer, aluminium, all types, all sizes	CDL			83	2		1			6	80	86	
	Cider/fruit based etc.	CDL											0	
	Flav. water/soft drink, (carbonated), all sizes	CDL	1		26	5	3	2	1		25	13	38	
	Flav. water/soft drink, (non-carb), all sizes	CDL			2							2	2	
	Foil take away	NBEV		1	21	7	5	4	1		14	25	39	
	Food cans (including pet food)	NBEV			10	6		3			14	5	19	
	Industrial cans - all types	NBEV			3	2						5	5	
	Metal bottle tops and can pull rings	NBEV	23	85	159	93	37	51	24	36	274	234	508	
	Metal pieces	NBEV	1	8	120	76	2	33	10	3	170	83	253	
	Other foil	NBEV	4	31	112	43	23	20	29	9	142	129	271	
TOTAL			29	126	549	236	70	116	65	48	660	579	1239	

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Items											
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS	
MISCELLANEOUS	Clothing & materials	NBEV	8	13	149	41	9	13	3	7	143	100	243	
	Condoms	NBEV		1						1	1	1	2	
	Construction materials	NBEV	12	1	38	40	1	21		1	106	8	114	
	Disposable nappies	NBEV			2							2	2	
	Ice cream sticks	NBEV	4	17	26	7	6	5	18	12	65	30	95	
	Illegal dumping	NBEV	1	3	7	5		5			20	1	21	
	Other miscellaneous	NBEV	4	22	10	10	7	12	10	2	53	24	77	
	Rubber pieces (not tyres)	NBEV	4	7	145	61	7	20	7	3	158	96	254	
	Syringes	NBEV											0	
	Tyres & pieces	NBEV			29	3					7	25	32	
TOTAL			33	64	406	167	30	76	38	26	553	287	840	
PAPER/PAPERBOARD	Cartons, flavoured milk, <1 litre	CDL	1		34	4				1	31	9	40	
	Cartons, flavoured milk, 1 litre+	BEV				1					1		1	
	Cartons, fruit juice, <1 litre	CDL		1	4						4	1	5	
	Cartons, fruit juice, 1 litre+	CDL											0	
	Cartons, milk, plain (white), all sizes	BEV			1	1				1	2	1	3	
	Cigarette packets	NBEV	2	21	146	66	1	21	5	11	156	117	273	
	Cups/take away containers	NBEV	15	21	148	24	3	13	3	9	155	81	236	
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	BEV												0
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL			1						1			1
	Ice cream wrappers	NBEV	5	4	30	3	4	3	2	1	18	34	52	
	Junk mail/free circulars	NBEV		1	22	9	1	27	3	1	40	24	64	
	Newspapers & magazines	NBEV	1	4	29	5		21		1	38	23	61	
	Other paper (including tissues)	NBEV	106	188	720	476	83	151	115	100	1482	457	1939	
	Packages & boxes	NBEV	3	21	96	39	4	14	18	1	153	43	196	
	Paper bags	NBEV	2	19	93	33	6	6	12	2	95	78	173	
	Shopper docketts & related shopping paper (eg. lists)	NBEV	8	16	28	3	1	1	5	19	61	20	81	
Tickets, e.g. bus, ATM, vending machine etc.	NBEV	6	8	19	4	2	4	9	14	51	15	66		
TOTAL			149	304	1371	668	105	261	172	161	2288	903	3191	

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Items										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS
PLASTIC	6 ring can holders	NBEV			4	3					7	7	
	Bags - heavier glossy typically branded carry bags	NBEV		1	16	2		1	1		16	5	21
	Bags - supermarket type light weight carry bags	NBEV	2	3	70	14	9	3	1	1	61	42	103
	Bread bag tags	NBEV	5	2	4	1	24	1	1		14	24	38
	Containers, domestic type	NBEV			9	1	1		1		7	5	12
	Containers, industrial e.g. oil	NBEV			26						2	24	26
	Drink pouches	CDL						22			22		22
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL			3						3		3
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL			2						2		2
	Flav. water/soft drink (carbonated), <1 litre	CDL	1		11			1			6	7	13
	Flav. water/soft drink (carbonated), 1 litre+	CDL			6	1					5	2	7
	Flavoured milk, <1 litre	CDL			2						2		2
	Flavoured milk, 1 litre+	BEV			1	2						3	3
	Fruit juice, <1 litre	CDL		4	2						6		6
	Fruit juice, 1 litre+	BEV			2						2		2
	Lollipop sticks	NBEV	6	26	15	3	13	6	22	10	63	38	101
	Other plastic	NBEV	62	92	489	251	43	124	49	42	881	271	1152
	Packing tape & straps	NBEV	6	8	81	21	7	9	4		97	39	136
	Plain water (carbonated or non-carb), <1 litre	CDL	1		4			2			6	1	7
	Plain water (carbonated or non-carb), 1 litre+	CDL			3				1		3	1	4
	Plastic bottle tops	NBEV	32	48	150	62	17	37	20	30	265	131	396
	Sacks - sheeting - other bags	NBEV		7	38	32	3		1		70	11	81
	Snack bags & confectionery wrappers	NBEV	27	90	112	43	13	22	21	10	250	88	338
	Spoons/cutlery	NBEV	4	9	27	7	9	11	9	4	51	29	80
	Straws	NBEV	24	29	73	39	27	16	20	22	166	84	250
	Styrene foam boxes, sheets, etc.	NBEV	10	1	94	55		2			154	8	162
	Take away & cups	NBEV	14	21	101	16	12	11	12	8	107	88	195
White milk, all sizes	BEV		1	2	2					1	4	5	
Wine cask bladders	BEV			4	1					2	3	5	
TOTAL		194	342	1351	556	178	268	163	127	2264	915	3179	
GRAND TOTAL		925	1921	4953	2352	572	1042	1645	1032	9744	4698	14442	

Data Summary - Volumes

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Volume - Cubic Metres										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL VOLUME
CIGARETTE BUTTS		NBEV	0.000059	0.000123	0.000117	0.000069	0.000021	0.000032	0.000137	0.000077	0.000420	0.000215	0.000635
GLASS	Alcoholic sodas/spirit-based mixers, all sizes	CDL			0.003369			0.000749			0.002246	0.001872	0.004117
	Beer, all colours of glass, <750ml	CDL		0.000480	0.026852	0.017742		0.005754	0.000480	0.000480	0.035483	0.016303	0.051786
	Beer, all colours of glass, 750ml+	CDL			0.004862	0.001621					0.004862	0.001621	0.006482
	Cider/fruit based etc.	CDL											0.000000
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL			0.002431	0.000810					0.001621	0.001621	0.003241
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL											0.000000
	Flav. water/soft drink (carbonated), <1 litre	CDL			0.000903				0.000602	0.000301	0.001204	0.000602	0.001807
	Flav. water/soft drink (carbonated), 1 litre+	CDL											0.000000
	Fruit juice, <1 litre	CDL											0.000000
	Fruit juice, 1 litre+	CDL											0.000000
	Other glass	NBEV	0.000098	0.000295	0.003457	0.001434	0.000059	0.000609	0.000157	0.000039	0.004399	0.001748	0.006147
	Plain water (carbonated or non-carb), <1 litre	CDL			0.002074	0.000830	0.001244		0.000830		0.002074	0.002904	0.004978
	Plain water (carbonated or non-carb), 1 litre+	CDL											0.000000
	Wine & spirit, all sizes	BEV			0.002674	0.005348		0.000891			0.008023	0.000891	0.008914
Wine cooler, all sizes	CDL											0.000000	
TOTAL			0.000098	0.000774	0.046622	0.027784	0.001303	0.008003	0.002068	0.000820	0.059912	0.027561	0.087472
METAL	Aerosols - pressure packs	NBEV		0.000684	0.000684	0.000684		0.001368			0.002737	0.000684	0.003421
	Alcoholic sodas & spirit-based mixers	CDL			0.006743	0.000562					0.006181	0.001124	0.007305
	Beer, aluminium, all types, all sizes	CDL			0.035806	0.000863		0.000431			0.002588	0.034512	0.037100
	Cider/fruit based etc.	CDL											0.000000
	Flav. water/soft drink, (carbonated), all sizes	CDL	0.000431		0.011216	0.002157	0.001294	0.000863	0.000431		0.010785	0.005608	0.016393
	Flav. water/soft drink, (non-carb), all sizes	CDL			0.000763							0.000763	0.000763
	Foil take away	NBEV		0.000462	0.009710	0.003237	0.002312	0.001850	0.000462		0.006473	0.011560	0.018033
	Food cans (including pet food)	NBEV			0.004638	0.002783		0.001391			0.006493	0.002319	0.008812
	Industrial cans - all types	NBEV			0.013710	0.009140						0.022850	0.022850
	Metal bottle tops and can pull rings	NBEV	0.000092	0.000340	0.000636	0.000372	0.000148	0.000204	0.000096	0.000144	0.001096	0.000936	0.002032
	Metal pieces	NBEV	0.000011	0.000085	0.001272	0.000806	0.000021	0.000350	0.000106	0.000032	0.001802	0.000880	0.002682
	Other foil	NBEV	0.000006	0.000048	0.000175	0.000067	0.000036	0.000031	0.000045	0.000014	0.000222	0.000201	0.000423
	TOTAL			0.000540	0.001620	0.085354	0.020670	0.003811	0.006489	0.001141	0.000190	0.038377	0.081437

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Volume - Cubic Metres										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL VOLUME
MISCELLANEOUS	Clothing & materials	NBEV	0.000122	0.000199	0.002280	0.000627	0.000138	0.000199	0.000046	0.000107	0.002188	0.001530	0.003718
	Condoms	NBEV		0.000000						0.000000	0.000000	0.000000	0.000001
	Construction materials	NBEV	0.004320	0.000360	0.013680	0.014400	0.000360	0.007560		0.000360	0.038160	0.002880	0.041040
	Disposable nappies	NBEV			0.002250							0.002250	0.002250
	Ice cream sticks	NBEV	0.000004	0.000016	0.000024	0.000006	0.000006	0.000005	0.000017	0.000011	0.000060	0.000028	0.000087
	Illegal dumping	NBEV	0.024000	0.072000	0.168000	0.120000		0.120000			0.480000	0.024000	0.504000
	Other miscellaneous	NBEV	0.000054	0.000297	0.000135	0.000135	0.000095	0.000162	0.000135	0.000027	0.000716	0.000324	0.001040
	Rubber pieces (not tyres)	NBEV	0.000001	0.000001	0.000024	0.000010	0.000001	0.000003	0.000001	0.000000	0.000026	0.000016	0.000042
	Syringes	NBEV											0.000000
	Tyres & pieces	NBEV			0.006525	0.000675					0.001575	0.005625	0.007200
TOTAL		0.028501	0.072873	0.192917	0.135854	0.000599	0.127929	0.000199	0.000506	0.522725	0.036653	0.559377	
PAPER/PAPERBOARD	Cartons, flavoured milk, <1 litre	CDL	0.000750		0.025490	0.002999				0.000750	0.023241	0.006747	0.029988
	Cartons, flavoured milk, 1 litre+	BEV				0.001013					0.001013		0.001013
	Cartons, fruit juice, <1 litre	CDL		0.000625	0.002499						0.002499	0.000625	0.003124
	Cartons, fruit juice, 1 litre+	CDL											0.000000
	Cartons, milk, plain (white), all sizes	BEV			0.001013	0.001013				0.001013	0.002025	0.001013	0.003038
	Cigarette packets	NBEV	0.000436	0.004575	0.031809	0.014379	0.000218	0.004575	0.001089	0.002397	0.033988	0.025491	0.059479
	Cups/take away containers	NBEV	0.010934	0.015308	0.107885	0.017495	0.002187	0.009476	0.002187	0.006561	0.112987	0.059045	0.172032
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	BEV											0.000000
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL			0.002070						0.002070		0.002070
	Ice cream wrappers	NBEV	0.000012	0.000010	0.000072	0.000007	0.000010	0.000007	0.000005	0.000002	0.000043	0.000082	0.000125
	Junk mail/free circulars	NBEV		0.000174	0.003828	0.001566	0.000174	0.004698	0.000522	0.000174	0.006960	0.004176	0.011136
	Newspapers & magazines	NBEV	0.001180	0.004720	0.034220	0.005900		0.024780		0.001180	0.044840	0.027140	0.071980
	Other paper (including tissues)	NBEV	0.000358	0.000635	0.002434	0.001609	0.000281	0.000510	0.000389	0.000338	0.005009	0.001545	0.006554
	Packages & boxes	NBEV	0.000240	0.001680	0.007680	0.003120	0.000320	0.001120	0.001440	0.000080	0.012240	0.003440	0.015680
	Paper bags	NBEV	0.000021	0.000201	0.000984	0.000349	0.000063	0.000063	0.000127	0.000021	0.001005	0.000825	0.001830
	Shopper docketts & related shopping paper (eg. lists)	NBEV	0.000016	0.000032	0.000057	0.000006	0.000002	0.000002	0.000010	0.000039	0.000124	0.000041	0.000164
Tickets, e.g. bus, ATM, vending machine etc.	NBEV	0.000005	0.000007	0.000017	0.000004	0.000002	0.000004	0.000008	0.000012	0.000045	0.000013	0.000058	
TOTAL		0.013953	0.027968	0.220056	0.049459	0.003256	0.045236	0.005777	0.012566	0.248089	0.130182	0.378271	

KESAB - Litter Strategy Monitoring - Wave 44 - Feb 2009 -			Volume - Cubic Metres										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL VOLUME
PLASTIC	6 ring can holders	NBEV			0.000006	0.000005						0.000011	0.000011
	Bags - heavier glossy typically branded carry bags	NBEV		0.000088	0.001402	0.000175		0.000088	0.000088		0.001402	0.000438	0.001840
	Bags - supermarket type light weight carry bags	NBEV	0.000068	0.000102	0.002376	0.000475	0.000305	0.000102	0.000034	0.000034	0.002070	0.001425	0.003496
	Bread bag tags	NBEV	0.000001	0.000000	0.000001	0.000000	0.000006	0.000000	0.000000		0.000003	0.000006	0.000009
	Containers, domestic type	NBEV			0.074916	0.008324	0.008324		0.008324		0.058268	0.041620	0.099888
	Containers, industrial e.g. oil	NBEV			0.583908						0.044916	0.538992	0.583908
	Drink pouches	CDL						0.001898			0.001898		0.001898
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL			0.001668						0.001668		0.001668
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL			0.003308						0.003308		0.003308
	Flav. water/soft drink (carbonated), <1 litre	CDL	0.000622		0.006843			0.000622			0.003733	0.004355	0.008087
	Flav. water/soft drink (carbonated), 1 litre+	CDL			0.009924	0.001654					0.008270	0.003308	0.011578
	Flavoured milk, <1 litre	CDL			0.001065						0.001065		0.001065
	Flavoured milk, 1 litre+	BEV			0.002137	0.004273						0.006410	0.006410
	Fruit juice, <1 litre	CDL		0.002131	0.001065						0.003196		0.003196
	Fruit juice, 1 litre+	BEV			0.004273						0.004273		0.004273
	Lollipop sticks	NBEV	0.000003	0.000014	0.000008	0.000002	0.000007	0.000003	0.000012	0.000005	0.000033	0.000020	0.000054
	Other plastic	NBEV	0.000078	0.000115	0.000611	0.000314	0.000054	0.000155	0.000061	0.000053	0.001101	0.000339	0.001440
	Packing tape & straps	NBEV	0.000002	0.000002	0.000022	0.000006	0.000002	0.000002	0.000001		0.000026	0.000011	0.000037
	Plain water (carbonated or non-carb), <1 litre	CDL	0.000788		0.003152			0.001576			0.004727	0.000788	0.005515
	Plain water (carbonated or non-carb), 1 litre+	CDL			0.004625				0.001542		0.004625	0.001542	0.012333
	Plastic bottle tops	NBEV	0.000256	0.000384	0.001201	0.000496	0.000136	0.000296	0.000160	0.000240	0.002121	0.001049	0.003170
	Sacks - sheeting - other bags	NBEV		0.000002	0.000012	0.000010	0.000001		0.000000		0.000022	0.000003	0.000026
	Snack bags & confectionery wrappers	NBEV	0.000211	0.000705	0.000877	0.000337	0.000102	0.000172	0.000164	0.000078	0.001958	0.000689	0.002647
	Spoons/cutlery	NBEV	0.000038	0.000086	0.000259	0.000067	0.000086	0.000106	0.000086	0.000038	0.000490	0.000278	0.000768
	Straws	NBEV	0.000099	0.000120	0.000301	0.000161	0.000111	0.000066	0.000083	0.000091	0.000685	0.000347	0.001031
	Styrene foam boxes, sheets, etc.	NBEV	0.000375	0.000038	0.003525	0.002063		0.000075			0.005775	0.000300	0.006075
	Take away & cups	NBEV	0.002898	0.004347	0.020909	0.003312	0.002484	0.002277	0.002484	0.001656	0.022151	0.018218	0.040369
	White milk, all sizes	BEV		0.002137	0.004273	0.004273					0.002137	0.008547	0.010683
	Wine cask bladders	BEV			0.001840	0.000460					0.000920	0.001380	0.002300
	TOTAL		0.005440	0.010270	0.734508	0.026407	0.011618	0.007438	0.013039	0.002196	0.180842	0.630074	0.810915
GRAND TOTAL		0.048591	0.113628	1.279573	0.260244	0.020609	0.195126	0.022361	0.016354	1.050363	0.906122	1.956485	

Appendix 1: Tracking Graphs

Weighting of Previous Results

Since February 2006 (Wave 32), 11 revised sites have been surveyed concurrently with the 151 original sites included within the litter monitor program since its inception in February 1998. The new and old sites were surveyed simultaneously across four Waves of the monitor.

These 11 revised sites have previously been surveyed concurrently with the 151 original sites to replace 11 of the original sites that were found to be unusual in nature, and analyses have typically focused on results for the 151 sites including the 11 *new* sites and the 151 sites including the 11 *old* sites separately.

However, in counts since the February 2007 Monitor only the 151 revised sites (incorporating the 11 new locations) have been surveyed. In order to facilitate tracking comparisons, figures prior to February 2007 have been weighted based upon the variations between results corresponding to the 151 sites including the 11 new sites and the 151 sites including the 11 old sites.

Weighting techniques were based upon comparisons of figures for items and volumes recorded during Waves 32, 33, 34 and 35 across all sites incorporating either the 11 original or 11 revised sites. Differences between such figures provided indices of the degree of consistent variation between original and revised site litter data, and reliable weightings were thereby established.

Figures which have been weighted included:

- **Absolute values (counts and volumes) within material categories and site types**, since the inclusion of the revised sites resulted in differences in nearly all absolute values of counted litter.

- **Comparisons between proportional representation of litter across site types**, due to the fact that site revision altered the proportions of litter contributed to the total litter stream within certain site categories whilst others remained unchanged.

However, preliminary investigations demonstrated that proportional contribution to the total litter stream within material types was consistently similar between the original and revised site sets. This finding supports the assumption that whilst the quantities of litter recorded differed between old and new sites, the types of materials present within such litter were relatively consistent. For this reason, proportional figures within material types did not require weighting.

Items within material categories across all 151 sites including either 11 original or 11 revised sites	Wave 32				Wave 33				Wave 34				Wave 35			
	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old
Glass	419	311	108	0.74224344	349	293	56	0.83954155	321	281	40	0.87538941	305	249	56	0.81639344
Metal	1505	1218	287	0.80930233	1450	1099	351	0.75793103	1440	1086	354	0.75416667	1517	1183	334	0.77982861
Plastic	5447	3819	1628	0.70111988	5261	3866	1395	0.73484128	5057	3575	1482	0.70694087	5332	3827	1505	0.71774194
Paper/ paperboard	4299	2969	1330	0.69062573	3820	3003	817	0.78612565	4017	2961	1056	0.73711725	3616	2752	864	0.76106195
Miscellaneous	1286	975	311	0.75816485	1057	814	243	0.77010407	1025	815	210	0.79512195	1150	944	206	0.82086957
Cigarette Butts	7600	5744	1856	0.75578947	9606	6814	2792	0.70934832	10950	6959	3991	0.63552511	10875	6474	4401	0.59531034
TOTAL	20556	15036	5520	0.73146527	21543	15889	5654	0.73754816	22810	15677	7133	0.68728628	22795	15429	7366	0.67685896
AVERAGE New as % of Old				0.74124442				0.76220572				0.74164965				0.73829497
OVERALL Mean New as % of Old	0.7458															

Items within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
		Wave 32	Old	1187	1016	2395	2194	1261	1517	617	10369	17020
	New	1187	1016	2196	2064	1292	1517	617	5147	11500	3536	15036
	Diff	0	0	199	130	-31	0	0	5222	5520	0	5520
	New as % of Old	1	1	0.92	0.94	1.02	1	1	0.50	0.68	1	7.3786248
Wave 33	Old	1227	737	2573	3142	2323	1659	590	9292	17788	3755	21543
	New	1227	737	2428	2722	1919	1659	590	4607	12134	3755	15889
	Diff	0	0	145	420	404	0	0	4685	5654	0	5654
	New as % of Old	1	1	0.94	0.87	0.83	1	1	0.50	0.68	1	7.1318625
Wave 34	Old	1185	721	2498	3365	1853	1670	479	11039	18749	4061	22810
	New	1185	721	2077	2724	1155	1670	479	5666	11616	4061	15677
	Diff	0	0	421	641	698	0	0	5373	7133	0	7133
	New as % of Old	1	1	0.83	0.81	0.62	1	1	0.51	0.62	1	6.7775595
Wave 35	Old	1134	728	2705	2601	2232	1801	729	10865	18640	4155	22795
	New	1134	728	2399	2156	1157	1801	729	5325	11274	4155	15429
	Diff	0	0	306	445	1075	0	0	5540	7366	0	7366
	New as % of Old	1	1	0.89	0.83	0.52	1	1	0.49	0.60	1	6.7242631
Average New as % of Old		1	1	0.89	0.86	0.75	1	1	0.50	0.65	1	7.0030775

Proportions of total items within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	1187	1016	2395	2194	1261	1517	617	10369	17020	3536	20556
	New	1187	1016	2196	2064	1292	1517	617	5147	11500	3536	15036
	Old % of total items	5.8%	4.9%	11.7%	10.7%	6.1%	7.4%	3.0%	50.4%	82.8%	17.2%	
	New % of total items	7.9%	6.8%	14.6%	13.7%	8.6%	10.1%	4.1%	34.2%	76.5%	23.5%	
	% change from Old to New	2.1%	1.8%	3.0%	3.1%	2.5%	2.7%	1.1%	-16.2%	-6.3%	6.3%	
Wave 33	Old	1227	737	2573	3142	2323	1659	590	9292	17788	3755	21543
	New	1227	737	2428	2722	1919	1659	590	4607	12134	3755	15889
	Old % of total items	5.7%	3.4%	11.9%	14.6%	10.8%	7.7%	2.7%	43.1%	82.6%	17.4%	
	New % of total items	7.7%	4.6%	15.3%	17.1%	12.1%	10.4%	3.7%	29.0%	76.4%	23.6%	
	% change from Old to New	2.0%	1.2%	3.3%	2.5%	1.3%	2.7%	1.0%	-14.1%	-6.2%	6.2%	
Wave 34	Old	1185	721	2498	3365	1853	1670	479	11039	18749	4061	22810
	New	1185	721	2077	2724	1155	1670	479	5666	11616	4061	15677
	Old % of total items	5.2%	3.2%	11.0%	14.8%	8.1%	7.3%	2.1%	48.4%	82.2%	17.8%	
	New % of total items	7.6%	4.6%	13.2%	17.4%	7.4%	10.7%	3.1%	36.1%	74.1%	25.9%	
	% change from Old to New	2.4%	1.4%	2.3%	2.6%	-0.8%	3.3%	1.0%	-12.3%	-8.1%	8.1%	
Wave 35	Old	1134	728	2705	2601	2232	1801	729	10865	18640	4155	22795
	New	1134	728	2399	2156	1157	1801	729	5325	11274	4155	15429
	Old % of total items	5.0%	3.2%	11.9%	11.4%	9.8%	7.9%	3.2%	47.7%	81.8%	18.2%	
	New % of total items	7.3%	4.7%	15.5%	14.0%	7.5%	11.7%	4.7%	34.5%	73.1%	26.9%	
	% change from Old to New	2.4%	1.5%	3.7%	2.6%	-2.3%	3.8%	1.5%	-13.2%	-8.7%	8.7%	
Average % difference from Old to New		2%	1%	3%	3%	0%	3%	1%	-14%	-7%	7%	

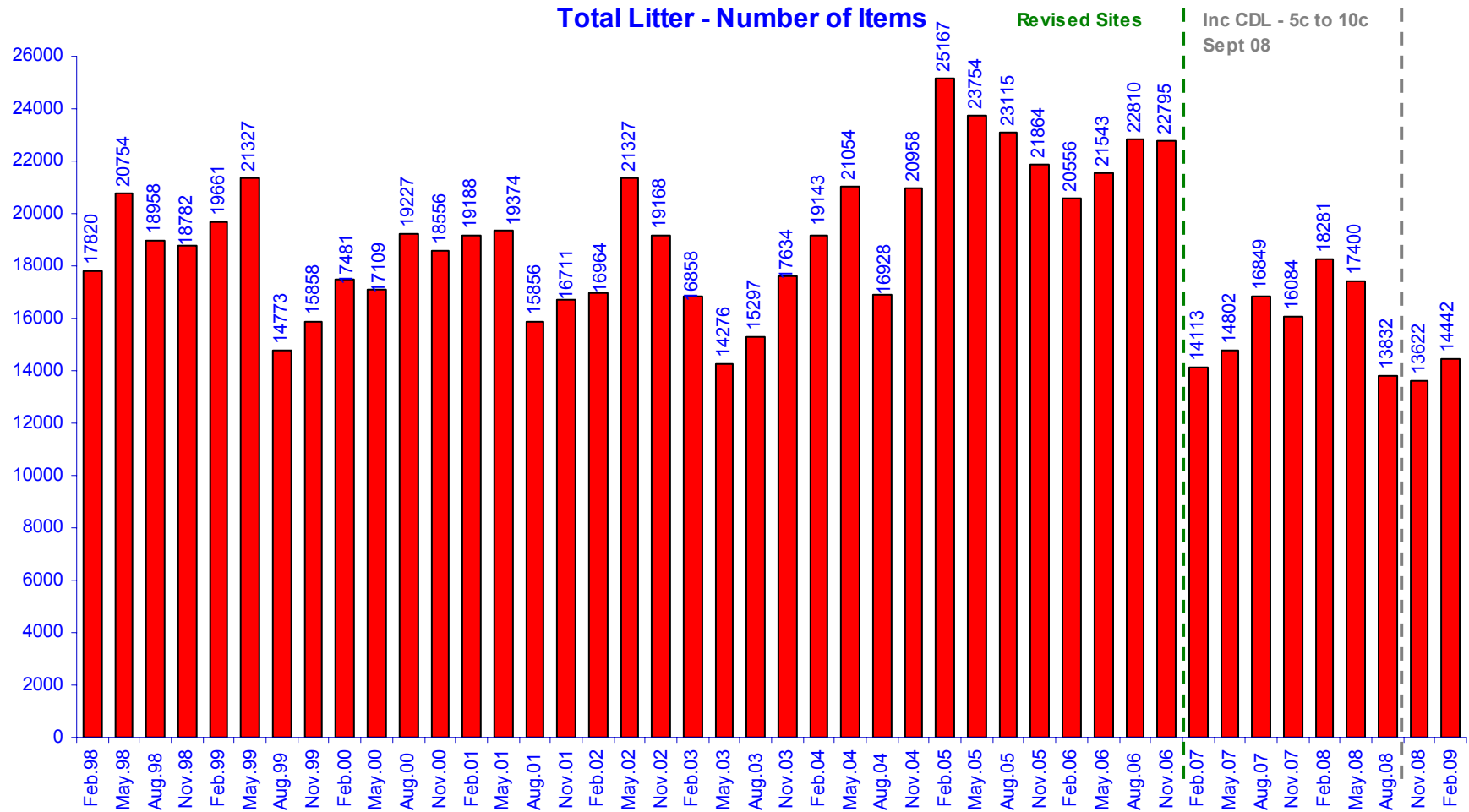
Volumes within material categories across all 151 sites including either 11 original or 11 revised sites	Wave 32				Wave 33				Wave 34				Wave 35			
	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old
Glass	0.11965	0.09027	0.02939	0.75438	0.08663	0.06859	0.01804	0.79173	0.08559	0.07086	0.01473	0.82789	0.06907	0.05316	0.01591	0.76962
Metal	0.22261	0.19846	0.02415	0.8915	0.15196	0.13181	0.02015	0.86741	0.15085	0.10952	0.04132	0.72605	0.17499	0.15130	0.02369	0.86463
Plastic	1.16278	0.72042	0.44235	0.61957	0.90407	0.71848	0.18559	0.79472	0.93411	0.63312	0.30099	0.67778	0.88814	0.67589	0.21225	0.76102
Paper/ paperboard	0.71375	0.41932	0.29443	0.58749	0.47904	0.36017	0.11888	0.75184	0.54568	0.35535	0.19033	0.6512	0.50410	0.35413	0.14998	0.70249
Miscellaneous	1.11014	0.83415	0.27599	0.75139	0.84900	0.61172	0.23727	0.72052	0.78143	0.71261	0.06882	0.91194	2.14021	1.97182	0.16839	0.92132
Cigarette Butts	0.00009	0.00007	0.00002	0.75515	0.00011	0.00008	0.00003	0.70935	0.00013	0.00008	0.00005	0.63553	0.00013	0.00007	0.00005	0.59531
TOTAL	3.32902	2.26269	1.06633	0.67969	2.47082	1.89085	0.57996	0.76528	2.49778	1.88155	0.61624	0.75329	3.77664	3.20638	0.57026	0.849
AVERAGE New as % of Old				0.71988				0.77155				0.74052				0.78049
OVERALL MEAN DIFFERENCE	0.7531															

Volumes within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	0.05441	0.02998	0.57970	0.13090	0.01177	0.01877	0.02922	2.47428	2.54585	0.78318	3.32902
	New	0.05441	0.02998	0.57922	0.17275	0.00965	0.01877	0.02922	1.36868	1.47951	0.78318	2.26269
	Diff			0.00048	-0.04186	0.00212			1.10559	1.06633		
	New as % of Old	1	1	0.99917	1.31979	0.82005	1	1	0.55317	0.58115	1	
Wave 33	Old	0.06600	0.03600	0.54200	0.07100	0.03000	0.02100	0.04100	1.66400	1.85500	0.61500	2.47100
	New	0.06600	0.03600	0.53900	0.07000	0.01000	0.02100	0.04100	1.10700	1.27500	0.61500	1.89000
	Diff			0.00300	0.00100	0.02000			0.55700	0.58000		
	New as % of Old	1	1	0.99446	0.98592	0.33333	1	1	0.66526	0.68733	1	
Wave 34	Old	0.07800	0.06500	0.41100	0.14100	0.05000	0.01200	0.00600	1.73400	1.87300	0.62500	2.49700
	New	0.07800	0.06500	0.40000	0.14000	0.00900	0.01200	0.00600	1.17100	1.25700	0.62500	1.88100
	Diff			0.01100	0.00100	0.04100			0.56300	0.61600		
	New as % of Old	1	1	0.97324	0.99291	0.18000	1	1	0.67532	0.67112	1	
Wave 35	Old	0.17400	0.01700	0.58800	0.13000	0.05300	0.05900	0.01700	2.73700	2.12500	1.65200	3.77500
	New	0.17400	0.01700	0.58600	0.14600	0.03700	0.05900	0.01700	2.16900	1.55500	1.65200	3.20500
	Diff			0.00200	-0.01600	0.01600			0.56800	0.57000		
	New as % of Old	1	1	1.00	1.12	0.70	1	1	0.79	0.73	1	
Average New as % of Old		1	1	0.99	1.11	0.51	1	1	0.67	0.67	1	

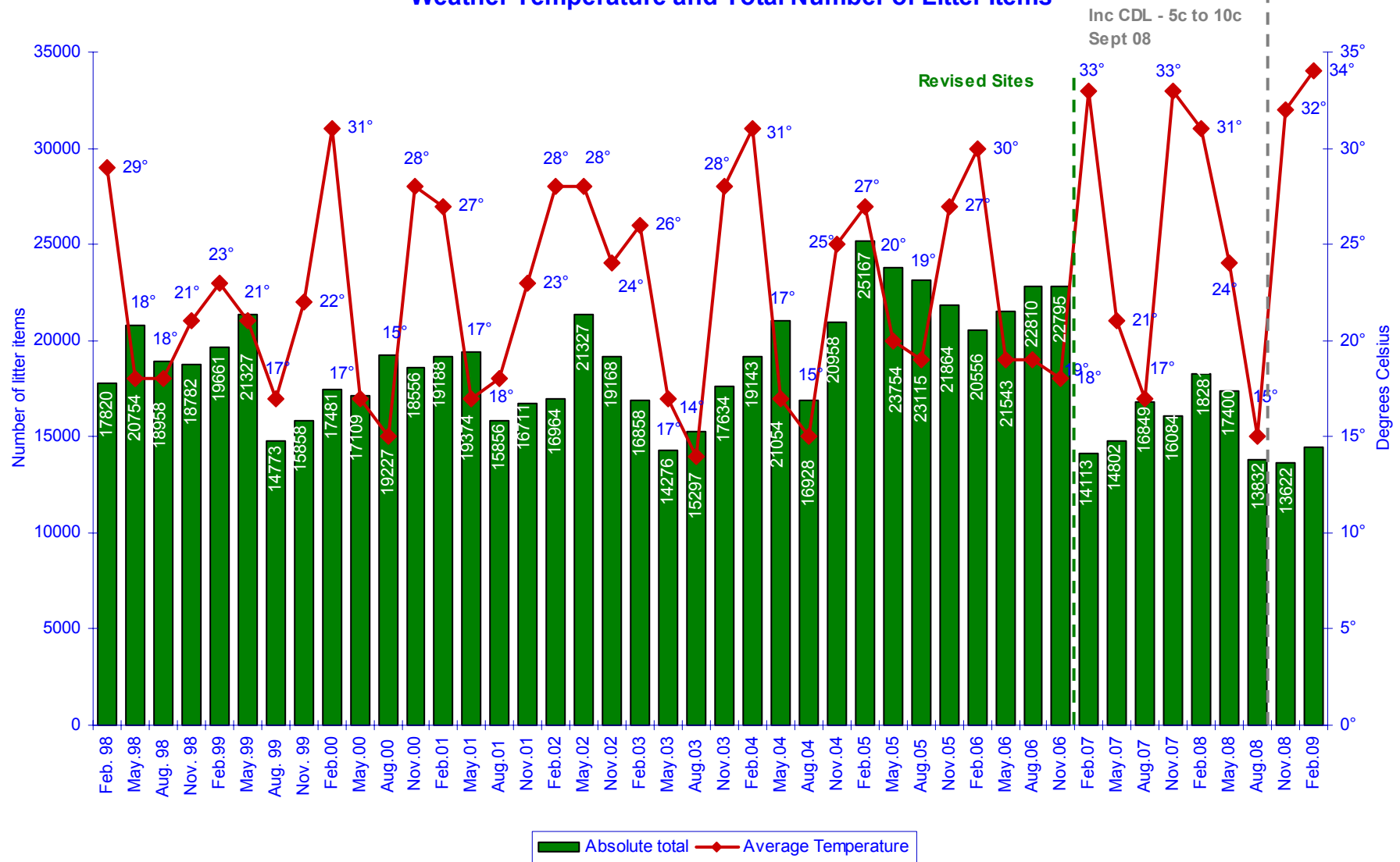
Proportions of total volume within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	0.05441	0.02998	0.57970	0.13090	0.01177	0.01877	0.02922	2.47428	2.54585	0.78318	3.32902
	New	0.05441	0.02998	0.57922	0.17275	0.00965	0.01877	0.02922	1.36868	1.47951	0.78318	2.26269
	Old % of total volume	1.6%	0.9%	17.4%	3.9%	0.4%	0.6%	0.9%	74.3%	76.5%	23.5%	
	New % of total volume	2.4%	1.3%	25.6%	7.6%	0.4%	0.8%	1.3%	60.5%	65.4%	34.6%	
	% change from Old to New	0.8%	0.4%	8.2%	3.7%	0.1%	0.3%	0.4%	-13.8%	-11.1%	11.1%	
Wave 33	Old	0.06600	0.03600	0.54200	0.07100	0.03000	0.02100	0.04100	1.66400	1.85500	0.61500	2.47100
	New	0.06600	0.03600	0.53900	0.07000	0.01000	0.02100	0.04100	1.10700	1.27500	0.61500	1.89000
	Old % of total volume	2.7%	1.5%	21.9%	2.9%	1.2%	0.8%	1.7%	67.3%	75.1%	24.9%	
	New % of total volume	3.5%	1.9%	28.5%	3.7%	0.5%	1.1%	2.2%	58.6%	67.5%	32.5%	
	% change from Old to New	0.8%	0.4%	6.6%	0.8%	-0.7%	0.3%	0.5%	-8.8%	-7.6%	7.7%	
Wave 34	Old	0.07800	0.06500	0.41100	0.14100	0.05000	0.01200	0.00600	1.73400	1.87300	0.62500	2.49700
	New	0.07800	0.06500	0.40000	0.14000	0.00900	0.01200	0.00600	1.17100	1.25700	0.62500	1.88100
	Old % of total volume	3.1%	2.6%	16.5%	5.6%	2.0%	0.5%	0.2%	69.4%	75.0%	25.0%	
	New % of total volume	4.1%	3.5%	21.3%	7.4%	0.5%	0.6%	0.3%	62.3%	66.8%	33.2%	
	% change from Old to New	1.0%	0.9%	4.8%	1.8%	-1.5%	0.2%	0.1%	-7.2%	-8.2%	8.2%	
Wave 35	Old	0.17400	0.01700	0.58800	0.13000	0.05300	0.05900	0.01700	2.73700	2.12500	1.65200	3.77500
	New	0.17400	0.01700	0.58600	0.14600	0.03700	0.05900	0.01700	2.16900	1.55500	1.65200	3.20500
	Old % of total volume	4.6%	0.5%	15.6%	3.4%	1.4%	1.6%	0.5%	72.5%	56.3%	43.8%	
	New % of total volume	5.4%	0.5%	18.3%	4.6%	1.2%	1.8%	0.5%	67.7%	48.5%	51.5%	
	% change from Old to New	0.8%	0.1%	2.7%	1.1%	-0.2%	0.3%	0.1%	-4.8%	-7.8%	7.8%	
Average % difference from Old to New		1%	0%	6%	2%	-1%	0%	0%	-9%	-9%	9%	

Unweighted Tracking Graphs

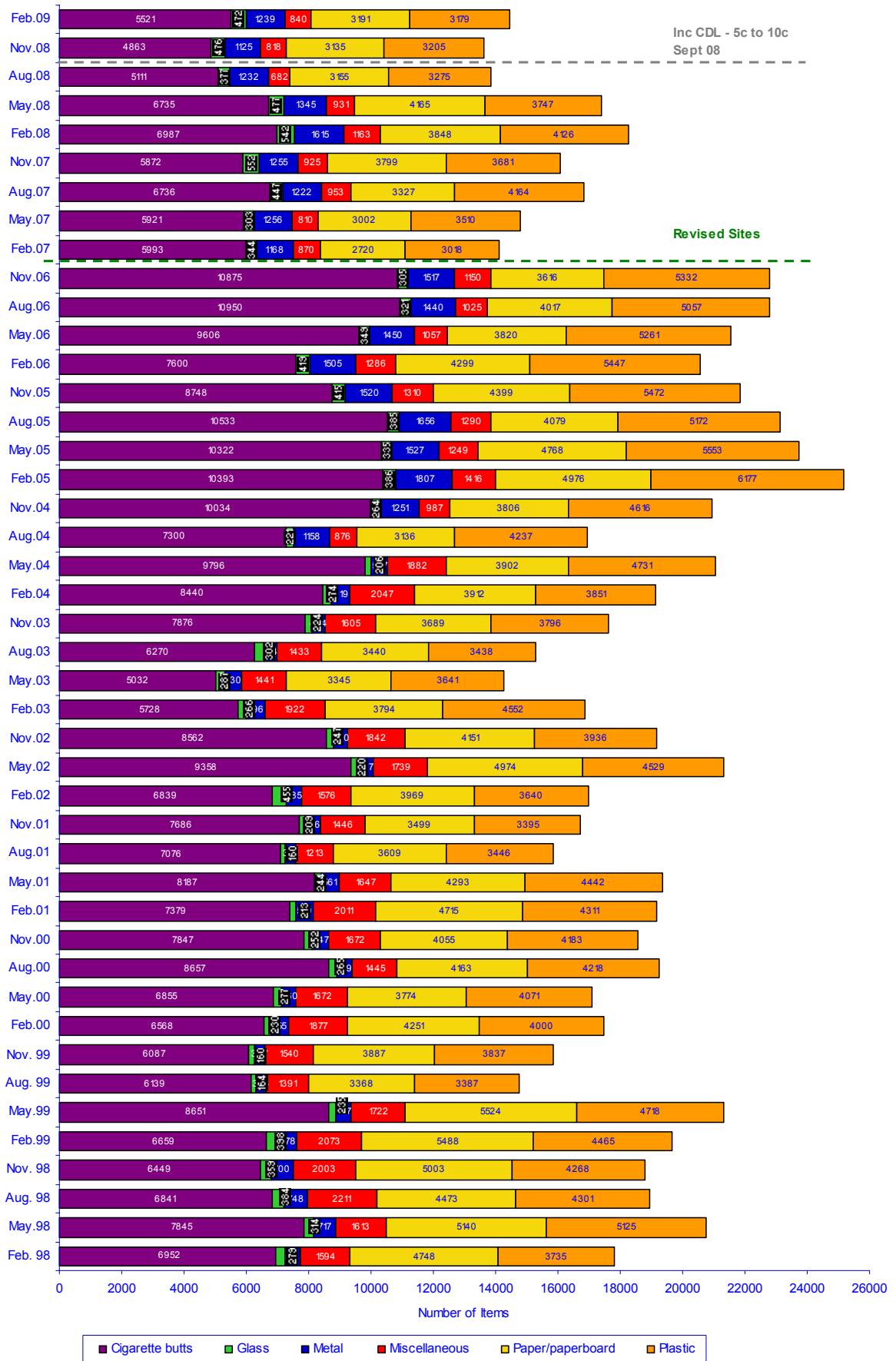
- Items



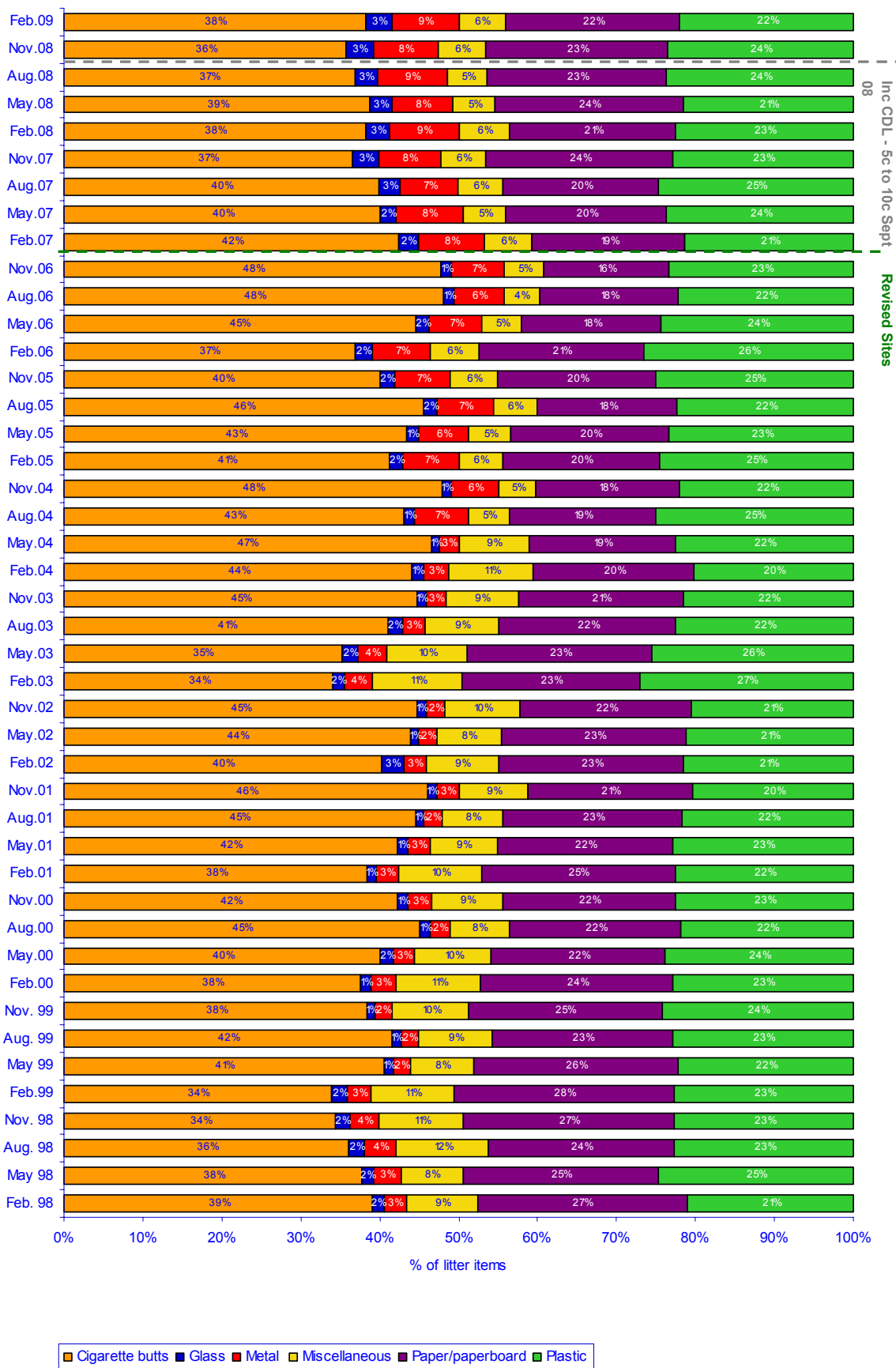
Weather Temperature and Total Number of Litter Items



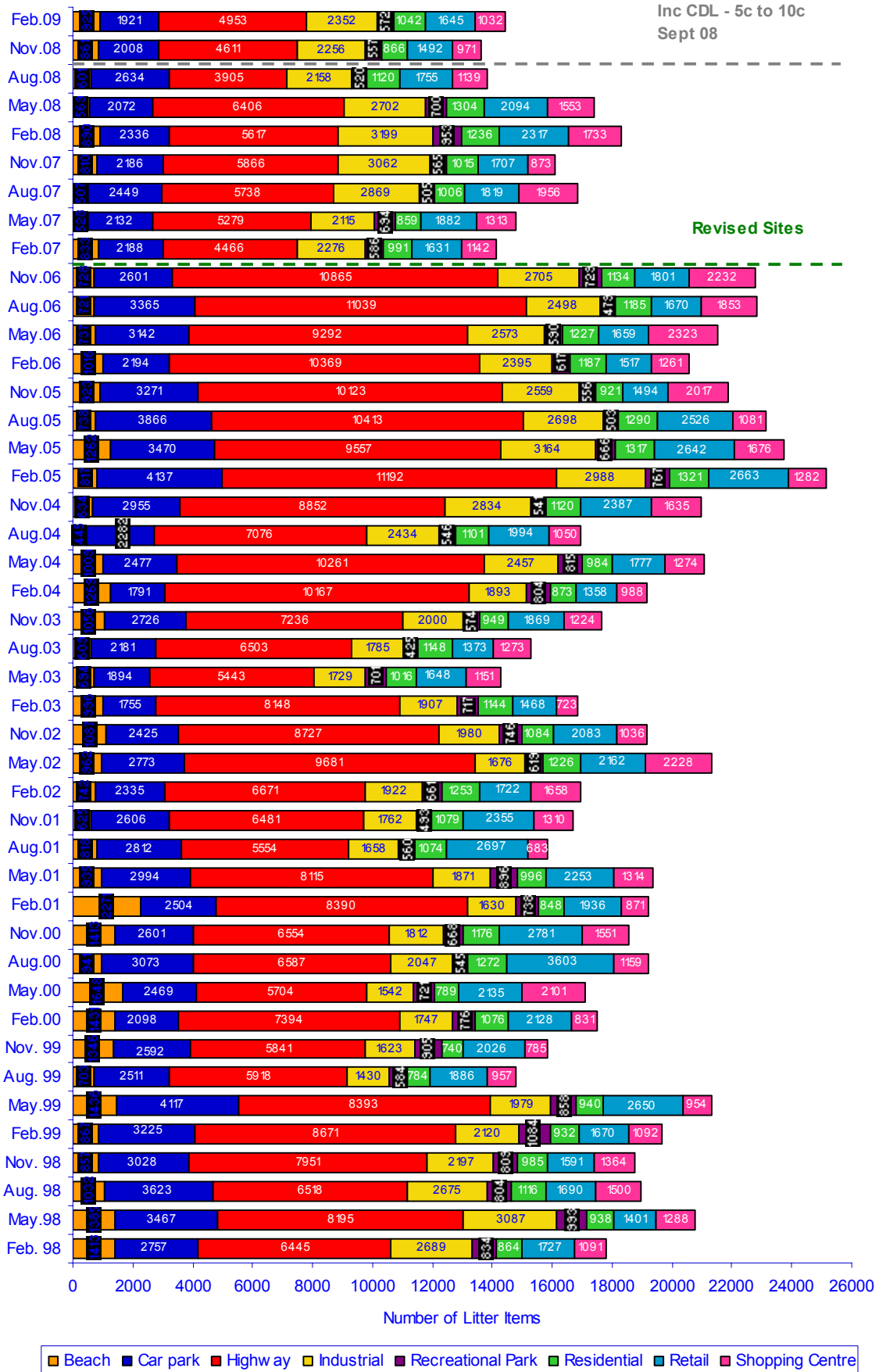
Number of Litter Items by Material Type



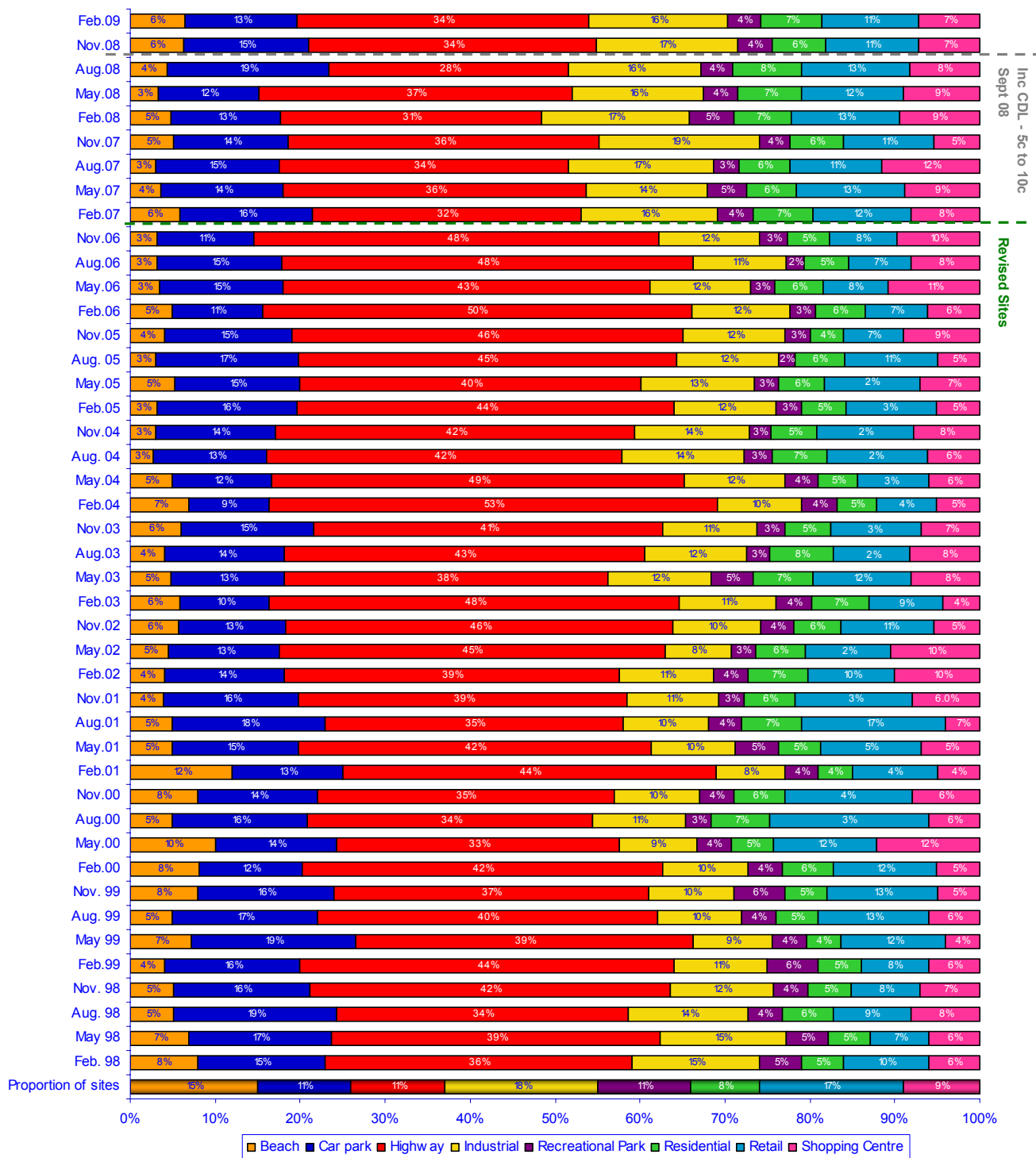
Proportion of Total Litter Stream by Material Type



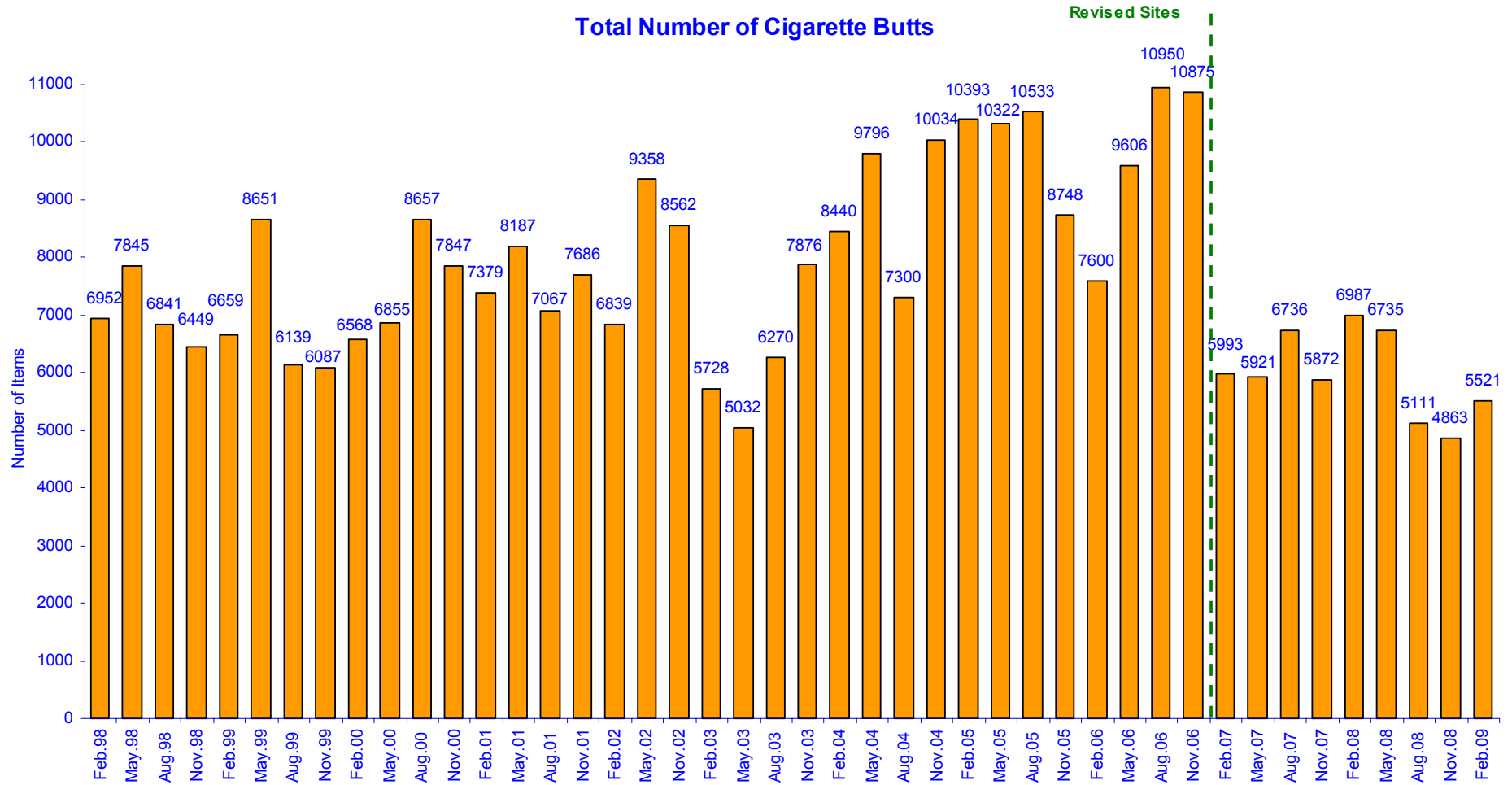
Number of Litter Items by Site Type



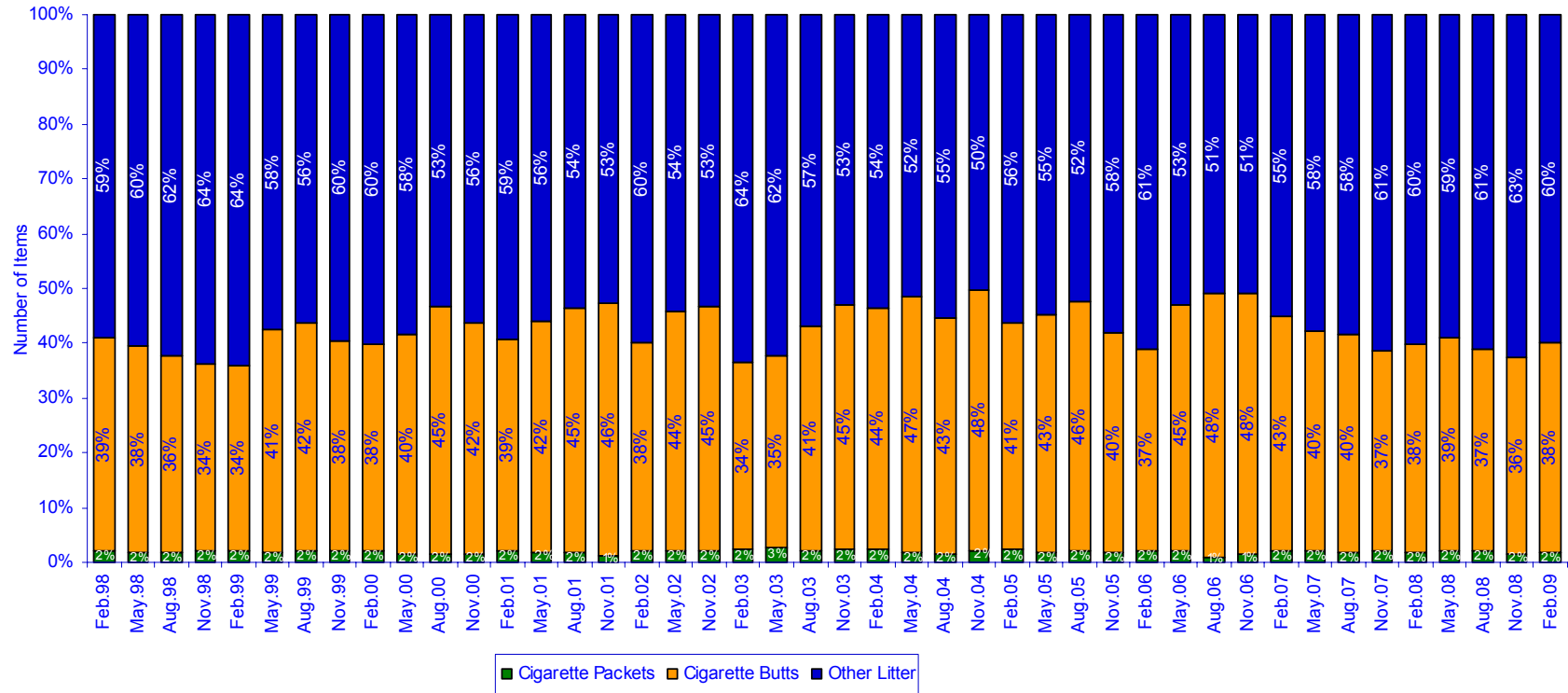
Proportion of Total Litter by Site Type



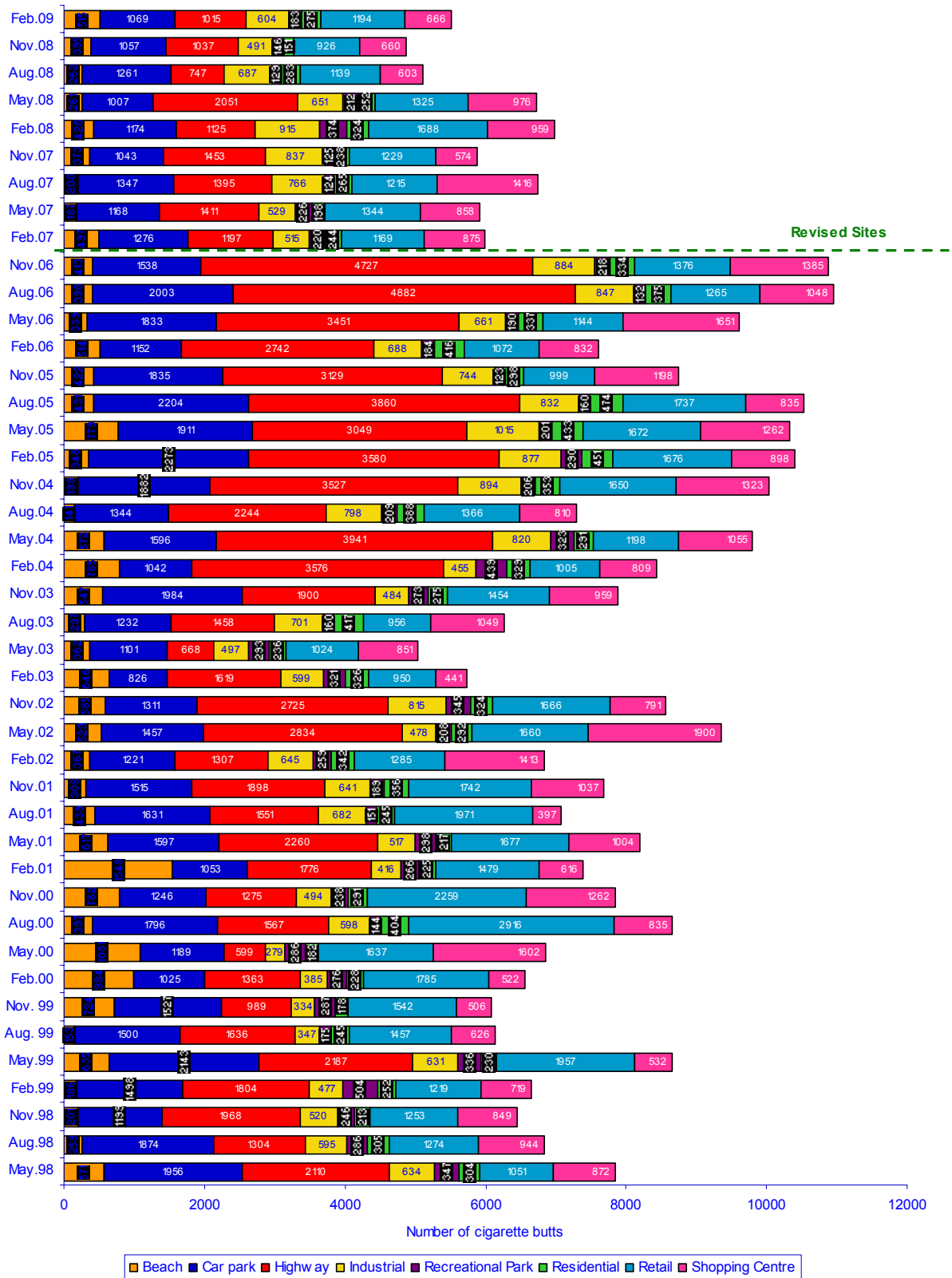
Total Number of Cigarette Butts



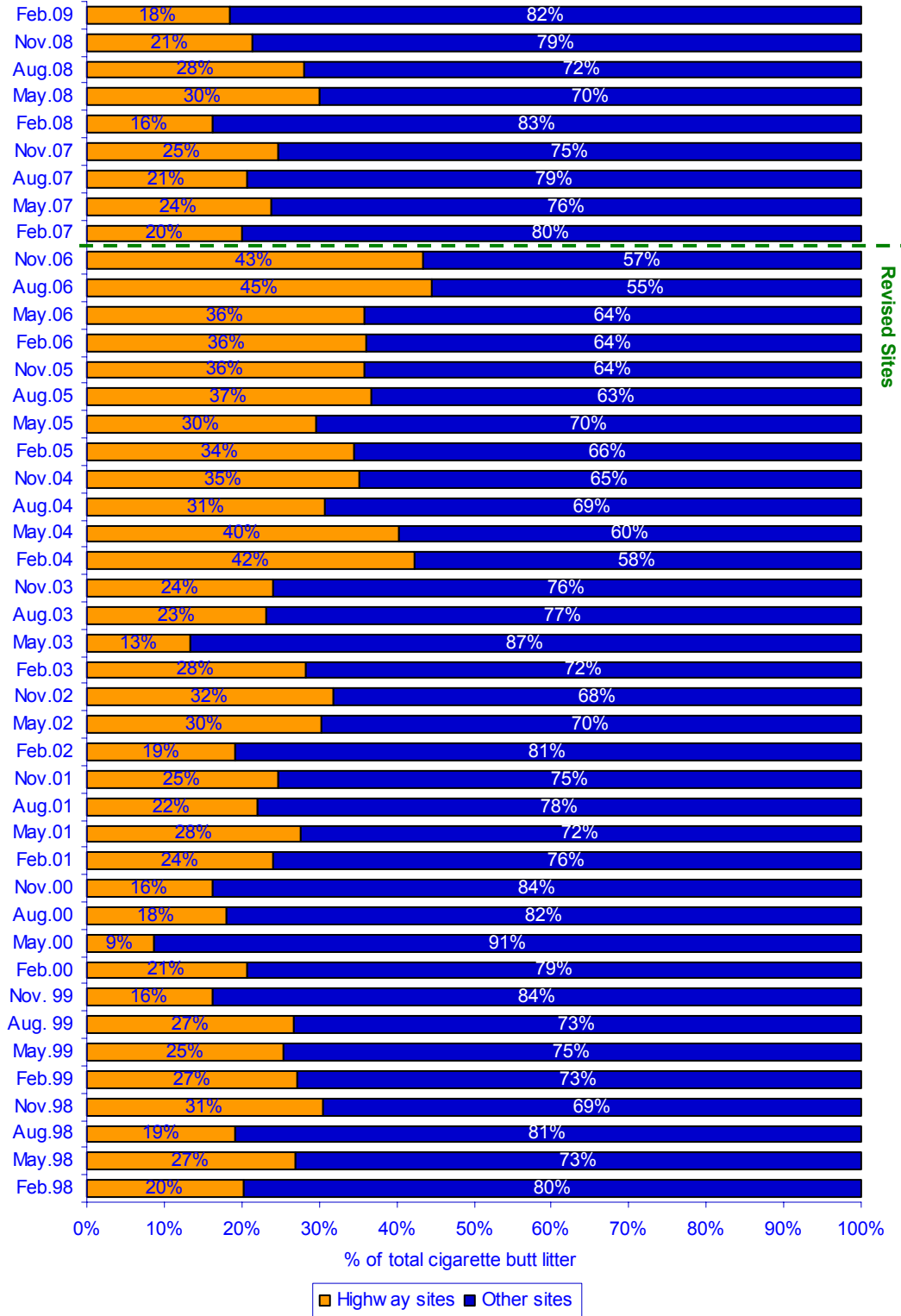
Proportion of Cigarette Related Litter Items in Total Litter Stream



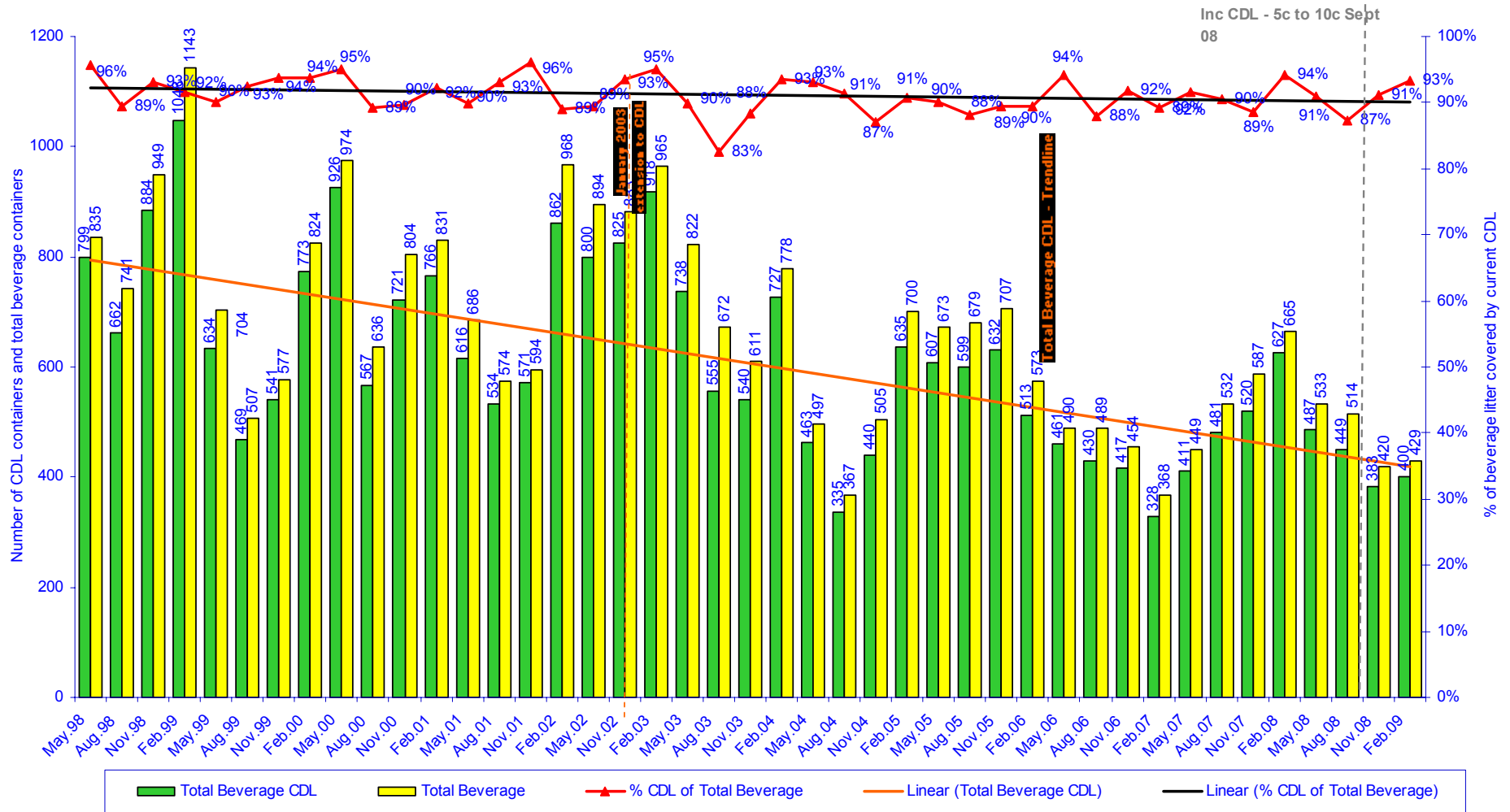
Number of Cigarette Butts by Site Type



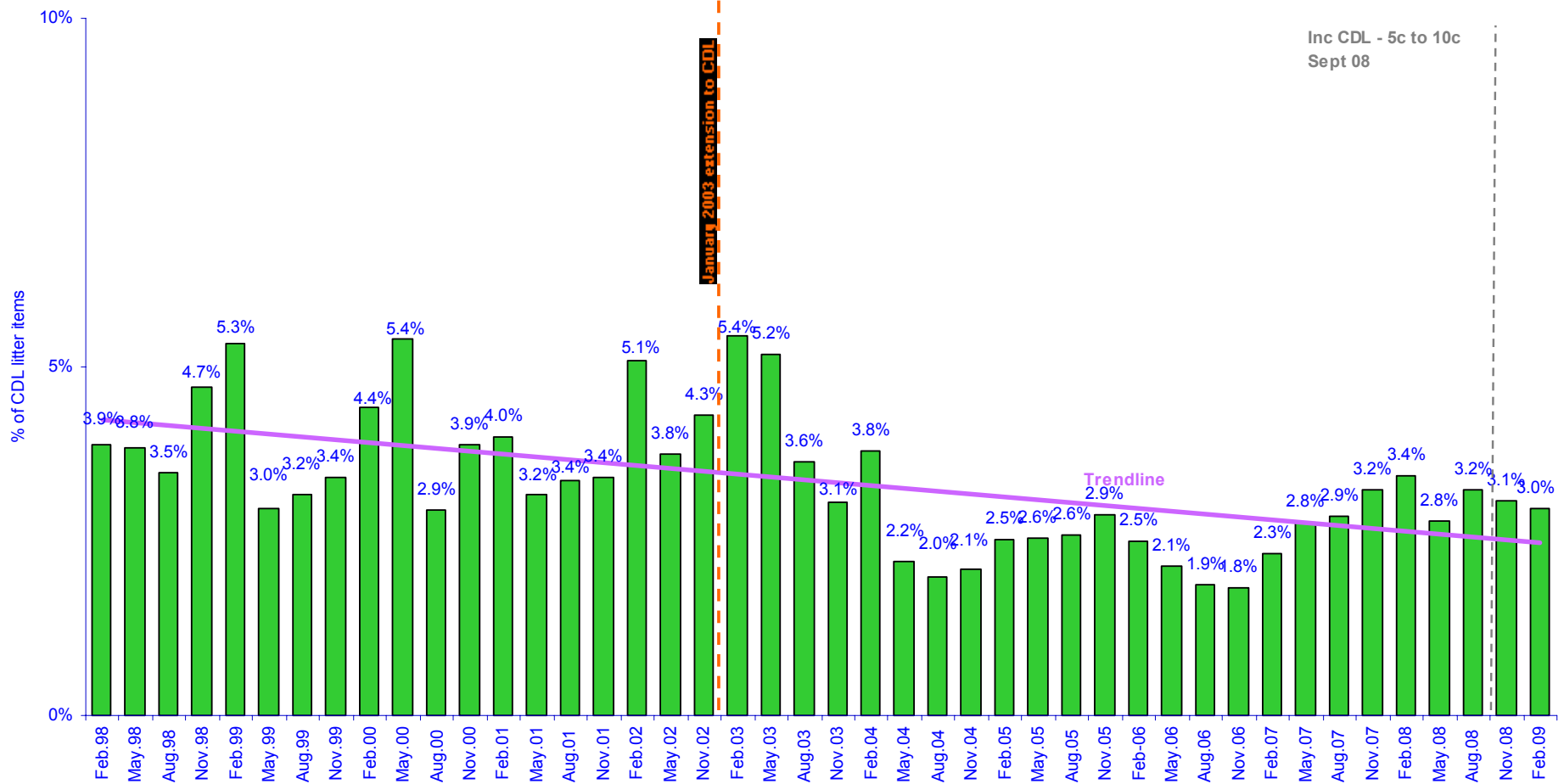
Proportion of Total Cigarette Butt Litter at Highway sites & Other sites



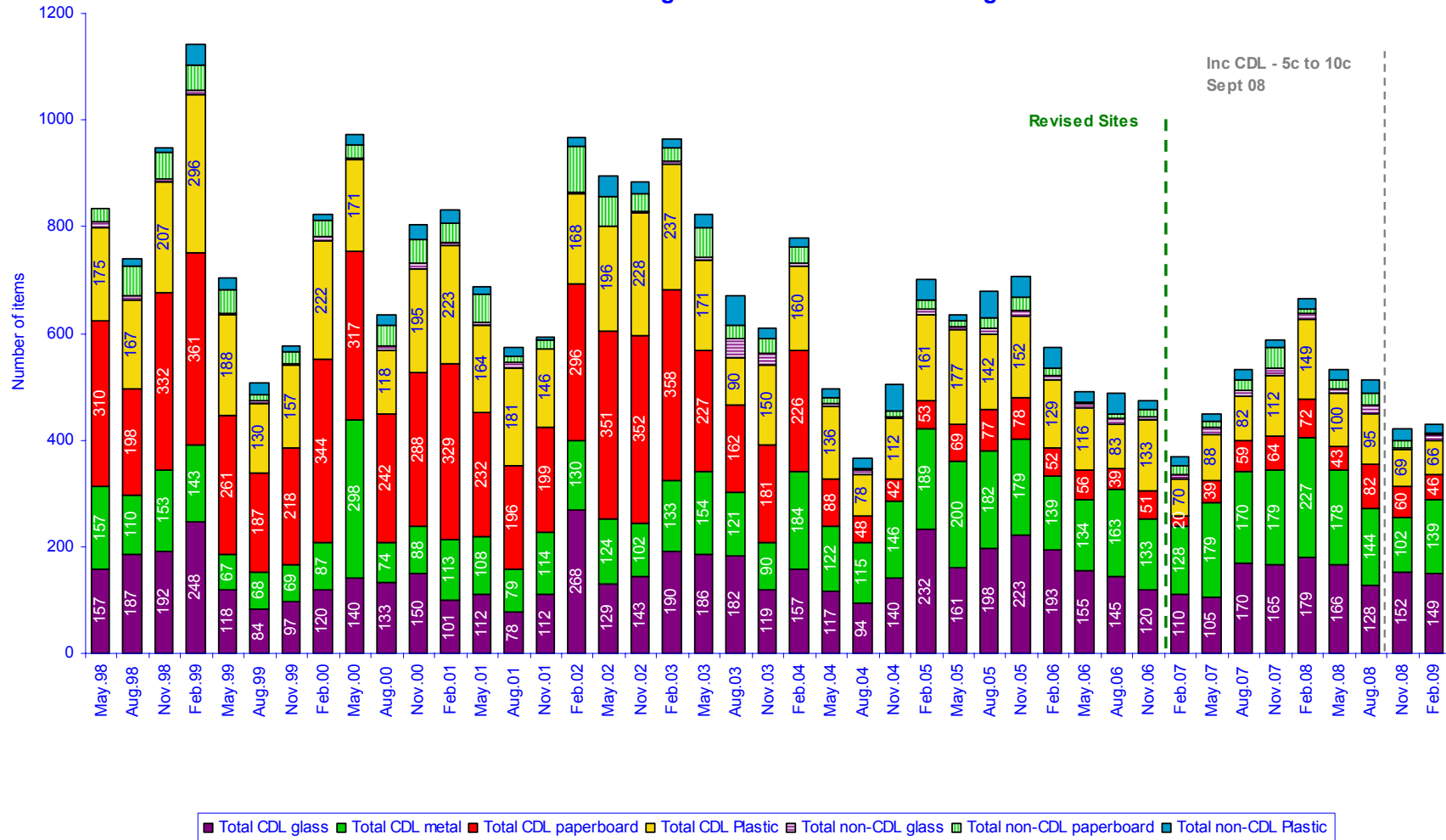
Proportion of Beverage Litter Covered By Current CDL & Total Number of Beverage Litter Items & Containers Covered By Current CDL



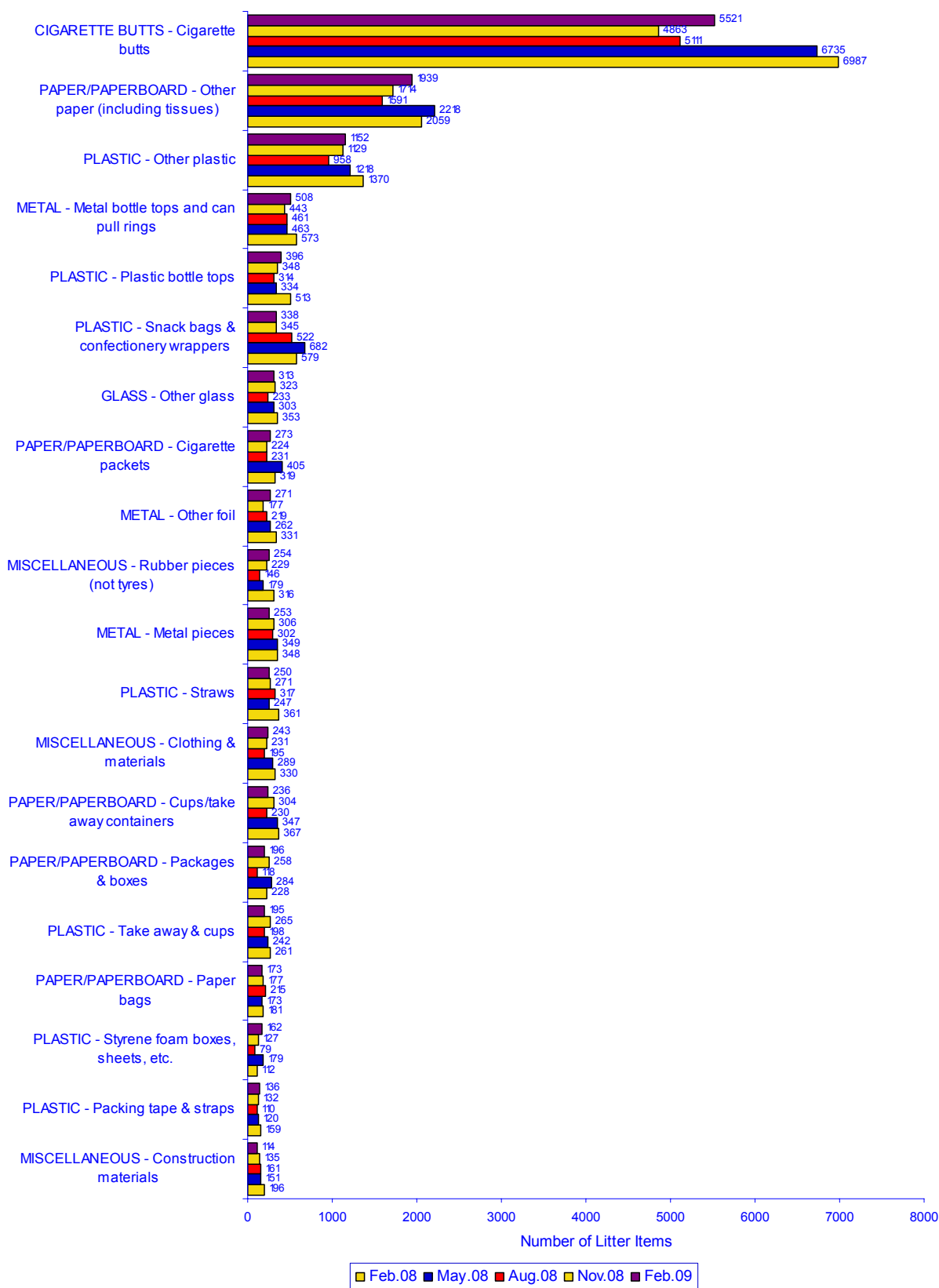
Proportion of Current CDL Litter Items in Total Litter Stream



CDL and Non-CDL Beverage Items Within Material Categories

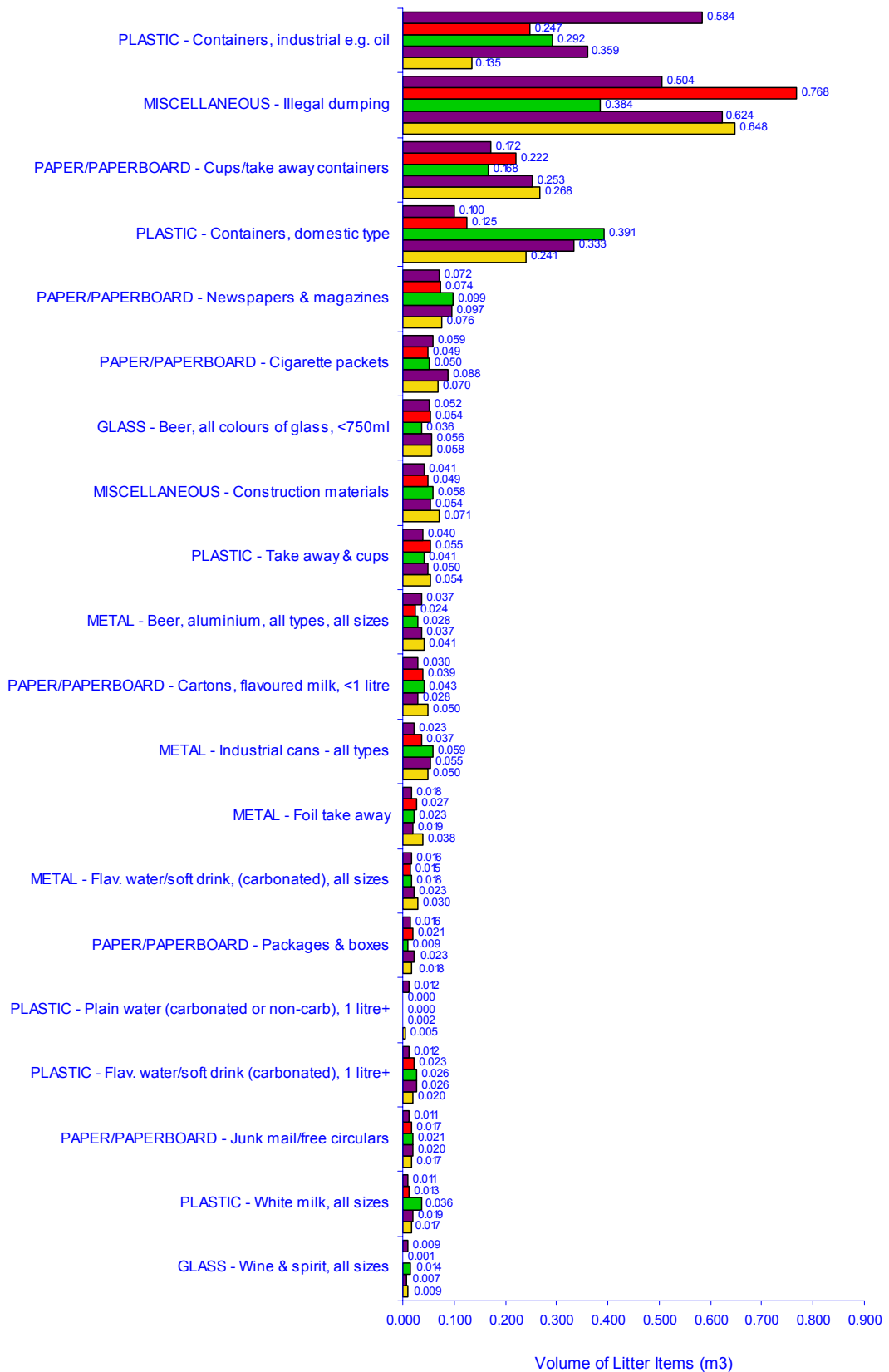


Top 20 Litter Items - Highest Counts

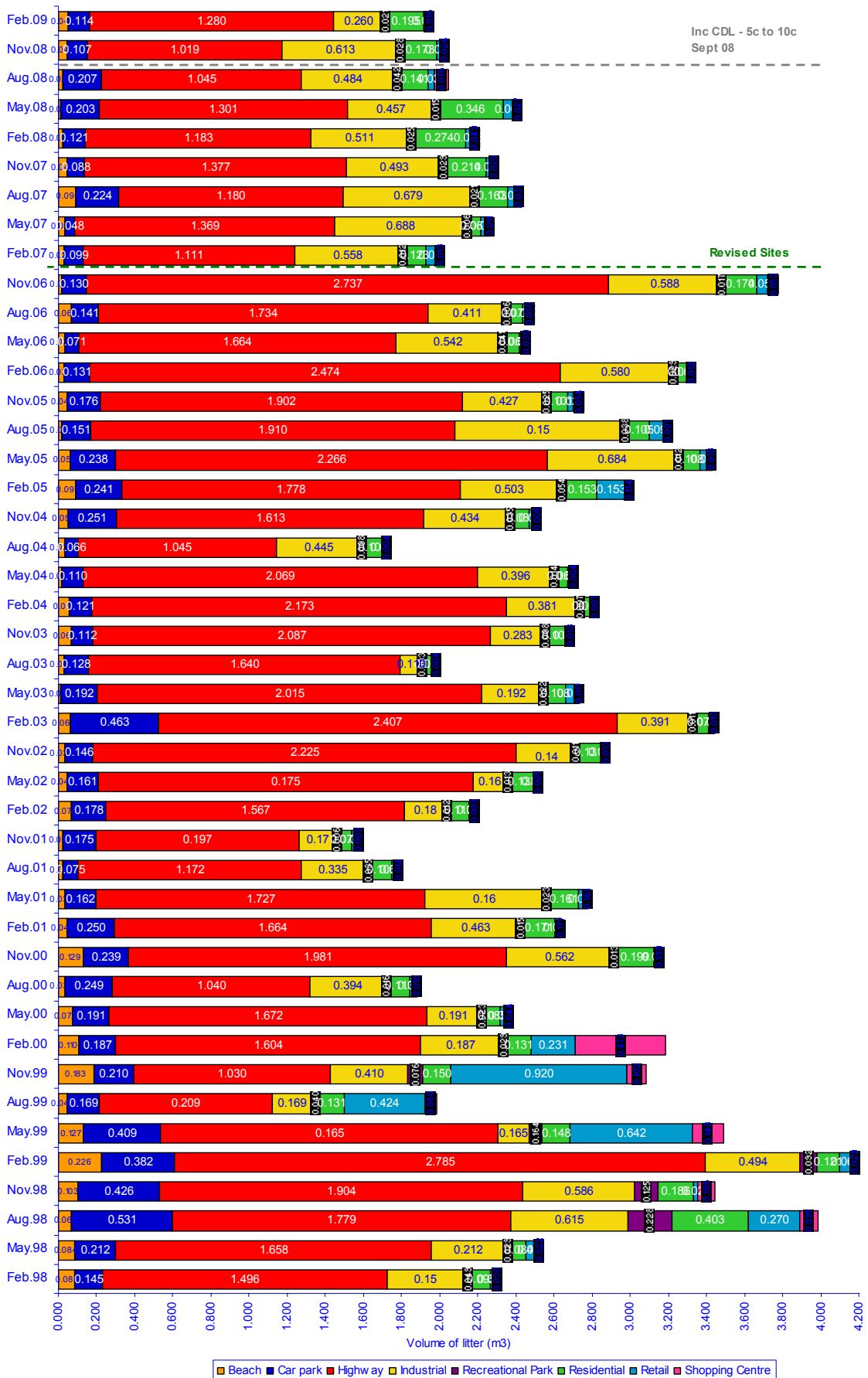


Unweighted Tracking Graphs
- Volume

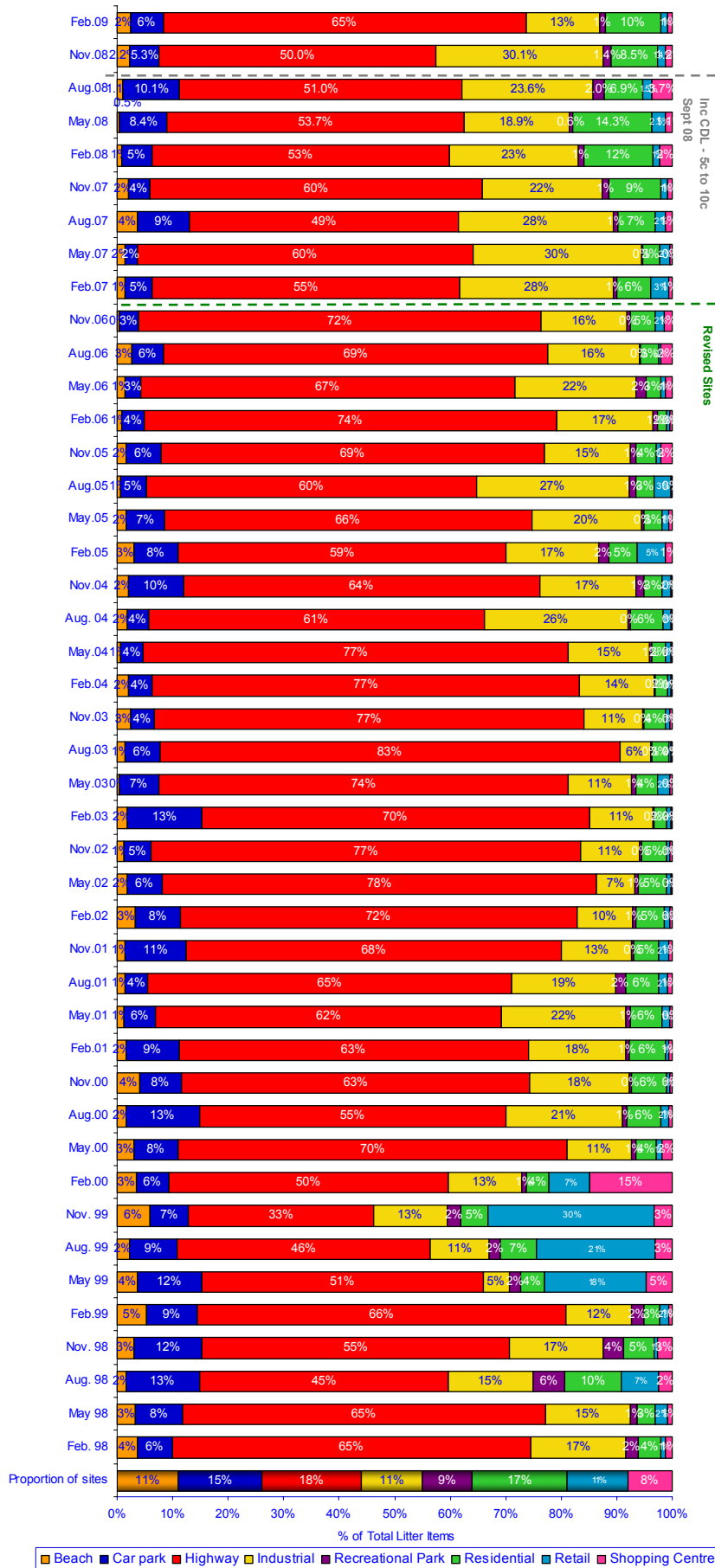
Top 20 Litter Items by Volume



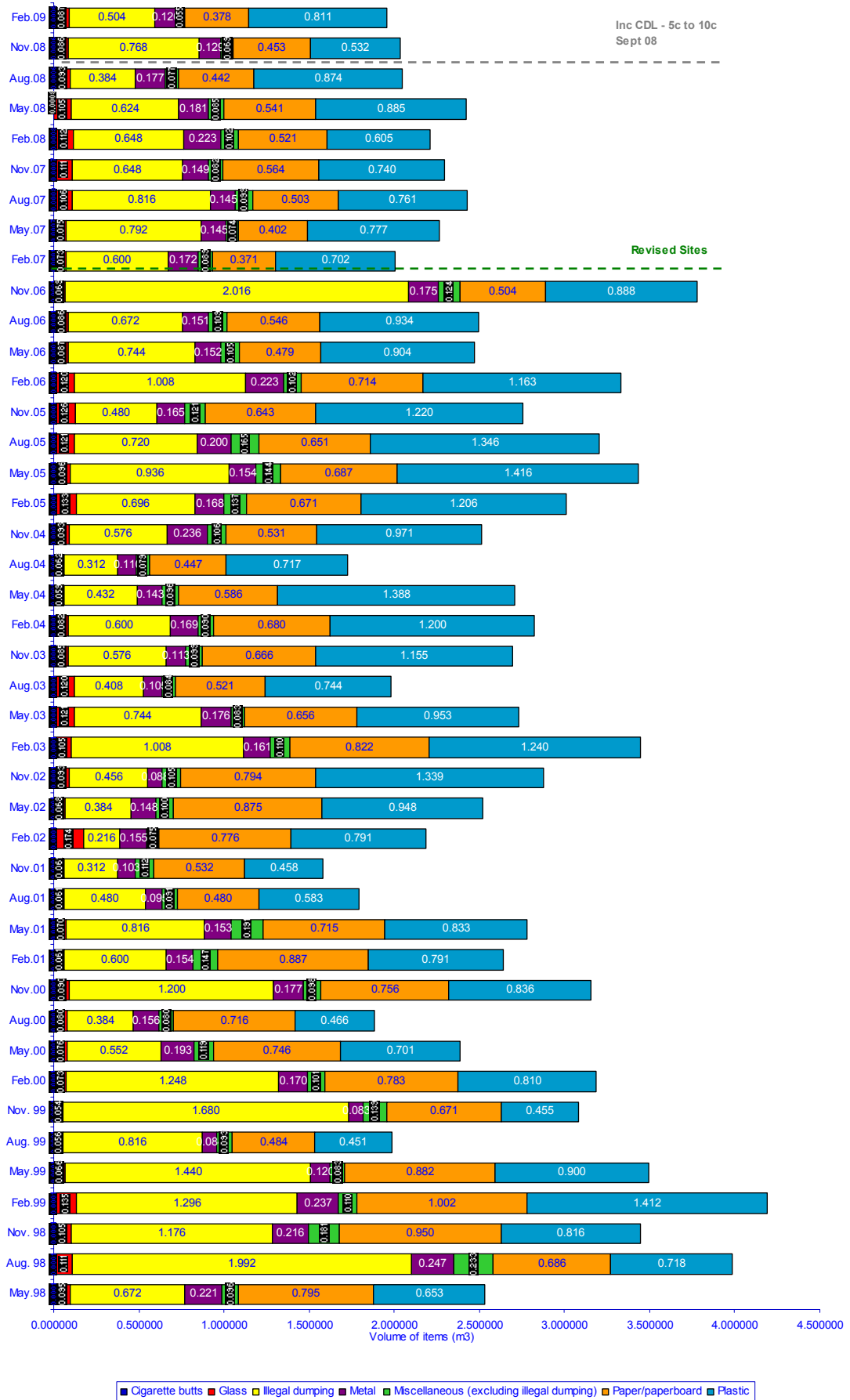
Volume of Litter by Site Type



Proportion of Litter Volume in Total Litter Stream by Site Type

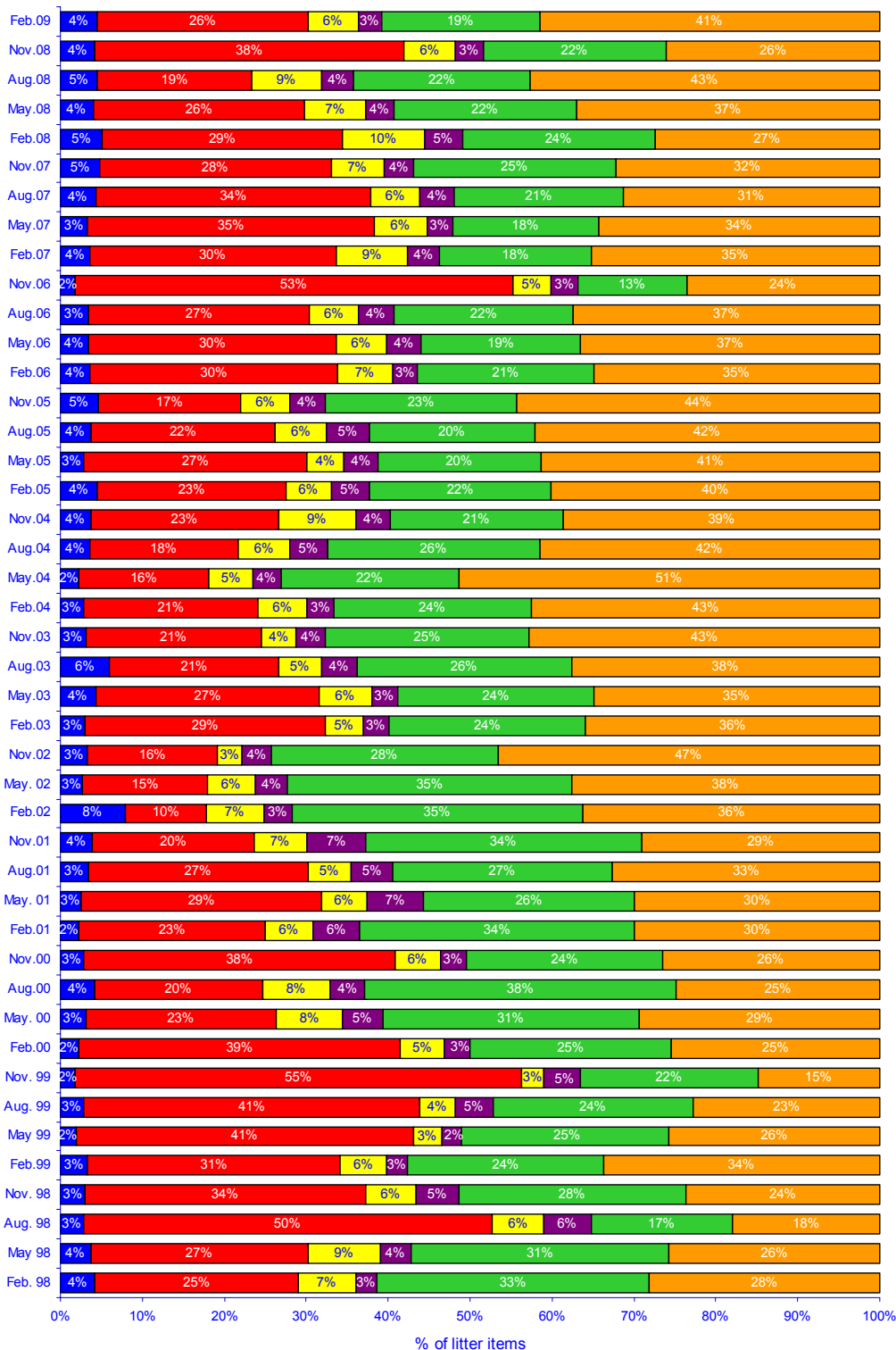


Volume of Litter Items by Material Type



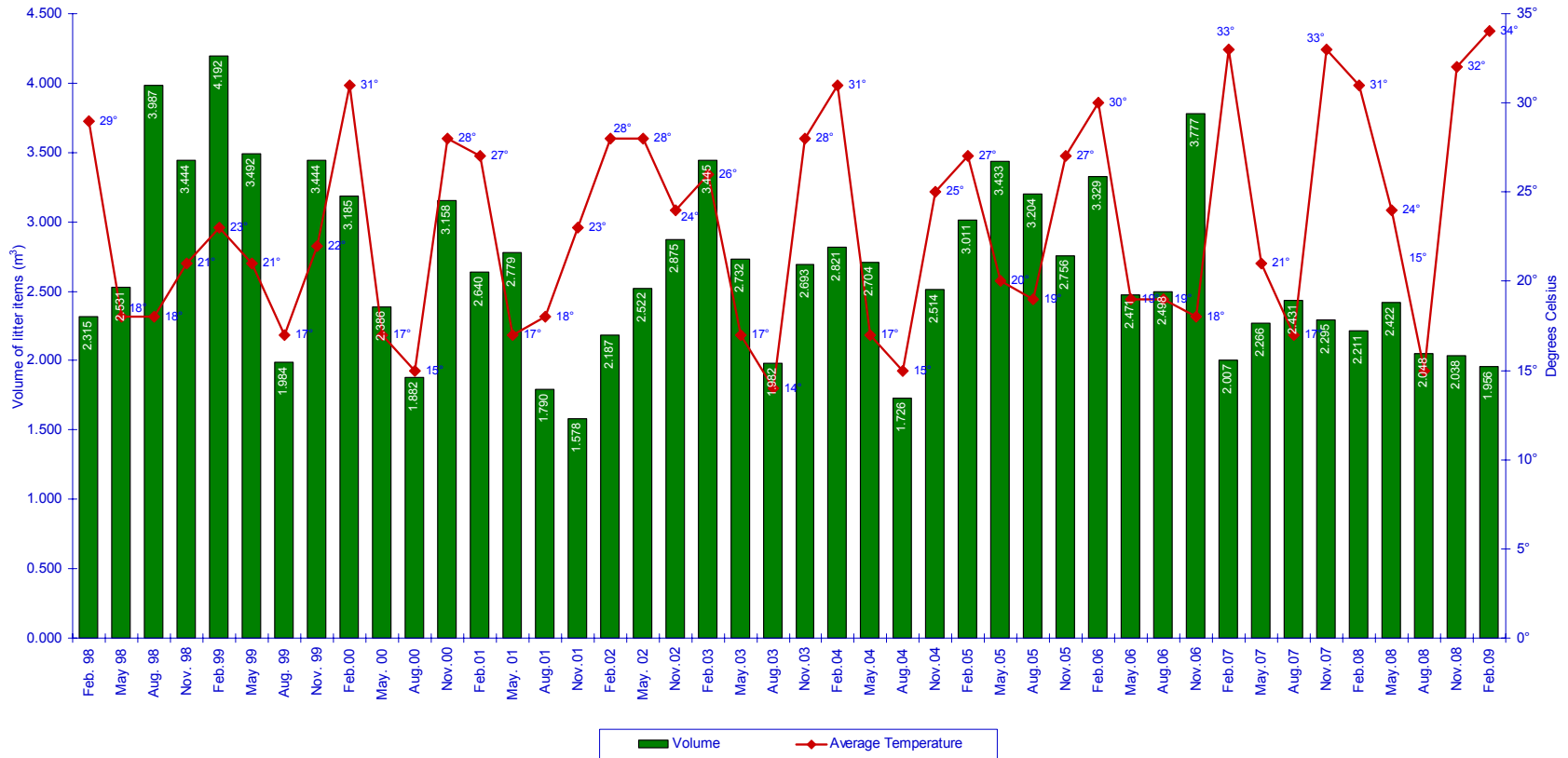
Proportion of Total Litter Volume by Material Type

- Please note that cigarette butts are not included as the volumes of such are consistently negligible -

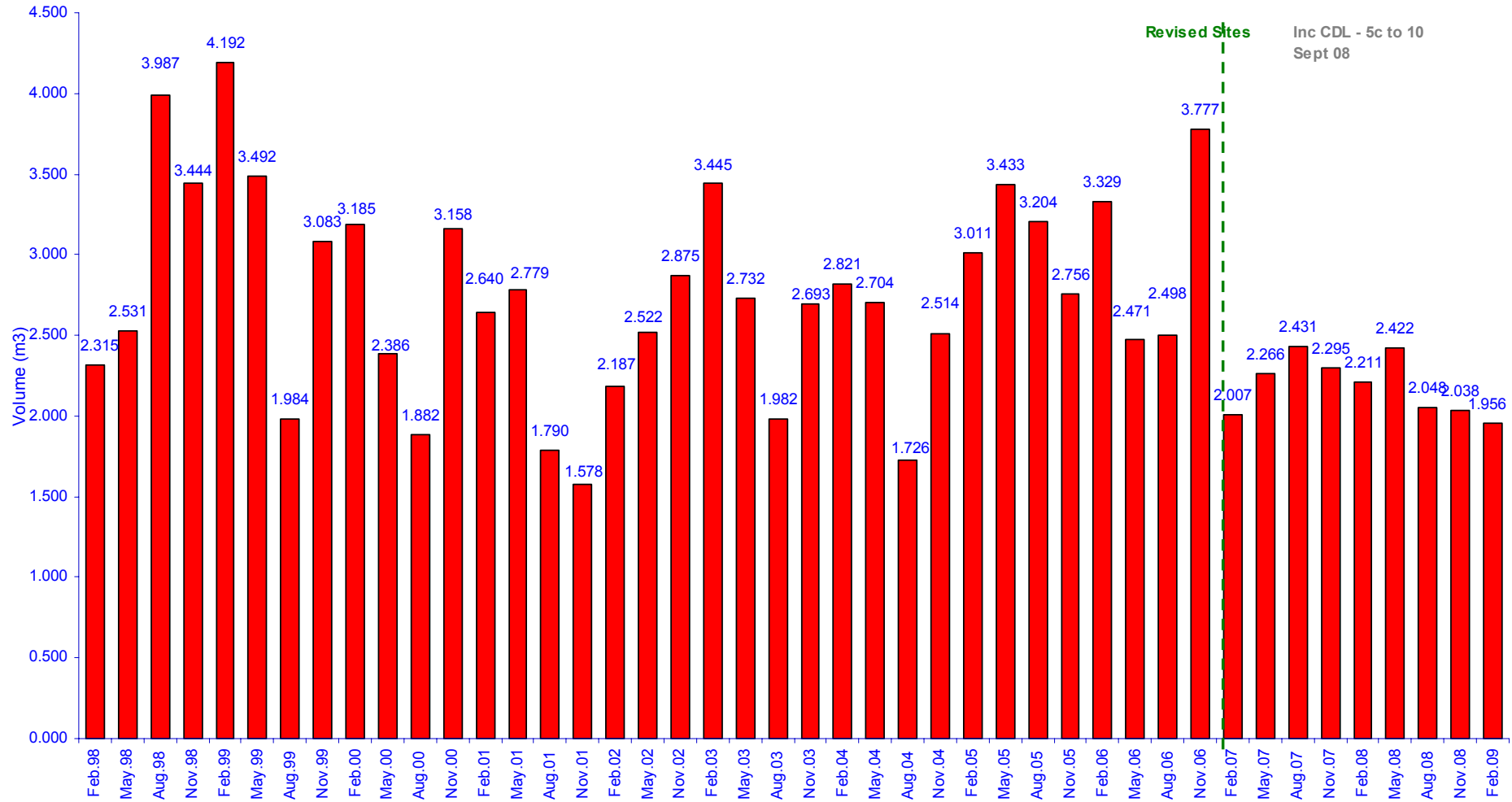


■ Glass ■ Illegal dumping ■ Metal ■ Miscellaneous (excluding illegal dumping) ■ Paper/paperboard ■ Plastic

Weather Temperature and Total Volume of Litter Items



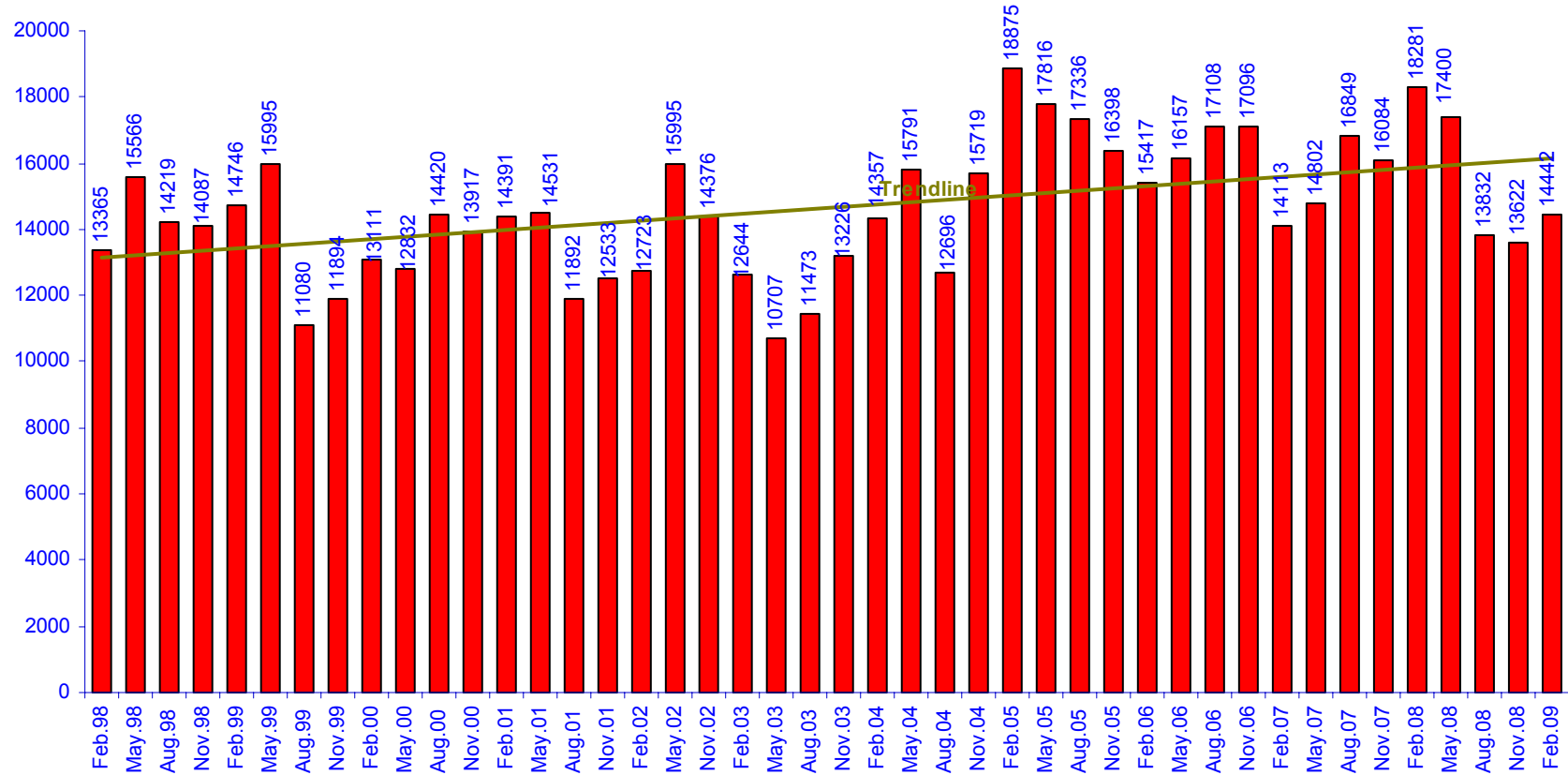
Total Volume (Cubic Metres) of Litter



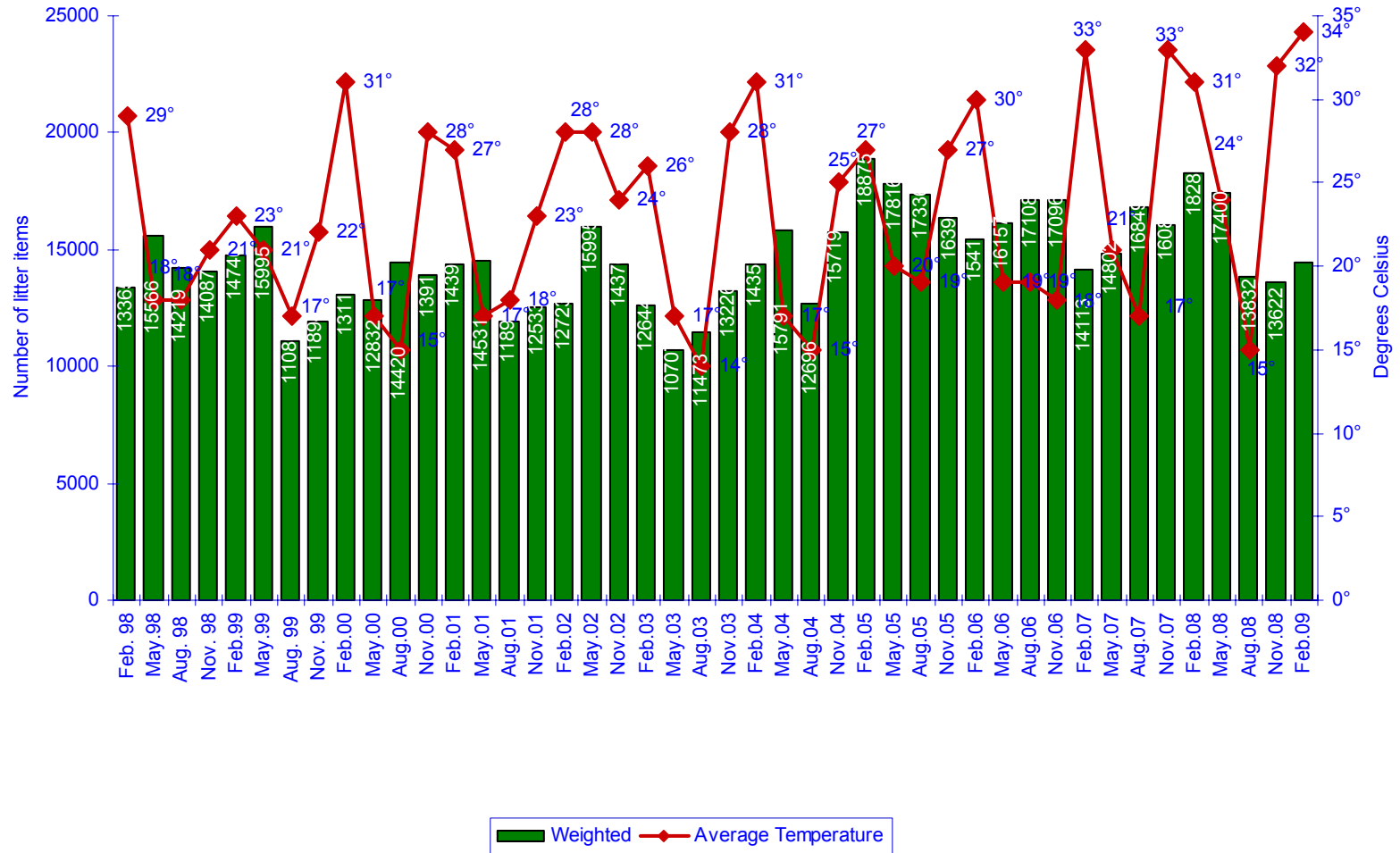
Weighted Tracking Graphs

- Items

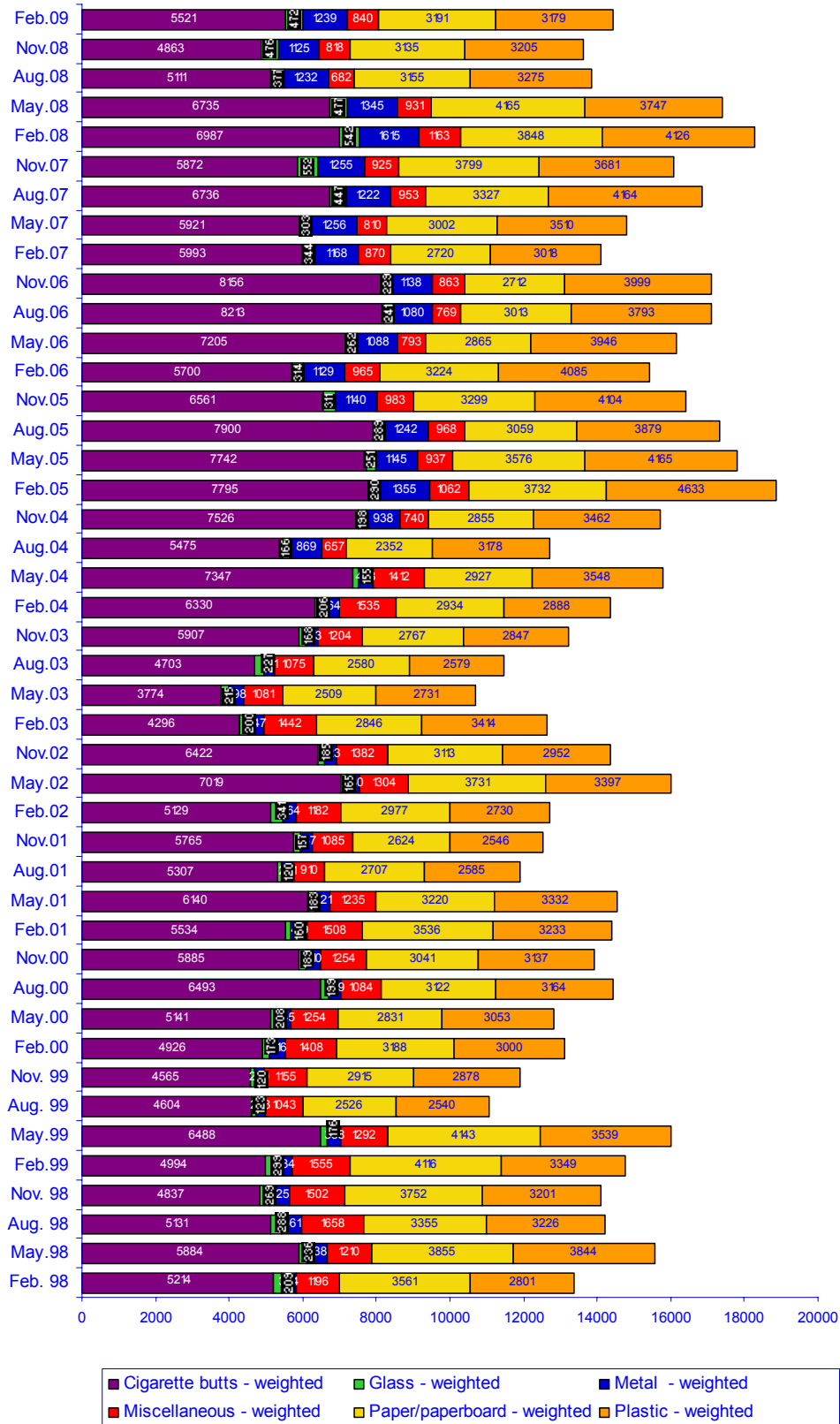
Total Litter - Number of Items - Weighted



Weather Temperature and Total Number of Litter Items - Weighted

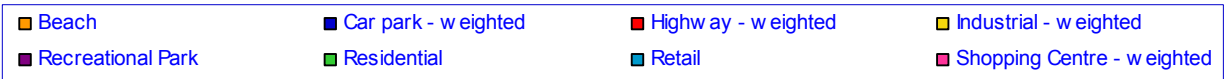
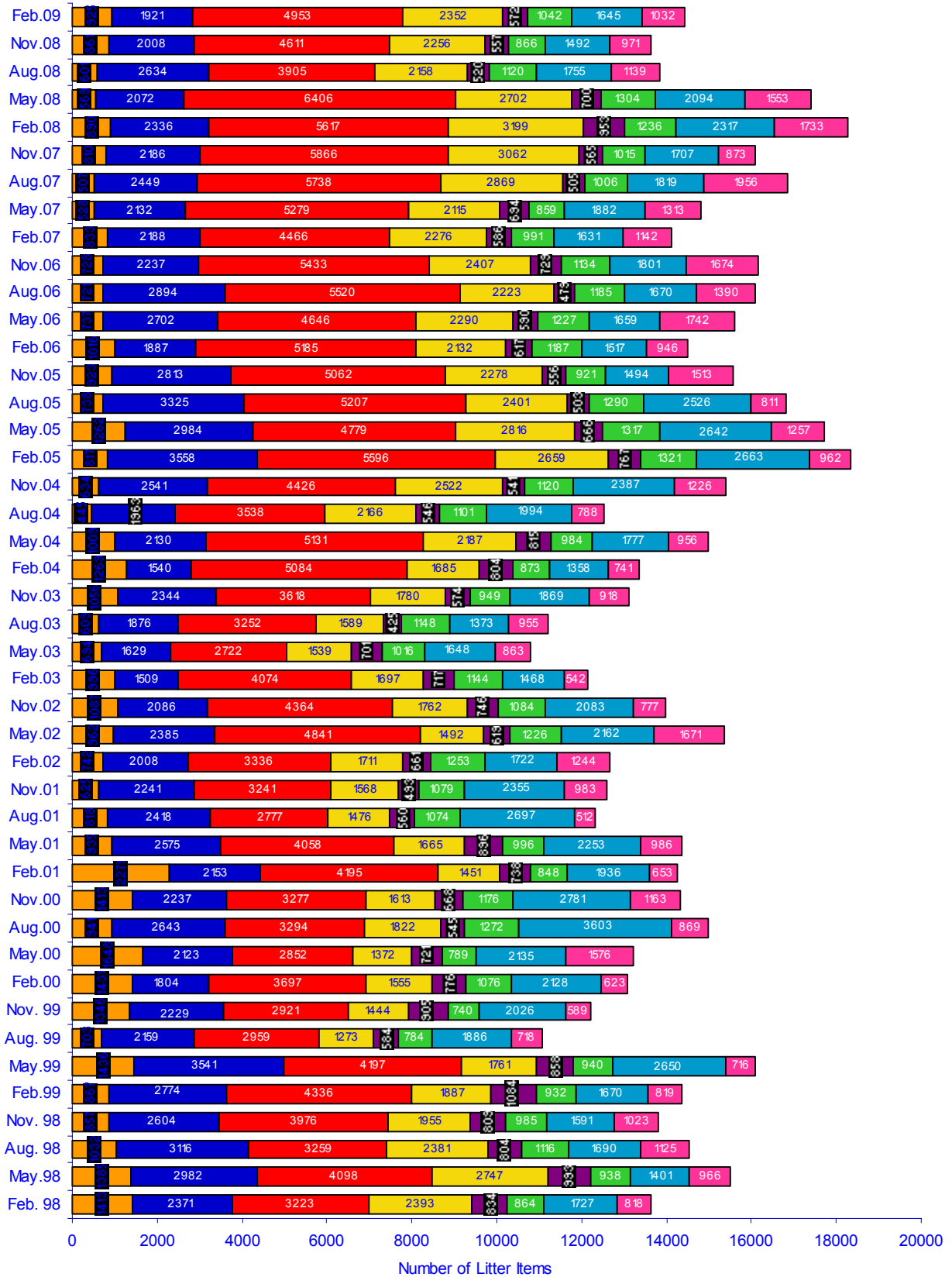


Number of Litter Items by Material Type - Weighted

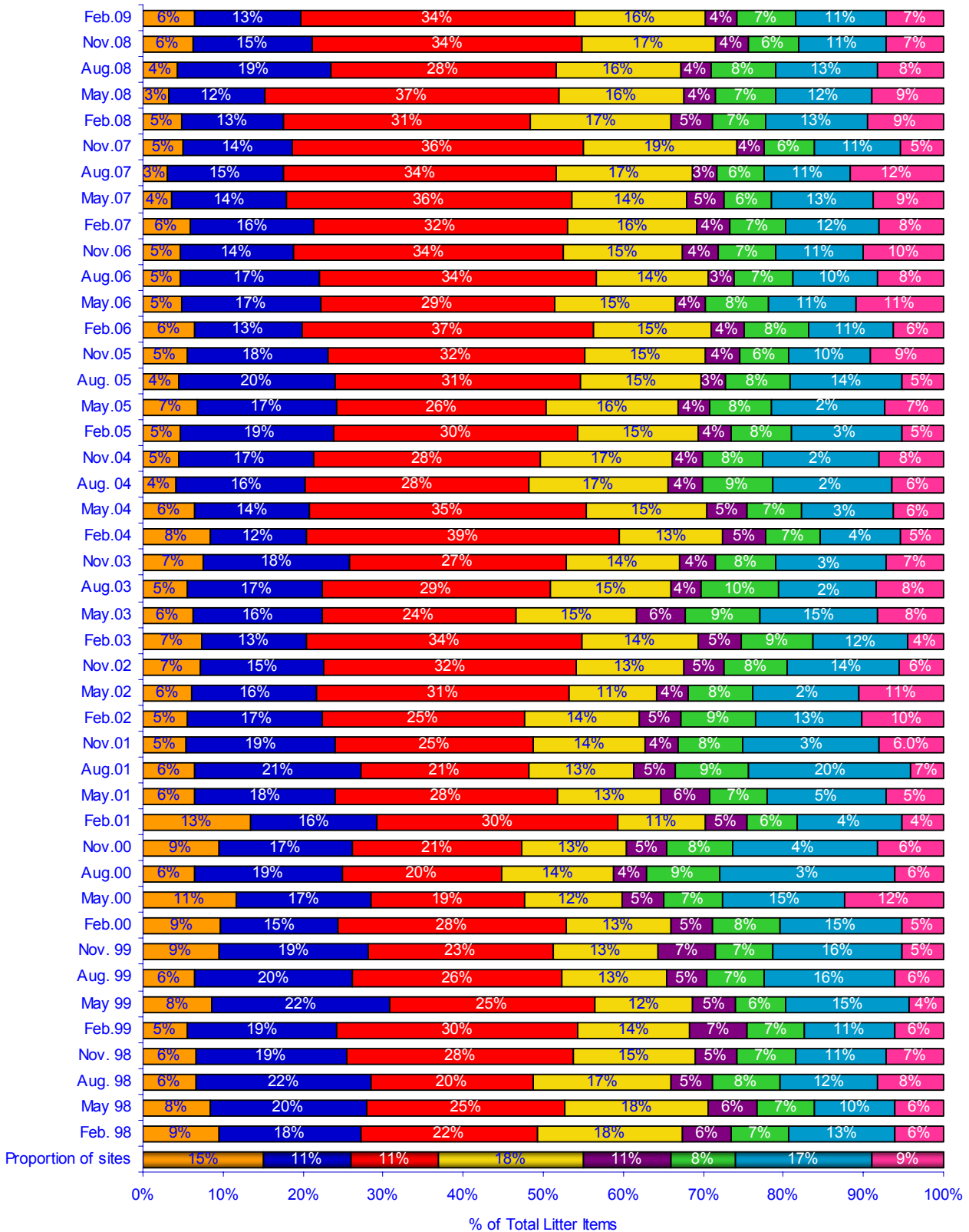


Number of Items

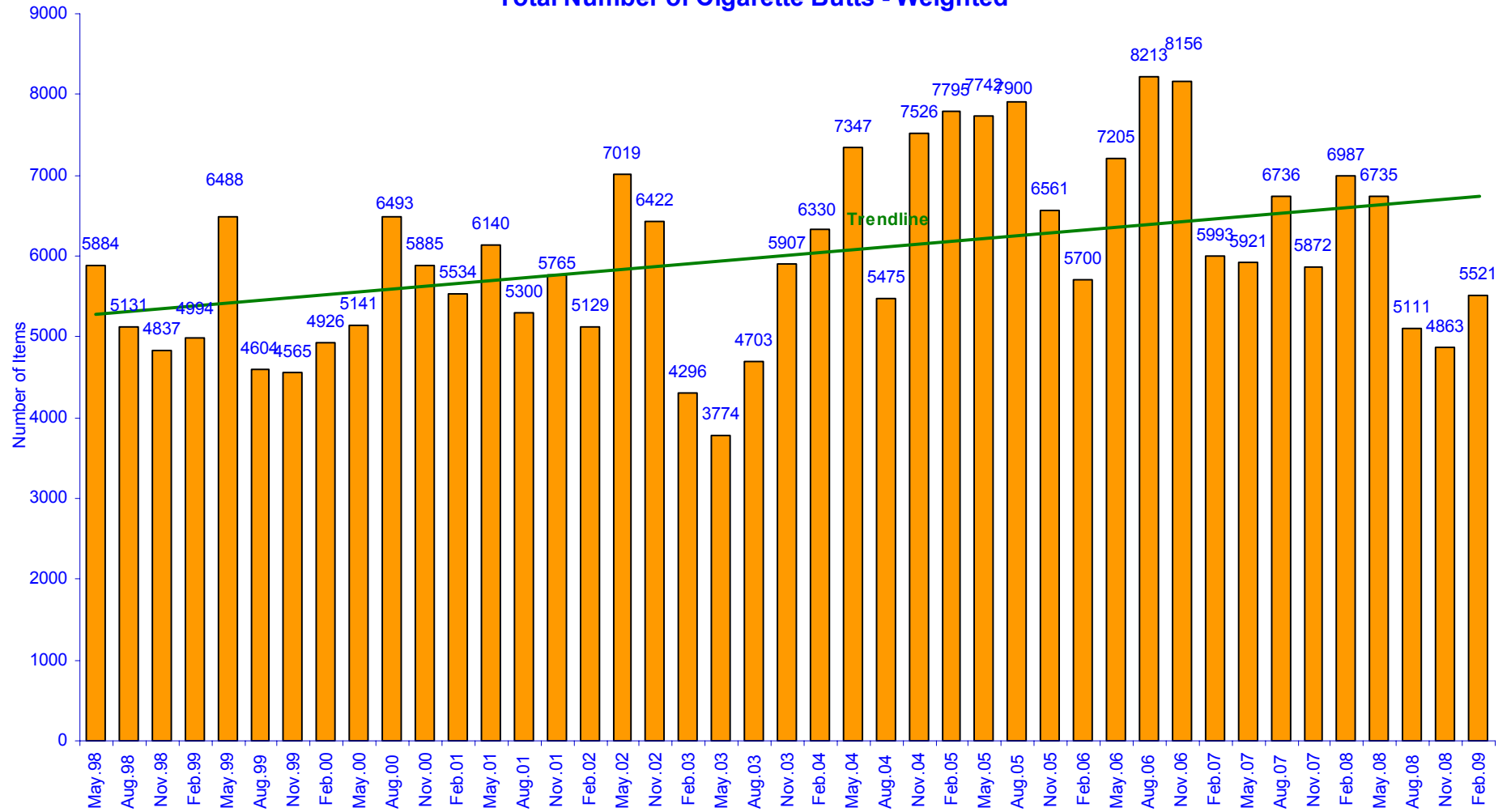
Number of Litter Items by Site Type - Weighted



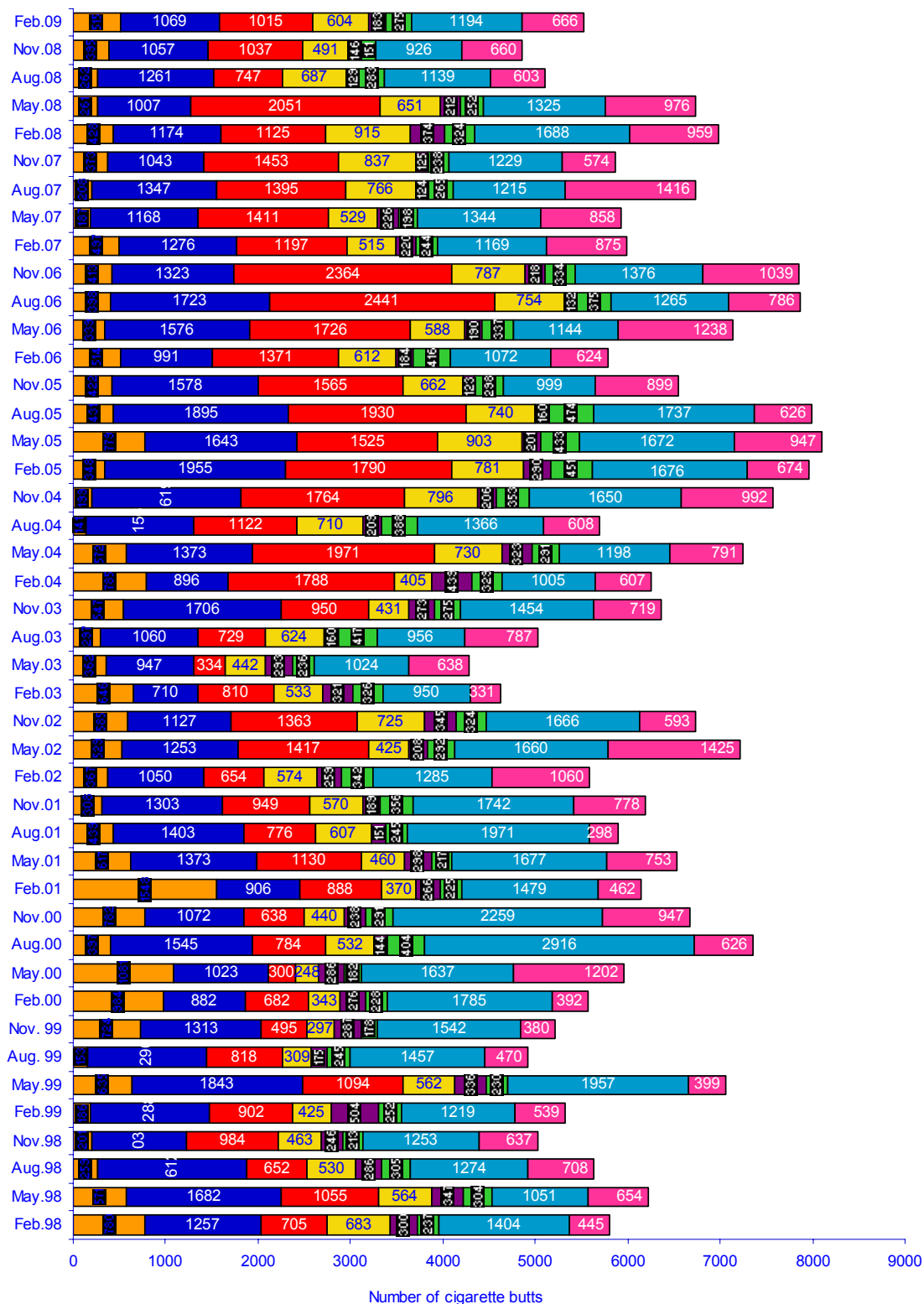
Proportion of Total Litter by Site Type - Weighted



Total Number of Cigarette Butts - Weighted

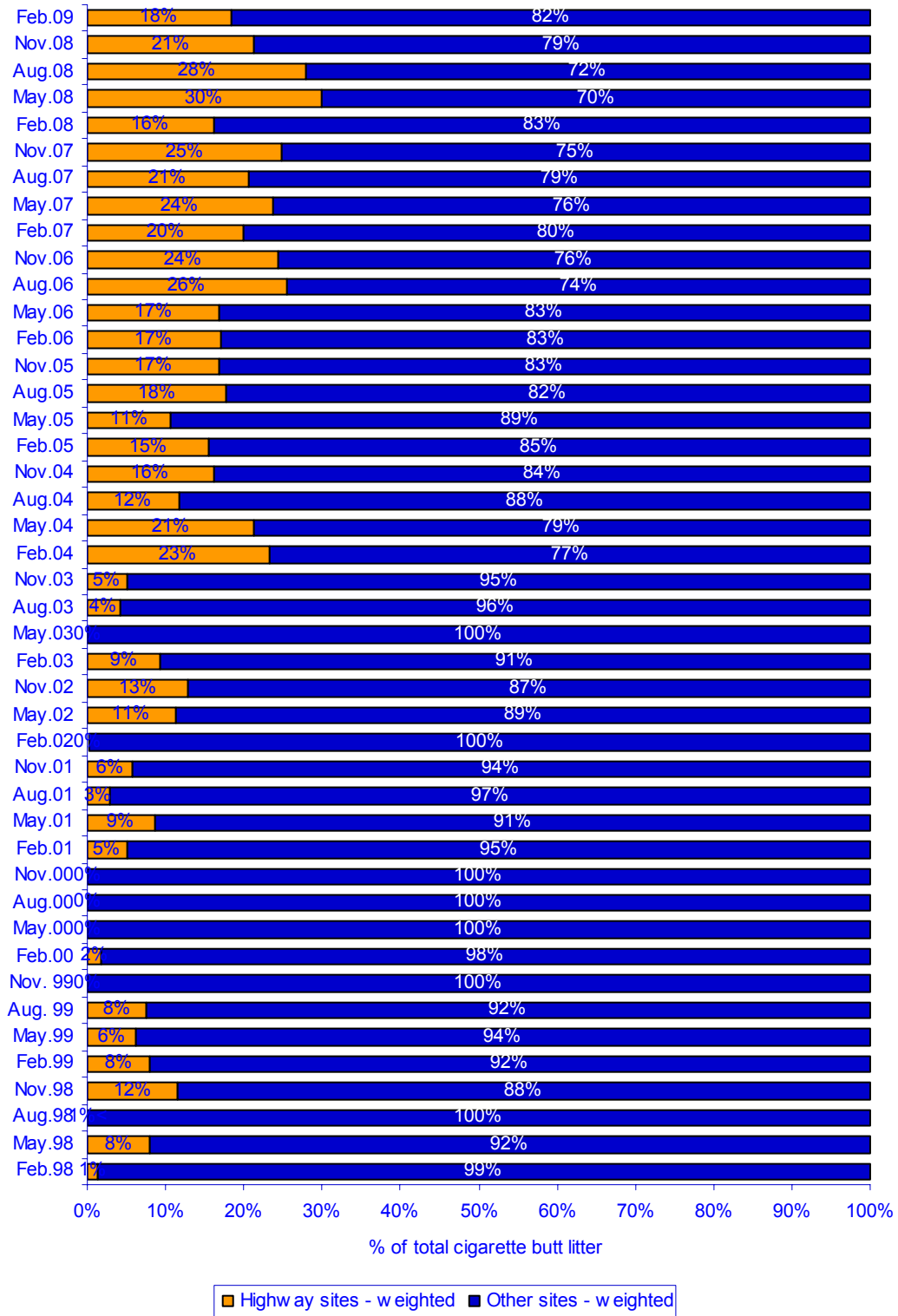


Number of Cigarette Butts by Site Type - Weighted

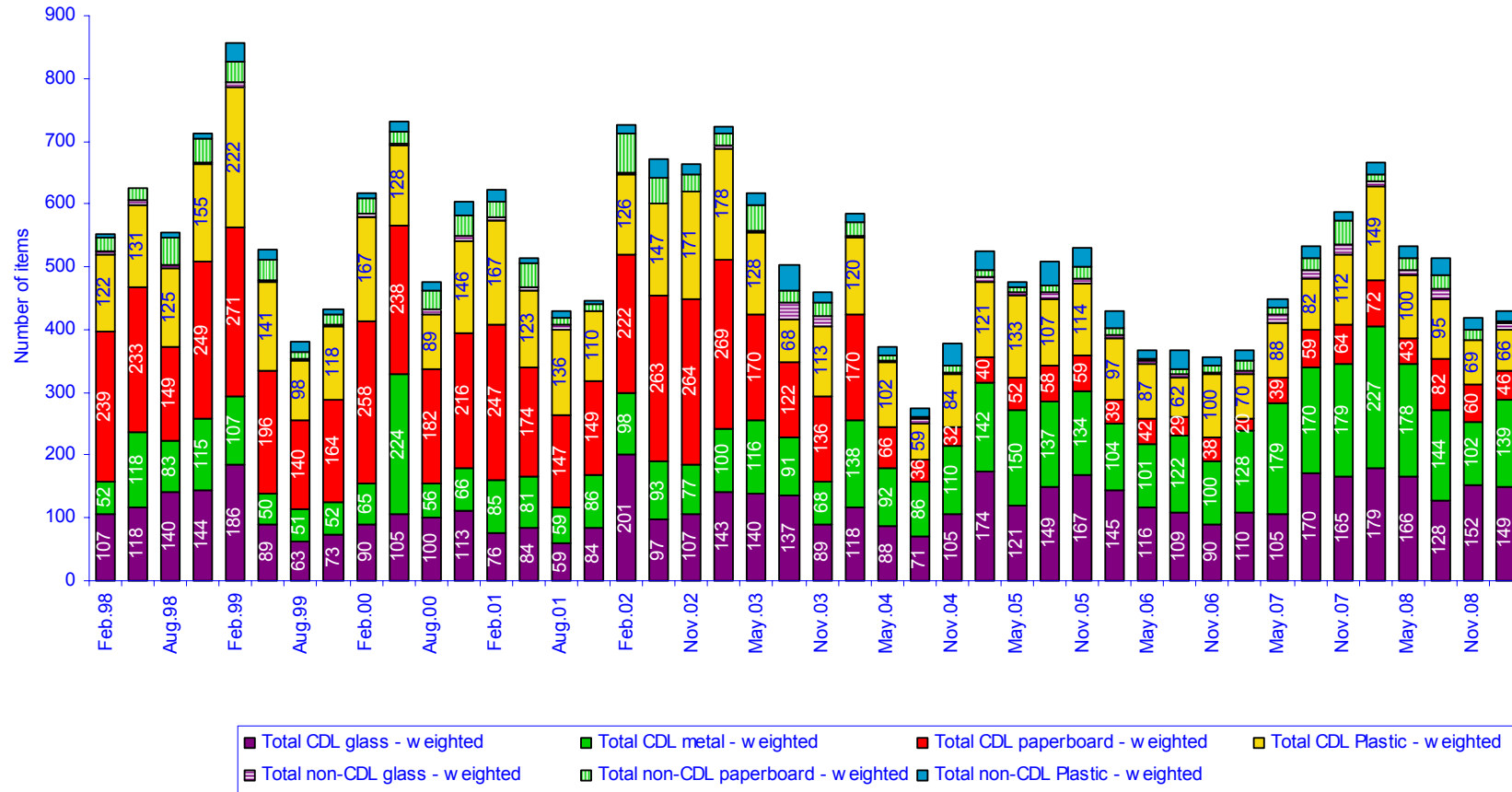


Beach Car park - w weighted Highway - w weighted Industrial - w weighted Recreational Park Residential Retail Shopping Centre - w weighted

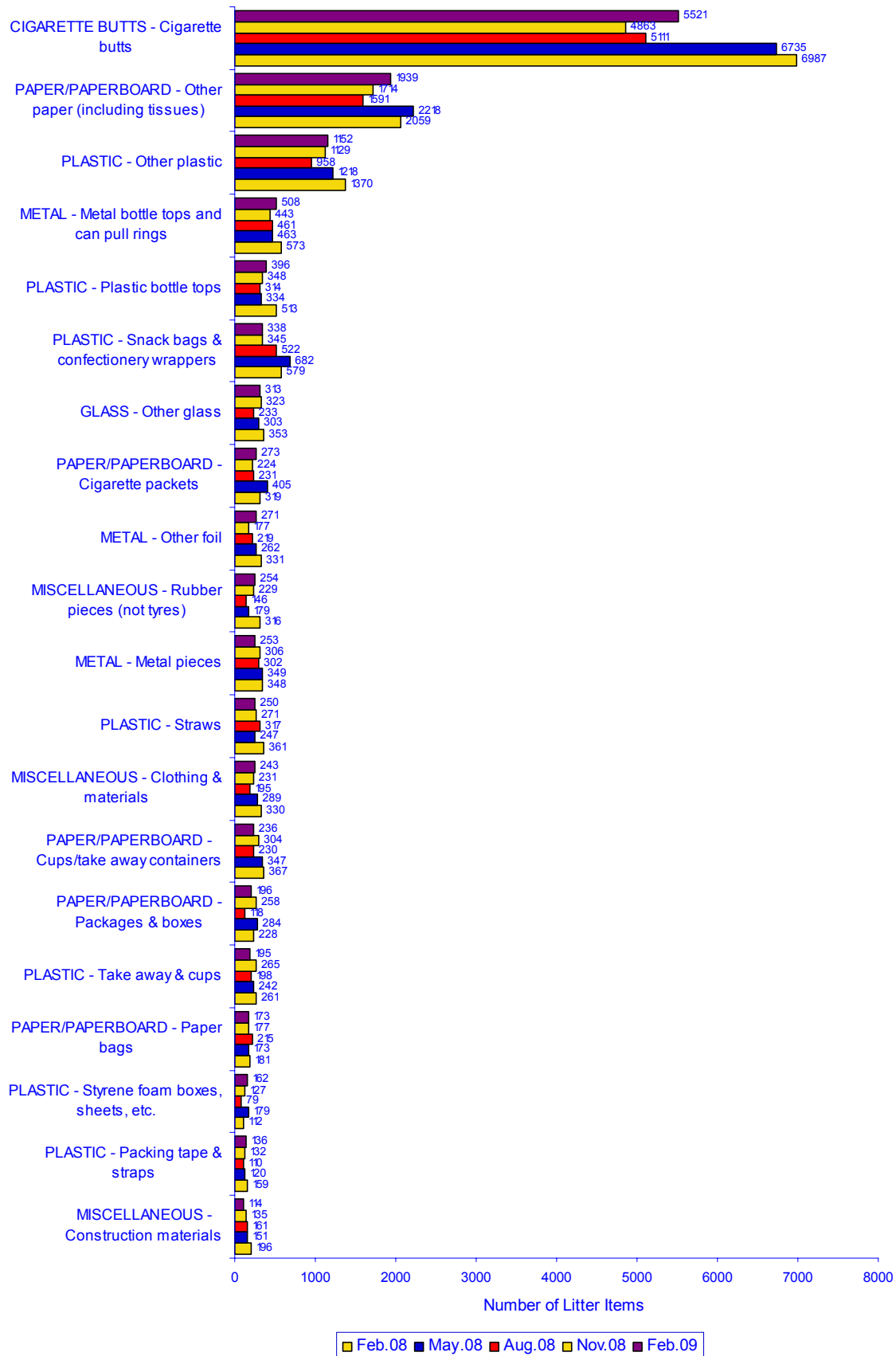
Proportion of Total Cigarette Butt Litter at Highway sites & Other sites - Weighted



CDL and Non-CDL Beverage Items Within Material Categories - Weighted

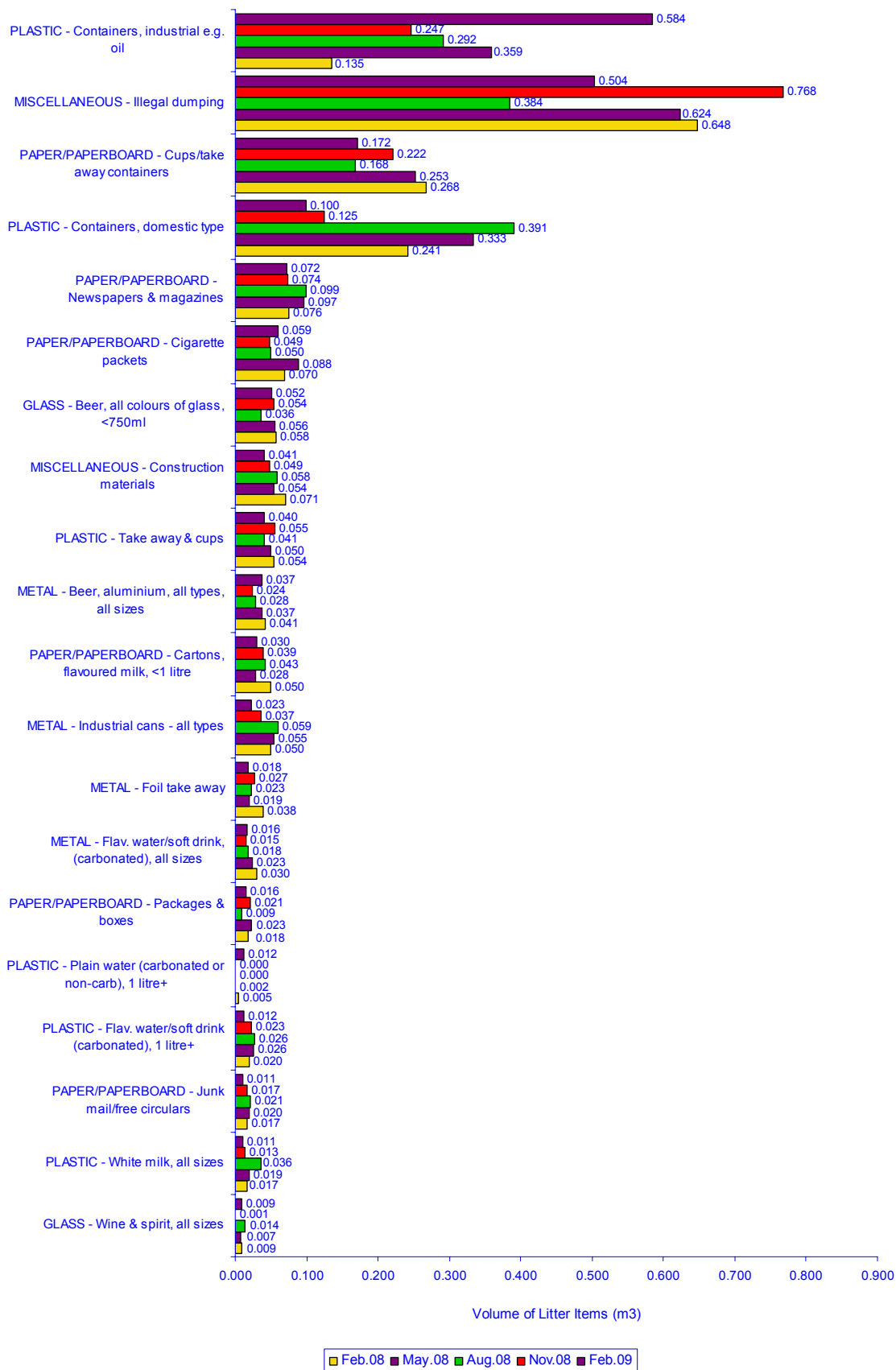


Top 20 Litter Items - Highest Counts - Weighted

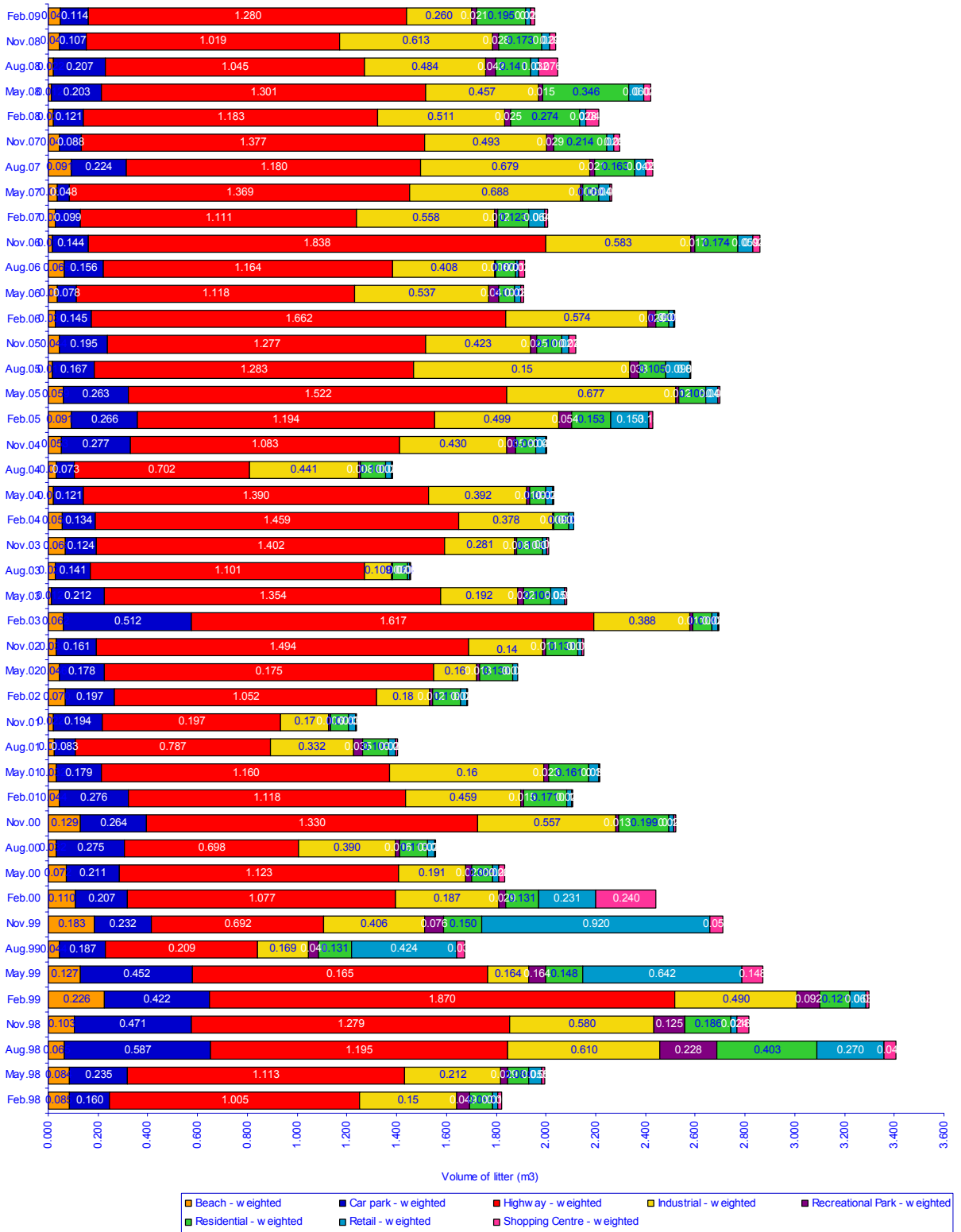


Weighted Tracking Graphs *- Volumes*

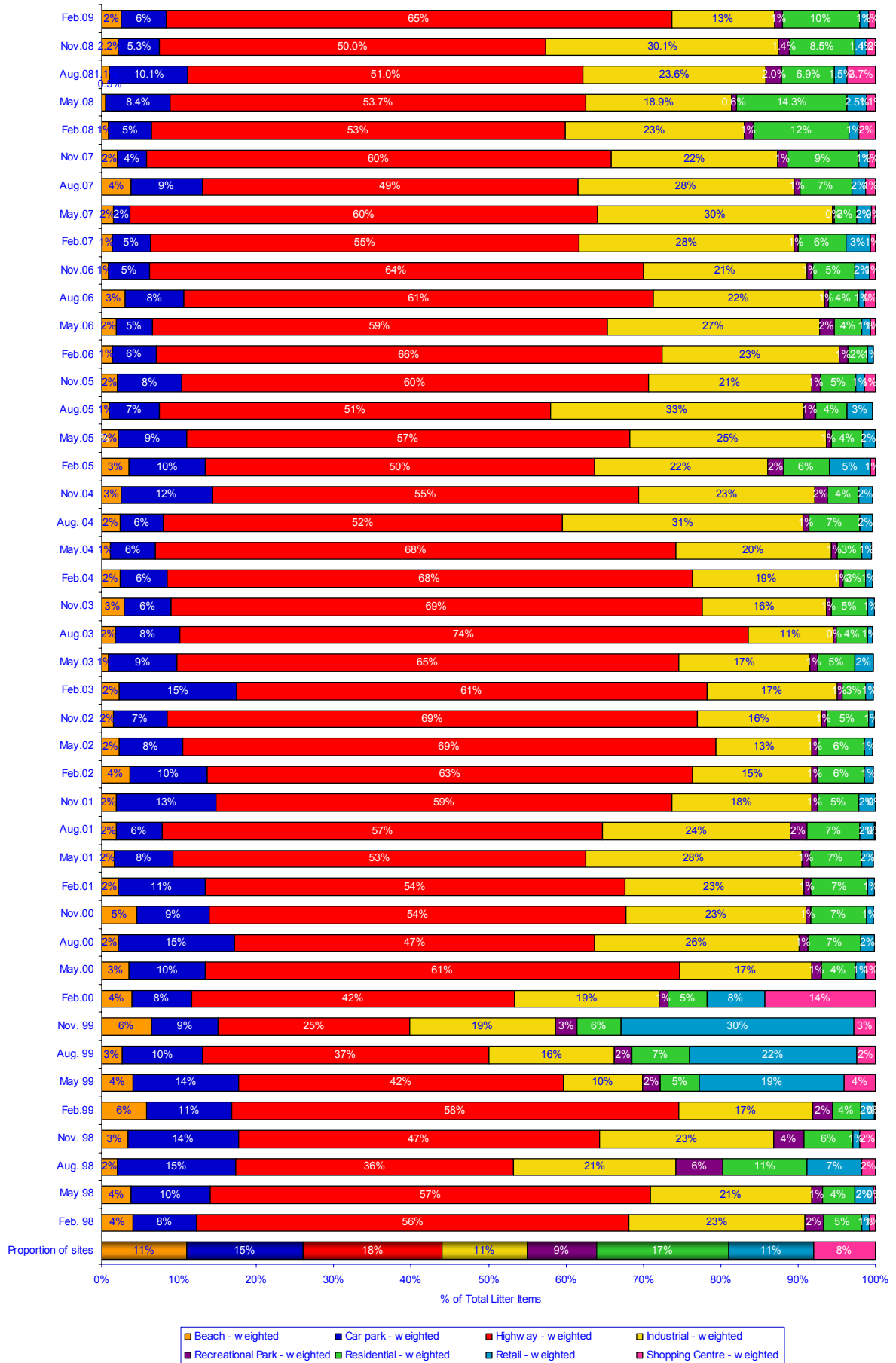
Top 20 Litter Items by Volume - Weighted



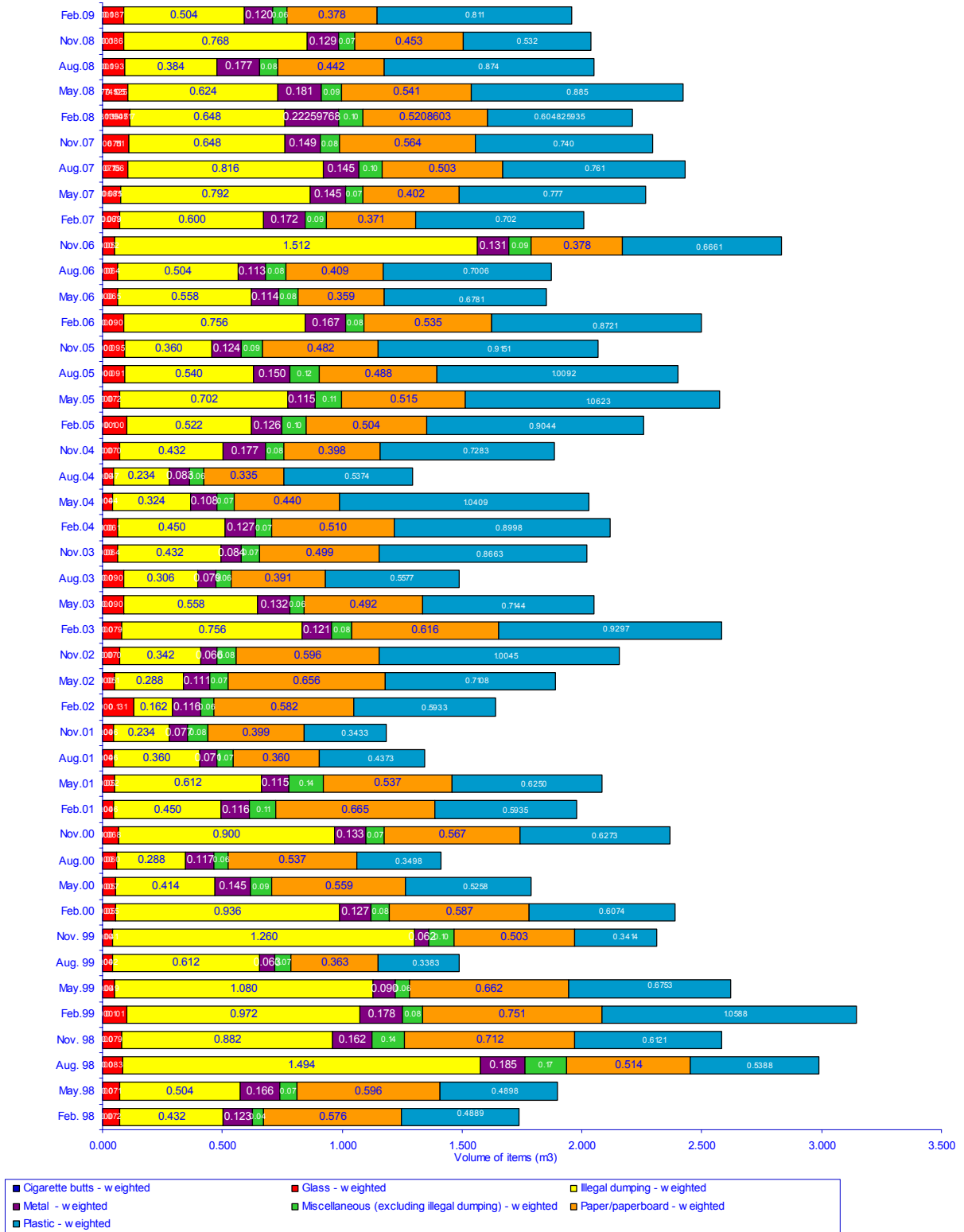
Volume of Litter by Site Type - Weighted



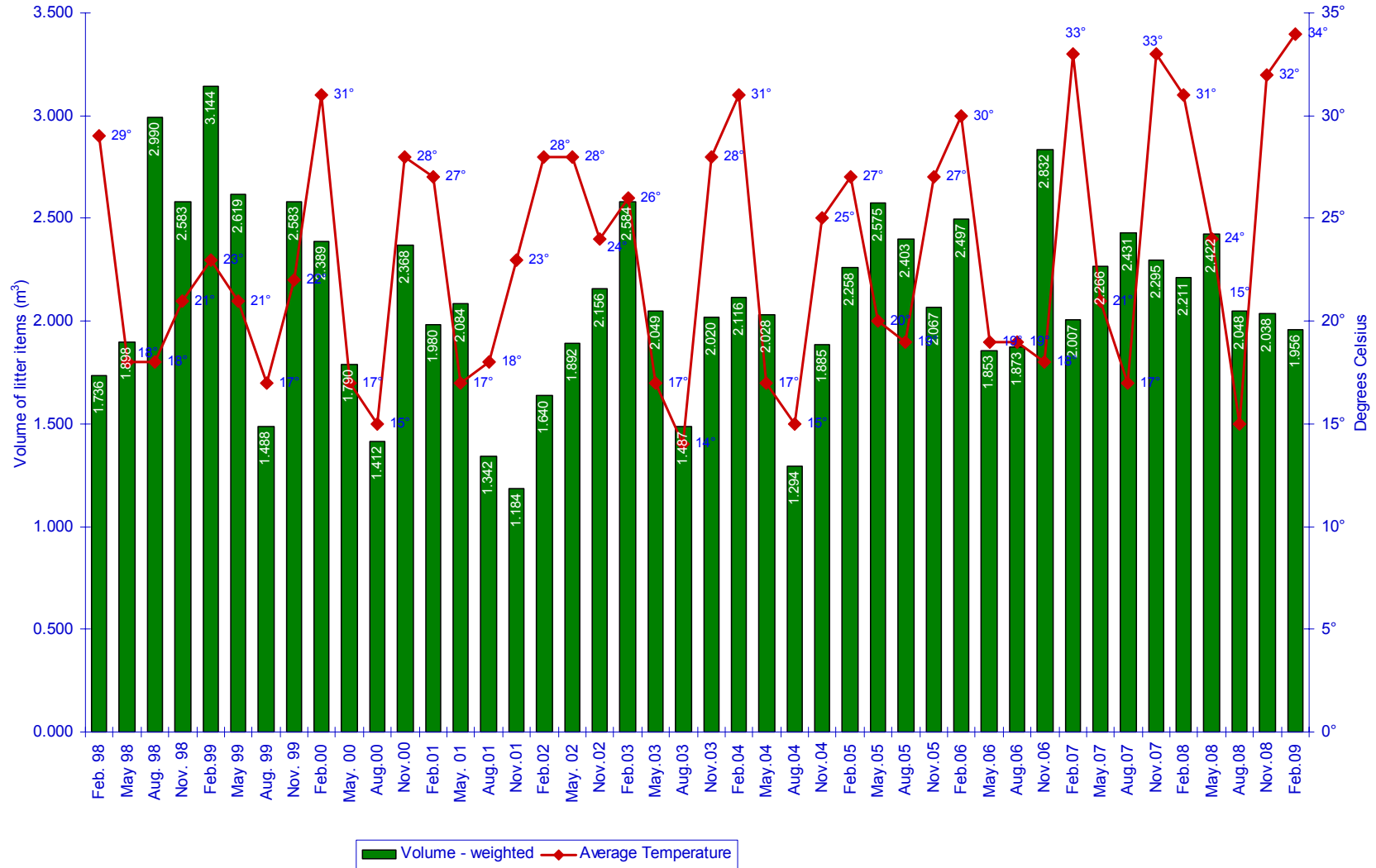
Proportion of Litter Volume in Total Litter Stream by Site Type - Weighted



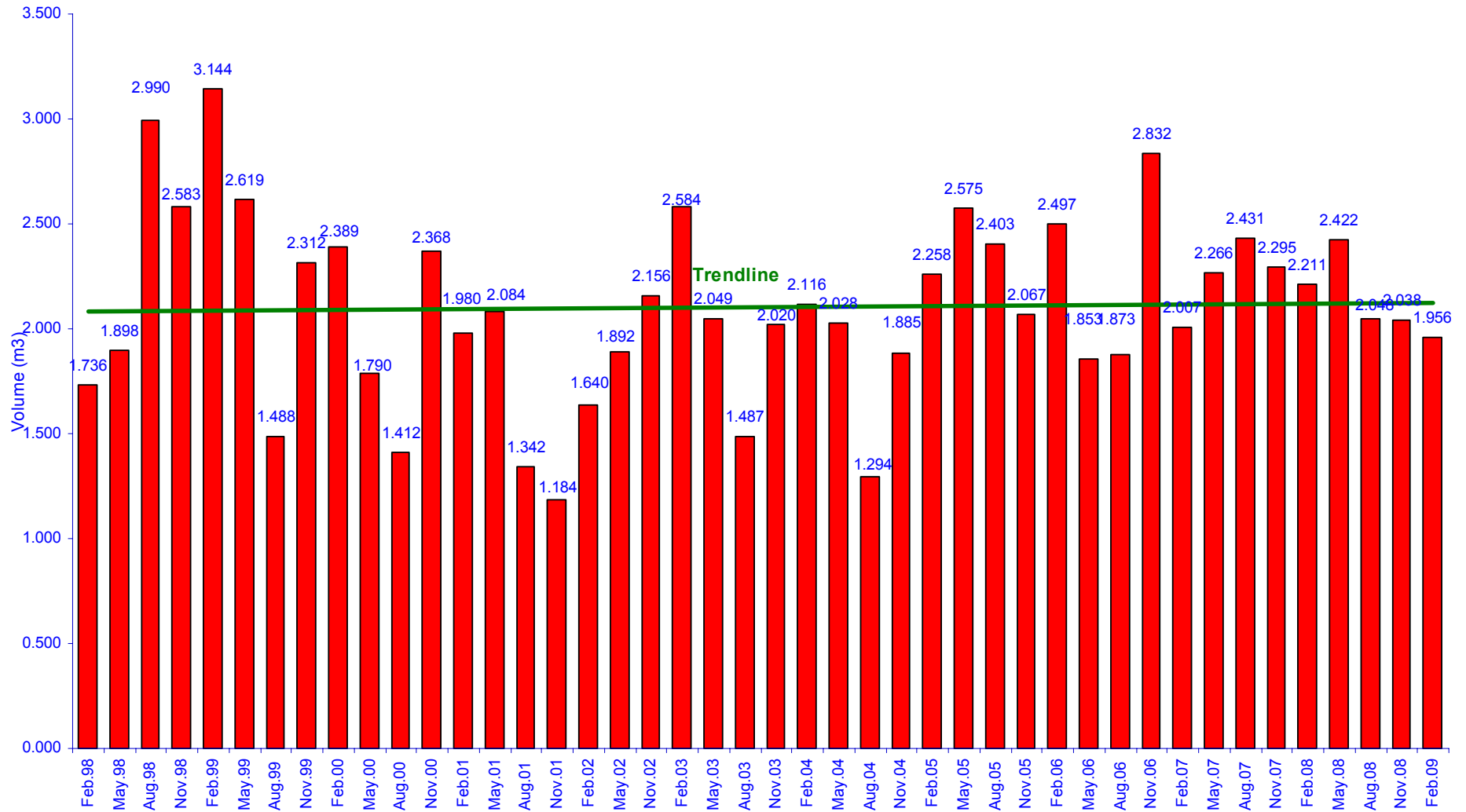
Volume of Litter Items by Material Type - Weighted



Weather Temperature and Total Volume of Litter Items - Weighted



Total Volume (Cubic Metres) of Litter - Weighted



***Appendix 2:
Data Collection Form***

KESAB - LITTER COUNT COVER SHEET

(REF: 7239)

SITE CODE:

PLEASE ENSURE THAT A COPY OF THIS COVER SHEET IS FILLED OUT AND ATTACHED TO THE COMPLETED LITTER COUNT FORM FOR EVERY SITE.

Date of count: ___ / ___ / ___

Site description: _____

Site responsible person: _____

Wet? (Y/N)

Windy? (Y/N)

Temp? °C

Conditions: (Circle appropriate numbers)

1. Area appeared to be cleaned before count
 2. Deliberate dumping of rubbish
 3. Area was mowed before count causing proliferation
 4. Very recent storm/flood damage litter build-up
 5. Very recent or current high winds causing build-up
 6. Recent public event held in area – **specify:**
 7. Uncovered load spilled in area causing litter
-

Please record number and type of bins in site area

No. of litter bins:

No. of butt bins:

No. and type of other bins: _____

PAPER / PAPERBOARD					PLASTIC				
Item Type	Brand	Work Area	Total	Item Type	Brand	Work Area	Total		
Ka Packages & boxes	NONE			Pf Plain water (carbonated or non-carb) 1 litre+	NONE				
Kb Cigarette packets	NONE			Pg Plain water (carbonated or non-carb) <1 litre	NONE				
Kc Cartons, milk, plain (white), all sizes	NONE			Ph Flavoured water/soft drink (carbonated) 1 litre+	NONE				
Kd Cartons, flavoured milk 1 litre or more	NONE			Pi Flavoured water/soft drink (carbonated) <1 litre	NONE				
Ke Cartons, flavoured milk < 1 litre	NONE			Pj Flavoured water/fruit juice drinks, sports drinks etc. (non-carb) 1 litre+	NONE				
Kf Cartons, flav. water / fruit juice drink/ sports drink, (non carb), 1 litre+	NONE			Pk Flavoured water/fruit juice drinks, sports drinks etc. (non-carb) <1 litre	NONE				
Kg Cartons, flav. water / fruit juice drink/ sports drink, (non carb), <1 litre	NONE			Pl Containers, industrial e.g. oil	NONE				
Kh Cartons, fruit juice, 1 litre or more	NONE			Pm Containers, domestic type	NONE				
Ki Cartons, fruit juice, < 1 litre	NONE			Pn Bags – light weight plastic shopping type carry bags	NONE				
Kj Newspapers & magazines	NONE			Po Bags – heavier glossy typically branded carry bags	NONE				
Kk Junk mail / free circulars	NONE			Pp Sacks – sheeting – other bags	NONE				
Kl Cup/take away containers	NONE			Pq Wine cask bladders	NONE				
Km Tickets, e.g. bus, ATM, vending machine etc.	NONE			Pr Straws	NONE				
Kn Ice cream wrappers	NONE			Ps 6 ring can holders	NONE				
Ko Paper bags	NONE			Pt Snack bags and confectionery wrappers	NONE				
Kp Shopper dockets & related shopping paper (eg, lists)	NONE			Pu Styrene foam boxes, sheets, etc	NONE				
Kq Other paper (including tissues)	NONE			Pv Packing tape & straps	NONE				
Pa White milk, all sizes	NONE			Pw Take away & cups	NONE				
Pb Flavoured milk, 1 litre or more	NONE			Px Plastic bottle tops	NONE				
Pc Flavoured milk, < 1 litre	NONE			Py Bread bag tags	NONE				
Pd Fruit juice, 1 litre or more	NONE			Pz Lollipop sticks	NONE				
Pe Fruit juice < 1 litre	NONE			P1 Spoons/ cutlery	NONE				
	NONE			P2 Drink pouches	NONE				
	NONE			P3 All other plastic	NONE				