

EnviroMedia Social Marketing

Texas Department of Transportation 2009 Visible Litter Study *Final Report*

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Executive Summary

NuStats, in cooperation with EnviroMedia Social Marketing and the Texas Department of Transportation (TxDOT), conducted a follow-up to the 2001 and 2005 Visible Litter Study (VLS) in 2009 to estimate the projected number of pieces and types of litter on Texas roadways. For this study, litter was collected from 163 research segments across Texas, each consisting of a 1,000-foot-long stretch of TxDOT-maintained roadway. In 2005, 129 sites consisting of a 750-foot-long stretch of roadway were sampled. Data from the current study were weighted for comparison with those from 2005.

The increase in number and length of sites in 2009 was designed to improve the confidence interval for the findings. Although the changes narrowed the interval from +/- 249 million pieces of litter in 2005 to +/- 200 million pieces of litter in 2009, changes in litter counts year to year are not statistically significant.

This report documents the methods and results of the 2009 Visible Litter Study. Following this Executive Summary, the remainder of this report documents the entire survey effort. Specific information on the study objectives, methods, sampling, and other study details begins in the section of this report titled Introduction.

Study Highlights

Below are the highlights of the findings from the 2009 VLS:

Visible litter¹ appears to have decreased on the Texas-maintained highway system; however, piece-for-piece, overall litter appears to have increased 33 percent².

- The results of the 2009 VLS indicate that approximately 1,102,000,000 items accumulate annually on the Texas-maintained highway system (comprised of Interstate Highways, U.S. Highways, State Highways, and Farm-to-Market roads). While litter seems to have increased 33 percent since 2005 (827 million items), it appears litter has decreased by 11 percent since 2001 (1.237 billion items).
- The increase in litter can be explained in part by the increase in Average Daily Traffic (ADT) counts from 2003 to 2007 for the roadway segments sampled in 2009. All sampled roadway segments show an increase in traffic from 2003 to 2007, with an overall increase of 9 percent. FM Roadway segments show the most increase in ADT counts (16 percent) followed by Interstate Highways, State Highways, and U.S. Highways. The overall Texas population³ increased 7.8 percent from 22,424,884 in 2004 to 24,326,974 in 2008, while the number of people of legal driving age also increased 4.6 percent since 2005, from 17,210,146 to 17,994,671.
- The biggest increases – based on actual pieces – are in micro litter (e.g., small pieces of litter such as cigarette butts that are not easily seen on roadways). For example, the number of cigarette butts increased by 42 percent.
- Food items, which are generally more visible litter, such as fast food bags decreased by 76 percent – from 29 percent in 2005 to 7 percent in this year's study. In the past two studies, food items were among the top two most prevalent litter categories, along with tobacco. Today, food litter falls behind tobacco (43 percent), non-alcoholic beverages (13 percent) and household/personal (9 percent).

¹ Litter that can be seen from roadways: Examples include food wrappers, drink cups, and food-related bags.

² Not statistically significant.

³ Population estimates as found on the official U.S. Census Bureau website.

Tobacco products, non-alcoholic beverages, and construction/industrial-related items constitute 66 percent of all litter.

- Two-fifths (43 percent) were tobacco-related litter. Items in this category include cigarette butts, cigarette packs, cigar butts, etc.
- More than one-tenth (13 percent) was non-alcohol-beverage-related litter. Items in this category include soda cans, cups, soda bottles, and cup pieces.
- One in ten items (10 percent) was related to construction/industrial. Items in this category include duct tape, sandpaper, wire, pipe, and paint cans.
- Seven categories (in descending order of percentage of total roadside litter composition: household/personal, food, automotive, alcoholic beverage, printed, agriculture/garden, and other) comprised the other 34 percent of litter collected.

Cigarette butt litter, still the most commonly found litter item on Texas roadways, increased by 8 percentage points between 2005 and 2009.

- When cigarette butts are excluded from the analysis, the data shows a decrease in litter on Interstate Highways and FM Roadways.

Proximity of potential litter sources increases amounts of roadside litter.

- The data suggests a causal relationship⁴ between litter amounts and the proximity of shopping malls, gas stations, schools, fast-food restaurants, and liquor stores.

More traffic volume equates to more litter.

- Previous litter studies confirmed heavily traveled roads are “dirtier” than less traveled roads — increased traffic equals increased litter.⁵ The 2009 VLS results support these findings.

About 95 percent of Texas litter is paper, plastic, metal, rubber or leather.

- Almost two-thirds (63 percent) of all items were made of paper and paperboard. These items ranged from paper grocery bags to miscellaneous pieces of cardboard.
- About one-fifth (19 percent) of collected items were plastic.
- About 7 percent were classified as metal, while 6 percent was rubber/leather.

Litter does not differ substantially across sample sites.

- A comparison from the 129 sites included in both the 2005 and 2009 studies shows the complete results, including all 163 sites, are consistent. In other words, NuStats found no substantial differences in litter counts from the additional 34 sampled sites in 2009.

⁴ Statistical correlation tests showed a direct relationship between litter and the proximity to a variety of shopping and food establishments, as well as schools and gas stations.

⁵ The 2001 and 2005 Litter Studies suggested a significant correlation between litter density and traffic volume.

Introduction

This report documents the survey design, sampling, data collection methodology, implementation, and results of the 2009 Visible Litter Study (VLS) conducted by NuStats under subcontract to EnviroMedia Social Marketing. The statewide study, sponsored by the Texas Department of Transportation (TxDOT), was a follow-up to the 2001 and 2005 VLS. A Visible Litter Study measures how fast litter accumulates and how much litter accumulates on different types of roadway segments. A roadway segment is both sides of a road, approximately 1,000 feet in length⁶.

The report presents the following:

- Quantitative measurement of statewide roadside litter.
- Relationships between roadside litter and variables suspected of influencing roadside litter amounts.
- Conclusions and recommendations.

The organizational layout of the report is as follows: Introduction, Background, Methodology, Data Collection, Data Results, Conclusions and Recommendations, Appendices.

Throughout this report, comparative analysis between the 2001, 2005, and 2009 Visible Litter Studies provides an understanding of roadside litter in Texas and any differences between the three studies.

Study Objectives

The Visible Litter Study (VLS) is a data collection effort that quantifies the amount and types of litter disposed of along Texas roadways. While there are many uses for the VLS data, one is to measure the Don't Mess with Texas (DMWT) litter prevention campaign's effectiveness in altering littering behavior (thereby resulting in a reduction of litter accumulating along Texas roadways). The comparative value between the 2001, 2005, and 2009 VLS data provides TxDOT with one mechanism for evaluating the effectiveness of its litter prevention efforts.

The specific study objectives for the 2009 VLS include:

- To produce a reliable statewide measurement of roadway litter to include the number of items, type of items, and, if possible, brand name of items.
- To provide an analysis of roadside litter accumulation rates that will allow TxDOT to model roadside litter accumulation rates across Texas.
- To compare the current data against the 2001 and 2005 data to derive a measure of the differences in quantities and/or types of litter.
- To ascertain whether geographic (e.g., urban or rural), population (increase, decrease, demographics), source (unsecured truck trash) or location-based (e.g., proximity to a park or recreation area, food service facility, or school) factors contribute to more or less litter accumulation.

⁶ In 2005, the roadway segments were 750-feet in length.

Background

The Litter Survey

Since the mid-1970s, litter surveys have been used with increasing frequency by several government and private agencies to quantify roadside litter. Both full-scale litter and visible litter surveys helped these agencies determine:

- The rate at which roadside litter is deposited;
- The effectiveness of litter prevention programs and legislation;
- The composition of litter;
- The factors that affect litter deposition; and
- The progress achieved in reducing overall amounts of roadside litter.

Full-scale surveys differ from visible litter surveys in that the former measures both fresh and accumulated litter, whereas the latter measures only accumulated litter. The full-scale variety captures litter data that is more detailed than that obtained in the visible litter survey. While the full-scale survey is an effective tool in the management of roadside litter, it is generally very expensive to conduct. However, the visible litter survey provides valuable information in a shorter period of time and at a lower cost.

Litter surveys often vary according to the unit of measure. While a number of measures have been used to quantify litter, none have proved to be more reproducible and consistent than the item count. Here, the items are simply removed from the sample site and counted. Area measurement, where the items are placed on a grid of known area and the aggregate area recorded, has also proved useful. Other measures such as weight and volume measurement,⁷ although useful, exhibit a lower level of reproducibility and a higher level of site-to-site variability. For this reason, primary emphasis is generally placed on the item count when drawing conclusions or making comparisons between other surveys, as was the case during both the 2001 and 2005 surveys.

Litter Prevention/Reduction Efforts

In an attempt to reduce litter amounts and preserve the beauty of Texas Highways, TxDOT is actively engaged in several litter prevention programs.

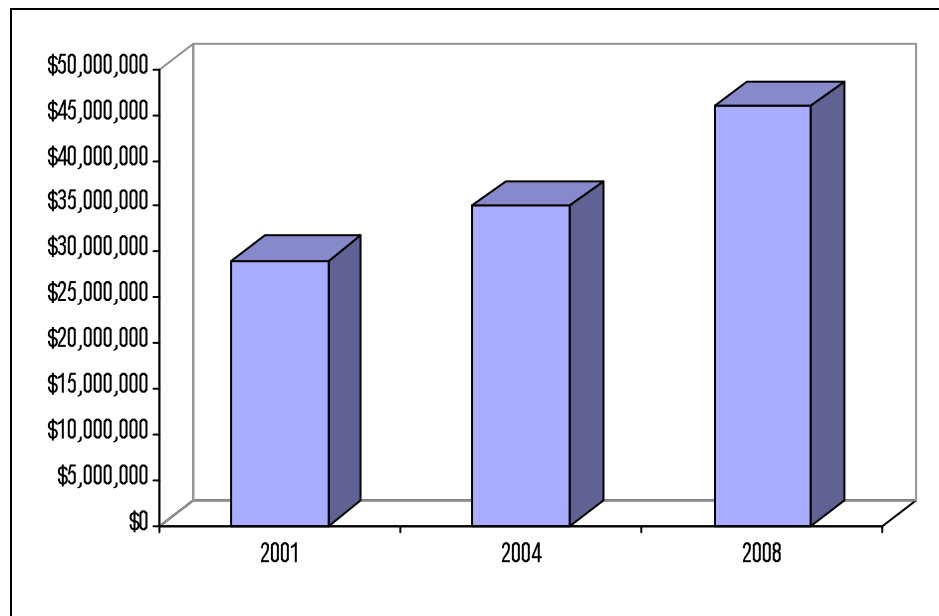
- The well-known Adopt-a-Highway (AAH) program, conceived in the TxDOT Tyler District in 1985, began when a civic group accepted a challenge to “adopt” a two-mile stretch of roadway. As of 2009, this program had grown to encompass more than 3,813 volunteer groups responsible for more than 7,800 miles of roadway statewide, approximately 10 percent of all TxDOT maintained centerline miles.
- The “Don’t Mess with Texas” (DMWT) public education campaign has a long history of success in the state, both for its use of well-known spokespersons and for its tough stance on litter. In addition to promoting public awareness, the campaign includes such programs as the annual Don’t Mess with Texas Trash-Off and the Don’t Mess with Texas Partners. Campaign research has helped identify potential partners in the past based on their connection to litter and littering behaviors.

⁷ Weight and volume were noted in the 2001 and 2005 VLS efforts; the decision for the 2009 effort was to omit these measurements because of their limited utility in the analysis of litter data.

Despite these litter prevention efforts, TxDOT is faced with an ever-increasing amount of roadway for which it is responsible. According to the 2007 Certified Annual Reports of the Texas Department of Transportation (TxDOT) Transportation Planning and Programming Division, TxDOT is responsible for the maintenance of over 80,067⁸ centerline miles of road. This represents 1,132,881 acres of right-of-way.

As demonstrated in Figure 1, TxDOT currently spends approximately \$46 million annually in litter cleanup expenditures, up from \$29 million during the 2001 Visible Litter Study cycle and \$35 million in 2004. Litter pickup is typically handled on a schedule set by district maintenance staff and generally follows a mowing cycle. Two other factors can trigger a litter pick up: complaints by motorists or residents in an area and before or after a special event, such as a rodeo, fair, major concert, etc.

Figure 1: TxDOT Annual Litter Expenditures 2000-2008



Source: Texas Department of Transportation

⁸ Include four road types from VLS as well as frontage roads and park roads. The VLS data is based only on the four roadway types studied: Interstate Highway, US Highway, State Highway and FM Roads.

Methodology

The 2009 Texas Visible Litter Survey

This report contains the results of data collected during a two-phased Visible Litter Survey. The study was broken into phases so as to replicate the seasonal data collection methodology utilized in 2001 and 2005. Phase I began in late November 2008 and culminated in late February 2009. Phase II began in February 2009 and was completed during May 2009. The results presented in this report data are based on quantitative and qualitative litter data collected from 163 study sites throughout Texas.⁹

Sample Design

A critical component of this study was the formulation of a sampling plan that would yield data indicative of the litter accumulation on Texas highways. Since a primary objective of this survey was to determine statewide litter projections, the sampling plan included:

- The number of samples;
- The distribution of samples; and
- The sampling stratification.

In 2001, the original sample target was 140 sites, but Phase II modifications resulted in more efficient collection of litter data; therefore the sample size was reduced to 126. The 2005 VLS project team established a sample size of 136 sites, which allowed for 10 possible “lost” sites during data collection. Lost sites arise from several factors, including mowing or litter collection by TxDOT or its contractors during the accumulation period; construction; safety hazards; and severe weather. The 2009 VLS sample design called for 170 sites across the state as well as longer roadway segments (1,000 feet). As noted above, the final data set contains 163 roadway segments with litter data.

Since littering on private land was not an impetus for this research, the statewide litter data was collected on public roadway rights-of-way and medians. As in the two previous efforts, the four types of roadways targeted for this study (thus comprising the sampling frame) were only certain types maintained by TxDOT. These consisted of the following roads:

- 1) Interstate Highways (IH);
- 2) United States Highways (US);
- 3) State Highways (SH); and
- 4) Farm-to-Market Roads (FM).

NuStats used a disproportionate stratified sampling method to divide the state into geographic sub-regions from which replicates, or sub-samples, could be selected. The 25 TxDOT districts constituted these sub-regions.

To determine the number of sample sites from each region, NuStats developed a matrix of key variables. This matrix paired each of the 25 TxDOT districts with the number of Daily Vehicle Miles (DVM) driven in that district. A daily vehicle mile is defined as the average mileage driven on state-maintained roadways in one day.

⁹ Out of the original 170 sites, 163 Visible Litter Study segments were used for the final analysis. One site was lost because of construction initiated between the purge and collection. Two sites were lost due to scheduling and resource issues for a Research Partner Team. Four sites were lost due to not receiving final purge data from a Research Partner Team.

The districts were ranked in descending order based on their respective DVM. The total state DVM on TxDOT-maintained roadways was then divided by 170, the initial target sample number, to determine how often a sample site should be selected from each district. Finally, the number of sample sites from each district was proportionately distributed by road type and traffic volume.

Sample Site Selection

The sample sites in each district were selected to satisfy the sampling matrix criteria mentioned in the previous section.¹⁰ TxDOT District Highway Traffic maps were used to select the general area in which the segment should be located. Not only did these maps serve as a geographic reference, they also provided the latest Average Daily Traffic (ADT) counts, which were utilized in computing the correlations between litter density and traffic volumes.

Using this general description as a reference, NuStats' subcontractors traveled to the designated site and were instructed to locate and clearly mark each end of the sample segment. These markers consisted of flagged stakes and served as an identifier to TxDOT personnel and third-party contractors. Further information regarding the selection of sample segments may be found in the Visible Litter Study Field Manual (see Appendix 3).

The locations of all proposed sample sites were provided to appropriate TxDOT districts to verify the presence of a suitable median for litter accumulation and lack of construction, both present and in the near future. In addition, NuStats requested that all Research Partner Teams (see Field Labor Force below) in the field notify the project manager immediately if they encountered hurricane-related debris on any of the roadway segments. They were instructed to not conduct the study on any such sites¹¹.

Upon verification, NuStats identified the sites using general highway maps, and distributed the sample locations to the subcontractors and Research Partner Teams.

Field Manual

To standardize and control the fieldwork, NuStats revised the 2005 Field Manual to reflect the 2009 study parameters (see Appendix 3). The manual consists of the following sections:

- Project overview and objectives;
- Project design;
- Step-by-step procedures for the purging and inventorying of litter; and
- Site selection criteria.

The Field Manual served to:

- Inform subcontractors about the project and their role in it, and provide key contact information;
- Train subcontractors on protocols for the initial purge, litter inventory, and data collection; and
- Serve as an overall guide for logistics and schedules.

¹⁰ It should also be noted that approximately 75 percent of sites included in the 2009 study were locations that were sampled in the two previous studies. The remaining 25 percent of sites were newly selected.

¹¹ No teams encountered any hurricane-related debris on roadway segments.

Field Labor Force

One notable difference between the 2005 and 2009 studies is that multiple subcontractors conducted the fieldwork for the 2009 VLS, while one subcontractor conducted the 2005 fieldwork. NuStats proposed the concept of multiple teams based on our experience in 2005 with having one contractor field the entire state. From a scheduling standpoint, having only one contractor to cover all of the sampled sites was challenging.

For the 2009 study, NuStats explored the concept of using nonprofit organizations around the state to create Research Partner Teams (RPTs) that would perform the fieldwork. We initially envisioned approximately 8 to 10 RPTs. NuStats teamed with Adisa Communications of Austin to lead the effort to locate and oversee the RPTs throughout the fielding of the study. NuStats contracted with 14 groups or private individuals to perform the litter pick-up and counting tasks.

Data Collection

This section presents an overview of the data collection and field process. Two separate field activities were required to determine the rate of litter accumulation at each of the 170 sites. These were (1) the initial litter purge (determination of the specific location, cleanup, and characterization), and (2) the litter inventory (collecting and counting of litter items following a litter accumulation period). This section provides details on these two processes.

The Initial Litter Purge

The study design required that litter accumulate on the research segments for different periods of time.¹² Accurately determining the rates of litter accumulation required several critical field preparation activities:

Communication

Prior to the initial purge in each phase, NuStats communicated with TxDOT maintenance supervisors in each district through the TxDOT Deputy Maintenance Director at TxDOT headquarters. The supervisors then notified highway maintenance contractors (litter collectors and mowers) about the study. The communication process provided TxDOT maintenance personnel and contractors with a letter detailing information about the study, the location of the research segments in their districts, and information about the importance of not disturbing the study segments during the accumulation period. The letter requested that maintenance supervisors remind contractors to not mow or collect litter on the sections of marked right-of-way for the duration of the project. Likewise, NuStats communicated with district Adopt-a-Highway coordinators through a letter to the Lead Coordinator at headquarters who notified sponsor organizations with adopted sections of roadway in close proximity to research segments.

Site Preparation

NuStats' VLS litter teams and subcontractors were required to prepare the study segments. This required marking the exact boundaries of the research plot, or segment. A segment is defined as both sides of an Interstate Highway, United States Highway, State Highway, or Farm-to-Market Road (including all medians and rights-of-way from between private property boundaries) and 1,000 feet in length.¹³ To assist with sample site locations, NuStats provided the subcontractor with a general location of the sample site. The subcontractor then selected the actual segment according to the selection criteria in the Field Manual. Measuring wheels were used to verify the length and width of each segment.

When the segment was clearly marked, all litter (with the exception of pieces of paper less than two inches in size)¹⁴ was purged from the site. Although the litter collected during this phase was not inventoried, the subcontractor observed general characteristics such as quantities of litter and length of time required to clean a sample site. During this initial visit to the segment site, the subcontractor recorded information unique to each particular segment on the Segment Data Sheet for use in subsequent analyses (e.g., geographic and ecological characteristics, proximity to potential litter sources, nearby land use).

¹² The average accumulation period was 34 days.

¹³ One significant change in data collection from 2005 was the increase in length of research segments from 750 feet to 1,000 feet.

¹⁴ This does not include cigarette butts. In 2001, if more than 300 cigarette butts were found within the first 100 yards of the segment, the subcontractor made a note on the segment data sheet and did not collect any more on that segment. In 2005 and 2009, all cigarette butts were collected (for both purge and collection), regardless of the count within the first 100 yards.

NuStats monitored the litter subcontractors weekly to obtain progress reports, resolve field issues, reconcile deviations from the project schedule, and to record the exact location of the sample segments. Although TxDOT district representatives had prior knowledge of the proposed litter survey schedule, maintenance personnel were contacted with updates on deviations from the project schedule and the exact locations of all sample sites within their respective district. Strict timing and synchronization of this phase was essential to minimize the chance of lost sites due to mowing or litter pick-up by TxDOT contractors.

Litter Inventory

The litter collection and inventory phase occurred an average of 34 days after the initial purge. The litter subcontractors traveled to the respective sites to collect and bag all litter within the boundaries of the research segments in preparation for sorting and counting. Detailed litter inventory procedures are in the Field Manual (see Appendix 3).

NuStats instructed subcontractors to label each bag of litter with the specific site identification number from which it was collected, as multiple sites were targeted each day. Within each site, bags were numbered 1 of 3, 2 of 3, and so forth if more than one bag of litter was collected at a site. After the litter was collected, bagged, labeled, and loaded for transport, the subcontractors recorded the remaining segment-specific information on the segment data sheets.

Litter Categorization

NuStats utilized a litter classification system¹⁵ established in the 2001 study. This classification system utilized a four-level process, described in more detail below:

- Level 1 – Composition;
- Level 2 – Litter Use;
- Level 3 – Item Description; and
- Level 4 – Brand Name.

In Level 1, the subcontractor first categorized all litter into general “Composition” categories. The litter within each “Composition” was then classified into Level 2 by “Litter Use.” The litter within each “Litter Use” was then classified by “Item Description” (Level 3). The final classification level targeted individual pieces of litter and identified the “Brand Name” of that particular item. The Litter Sorting Procedure is in the Field Manual in the Appendix. Empirical litter measurements recorded included the number of litter items found per site.

Initial data collected was recorded on the Tally Count worksheet. NuStats staff performed data entry on the hard-copy data delivered by RPTs and contractors. During the litter categorization process, NuStats staff met with several of the litter subcontractors and RPTs to observe the classification procedure and offer additional instruction on litter categorization.

¹⁵ This entailed reviewing litter tally sheets from previous studies, consulting the waste characterization reports from the Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste Division, and the Environmental Protection Agency (EPA) Office of Solid Waste, as well as communication between EnviroMedia and TxDOT.

Data Results

This section describes the findings of the Visible Litter Study data analysis, characterized by projected statewide litter rates, qualitative litter characterization, and quantitative analyses between litter and variables that have the potential to affect the rates at which it is deposited on the roadside.

The Visible Litter Study data analysis sought to provide answers to the following questions.

- How much litter accumulates on state-maintained roads in a given amount of time in Texas?
- How much litter accumulates on each of the four types of state-maintained roadways?
- What types of litter are most commonly found on the state-maintained highway system?
- What are the most common brand names found in Texas roadside litter?
- What is the relationship between litter amounts and variables such as:
 - ✓ Traffic volume; and
 - ✓ Proximity to potential litter sources.

Throughout this section of the report, tables show data based on magnitude; therefore, the four road types are not always presented in the same order.

Statewide Litter Estimates, 2009

In order to generate representative statewide litter estimates, NuStats created and applied statistical weight factors to the litter data. This detailed process required comparing the actual length of roadway sampled during the Visible Litter Study (approximately 31 centerline miles) to the entire state-maintained highway system (approximately 72,600 centerline miles¹⁶). More than half of all Texas state-maintained roadways are FM roads. The sample centerline miles were stratified by road type. Likewise, the state centerline data was stratified. The sample statistics were then compared to the state statistics, and weight factors were created based on the differences.

As shown in Table 1, all state-maintained roadways show an increase in litter from 2005 to 2009. However, compared to 2001, there is a reduction in litter. State Highways show the most increase in litter from 170.5 million items in 2005 to 260.7 million items in 2009, which may be attributed to the fact that average daily miles driven increased more on State Highways than other roadway types and we know that more drivers correlates to more litter. US highways, Interstate Highways, and FM Roadways also show increases in litter since 2005. In 2009, the majority of Texas roadway litter was generated on Farm-to-Market Roads, which account for the most miles of TxDOT maintained roads. This finding is similar to the 2001 and 2005 findings.

Table 1: Number of Litter Items by Road Type

	Number of Litter Items		
	2001	2005	2009
Interstate Highway (3,233)	107,204,788	72,971,697	94,121,255
US Highway (12,104)	239,269,458	153,035,881	218,168,944
State Highway (16,331)	333,243,215	170,488,104	260,656,708
FM Roadways (40,965)	557,664,430	430,709,842	528,823,879
Total (72,633)	1,237,381,891	827,205,524	1,101,770,786

Projected amounts per entire state road system.

¹⁶ Does not include frontage or park roads. Number of centerline miles has increased from October 2008 to August 2009; however, this report uses the 2008 numbers provided by TxDOT, which is the basis for the sampling plan, weighting and expansion factors.

The increase in litter can be explained in part by the increase in Average Daily Traffic (ADT) counts from 2003 to 2007 (See Table 2). Specifically, the 2003 and 2007 ADT counts for the roadway segments sampled in 2009 were compared. As shown in Table 2, all sampled roadway segments show an increase in traffic from 2003 to 2007, with an overall increase of 9 percent. FM Roadway segments show the most increase in ADT counts (16 percent). The sampled roadway segments from Interstate Highways, State Highways, and US Highways, also show increases in traffic from 2003 to 2007.

Note that Table 2 reflects 2007 ADT numbers for the sampled roadway segments and cannot directly explain the increase in litter in Table 1 (which represents the roadway system in Texas in 2009). However, these statistics are a reflection of an increase in traffic over the years, especially on Interstate Highways, State Highways, and FM Roadways.

Table 2: ADT by Road Type for Sampled Roadway Segments

	ADT		
	2003	2007	Percent Increase
Interstate Highway	3,441,900	3,838,911	12%
US Highway	1,089,410	1,101,587	1%
State Highway	690,650	732,419	6%
FM Roadways	137,940	160,480	16%
Total	5,359,900	5,833,397	9%

Data Comparison from 2001 to 2009

An important goal of the 2009 VLS was to generate data that could be compared to the 2001 and 2005 VLS to quantify the change in statewide litter amounts over time. The 2001, 2005, and 2009 studies utilized a series of expansion factors for the statewide estimates.¹⁷ Table 3 compares the results of three years of studies; the data indicate a 33 percent overall increase in litter from 2005 to 2009.¹⁸

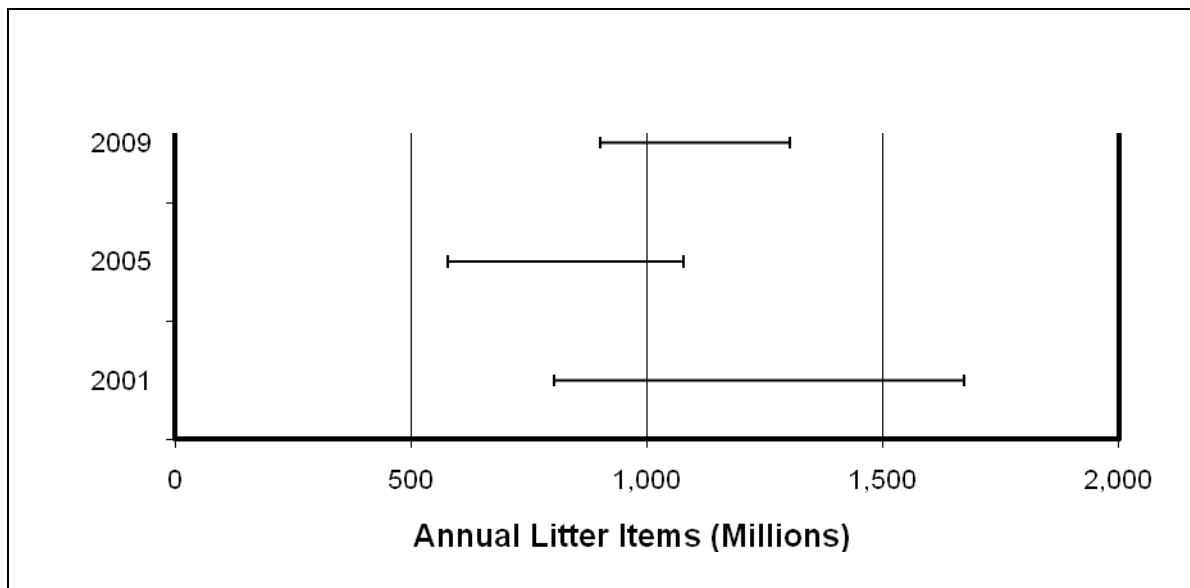
The annual litter estimates were created with statistical models that use empirical data to generate estimates that can be expanded to the state level. As with any statistical model based on a sample, there is a certain degree of error. It is important to consider the range of error associated with the 2001, 2005, and 2009 estimates to better understand the precision. Table 3 presents the results of calculating a 90 percent confidence interval for the annual litter estimates. One can state with 90 percent confidence that the 2009 annual litter estimate falls between 901,653,876 and 1,301,887,696 items. See Figure 2 for a better understanding.

¹⁷ A significant change in methodology from 2001 to 2005 occurred when the decision was made to reduce the overall length of each segment from 1,500 feet to 750 feet and collect litter from the full width of the segment, as opposed to collecting litter from only half the segment. The methodology was changed in 2009 when the decision was made to increase the overall length of each segment to 1,000 feet but continue collecting litter from the full width of the segment.

¹⁸ Not statistically significant.

Table 3: Annual Litter Estimates and Associated 90% Confidence Interval Estimates

Year of the Survey	Annual Litter Estimates (Millions of Items)	Annual Litter Estimates Minus 90% CI Estimate (Millions of items)	Annual Litter Estimates Plus 90% CI Estimate (Millions of items)
2001	1,237	804	1,671
2005	827	578	1,076
2009	1,102	902	1,302

Figure 2: Annual Litter Estimate Confidence Intervals

NuStats also ran a comparison of litter counts by site and found no substantial differences between the same sites in 2005 and 2009, and all of the sites in 2009 (approximately 27 additional sites were collected in the 2009 VLS).

The size of the confidence intervals illustrated in Figure 2 for 2009 litter estimates has decreased, compared to 2001 and 2005 litter estimates. This is due to the increase in the number of study segments sampled in 2009 as compared to the previous years. It should be noted that smaller confidence intervals translate to more precision on the statewide statistical results and more accuracy in the ability to cite statistically significant changes in statewide litter amounts over time. However, it is important to note that the sample size (i.e., number of roadway segments) would need to increase rather dramatically to detect statistically significant changes.

Table 4 presents the number of items likely to accumulate on one mile of each road type on a monthly basis. When compared on a mile-per-mile basis, the Interstate Highway system continues to contribute the largest amount of litter (2,426 items per mile of roadway per month in 2009). The US Highway ranks second at 1,502 items, followed closely by State Highways and Farm-to-Market Roads, at 1,330 items and 1,076 items, respectively, per month per mile.

Table 4: Monthly Litter Projection by Road Type

	Monthly Litter Projection		
	2001	2005	2009
Interstate Highway	2,763	1,881	2,426
US Highway	1,646	1,054	1,502
State Highway	1,722	877	1,330
FM Roadways	1,134	876	1,076

Number of items per mile of roadway. Numbers may not reflect Table 1 totals due to rounding.

Litter Characterization

This section provides an overview of the composition of litter collected during the 2009 study. These findings reflect weighted data. The data was statistically manipulated to reflect the amount of litter estimated to accumulate annually per segment, where each segment is 1,000 feet of roadway.

For the 163 final sampled segments, the unweighted litter database contains 55,121 litter items. The weighted litter database contains 617,858 items. Litter was characterized into seven physical composition categories (plus 'other') obtained from the EPA Office of Solid Waste.

As Table 5 shows, the majority of litter collected in 2009 consisted of Paper and Paperboard (63 percent). This was followed by Plastic (19 percent), Metals (7 percent), and Rubber/leather (6 percent). These three categories comprised 95 percent of all litter collected.

Table 5: Litter by Physical Composition

Physical Composition	Percent of Total		
	2001	2005	2009
Paper & Paperboard	68%	61%	63%
Plastic	19%	25%	19%
Metals	9%	10%	7%
Rubber/Leather	<1%	<1%	6%
Glass	2%	1%	2%
Textiles	1%	1%	1%
Wood	<1%	<1%	<1%
Other	1%	1%	< 1%
Total	100%	100%	100%

2001 estimates based on Phase II data only; composition data was not collected in Phase I of the 2001 VLS.

Overall, Paper and Paperboard, Rubber/Leather, and Glass litter increased since 2005 (as seen in Table 5). A closer look by road type (see Table 6) indicates that while Interstate Highways and FM Roadways show substantial increases in Paper and Paperboard litter, US Highways and State Highways show a moderate reduction. Rubber/Leather and Glass litter accumulation increased across all road types since 2005. Plastic litter accumulation, on the other hand, decreased across all road types, with substantial decrease on Interstate Highways.

Table 6: Litter by Physical Composition and Road Type

Physical Composition	Percent of Total by Road Type								Percent of Total	
	Interstate Highway		US Highway		State Highway		FM Roadways			
	2005	2009	2005	2009	2005	2009	2005	2009	2005	2009
Paper & Paperboard	59%	68%	63%	57%	62%	56%	65%	72%	61%	63%
Plastic	28%	19%	23%	19%	25%	22%	20%	14%	25%	19%
Metals	9%	5%	10%	9%	11%	9%	11%	5%	10%	7%
Rubber/Leather	<1%	5%	<1%	9%	<1%	7%	<1%	4%	<1%	6%
Glass	1%	2%	1%	3%	1%	2%	2%	3%	1%	2%
Textiles	2%	<1%	1%	2%	<1%	2%	1%	<1%	1%	1%
Wood	<1%	<1%	<1%	<1%	<1%	<1%	-	<1%	<1%	<1%
Other	1%	<1%	2%	1%	1%	<1%	1%	1%	1%	< 1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

2001 data not available.

Litter was characterized into ten Use Categories. In the 2009 VLS, two-fifths of all litter items within the expanded database came from the Tobacco Litter Use (see Table 7). This category is closely followed by Non-alcoholic Beverage (13 percent). Construction/Industrial and Household/Personal account for 10 and 9 percent of litter by use, respectively.

Comparatively, in the 2005 VLS, Tobacco constituted the highest percent of all litter items (33 percent), followed by Food (29 percent) and Non-alcoholic Beverage (11 percent). As illustrated in Table 7, Food litter items that were a prevalent litter source in 2001 and 2005 were not a major source of litter in 2009. Non-alcoholic Beverage, on the other hand, continues to be a prevalent litter source.

Table 7: Litter by Use

Use	Percent of Total		
	2001	2005	2009
Tobacco	39%	33%	43%
Household/Personal	15%	4%	9%
Food	14%	29%	7%
Non-alcoholic Beverage	13%	11%	13%
Alcoholic Beverage	6%	6%	6%
Construction/Industrial	6%	8%	10%
Printed	5%	8%	4%
Other	1%	0%	1%
Automotive	1%	1%	7%
Total	100%	100%	100%

Counts rounded to nearest thousand for analytical purposes.

Overall, Tobacco constituted the highest litter use type on Texas roadways since 2005 (as seen in Table 7). A closer look by road type (see Table 8) indicates that while Interstate Highways and FM Roadways show substantial increases in Tobacco litter accumulation, US Highways and State Highways show a slight reduction from 2005 to 2009 (see shaded cells in Table 8 below). Household/Personal and Automotive litter accumulation on all road types has increased over the years while Food and Printed litter accumulation on all road types decreased. Construction/Industrial litter accumulation does not vary across all road types except State Highways, which increased substantially from 2005 (8 percent in 2005 to 15 percent in 2009).

Table 8: Litter by Use and Road Type

Use	Percent of Total by Road Type								Percent of Total	
	Interstate Highway		US Highway		State Highway		FM Roadways			
	2005	2009	2005	2009	2005	2009	2005	2009	2005	2009
Tobacco	30%	50%	37%	34%	34%	31%	41%	55%	33%	43%
Household/Personal	5%	8%	4%	11%	4%	10%	2%	8%	4%	9%
Food	31%	6%	26%	8%	28%	9%	22%	5%	29%	7%
Non-alcoholic Beverage	10%	14%	11%	14%	10%	13%	12%	9%	11%	13%
Alcoholic Beverage	5%	5%	7%	7%	8%	7%	9%	6%	6%	6%
Construction/Industrial	9%	9%	8%	9%	8%	15%	7%	7%	8%	10%
Printed	9%	3%	7%	5%	7%	4%	6%	5%	8%	4%
Other	<1%	<1%	<1%	2%	<1%	2%	<1%	<1%	0%	1%
Automotive	1%	6%	1%	10%	1%	9%	1%	5%	1%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

2001 data not available.

Cigarette butts are a substantial portion of overall litter counts in Texas; they account for 43 percent of the total of litter across all four road types. NuStats conducted an analysis in which we excluded cigarette butts to see what the data would look like if there were no cigarette litter. Table 9 below compares the overall number of litter items by road type with and without cigarette butts. We see that when cigarette butts are excluded, litter counts actually decreased on Interstate Highways. With the same exclusion, litter on FM Roadways also decreased. This leads to the conclusion that cigarette butt litter is heaviest on those two road types but if it did not exist, those roadways would show a substantial reduction in the number of litter items found on the roadways.

Table 9: Number of Litter Items by Road Type, with and without Cigarette Butts

	Including Cigarette Butt Litter			Excluding Cigarette Butt Litter		
	2005	2009	Percent Change	2005	2009	Percent Change
Interstate Highway (3,233)	72,971,697	94,121,255	29%	54,815,307	52,839,405	-4%
US Highway (12,104)	153,035,881	218,168,944	43%	104,402,341	154,866,269	48%
State Highway (16,331)	170,488,104	260,656,708	53%	121,622,506	192,921,872	59%
FM Roadways (40,965)	430,709,842	528,823,879	23%	292,265,809	339,565,496	16%
Total (72,633¹⁹)	827,205,524	1,101,770,786	33%	573,105,963	740,193,042	29%

Projected amounts per entire state road system. 2001 data not available.

Appendix 7 contains additional analysis comparing the litter data with and without cigarette butts included.

¹⁹ Does not include frontage roads or park roads.

Table 10 provides an overview of the most commonly found items within each Litter Use. A more exhaustive list appears in Appendix 5.

Table 10: Most Common Items within Litter Use Categories, 2009

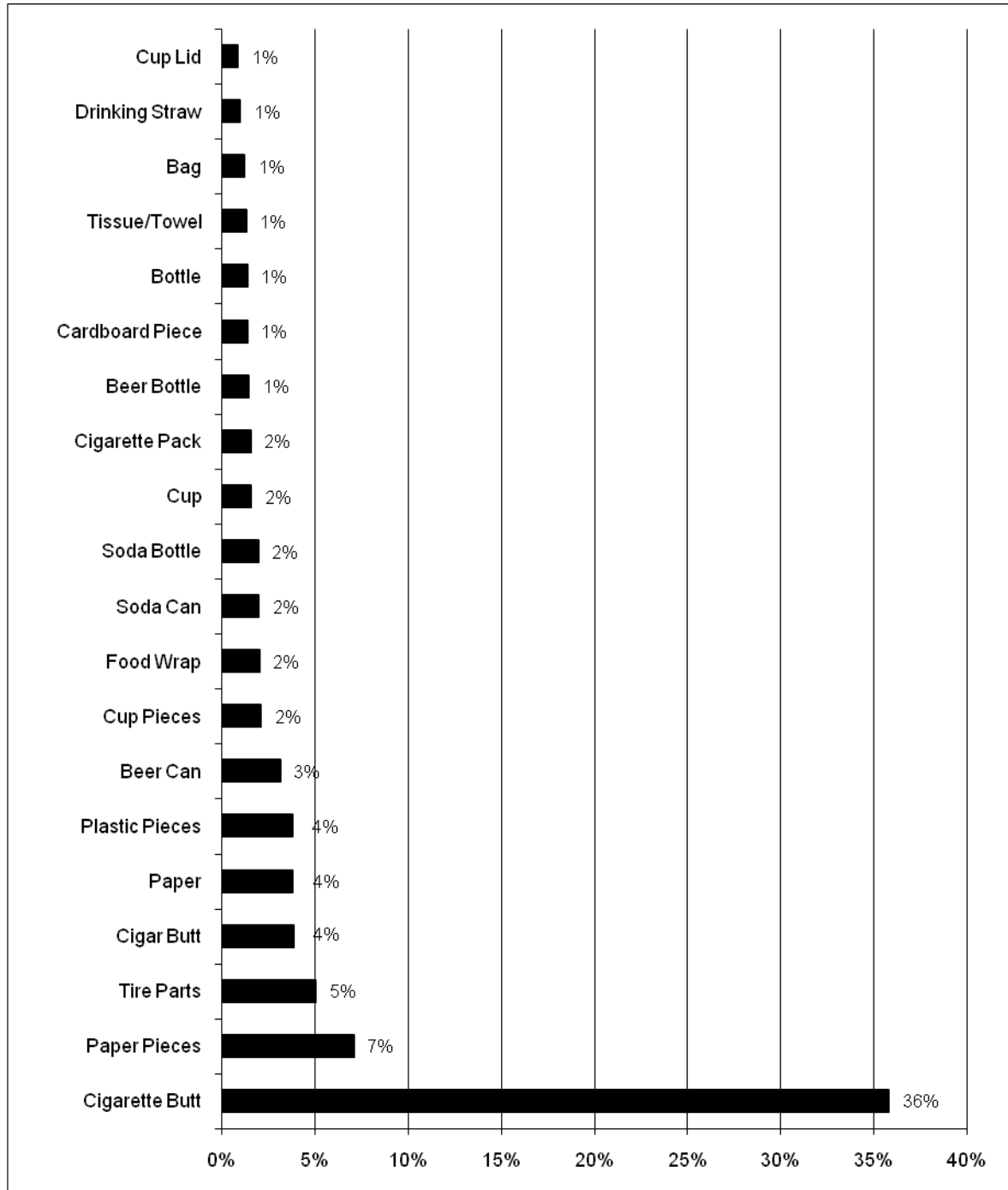
Use	Item Name	Percent within each Litter Use
Tobacco	Cigarette Butt	84%
	Cigar Butt	9%
	Cigarette packs	4%
Food	Food Wrap	29%
	Snack Wrap	10%
	Bag	9%
	Condiment pack	9%
	Candy	5%
Non-Alcoholic Beverage	Soda Can	15%
	Soda Bottle	15%
	Cup Pieces	14%
	Cup	11%
	Bottle	10%
	Plastic Pieces	9%
Construction/Industrial	Paper Pieces	46%
	Plastic Pieces	20%
	Cardboard Pieces	11%
Printed	Paper Pieces	42%
	Paper	29%
	Lottery Ticket	11%
Alcoholic Beverage	Beer Can	56%
	Beer Bottle	26%
Household/Personal	Paper	28%
	Tissue/Towel	15%
	Bag	7%
	Paper Pieces	6%
	Paper Towel	6%
Automotive	Tire parts ²⁰	68%
	Rubber	4%
	Plastic Pieces	4%
Agriculture/Garden	Feed Sacks	30%
	Metal Shavings	12%
	Garden Container	12%
	Fencing	9%
	Glove	8%
Other	Miscellaneous ²¹	27%
	Mask	18%
	Paper Pieces	9%

²⁰ Tire parts, while not generally litter that is tossed out of cars or the backs of trucks, have traditionally been counted as litter in the TxDOT VLS.

²¹ Miscellaneous is the actual category name; NuStats recommends removing this option from future studies.

The litter subcontractors were able to identify nearly 100 percent of all litter items collected in 2009. Figure 3 shows the top 20 identifiable litter items collected, regardless of litter use classification. Of all identifiable items collected, cigarette butts were the most common (36 percent), followed by paper pieces (7 percent), tire parts (5 percent), cigar butt (4 percent), paper (4 percent), and plastic pieces (4 percent). These six items account for nearly 60 percent of all estimated litter.

Figure 3: Top 20 Most Common Litter Items



A distribution of cigarette butt litter by road types shows that more than half of this litter accumulated on Interstate Highways (see Table 11 below). US Highways, State Highways, and FM Roadways accumulated 19 percent, 15 percent, and 11 percent of this litter, respectively.

Table 11: Cigarette Butt Litter by Road Type

Road Type	Count	Percent
Interstate Highway	120,901	55%
US Highway	42,591	19%
State Highway	32,993	15%
FM Roadways	24,500	11%
Total	220,985	100%

Table 12 contains a summary of the top classes of litter and the top brand names within that category identifiable by brand. A more exhaustive list appears in Appendices 4 and 6.

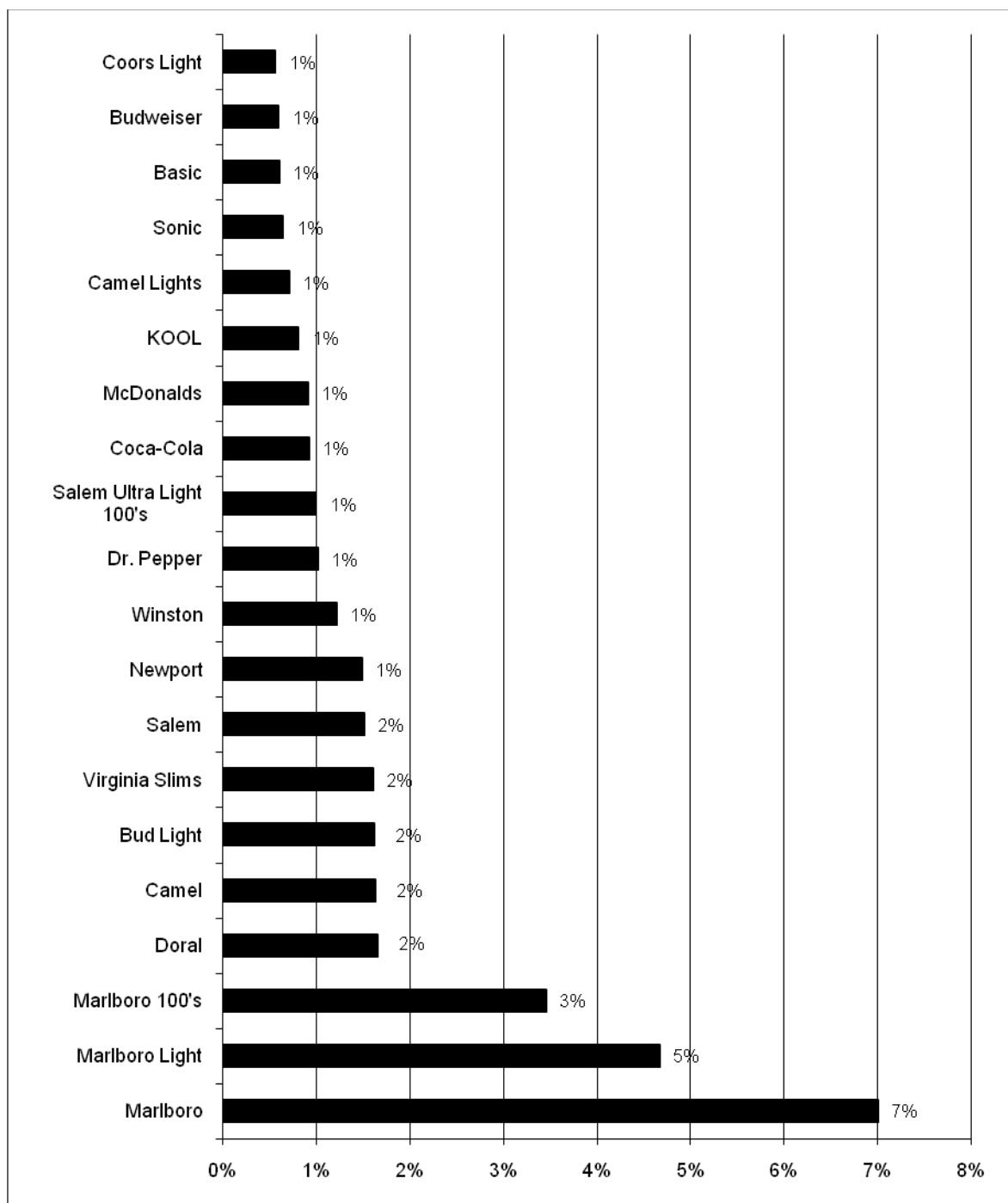
Table 12: Top Brand within Each Litter Use Category, 2009

Use	Brands	Percent within Each Litter Use
Tobacco	Unknown	33%
	Marlboro®	12%
	Marlboro Light®	11%
	Marlboro 100's®	8%
	Doral®	4%
	Camel®	4%
	Virginia Slims®	4%
	Salem®	4%
	Newport®	4%
	Winston®	3%
	All other brands	13%
Food	Unknown	25%
	McDonald's®	10%
	Sonic®	4%
	Jack in the Box®	3%
	Taco Bell®	3%
	Whataburger®	3%
	Wendy's®	3%
	Grandma's Cookies®	2%
	Frito Lay®	2%
	Burger King®	2%
	Snickers®	2%
	All other brands	41%
Non-Alcoholic Beverage	Unknown	52%
	Dr. Pepper®	8%
	Coca-Cola®	7%
	Sonic®	3%

Use	Brands	Percent within Each Litter Use
	Pepsi®	2%
	Red Bull®	2%
	Gatorade®	2%
	Sprite®	2%
	All other brands	12%
Construction/Industrial	Unknown	98%
	3M®	<1%
	Busch	<1%
	All other brands	1%
Printed	Unknown	86%
	State of Texas	7%
	Wal-Mart®	1%
	All other brands	6%
Alcoholic Beverage	Bud Light®	28%
	Budweiser®	11%
	Coors Lite®	10%
	Keystone®	9%
	Miller Lite®	9%
	Busch®	7%
	All other brands	26%
Household/Personal	Unknown	91%
	Wal-Mart®	1%
	HEB®	1%
	All other brands	7%
Automotive	Unknown	96%
	Bengal	1%
	Ford®	<1%
	All other brands	3%
Agriculture/Garden	Unknown	92%
	Nutrena®	4%
	All other brands	4%
Other	Unknown	74%
	Small Pieces of Paper	6%
	Circle K	4%
	State of Texas	3%
	All other brands	13%

NuStats identified brand names for 47 percent of all litter items in the database. Figure 4 depicts the most commonly found identifiable brand names.

Figure 4: Most Common Litter Brands



Correlation between Litter Accumulation and Other Variables

This section presents the correlation analyses between litter accumulation at each study segment and variables such as Average Daily Traffic (ADT) and proximity to potential litter sources. Correlation analysis is used to measure the degree of linear relationship between two variables. In a perfect linear relationship, every unit increase or decrease in one variable (X) is followed by an identical unit increase or decrease in the other variable (Y). The resultant statistic, the *coefficient of simple correlation (r)*, indicates how much variability in one variable can explain the variability in the other. The possible values for the coefficient of simple correlation range from +1, a perfect positive linear relationship, to -1, a perfect negative linear relationship. The *p-value* associated with each *coefficient of simple correlation* indicates the precision of the statistic.

Traffic Volume

The 2009 study suggests, as did the 2005 and 2001 studies, that litter accumulation is directly related to the number of vehicle miles traveled. This is a logical assumption, implying that an increased number of cars traveling more miles means that more litter accumulates (i.e., more cars = more litter).

NuStats designed the VLS so this relationship could be quantified. Correlation coefficients were calculated utilizing the amounts of litter on each site (in number of items) and the ADT counts as variables. The litter counts used to calculate the litter density were un-weighted, and the ADT counts were obtained from 2007 District Highway Traffic Maps produced and distributed by TxDOT. The Pearson's technique was utilized for all correlation analyses.

The resulting correlation analysis yielded a modest but significant correlation ($r = .265$, $p = .01$) with higher litter densities associated with higher traffic volumes. This figure indicates a statistically significant positive linear relationship between traffic volume (X) and the amount of litter found on a roadway (Y). The associated *p-value* indicates that this statement can be made with 99 percent confidence.

Population Increases

With higher vehicle miles traveled comes the assumption that the population of possible drivers within the state of Texas has increased. According to the data in the American Community Survey (ACS)²², the state's population of those age 16 and older increased 4.6 percent between 2005 and 2007 (the most recent year for which ACS data was available). This essentially means that Texas now has an additional three quarters of a million more driving age residents since the 2005 Visible Litter Study. Table 13 below shows the actual figures.

Table 13: Texas Population Change between 2005 and 2007

Population Age 16+ in 2005	Population Age 16+ in 2007	Percent Change
17,210,146	17,994,671	4.56%

The overall Texas population increased 8 percent during the same period, from 22,424,884 to 24,326,974.

²² The ACS data is compiled by the U.S. Bureau of the Census.

Proximity to Potential Litter Sources

Construction sites, convenience stores, fast food restaurants, gas stations, liquor stores, parks, rest stops, schools, shopping malls, and tourist shops are establishments that represent potential litter sources. Correlation coefficients were calculated utilizing the amount of litter on each site and the presence of potential litter sources within three miles in either direction of the sample segment as variables.

As Table 14 illustrates, modest but significant correlations exist between litter density and presence of shopping malls ($r = .211$, $p = .01$), gas stations ($r = .207$, $p = .01$), schools ($r = .192$, $p = .05$), fast food restaurants ($r = .180$, $p = .05$), and liquor stores ($r = .179$, $p = .05$), in close proximity of sample segments.

Table 14: Correlation Coefficients – Potential Litter Sources

Potential Litter Source	Correlation Coefficient
Shopping Mall	.211**
Gas Station	.207**
School	.192*
Fast Food Restaurant	.180*
Liquor Store	.179*
Tourist Shop	.151
Landfill/Recycling Centers	.122
Park	.104
Construction Site	.014
Rest Stop	-.021
Convenience Store	-.043

* - Indicates significance at .05 level

** - Indicates significance at .01 level

Conclusions and Recommendations

Summary of Findings

This section summarizes the key points and findings of the TxDOT 2009 Visible Litter Study.

2009 Litter Snapshot

- Overall litter increased 33 percent from 2005 to 2009. However, roadway litter is down since 2001.²³
- Visible litter appears to have decreased. Based on actual counts, the biggest increases are in micro litter (e.g., small pieces of litter such as cigarette butts that are not easily seen on roadways).
- All road types show an increase in litter from 2005 to 2009. (When cigarette butts are excluded, litter went down on Interstate Highways and FM Roadways.)
- Shopping malls, gas stations, schools, fast food restaurants, and liquor stores correlate to the density of litter found at each site; i.e., those establishments contribute to roadway litter.
- Tobacco-related litter is the most common litter use (43 percent).
- Cigarette butt litter is still the most common litter item on Texas roadways; however, it is not considered visible from the roadway.
- The presence of larger litter items (including food and food related) declined between 2005 and 2009.
- The most commonly found identifiable litter brands were Marlboro® (7 percent) and Marlboro Light® (5 percent).
- Most litter in Texas (95 percent) is paper, plastic, metal, or rubber/leather.
- Both the population of driving age Texans (age 16+) and the number of vehicle miles driven increased since 2005, which may help explain litter increases. The total Texas population also increased 5 percent during this time.

Comparison of 2001, 2005, and 2009 VLS

This section summarizes the differences between the 2001, 2005, and 2009 Visible Litter Studies.

Not only did tobacco products continue to rank highest in terms of litter use, there is a significant increase from 2005 to 2009 as seen in Table 15 below. While Interstate Highways and FM Roadways show substantial increases in tobacco litter accumulation, US Highways and State Highways show a slight reduction from 2005 to 2009. On the other hand, food that was a prevalent litter use in 2001 and 2005 reduced significantly in 2009. Also, non-alcoholic beverage continues to be a prevalent litter source over the years.

²³ Not statistically significant.

Table 15: Litter Use Rank Comparisons

2001 VLS Use Rank	2005 VLS Use Rank	2009 VLS Use Rank
Tobacco (39%)	Tobacco (33%)	Tobacco (43%)
Household/Personal (15%)	Food (29%)	Non-alcoholic Beverage (13%)
Food (14%)	Non-alcoholic Beverage (11%)	Construction/Industrial (10%)
Non-alcoholic Beverage (13%)	Construction/Industrial (8%)	Household/Personal (9%)
Alcoholic Beverage (6%)	Printed (8%)	Food (7%)
Construction/Industrial (6%)	Alcoholic Beverage (6%)	Automotive (7%)
Printed (5%)	Household/Personal (4%)	Alcoholic Beverage (6%)
Other (1%)	Automotive (1%)	Printed (4%)
Automotive (1%)	Other (0%)	Other (<1%)
Agriculture/Garden (<1%)	Agriculture/Garden (0%)	Agriculture/Garden (<1%)

Cigarette butts continue to be the number one litter item found on Texas roadways and increased 8 percentage points between 2005 and 2009. More than half of the cigarette butt litter was found on Interstate Highways in 2009.

Table 16: Top 10 Litter Item Description Rank Comparisons

2001 VLS Item Rank	2005 VLS Item Rank	2009 VLS Item Rank
Cigarette Butts (31%)	Cigarette Butts (28%)	Cigarette Butts (36%)
Wrap (10%)	Wrap (7%)	Paper Pieces (7%)
Cardboard (7%)	Tissues/Towels/Napkins (5%)	Tire Parts (5%)
Beer Cans (5%)	Beer Can (5%)	Cigar Butt (4%)
Beverage Cups (5%)	Beverage Cup (4%)	Paper (4%)
Tissue/Towel (4%)	Cigarette Pack (4%)	Plastic Pieces (4%)
Cigarette Pack (3%)	Soda Can (3%)	Beer Can (3%)
Soda Can (3%)	Cup Lid (3%)	Cup Pieces (2%)
Paper Pieces (3%)	Drinking Straw (3%)	Food Wrap (3%)
Bags (2%)	Lottery Ticket (2%)	Soda Can (2%)

Marlboro Light® litter decreased 13 percentage points between 2005 and 2009. Marlboro® was the top brand name litter on Texas roadways in 2009.

Table 17: Litter Brand Name Rank Comparisons

2001 VLS Brand Rank	2005 VLS Brand Rank	2009 VLS Brand Rank
Marlboro® (12%)	Marlboro Light® (18%)	Marlboro® (7%)
Doral® (4%)	Marlboro® (13%)	Marlboro Light® (5%)
Salem® (3%)	Texas Lottery® (3%)	Marlboro 100's (3%)
Bud Light® (3%)	Doral® (3%)	Doral® (2%)
Coca Cola® (3%)	McDonald's® (3%)	Camel® (2%)
Texas Lottery® Tickets (3%)	Bud Light® (2%)	Bud Light® (2%)
Marlboro Light® (3%)	Marlboro Menthol® (2%)	Virginia Slims® (2%)
Dr. Pepper® (3%)	Coca-Cola® (2%)	Salem® (2%)
Budweiser® (3%)	Burger King® (2%)	Newport® (1%)
McDonald's® (3%)	Dr. Pepper® (2%)	Winston® (1%)

2001 Data based on non-recalibrated cigarette butt litter.

Recommendations

Based on the findings from the 2009 Visible Litter Study, NuStats recommends the following:

Marketing/Communications

For the past several years, the TxDOT “Don’t Mess with Texas” litter prevention campaign targeted outdoor media buys on Interstate and major State Highways. The 2009 VLS data suggests the TxDOT should continue targeting the Interstate and most heavily traveled State Highways, given the increase in litter on these roadway types.

The DMWT campaign has also targeted specific litter items over the past several years, including both gross (or large) and micro items. The data obtained through this study provide guidance on the types of items that might be a focal point of the campaign in the future. For example, since the study and the campaign are about visible litter, an emphasis on reducing litter of larger items such as non-alcoholic beverage containers is recommended. This may include developing relationships with fast food restaurants, convenience store chains, and soda and other non-alcoholic beverage manufacturers.

The increase in cigarette butts over the past four years also suggests that more campaigns should target tobacco users to reduce litter, which could include partnerships with tobacco producers to distribute a “personal ashtray” that allows smokers to keep the containment device in their cars without using the vehicle’s ashtray.

Targeting potential litter sources may also be advantageous.

- Consider campaign strategies that target specific potential litter sources, especially gas stations, shopping malls, liquor stores, fast food restaurants, and schools. This could result in partnerships with these vendors/owners to distribute in-vehicle litter bags, to place more litter receptacles in parking lots at potential litter sources, or possibly to develop and implement their own targeted marketing campaign.

Another success of DMWT is its witty appeal to Texans to not mess with our state. These spots emphasize respect and responsibility.

- Future campaigns may consider a humorous emotional appeal that connects respect for our roads and responsibility for littering behavior associated with activities at potential litter sources, e.g., after visiting a fast food restaurant or gas station.

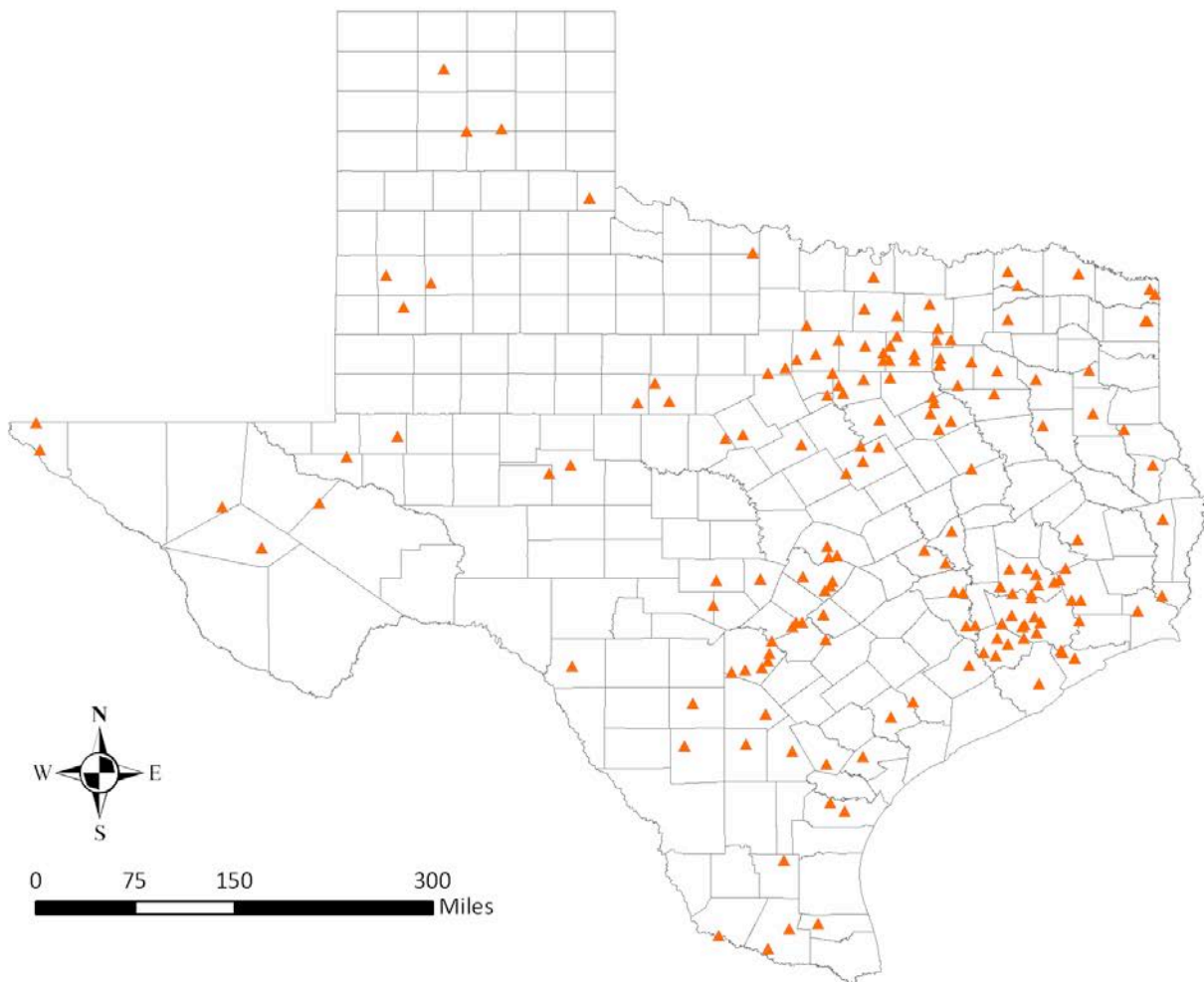
Study Design

The methodological and sample size enhancements introduced in the 2009 Visible Litter Study increased the precision of the data and, in turn, allowed NuStats to produce statewide estimates that were statistically superior to their 2005 and 2001 VLS counterparts (see Table 3 and Figure 2). NuStats recommends the use of this approach for future studies.



NuStats also suggests removing “other”, “miscellaneous” and any categories that do not allow for specific examples of litter items to allow the litter team an opportunity to provide more useful descriptions.

Appendices

Appendix 1: Map of Study Segments



Legend

-  Sampled Roadway Segment
-  County Boundary

Data Source:
Visible Litter Study 2009 by NuStats
Texas State Data Center and Office of the State Demographer
Created by NuStats, LLC. in June, 2009

Appendix 2: Segment Selection Matrix

Segment ID	District	Road Type**	County	Description
ABL01	ABILENE	1	CALLAHAN	IH 20 AT FM 603
ABL02	ABILENE	2	SCURRY	US 84 AT FM 612
ABL03	ABILENE	3	CALLAHAN	SH36 AT US 283
AMA02	AMARILLO	1	CARSON	IH 40 AT FM 2880
AMA03	AMARILLO	2	POTTER	US 287 AT POTTER AT MOORE COUNTY LINE SOUTH OF RR BLDG
AMA04	AMARILLO	3	MOORE	SH 152 AT FM 1284
ATL01	ATLANTA	2	BOWIE	US 59/71 IMMEDIATELY NORTH OF SPUR 14
ATL03	ATLANTA	3	BOWIE	SH 93 AT FM 558 NORTH OF WAGNER CREEK
ATL05	ATLANTA	1	BOWIE	IH 30 WEST OF THE INTERSECTION OF IH 30 AND FM 989
ATL06	ATLANTA	4	CASS	FM 251 AT SH 77
AUS00	AUSTIN	3	GILLESPIE	SH 16 SOUTH OF FREDERICKSBURG CITY LIMIT
AUS01	AUSTIN	4	TRAVIS	FM 2244 BEGINNING AT SH 71
AUS04	AUSTIN	2	TRAVIS	US 183 BETWEEN FM 812 AND FM 1625
AUS05	AUSTIN	4	TRAVIS	FM 969 BETWEEN FM 3177 AND FM 973
AUS08	AUSTIN	1	HAYES	IH 35 AT SH 4 LOOP
AUS10	AUSTIN	3	TRAVIS	SH 71 EAST OF FM 973
AUS11	AUSTIN	2	WILLIAMSON	US 79 AT FM 685
AUS12	AUSTIN	3	MASON	SH 29 AT FM 1222
AUS15	AUSTIN	2	WILLIAMSON	US 79 AT FM 1460
AUS17	AUSTIN	4	CALDWELL	2720 AT SH 142
AUS18	AUSTIN	4	BLANCO	FM 2766 AT US 281
BMT01	BEAUMONT	1	ORANGE	I 10 EAST OF NECHES RIVER BRIDGE
BMT02	BEAUMONT	2	LIBERTY	US 59 AT THE MONT. COUNTY LINE
BMT03	BEAUMONT	3	LIBERTY	SH 321 AT FM 1008
BMT04	BEAUMONT	4	LIBERTY	FM 1960 AT FM 686
BMT05	BEAUMONT	2	JASPER	US 96 NORTH OF FM 2800
BMT06	BEAUMONT	1	JEFFERSON	IH 10 EAST OF FM 364
BRY01	BRYAN	1	FREESTONE	I 10 45 AT FREESTONE LEON CO LENI
BRY02	BRYAN	4	BURLESON	FM 50 AT FM 1361
BRY04	BRYAN	2	WASHINGTON	US 290 LOOP 2447
BRY05	BRYAN	4	BURLESON	FM 1362 N OF SH 21
BRY06B	BRYAN	4	BRAZOS	FM 2038 REF MARKER 628
BWD01	BROWNWOOD	2	BROWN	US 67 IMMEDIATELY WEST OF FM 1467
BWD02	BROWNWOOD	3	COMANCHE	SH 16 AT FMR 3200
CHS01	CHILDRESS	2	CHILDRESS	US 287 IMMEDIATELY EAST OF FM 2875
CRP01	CORPUS CHRISTI	1	LIVE OAK	IH 37 IMMEDIATELY SOUTH OF FM 799
CRP02	CORPUS CHRISTI	3	NUECES	SH 358 AT IH 37
CRP04	CORPUS CHRISTI	2	NUECES	US 77 BETWEEN NUECES COUNTY AIRPORT AND THE CITY OF CORPUS CHRISTI ETJ
CRP05	CORPUS CHRISTI	2	REFUGIO	US 183 NORTH OF SH 202
CRP06	CORPUS CHRISTI	3	BEE	SH 359 EAST OF US 181
DAL01	DALLAS	3	COLLIN	SH 121 1500' NORTH OF FM 2933
DAL02	DALLAS	3	COLLIN	SH 78 1500' WEST OF SH 205
DAL03	DALLAS	1	DALLAS	IH 35 EAST 1 MILE NORTH OF LOOP 635, NORTH OF DOWNTOWN
DAL04	DALLAS	1	DALLAS	IH 20 IMMEDIATELY WEST OF FM 1382
DAL05A	HUTCHINS	1	DALLAS	IH 20 EAST OF I45
DAL06	DALLAS	2	ELLIS	US 287 3000' SOUTH OF BUSINESS 67

Segment ID	District	Road Type**	County	Description
DAL08	DALLAS	1	KAUFMAN	IH 20 1500 FT EAST OF FM 2932
DAL09	DALLAS	1	KAUFMAN	IH 20 1500' EAST OF FM 2965
DAL10	DALLAS	2	KAUFMAN	US 175 1500' SOUTH OF BUSINESS 175 NORTHWEST OF MABANK
DAL11	DALLAS	3	KAUFMAN	SH 274 1500' SOUTH OF FM 148
DAL12	DALLAS	1	NAVARRO	IH 45 AT FM 1126, 1500' SOUTH OF MILE POST 240
DAL13	DALLAS	2	NAVARRO	US 287 1500' EAST OF FM 3243
DAL14	DALLAS	3	NAVARRO	SH 22 WEST OF FM 1839
DAL15	DALLAS	1	ROCKWALL	IH 30 1500 FT WEST OF FM 740
DAL16	DALLAS	1	ELLIS	IH 45 AT FM 1182
DAL17	DENTON	2	DENTON	US 380 EAST OF FM 156
DAL18	DENTON	4	DENTON	FM 720, EAST OF IT INTERSECTION 423
DAL19	DALLAS	1	NAVARRO	IH 45 SOUTH OF FM 1394
DAL21	HUTCHINS	2	DALLAS	US 175 S OF IH45
DAL22	DALLAS	3	DALLAS	SH 356 SOUTH OF SH 183
DAL23	DALLAS	3	ROCKWALL	SH 276 EAST OF FM 548
ELP01	EL PASO	1	EL PASO	2 MILES W OF IH 10 / IH 20 INTERCHANGE
ELP02	EL PASO	2	EL PASO	US 54 AT TEXAS - NEW MEXICO STATE LINE
ELP04	EL PASO	1	EL PASO	IH 10 SOUTH of SPUR 375
ELP05	EL PASO	3	JEFF DAVIS	SH 17 JUST NORTH OF FORT DAVIS
FTW01	FORT WORTH	2	JOHNSON	US 67 EAST OF FM 2331
FTW02	FORT WORTH	3	JOHNSON	SH 171 N AT JOHNSON COUNTY LINE
FTW03	FORT WORTH	4	JOHNSON	FM 2331 AT FM 4
FTW04	FORT WORTH	1	PALO PINTO	IH 20 AT SH 193
FTW05	FORT WORTH	1	PARKER	IH 20 NORTHEAST OF FM 113
FTW06	FORT WORTH	3	PARKER	SH 199 AT FM 2257
FTW07	FORT WORTH	3	PARKER	SH 171 SOUTH OF FM 51
FTW08	FORT WORTH	1	TARRANT	IH 30 EAST SH 360 EAST OF FORT WORTH
FTW09	FORT WORTH	1	TARRANT	IH 20 EAST OF SH 360 EAST FORT WORTH
FTW10	FORT WORTH	1	JOHNSON	IH 35 W / NORTH OF 917
FTW11	FORT WORTH	2	SOMERVELL	US 67 AT FM 199
FTW12	FORT WORTH	1	PALO PINTO	IH 20 WEST OF US 281
FTW13B	FORT WORTH	3	JACK	FM 2210 NORTH OF SH 199
FTW14	FORT WORTH	3	PALO PINTO	SH 16 NORTH OF FM 207
HOU03	HOUSTON	3	HARRIS	SH 529 WEST OF THE SH 529-SH 6 INTERSECTION
HOU04R	HOUSTON	1	HARRIS	IH 10 WEST FROM FM RD TO W GRENVEST ON WESTSIDE
HOU05	HOUSTON	1	HARRIS	I 45 NORTH BETWEEN W PARKER RD AND E LITTLE YORK
HOU06	HOUSTON	1	HARRIS	I 45 NORTH BETWEEN CYPRESS WOOD AND FM 2920
HOU07	HOUSTON	1	HARRIS	IH 10 AT HARRIS/CHAMBERS COUNTY LINE
HOU08	HOUSTON	2	HARRIS	US 59 BETWEEN SH 288 & IH LOOP 610
HOU09	HOUSTON	3	HARRIS	SH 288 BETWEEN 610 & US 90A SOUTH OF HOUSTON
HOU11	HOUSTON	4	MONTGOMERY	FM 2854 FROM SH 105 PROCEEDING SOUTH FOR 750 FEET
HOU12	HOUSTON	1	HARRIS	IH 10 BETWEEN IH LOOP 610 AND SH 8 - WEST OF HOUSTON
HOU13R	HOUSTON	3	HARRIS	IH 10 W FROM MASON TO SH 99
HOU14	HOUSTON	2	HARRIS	US 90 BETWEEN SH 8 AND FM 2100
HOU15	HOUSTON	1	WALLER	I-10 EAST OF WHALLER COUNTY LINE
HOU16	HOUSTON	2	WALLER	US 290 AT WHALLER/WASHINGTON COUNTY LINE
HOU17	HOUSTON	3	MONTGOMERY	SH 249 AT THE HARRIS/MONTGOMERY LINE
HOU18	HOUSTON	1	MONTGOMERY	IH45 BETWEEN THE HARRIS/MONTGOMERY LINE AND SHENANDOAH, RIGHT AFTER WOODLANDS
HOU21	HOUSTON	4	MONTGOMERY	FM 1314 AT SH 242
HOU22	HOUSTON	4	MONTGOMERY	FM 2090, WEST OF SPLENDORA
HOU25	HOUSTON	3	FORT BEND	SH 36 BETWEEN FM 361 AND NEEDVILLE

Segment ID	District	Road Type**	County	Description
HOU26	HOUSTON	1	GALVESTON	I 45 BETWEEN HARRIS COUNTY LINE AND FM 646
HOU27	HOUSTON	1	MONTGOMERY	I 45 BETWEEN FM RD 830/1097
HOU28	HOUSTON	2	FORT BEND	US 59 WILLIAMS WAY TO FM 762
HOU29	HOUSTON	2	FORT BEND	US 59 NORTH OF KENDLETON
HOU30	HOUSTON	1	HARRIS	IH 10 EAST OF SH 99
HOU31	HOUSTON	1	GALVESTON	I 45 WEST OF SH 275
HOU32	HOUSTON	3	MONTGOMERY	SH 105 EAST OF CUT AND SHOOT
HOU33	HOUSTON	3	GALVESTON	SH 146 SOUTH OF MOSES LAKE
HOU34	HOUSTON	4	FORT BEND	FM 723 AT FM 1463/359
HOU35	HOUSTON	4	BRAZORIA	FM 2004 AT FM 523
HOU36	HOUSTON	4	WALLER	FM 1488 AND 362 NEAR 1736 TO NELSON RD
LDO01	LAREDO	2	KINNEY	US 90 FROM RM 454 WEST OF BRACKETVILLE
LDO02	LAREDO	1	LASALLE	I 35 AT FM 469
LUB01	LUBBOCK	3	HOCKLEY	SH 114 BETWEEN 303 N & 303 S
LUB02	LUBBOCK	4	LUBOCK	FM 179 N & US 82 SOUTH OF WOLFORTH
LUB03	LUBBOCK	2	TERRY	US 385 SOUTH OF 2196
LUF03	LUFKIN	2	SAN JACINTO	US 59 AT LIBERTY COUNTY LINE
LUF04	LUFKIN	3	POLK	SH 146 AT THE CITY OF LIVINGSTON ETJ LINE
LUF06	LUFKIN	2	SHELBY	US 84 AND FM 1970 (NEAR TIMPSON)
LUF07	LUFKIN	4	SAN AUGUSTINE	FM 2213 AT THE CITY OF SAN AUGUSTINE LINE
ODA01	ODESSA	1	ECTOR	IH 20 WEST OF US 385
ODA03	ODESSA	3	WARD	SH 18 FROM FM 1219 PROCEEDING 5 MILES NORTH
ODA04	ODESSA	2	PECOS	US 285 BETWEEN FM 1776 AND COUNTY LINE
PHR01	PHARR	2	BROOKS	US 281 AT FM 3066
PHR02	PHARR	3	HIDALGO	SH 107 FROM RM 514 TO RM 516
PHR03	PHARR	4	WILLACY	FM 1762 BETWEEN US 277 AND BUSINESS 77
PHR04	PHARR	2	STARR	US 83 WEST OF RIO GRANDE CITY AND WEST OF VILLOREALE
PHR05	PHARR	2	BROOKS	US 281 AND FM 3066
PHR06	PHARR	4	HIDALGO	FM 490 FROM RM 506 TO RM 508
PRS01	PARIS	2	LAMAR	US 82W AT FM 38 BROOKSTON JCT
PRS02	PARIS	3	LAMAR	SH 19 NORTH OF DELTA COUNTY LINE
PRS04	PARIS	1	HOPKINS	IH 30 WEST AT THE CITY OF SULPHUR SPRINGS
PRS05	PARIS	4	RED RIVER	FM 114 WEST OF FM 44 NORTH OF ANNONA
SAT02	SAN ANTONIO	1	COMAL	IH 35 AT HAYS COUNTY LINE
SAT03	SAN ANTONIO	3	BEXAR	SH 16 BETWEEN IH LOOP 410 AND FM LOOP 1604
SAT05	SAN ANTONIO	4	COMAL	FM 3009 FROM IH 35 TO FM 2252
SAT06	SAN ANTONIO	2	BEXAR	US 181 SOUTH OF THE US 181/SH 122 INTERSECTION
SAT07	SAN ANTONIO	2	BEXAR	US 87 BETWEEN FM 1628 AND IH LOOP 410
SAT08	SAN ANTONIO	1	BEXAR	IH 35 BETWEEN FM LOOP 1604 BEXAR/ATASCOSA COUNTY LINE
SAT09	SAN ANTONIO	1	BEXAR	IH 10 EAST BETWEEN FM 1518 AND 1604
SAT10	SAN ANTONIO	3	GUADALUPE	HAYS COUNTY LINE 123
SAT11	SAN ANTONIO	1	KERR	IH 10 AT KERR COUNTY LINE BY MILE MARKER 522
SAT12	SAN ANTONIO	3	MCMULLEN	SH 72 WEST OF ITS INTERSECTION WITH SH 16
SAT13	SAN ANTONIO	1	GUADALUPE	I 10 BETWEEN FM 1104 AND COUNTYLINE
SAT14	SAN ANTONIO	1	ATASCOSA	I 37 NORTH OF CAMPBELLTON
SAT15	SAN ANTONIO	4	FRIO	FM 140 BETWEEN PEARSALL AND FM 472
SJT02	SAN ANGELO	2	TOM GREEN	US 87 S, 33.5 MILES EAST OF IRION COUNTY LINE
SJT03	SAN ANGELO	4	IRION	FM 853 WEST IRION/TOM GREEN COUNTY LINE
TYL01	TYLER	4	CHEROKEE	FM 747, 1.5 SOUTH OF US 79
TYL02	TYLER	3	GREGG	SH 300 THREE MILES NORTH OF SPUR 281
TYL03	TYLER	3	HENDERSON	SH 19 AT FM 2709

Segment ID	District	Road Type**	County	Description
TYL04	TYLER	2	SMITH	US 69 SOUTH OF IH 20
TYL05	TYLER	1	VAN ZANDT	IH 20 IMMEDIATELY EAST OF FM 1255
TYL06	TYLER	2	RUSK	US 259 BETWEEN FM 3310 AND FM 1798
WAC03	WACO	2	MCLENNAN	US 84 BETWEEN MCLENNAN CORYELL LINE AND SH 317
WAC04	WACO	3	MCLENNAN	SHC BETWEEN FM 185 AND WACO BRIDGE
WAC05	WACO	1	MCLENNAN	IH35 BETWEEN FM 308 AND FM 3149
WAC06	WACO	4	BOSQUE	FM2490 AT BOSQUE MCLENNAN COUTY LINE
WAC07	WACO	1	MCLENNAN	IH35 SOUTH OF PECAN CREEK IN HILLSBORO
WAC08	WACO	3	HAMILTON	SH 22 BETWEEN 1602 AND CRANFILLS GAP
WFS01	WICHITA FALLS	1	COOKE	IH 35 JUST SOUTH OF ITS INTERSCTION WITH FM 1306
WFS02	WICHITA FALLS	2	WICHITA	US 281 FROM FM 369 PROCEEDING 750' NORTH
YKM01	YOAKUM	2	JACKSON	US 59 AT FM 234
YKM02	YOAKUM	3	VICTORIA	SH 185 SOUTH OF US 59 ON SOUTHEAST SIDE OF VICTORIA
YKM03	YOAKUM	4	WHARTON	FM 102, IMMEDIATELY NORTHWEST OF US 59
YKM04	YOAKUM	1	AUSTIN	IH10 WEST OF SH 36

*** Road Type 1=Interstate Highway, Road Type 2=US Highways, Road Type 3=State Highway, Road Type 4 = Farm-to-Market Road*

Appendix 3: Field Manual

Appendix 4: Litter Items by Brand Name & Use

Litter Use	Brand Code	Item Code	Tally Count	%
Agriculture/Garden	Unknown	bucket	11	0.6%
		container	17	1.0%
		drinking straw	13	0.7%
		feed sack	510	29.2%
		fencing	166	9.5%
		flower	37	2.1%
		garbage bag (empty)	10	0.6%
		garden container	224	12.8%
		glove	151	8.6%
		label	7	0.4%
		metal shaving	232	13.3%
		miscellaneous	55	3.2%
		nursery planter	39	2.2%
		plant	33	1.9%
		plant box	72	4.1%
		plastic	10	0.6%
		plastic sheets	10	0.6%
		pvc	22	1.3%
		road marker	55	3.2%
		rope	11	0.6%
		sign	9	0.5%
		twine	9	0.5%
		wire	44	2.5%
	Nutrena	feed sack	69	100.0%
	plastic bags	bag	73	100.0%
	shurfine	plastic	10	100.0%
	EVANS FARM	bag	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Anheuser Busch	beer bottle	73	60.4%
		beer can	36	29.6%
		bottle cap	12	10.1%
	Bacardi	beer bottle	56	100.0%
	Bartels and James	beer bottle	87	100.0%
	Boone's Farm	bottle	11	48.5%
		bottles - broken	11	51.5%
	Budweiser	beer bottle	1142	30.6%
		beer can	2223	59.6%
		beer carton	122	3.3%
		bottle cap	205	5.5%
		bottles - broken	17	0.5%
		label	11	0.3%
		six pack container	10	0.3%
	Busch	beer bottle	147	5.9%
		beer can	2313	93.1%
		cardboard piece	24	1.0%
	Circle K	bottle rings	9	8.3%
		copper tube	17	16.7%
		glass pieces	43	41.7%
		packing material	26	25.0%
		Unknown	9	8.3%
	Colt 45	beer bottle	15	19.5%
		bottle cap	11	13.7%
		soda can	52	66.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Coors	beer bottle	75	21.7%
		beer can	271	78.3%
	Corona	beer bottle	424	73.9%
		beer can	54	9.5%
		beer carton	41	7.1%
		bottle cap	54	9.5%
	Fosters	beer can	12	100.0%
	Guinness	beer bottle	11	100.0%
	Heineken	beer bottle	146	67.1%
		beer can	61	28.1%
		six pack container	10	4.8%
	Ice House	beer bottle	11	51.4%
		beer can	10	48.6%
	Jack Daniels	bottle	22	48.9%
		bottle cap	11	25.5%
		liquor bottle	11	25.5%
	Keystone	beer bottle	354	11.5%
		beer can	2392	78.0%
		beer carton	50	1.6%
		bottle	15	0.5%
		box piece	11	0.4%
		can	224	7.3%
		cardboard	10	0.3%
		soda can	12	0.4%
	Leaf	beer can	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Lone Star	beer bottle	52	30.8%
		beer can	86	50.6%
		bottle	21	12.3%
		can	11	6.3%
	Lowenbrau	beer bottle	12	100.0%
	Michelob	beer bottle	344	46.4%
		beer can	223	30.0%
		beer carton	11	1.5%
		bottle	13	1.8%
		bottle cap	11	1.4%
		cup	107	14.5%
		label	7	1.0%
		six pack container	25	3.4%
	Mickey's	beer bottle	23	66.8%
		beer can	11	33.2%
	Miller	beer bottle	30	4.4%
		beer can	625	90.3%
		bottle cap	24	3.4%
		can	13	1.9%
	Miller Lite	beer bottle	812	26.8%
		beer can	1892	62.4%
		beer carton	63	2.1%
		bottle cap	10	0.3%
		can	107	3.5%
		cardboard piece	11	0.4%
		glass, broken	137	4.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Milwaukees Best	beer bottle	127	24.3%
		beer can	381	72.9%
		paper pieces	15	2.8%
	Mountain Dew	beer bottle	10	100.0%
	Natural Lite	beer bottle	88	7.2%
		beer can	935	77.3%
	Natural Lite	bottle	53	4.4%
		can	110	9.1%
		six pack container	24	2.0%
	Nehi	beer can	61	100.0%
	Ocean Spray	beer bottle	11	100.0%
	Old Milwaukee	beer bottle	24	11.6%
		beer can	186	88.4%
	Pabst	beer bottle	22	33.2%
		beer can	11	17.1%
		carton	11	16.6%
		cup	22	33.2%
	Pearl	beer can	23	100.0%
	Red Dog	beer bottle	12	100.0%
	Rolling Rock	beer bottle	11	100.0%
	Schlitz	beer bottle	21	69.1%
		beer can	10	30.9%
	Seagrams	beer bottle	24	39.7%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Seagrams	liquor bottle	36	60.3%
	Shiner Bock	beer bottle	218	44.7%
		beer can	235	48.2%
		bottle	34	7.1%
	Smirnoff	beer bottle	184	79.9%
		bottle cap	34	14.8%
		liquor bottle	12	5.3%
	Strohs	beer bottle	11	20.5%
		beer can	42	79.5%
	Zima	beer bottle	23	68.2%
		bottle	11	31.8%
	Unknown	beer bottle	383	20.6%
		beer can	279	15.0%
		beer carton	10	0.5%
		bottle	28	1.5%
		bottles - broken	258	13.9%
		carton	11	0.6%
		cup holder	11	0.6%
		glass pieces	704	37.8%
		liquor bottle	92	4.9%
		miscellaneous	23	1.2%
		packing material	10	0.6%
		six pack container	19	1.0%
		six pack ring	34	1.8%
	Dos Equis	beer bottle	104	69.2%
		beer can	36	23.8%
		bottle	10	7.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Koito	beer bottle	13	100.0%
	Cambridge	can	143	100.0%
	Tecate	beer bottle	11	14.5%
		beer can	53	71.3%
		can	10	14.1%
	Bud Light	beer bottle	3033	31.6%
		beer can	4559	47.6%
		beer carton	53	0.6%
		bottle	104	1.1%
		bottle cap	185	1.9%
		bottles - broken	480	5.0%
		can	433	4.5%
		carton	23	0.2%
		glass pieces	243	2.5%
		glass, broken	386	4.0%
		lid	15	0.2%
		six pack	11	0.1%
		six pack container	57	0.6%
	Coors Light	beer bottle	879	25.5%
		beer can	2220	64.5%
		beer carton	67	2.0%
		bottle	82	2.4%
		bottle cap	11	0.3%
		box piece	10	0.3%
		can	138	4.0%
		cardboard	12	0.3%
		cardboard piece	15	0.4%
		cup pieces	10	0.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Bengal	beer can	158	100.0%
	Kent	can	41	100.0%
	Chick Fil-A	beer bottle	15	100.0%
	Palmetco	can	14	100.0%
	KOOL	beer bottle	13	100.0%
	Zima	beer bottle	12	100.0%
	Goldschlagger	liquor bottle	10	100.0%
	Smirnoff	liquor bottle	11	100.0%
	potters vodka bottle	bottle	12	100.0%
	chardonnay paper handler tray	carton	12	100.0%
	gallo wine carton	carton	24	100.0%
	canadian mist	liquor bottle	37	100.0%
	e and j	brandy bottle	13	100.0%
	keystone light	beer can	32	100.0%
	hennessey	liquor bottle	11	100.0%
	cocks	liquor bottle	11	100.0%
	sutter home	liquor bottle	11	100.0%
	jim beam	bottle	11	50.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Alcoholic Beverage	Jim beam	liquor bottle	11	50.0%
	budweiser select	beer bottle	21	51.4%
		can	20	48.6%
	tanqueray	liquor bottle	11	100.0%
	bud ice	beer can	43	100.0%
	sparks	can	11	100.0%
	zinfandel	liquor bottle	11	100.0%
	micelob ultra	beer bottle	32	100.0%
	bud light lime beer	beer bottle	11	100.0%
	tilt malt beverage	beer can	11	100.0%
	corona beer	beer bottle	11	100.0%
	GALLO WINE	bottle	37	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	Armor-All	air freshner	37	48.7%
		can	27	36.1%
		package	11	15.2%
	Auto Zone	auto air freshner	12	9.3%
		auto related	15	11.2%
		bag	11	8.7%
		cardboard piece	11	8.7%
		oil container	15	11.2%
		paper	11	8.7%
		paper towel	11	8.7%
		plastic	24	18.6%
		radiator hose	10	7.4%
		spark plug box	10	7.4%
	Car Fresh	air freshner	17	100.0%
	Chevrolet	auto bumper	11	19.7%
		auto related	11	20.9%
		container	11	20.9%
		hub cap	11	20.9%
		tire rim	10	17.6%
	Circle K	automotive	9	15.2%
		bag	49	84.8%
	Cooler	auto bumper	11	52.2%
		box piece	10	47.8%
	Fram	box piece	11	100.0%
	Havoline	cup lid	22	40.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	Havoline	oil container	33	60.0%
		automotive	10	47.2%
		Unknown	11	52.8%
	Napa Auto Parts			
	Oak Farm	license plate	11	100.0%
	Penzoil	auto registration	26	16.3%
		auto related	11	6.7%
		container	15	9.5%
		oil container	95	59.3%
		oil bottle	13	8.2%
	State of Texas			
	Winchester	license plate	60	100.0%
	Unknown	auto related	9	100.0%
		air filter	24	0.1%
		air freshner	48	0.1%
		antenna	202	0.5%
		auto air freshner	69	0.2%
		auto battery felt	919	2.1%
		auto floor mat	73	0.2%
		auto headlamp assembly	54	0.1%
		auto light	224	0.5%
		auto mat	147	0.3%
		auto part	1020	2.3%
		auto related	922	2.1%
		auto repair form	232	0.5%
		auto trim	669	1.5%
		automotive	163	0.4%
		bag	22	0.0%
		block	44	0.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	Unknown	bolt cover	11	0.0%
		bottle	47	0.1%
		box piece	64	0.1%
		brake	15	0.0%
		bumper sticker	10	0.0%
		bungee cord	35	0.1%
		carpet	20	0.0%
		carton	21	0.0%
		cloth, vinyl	54	0.1%
		container	11	0.0%
		cooler lid	10	0.0%
		door trim	12	0.0%
		fan belt	43	0.1%
		foil tape	24	0.1%
		funnel	12	0.0%
		fuse	46	0.1%
		gas cap	113	0.3%
		hose	49	0.1%
		hub cap	204	0.5%
		inner tube	26	0.1%
		license plate	69	0.2%
		magnet	20	0.0%
		metal cap	19	0.0%
		metal shaving	9	0.0%
		miscellaneous	142	0.3%
		mud flap	152	0.3%
		nylon	16	0.0%
		oil container	172	0.4%
		oil filter	21	0.0%
		oil rag	37	0.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	Unknown	paper pieces	17	0.0%
		part	10	0.0%
		pipe	13	0.0%
		plastic pieces	1782	4.0%
		radiator cap	55	0.1%
		radiator hose	50	0.1%
		rag	29	0.1%
		reflector	419	1.0%
		registration sticker	32	0.1%
		rubber	1838	4.2%
		shop rag	282	0.6%
		speaker cover	23	0.1%
		sponge	27	0.1%
		sticker	10	0.0%
		strap	131	0.3%
		string	17	0.0%
		tie down	363	0.8%
		timing belt	387	0.9%
		tire	469	1.1%
		tire and rim	30	0.1%
		tire parts	31407	71.4%
		tire rim	58	0.1%
		tire weight	21	0.0%
		tissue/towel	50	0.1%
		tube	44	0.1%
		visor	23	0.1%
		wire	88	0.2%
		luggage rack holder	13	0.0%
		jumper cable part	9	0.0%
	John Deere	rubber	135	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	Bengal	air filter	414	100.0%
	Motor Craft	oil container	12	100.0%
	Ford	auto bumper	12	7.0%
		auto trim	64	36.9%
		hub cap	36	20.5%
		mud flap	62	35.7%
	RAIN-X	windshield wiper	10	100.0%
	Castrol Oil	oil container	22	100.0%
	EvenFlo	oil bottle	13	100.0%
	Polar Ice	auto related	37	100.0%
	Kudo's	auto related	15	100.0%
	B-4 Auto Parts	Unknown	31	100.0%
	auto molding piece	auto trim	12	100.0%
	auto light reflector	auto related	12	50.0%
		reflector	12	50.0%
	auto part	auto part	24	100.0%
	windshield sun screen	automotive	12	100.0%
	mercedes	container pieces	65	83.3%
		car emblem	13	16.7%
	gilco	oil container	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Automotive	ac delco	spark plug box	11	100.0%
	phillips	auto light	11	100.0%
	ORANGE CONSTRUCTION CONE	auto trim	13	100.0%
	HART	leather piece	9	100.0%
	LUG NUT	automotive	13	100.0%
	CAR MIRROR	mirror	13	100.0%
	MISC METAL PIECES	metal cap	13	100.0%
	RUBBER STRIP	auto trim	26	100.0%
	PLASTIC BUSHING	auto part	13	100.0%
	INDUSTRIAL SOL	auto related	17	100.0%
	MISC AUTO PART	auto related	52	100.0%
	IOWA	license plate	9	100.0%
	AUTO WHEEL COVER	auto part	13	100.0%
	TYDEN BRM	automotive	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Construction/Industrial	Auto Zone	corrugated box	10	48.5%
		Industrial Tape	11	51.5%
	Busch	Industrial Tape	247	100.0%
	State of Texas	road marker	84	89.0%
		tag	10	11.0%
	Wal-mart	bag	11	52.2%
		cardboard	10	47.8%
	Whataburger	rope	10	100.0%
	Unknown	aerosol can	10	0.0%
		air filter	32	0.1%
		bag	113	0.2%
		battery	11	0.0%
		block	34	0.1%
		bottle	11	0.0%
		box piece	260	0.4%
		bracket	13	0.0%
		bucket	20	0.0%
		butane bottle	11	0.0%
		cardboard	316	0.5%
		cardboard piece	6460	10.7%
		carpet	55	0.1%
		caulk gun	19	0.0%
		cement	217	0.4%
		cooler lid	9	0.0%
		cooler pieces	31	0.1%
		corrugated box	107	0.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Construction/Industrial	Unknown	corrugated box piece	764	1.3%
		corrugated cardboard	21	0.0%
		door trim	12	0.0%
		duct tape	445	0.7%
		extension cord	12	0.0%
		fiberglass	98	0.2%
		flag	27	0.0%
		flare	39	0.1%
		foam	1212	2.0%
		foam block	299	0.5%
		foam rubber	36	0.1%
		foil tape	10	0.0%
		funnel	188	0.3%
		garden container	22	0.0%
		glove	467	0.8%
		hose	20	0.0%
		Industrial Tape	61	0.1%
		industrial can	245	0.4%
		insulation	19	0.0%
		label	129	0.2%
		leather piece	72	0.1%
		lid	11	0.0%
		linoleum	10	0.0%
		lumber	188	0.3%
		marker	15	0.0%
		mask	21	0.0%
		metal shaving	11	0.0%
		miscellaneous	1233	2.0%
		mud flap	43	0.1%
		nylon rope	114	0.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Construction/Industrial	Unknown	nylon strap	26	0.0%
		nylon webbing	12	0.0%
		packing material	108	0.2%
		packing slip	46	0.1%
		packing tape	10	0.0%
		paint can	36	0.1%
		paint lid	53	0.1%
		paper	15	0.0%
		paper pieces	28285	46.7%
		paper towel	43	0.1%
		part	11	0.0%
		pill bottle	15	0.0%
		pipe	22	0.0%
		plastic	180	0.3%
		plastic pieces	12267	20.3%
		plastic sheets	1027	1.7%
		plastic strap	95	0.2%
		plywood	438	0.7%
		pottery	10	0.0%
		pudding	7	0.0%
		pvc	154	0.3%
		rag	13	0.0%
		receipt	67	0.1%
		road marker	309	0.5%
		road part	10	0.0%
		roofing	662	1.1%
		roofing felt	110	0.2%
		rope	229	0.4%
		rubber	441	0.7%
		sandpaper	104	0.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Construction/Industrial	Unknown	sheet rock	134	0.2%
		shell casing	11	0.0%
		shingles	497	0.8%
		shop rag	13	0.0%
		shovel	12	0.0%
		siding	203	0.3%
		sign	52	0.1%
		steel strap	19	0.0%
		stove part	13	0.0%
		strap	195	0.3%
		tape	58	0.1%
		tarp	77	0.1%
		tie down	50	0.1%
		tissue/towel	20	0.0%
		tools	64	0.1%
		twine	360	0.6%
		washers	34	0.1%
		wire	114	0.2%
		tin	13	0.0%
		measuring tape	19	0.0%
		rake	10	0.0%
		boot	11	0.0%
		tar paper	39	0.1%
		wood stakes	52	0.1%
		nuts and bolts	11	0.0%
		upholstry	10	0.0%
		bolt and washer set	10	0.0%
		suction cup	10	0.0%
		Window Screen	11	0.0%
		Cable	9	0.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Construction/Industrial	Unknown	Unknown	9	0.0%
	John Deere	plastic	178	87.9%
		twine	24	12.1%
	Bud Light	plastic	13	100.0%
	CarQuest	washers	10	100.0%
	3M	foil tape	15	4.8%
		sandpaper	287	95.2%
	Kent	shingles	130	100.0%
	Blue Ox	duct tape	9	100.0%
	Stanley	measuring tape	7	100.0%
	clear plastic wrap	plastic	73	100.0%
	pcp pipe 7 inch piece	pipe	12	100.0%
	plastic containers	foam block	85	100.0%
	ups	cardboard	10	100.0%
	montagna	box piece	11	100.0%
	HAMMER PART	rake	13	100.0%
	ELECTRIC OUTLET	electrical outlet	13	100.0%
	TAPE	duct tape	26	100.0%
	STEEL STRUP	steel strap	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
	RUBBER CYLENDERS	rubber	26	100.0%
	AQUA KLEAN	package	9	100.0%
	CARD BOMBAY PURSE	cardboard piece	52	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Almond Joy	candy	21	22.0%
		food wrap	40	41.6%
		snack wrap	24	25.3%
		packaging product	11	11.2%
	Arctic Ice	food wrap	11	100.0%
	Austin Quality	snack wrap	43	100.0%
	Big Red	gum wrap	10	100.0%
	Blue Bell	container	42	16.9%
		food wrap	65	26.3%
		lid	21	8.4%
		snack wrap	105	42.5%
		steel strap	15	5.9%
	Braum's	container	10	7.8%
		cup and straw	11	8.6%
		feed sack	23	17.1%
		food wrap	67	49.9%
		paper cup	22	16.6%
	Burger King	bag	101	11.4%
		condiment pack	87	9.8%
		feed sack	64	7.2%
		food tray	11	1.2%
		food wrap	580	65.4%
		paper pieces	12	1.4%
		snack wrap	32	3.6%
	Butterfinger	candy	44	27.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Butterfinger	food wrap	52	32.6%
		snack wrap	43	26.7%
		aluminum foil product packet	21	13.4%
	Capri Sun	drink pouch	56	39.1%
		food wrap	12	8.5%
		snack wrap	75	52.4%
	Church's Chicken	bag	11	1.6%
		box piece	14	2.0%
		cardboard piece	456	67.5%
		condiment pack	56	8.2%
		container	11	1.6%
		cup	24	3.5%
		food tray	23	3.4%
		food wrap	62	9.1%
		snack wrap	11	1.6%
		food take out style container	9	1.3%
	Clearly Canadian	condiment pack	24	69.4%
		aluminum foil product packet	11	30.6%
	Coca-Cola	food wrap	21	100.0%
	Cooler	drink pouch	9	100.0%
	Corn Nuts	food wrap	23	32.9%
		snack wrap	48	67.1%
	Dentyne	gum wrap	28	72.9%
		snack wrap	10	27.1%
	Dorito's	bag	63	18.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Food		food wrap	147	42.9%
		paper	52	15.3%
		snack wrap	80	23.4%
	Dr. Pepper	bottle	15	35.0%
		can	21	47.9%
		label	7	17.1%
	Frito Lay	bag	85	8.8%
		candy	10	1.1%
		foil	9	0.9%
		food	68	7.1%
		food tray	15	1.6%
		food wrap	354	36.7%
		funnel	11	1.1%
		miscellaneous	34	3.6%
		snack wrap	327	33.9%
		tinlid	10	1.1%
		aluminum foil product packet	30	3.1%
		packaging product	11	1.1%
	Gatorade	cup lid	44	100.0%
	Grandma's Cookies	bag	97	9.9%
		food wrap	823	83.4%
		snack wrap	67	6.8%
	HEB	bag	15	21.4%
		container	26	36.0%
		food tray	10	13.5%
		food wrap	21	29.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Hefty	plastic pieces	295	100.0%
	Heinz	cardboard	10	3.1%
		condiment pack	239	72.5%
		cup	10	2.9%
		food wrap	37	11.1%
		package	13	4.0%
		aluminum foil product packet	21	6.5%
	Hershey's	candy	67	12.5%
		food	55	10.4%
		food wrap	269	50.5%
		miscellaneous	11	2.1%
		snack wrap	119	22.4%
		wrapping paper	10	2.0%
	Hostess	food wrap	84	28.4%
		snack wrap	210	71.6%
	Jack in the Box	bag	169	12.1%
		bowl	10	0.7%
		condiment pack	524	37.5%
		corrugated box piece	26	1.9%
		cup	26	1.9%
		cup and straw	28	2.0%
		feed sack	36	2.6%
		food tray	11	0.8%
		food wrap	508	36.3%
		pudding	9	0.6%
		receipt	9	0.6%
		wrap	10	0.7%
		packaging product	32	2.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Janet Lee	snack wrap	21	100.0%
	Keebler	food	11	13.1%
		food wrap	73	86.9%
	Kentucky Fried Chicken	bag	66	18.9%
		cardboard piece	52	15.0%
		condiment pack	45	13.0%
		container	12	3.5%
		cup	11	3.1%
		cup and straw	12	3.4%
		cup pieces	30	8.5%
		feed sack	11	3.3%
		food wrap	109	31.4%
	Kroger	bag	53	50.6%
		container	37	34.9%
		receipt	15	14.5%
	Lance	food wrap	45	33.9%
		miscellaneous	11	8.6%
		snack wrap	77	57.6%
	Little Debbie	box piece	10	2.6%
		food	48	13.0%
		food wrap	146	39.4%
		funnel	30	8.2%
		snack wrap	136	36.8%
	M & M	candy	166	48.9%
		food wrap	91	26.8%
		miscellaneous	11	3.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	M & M	snack wrap	60	17.8%
		packaging product	11	3.2%
	Mars	candy	56	43.8%
		food wrap	61	47.8%
		packaging product	11	8.4%
	McDonalds	bag	389	9.1%
		box piece	13	0.3%
		carton	26	0.6%
		condiment pack	552	12.9%
		cup	242	5.7%
		cup and straw	13	0.3%
		cup lid	10	0.2%
		cup pieces	46	1.1%
		feed sack	76	1.8%
		fluff	10	0.2%
		foil tape	10	0.2%
		food tray	23	0.5%
		food wrap	2443	57.0%
		package	13	0.3%
		paper cup	381	8.9%
		salt pack	10	0.2%
		wrapping paper	10	0.2%
		food take out style container	21	0.5%
	Milky Way	candy	117	48.2%
		food wrap	54	22.3%
		snack wrap	71	29.5%
	Mrs. Baird	candy	13	5.2%
		food wrap	95	39.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Mrs. Baird	miscellaneous	11	4.7%
		plastic	23	9.7%
		snack wrap	99	41.0%
	Nabisco	box piece	11	3.5%
		candy	10	3.1%
		feed sack	21	6.7%
		food wrap	10	3.1%
		paper	156	50.4%
		snack wrap	103	33.3%
	Nestle	candy	134	50.7%
		food wrap	81	30.6%
		miscellaneous	11	4.3%
		snack wrap	29	11.0%
		water jug	9	3.3%
	Oak Farm	food wrap	21	100.0%
	Ozarka	label	7	10.9%
		plastic	52	76.4%
		water jug	9	12.7%
	Planters	bag	12	3.6%
		food wrap	99	29.5%
		package	10	3.1%
		snack wrap	176	52.0%
		wrap	31	9.3%
		aluminum foil product packet	9	2.6%
	Popeye's	bag	37	13.5%
		container pieces	13	4.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Popeye's	cup	61	22.5%
		food tray	10	3.9%
		food wrap	37	13.6%
		paper	104	38.5%
		paper cup	9	3.2%
	Reese's	candy	176	47.7%
		food wrap	57	15.4%
		miscellaneous	23	6.2%
		snack wrap	104	28.3%
		candy wrapper	9	2.4%
	Sam's	can	10	13.0%
		candy	10	13.0%
		food wrap	13	17.6%
		pizza box	11	15.4%
		receipt	30	41.1%
	Slim Jim	food wrap	127	42.5%
		miscellaneous	11	3.8%
		snack wrap	149	50.0%
		packaging product	11	3.6%
	Snickers	candy	310	35.2%
		food	11	1.3%
		food wrap	341	38.7%
		snack wrap	208	23.7%
		wrap	10	1.2%
	Sonic	bag	92	5.7%
		candy	26	1.6%
		carton	9	0.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Sonic	condiment pack	353	22.0%
		feed sack	92	5.7%
		food tray	32	2.0%
		food wrap	699	43.5%
		paper	287	17.8%
		paper cup	17	1.1%
	Starburst	food wrap	15	18.7%
		miscellaneous	11	14.0%
		snack wrap	45	54.8%
		candy wrapper	10	12.5%
	Subway	bag	51	20.4%
		food wrap	176	70.1%
		paper cup	9	3.5%
		snack wrap	15	6.0%
	Sunkist	snack wrap	11	100.0%
	Sunny Delight	bag	10	100.0%
	Taco Bell	bag	105	8.6%
		condiment pack	546	44.5%
		feed sack	34	2.8%
		food wrap	454	37.0%
		paper	78	6.4%
		packaging product	9	0.7%
	Taco Cabana	bag	11	12.6%
		condiment pack	40	44.4%
		container	11	12.2%
		food wrap	28	30.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Three Musketeers	food wrap	13	100.0%
	Tom Thumb	bag	15	100.0%
	Tom's	food wrap	21	66.7%
		packaging product	11	33.3%
	Town and Country	condiment pack	21	73.7%
		filling station napkin	7	26.3%
	Wal-mart	bag	263	73.0%
		box piece	26	7.3%
		cat	11	3.1%
		food tray	10	2.7%
		food wrap	29	8.1%
		receipt	10	2.9%
		snack wrap	11	3.1%
	Wendy's	bag	40	3.7%
		cloth, vinyl	26	2.4%
		condiment pack	130	12.0%
		cup	50	4.6%
		cup and straw	10	0.9%
		cup pieces	11	1.1%
		feed sack	10	1.0%
		food wrap	365	33.6%
		glove	43	4.0%
		paper	209	19.2%
		paper pieces	104	9.6%
		paper towel	78	7.2%
		plastic pieces	9	0.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Whataburger	bag	357	32.8%
		condiment pack	176	16.2%
		cup and straw	46	4.2%
		cup pieces	11	1.0%
		food wrap	230	21.2%
		paper	261	23.9%
		paper cup	9	0.8%
	Wilson's	plastic pieces	22	100.0%
	Winn Dixie	plate	13	100.0%
	Wrigley's	candy	10	2.7%
		food	33	9.3%
		food wrap	30	8.3%
		gum wrap	258	72.0%
		snack wrap	28	7.8%
	Ziploc	bag	273	100.0%
	Unknown	apple	9	0.1%
		bag	734	6.7%
		bottle	38	0.4%
		bottle cap	10	0.1%
		bottle rings	10	0.1%
		bow	10	0.1%
		bowl	31	0.3%
		box piece	22	0.2%
		can	472	4.3%
		candy	62	0.6%
		cardboard piece	107	1.0%
		carton	11	0.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Unknown	cellophane storage bags	39	0.4%
		chop stick	11	0.1%
		clam shell	114	1.0%
		condiment pack	488	4.5%
		container	275	2.5%
		container pieces	126	1.2%
		corrugated cardboard	21	0.2%
		cup	555	5.1%
		cup and straw	21	0.2%
		cup holder	19	0.2%
		cup lid	363	3.3%
		cup pieces	1428	13.1%
		drinking straw	1155	10.6%
		drinking straw wrapper	15	0.1%
		foil	229	2.1%
		food	41	0.4%
		food tray	47	0.4%
		food wrap	1705	15.6%
		funnel	26	0.2%
		grocery bag	19	0.2%
		gum wrap	51	0.5%
		ice bag	96	0.9%
		keg	87	0.8%
		lid	156	1.4%
		lid with straw	21	0.2%
		miscellaneous	91	0.8%
		package	26	0.2%
		pallet strap	77	0.7%
		paper cup	128	1.2%
		paper pieces	751	6.9%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Unknown	pill bottle	10	0.1%
		pizza box	41	0.4%
		plastic	51	0.5%
		plastic pieces	210	1.9%
		plate	119	1.1%
		polystyrene insulation	10	0.1%
		popsicle stick	86	0.8%
		salt pack	25	0.2%
		snack wrap	186	1.7%
		tinlid	20	0.2%
		utensil	216	2.0%
		utility knife	42	0.4%
		pumpkin seeds	11	0.1%
		napkin	30	0.3%
		food take out style container	10	0.1%
		food container seal	10	0.1%
		plastic eating utensil	11	0.1%
		coffee stirrer	11	0.1%
		Unknown	111	1.0%
	Chee-tos	bag	146	23.8%
		feed sack	10	1.7%
		food	9	1.4%
		food wrap	99	16.0%
		snack wrap	351	57.1%
	Hunts	bottle	15	4.3%
		can	15	4.3%
		condiment pack	128	36.0%
		food wrap	183	51.2%
		snack wrap	15	4.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	HI-C	drink pouch	27	100.0%
	Pringles	container	15	12.7%
		food wrap	46	38.7%
		snack wrap	47	39.8%
		tinlid	10	8.7%
	Long John Silvers	condiment pack	67	75.3%
		container	11	12.9%
		cup and straw	10	11.8%
	Misty	bag	58	81.8%
		ice bag	13	18.2%
	Reddy Ice	bag	69	27.7%
		food wrap	10	4.1%
		ice bag	135	54.3%
		snack wrap	35	14.0%
	Dairy Queen	bag	60	16.3%
		condiment pack	59	16.1%
		feed sack	13	3.4%
		food wrap	235	64.1%
	Dixie	plate	15	100.0%
	Milk Duds	candy	13	100.0%
	Chicken Express	food wrap	34	100.0%
	Pemmican	gum wrap	11	100.0%
	Bake-Ens	candy	13	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Ruffles	bag	15	26.1%
		feed sack	10	17.9%
		food	11	19.0%
		food wrap	21	36.9%
	John Deere	food wrap	10	7.0%
		paper cup	128	93.0%
	Hill Country	bag	9	100.0%
	Wonka's	snack wrap	12	100.0%
	Cheese Nips	bag	30	23.7%
		cardboard	10	8.1%
		food wrap	13	9.8%
		snack wrap	75	58.3%
	Bud Light	candy	10	100.0%
	Fruit & Grain	cup	39	37.8%
		food wrap	21	20.7%
		snack wrap	43	41.5%
	Frigo	food wrap	13	34.9%
		pizza box	12	32.6%
		Unknown	12	32.6%
	Ring Pop	snack wrap	12	100.0%
	Tootsie Roll	carton	11	48.4%
		snack wrap	12	51.6%
	Kellogg's	box piece	27	21.1%
		cardboard piece	10	8.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Kellogg's	food wrap	24	18.9%
		snack wrap	65	51.7%
	Jolly Rancher	candy	105	71.2%
		food wrap	32	21.8%
		wrap	10	7.1%
	Hill Country Fair	bag	32	23.2%
		food wrap	79	58.4%
		pudding	25	18.5%
	Double Bubble	candy	10	58.3%
		gum wrap	7	41.7%
	Trident	bubble wrap	13	5.8%
		candy	19	8.5%
		food	22	9.8%
		food wrap	15	6.8%
		gum wrap	111	49.2%
		snack wrap	45	19.8%
	Jazzercise	bag	30	100.0%
	Pizza Hut	box piece	12	9.8%
		food tray	11	8.9%
		food wrap	29	24.2%
		menu	20	16.4%
		pizza box	49	40.7%
	Kraft	can	15	10.2%
		condiment pack	31	20.9%
		container	15	10.2%
		food wrap	11	7.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Kraft	snack wrap	77	51.3%
	Moon Pies	bag	24	34.1%
		feed sack	10	14.6%
		food wrap	13	18.3%
		miscellaneous	11	16.0%
		snack wrap	12	17.0%
	Grandy's	snack wrap	9	100.0%
	Twix	candy	96	44.0%
		food	11	5.1%
		food wrap	56	25.5%
		snack wrap	55	25.4%
	Sun-Maid	paper	9	46.2%
		packaging product	10	53.8%
	Kit Kat	candy	153	79.8%
		food wrap	39	20.2%
	Bengal	utensil	10	100.0%
	Jack Links	food wrap	98	47.7%
		miscellaneous	11	5.5%
		snack wrap	96	46.7%
	Slim Fast	carton	15	59.3%
		snack wrap	10	40.7%
	Junior Mints	candy	11	100.0%
	Fiesta Mart	bag	90	89.3%
		snack wrap	11	10.7%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Pyramid	food wrap	11	100.0%
	Power Block	bottle cap, wine	9	100.0%
	Chick Fil-A	bag	45	17.3%
		box piece	9	3.3%
		carton	37	14.0%
		condiment pack	33	12.7%
		container	13	5.0%
		food wrap	116	44.4%
		paper cup	9	3.3%
	Lifesavers	candy	22	59.9%
		food wrap	15	40.1%
	Blow Pop	candy	33	100.0%
	Quaker	food	11	12.9%
		food wrap	32	36.9%
		snack wrap	43	50.2%
	Domino's	condiment pack	9	24.6%
		pizza box	27	75.4%
	Sour Punch	candy	10	33.3%
		snack wrap	21	66.7%
	Sun Mart	cup	49	100.0%
	Good Day	snack wrap	12	100.0%
	Lunchables	box piece	9	13.2%
		container	23	35.5%
		food wrap	11	16.9%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Lunchables	snack wrap	23	34.4%
	Nesquick	bottle	12	100.0%
	Chesterfried	bag	15	100.0%
	Hartz	food wrap	11	100.0%
	Polar Ice	bag	15	15.2%
		ice bag	75	74.4%
		snack wrap	10	10.4%
	Dollar General	snack wrap	10	100.0%
	Lay's	bag	80	18.0%
		feed sack	45	10.1%
		food wrap	108	24.2%
		miscellaneous	11	2.6%
		snack wrap	201	45.1%
	Twizzlers	candy	35	75.6%
		snack wrap	11	24.4%
	Airhead	candy	33	61.9%
		foil	13	24.3%
		food wrap	7	13.9%
	Sara Lee	food wrap	21	39.9%
		snack wrap	32	60.1%
	Little Ceasar's	cardboard piece	13	13.3%
		feed sack	11	11.7%
		food tray	12	12.4%
		food wrap	51	51.9%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Little Ceasar's	pizza box	10	10.7%
	Bill Miller	condiment pack	48	100.0%
	Owen's	food wrap	10	100.0%
	Peter Piper	pizza box	24	100.0%
	Chick-O-Stick	candy	23	65.4%
		food wrap	12	34.6%
	Bit-O-Honey	candy	12	25.0%
		snack wrap	37	75.0%
	Walgreen's	bag	53	84.7%
		bottle	10	15.3%
	Love's	condiment pack	15	56.4%
		cup	12	43.6%
	Shipley's Donuts	bag	32	33.3%
		grocery bag	37	37.6%
		paper towel	13	13.4%
		receipt	15	15.7%
	Whoppers	candy	21	20.1%
		food	83	79.9%
	Mounds	candy	11	34.4%
		food wrap	10	29.0%
		snack wrap	12	36.7%
	Now & Later	candy	32	73.8%
		snack wrap	11	26.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	Campbell's	can	39	78.1%
		container	11	21.9%
	Alamo Street	food wrap	13	100.0%
	Bugles	bag	12	100.0%
	Dunkin Donuts	bag	15	100.0%
	Funyun's	food wrap	56	56.8%
		snack wrap	43	43.2%
	Dasani	food wrap	11	100.0%
	community coffee	food	9	100.0%
	clear plastic wrap	wrap	73	100.0%
	drinking straw no brand	drinking straw	85	100.0%
	paper straw wrapper	drinking straw wrapper	37	100.0%
	plastic garbage bag	candy	9	100.0%
	plastic ice bag	ice bag	61	100.0%
	plastic cup lids	cup lid	134	100.0%
	plastic drink cups	cup	73	100.0%
	hunts brothers pizza	carton	37	100.0%
	oreo cookie wrapper	food wrap	24	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	blue bunny ice cream wrapper	food wrap	24	100.0%
	sabritones	food wrap	12	100.0%
	plastic cup lids	cup lid	85	100.0%
	ensure	health item	12	100.0%
	fanta	plastic	10	100.0%
	back to nature	food wrap	10	100.0%
	target	package	13	100.0%
	starbucks coffee	cup	104	69.7%
		food wrap	32	21.5%
		package	13	8.7%
	oscar meyer	food wrap	13	100.0%
	carls jr	food wrap	13	100.0%
	heath	candy	24	100.0%
	lemon heads	candy	45	100.0%
	mr goodbar	candy	24	100.0%
	taco bueno	food tray	13	37.8%
		food wrap	21	62.2%
	drumstick	food wrap	11	100.0%
	race trac	food wrap	32	75.0%
		snack wrap	11	25.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	stride	gum wrap	11	100.0%
	fancy ketchup	condiment pack	11	100.0%
	munchos	food wrap	11	100.0%
	oreos	food wrap	11	100.0%
	hot pocket	food wrap	11	100.0%
	jimmy dean	box piece	11	100.0%
	fruit gushers	snack wrap	11	100.0%
	clover hill	food wrap	11	100.0%
	charmin	food wrap	11	50.0%
		snack wrap	11	50.0%
	japones	snack wrap	11	100.0%
	bimbo	snack wrap	32	100.0%
	skittles	candy	21	100.0%
	1000 grand	candy	11	100.0%
	risen	candy	11	100.0%
	crunch and munch	snack wrap	11	100.0%
	raisinettes	candy	11	50.0%
		snack wrap	11	50.0%
	russell stovers	candy	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	walgreens	snack wrap	11	100.0%
	pop tart	candy wrapper	21	100.0%
	cracker jack	snack wrap	11	100.0%
	eclipse	gum wrap	21	100.0%
	orbit	gum wrap	21	100.0%
	double mint	gum wrap	11	100.0%
	krystal	snack wrap	11	100.0%
	extra	gum wrap	11	100.0%
	thriftway	bag	10	100.0%
	shurfine	condiment pack	7	100.0%
	skydancer	pornography	21	100.0%
	stars and stripes	package	10	100.0%
	monster rockstar	lid with straw	10	100.0%
	armour	ice bag	10	100.0%
	bubblicious gum	food wrap	10	58.3%
		gum wrap	7	41.7%
	apple computer	package	10	100.0%
	murphys restaurant	menu	7	41.7%
		plastic	10	58.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	chex mix	can	13	63.6%
		snack wrap	7	36.4%
	portion pak inc	condiment pack	28	100.0%
	sunbelt foods	food wrap	7	100.0%
	austin toasty crackers	food wrap	7	100.0%
	nerds candy	carton	7	46.2%
		packaging product	9	53.8%
	general mills fiber bag	food wrap	7	100.0%
	starkist	container	10	100.0%
	hardees	cup	10	100.0%
	flying j	cup	10	100.0%
	yoplait	bottle top foil wrap	10	50.0%
		packaging product	10	50.0%
	cesar canine cuisine	bottle top foil wrap	10	50.0%
		packaging product	10	50.0%
	armour feeds	can	10	100.0%
	ex3 energy burst	pill wrap	10	100.0%
	crystal light	aluminum foil product packet	10	100.0%
	sweetheart	cup lid	10	100.0%
	david	aluminum foil product packet	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	blue bunny	aluminum foil product packet	10	48.6%
		packaging product	11	51.4%
	skittles	aluminum foil product packet	10	32.7%
		packaging product	21	67.3%
	upstate farms	packaging product	9	100.0%
	carls jr	packaging product	9	100.0%
	dannon	food container seal	9	100.0%
	harvest	packaging product	9	100.0%
	deli express	food wrap	9	100.0%
	popcorn chicken	packaging product	11	100.0%
	fresh choices (valero)	packaging product	11	100.0%
	payday	aluminum foil product packet	11	100.0%
	popsicle	packaging product	11	100.0%
	bimbo	packaging product	11	100.0%
	dela ross	packaging product	21	100.0%
	import solutions	packaging product	11	100.0%
	mike ike candy	packaging product	11	100.0%
	HUNT BROS PIZZA	pizza box	9	100.0%
	RICKS	food wrap	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Food	MARUCHAN	food wrap	9	100.0%
	BRAND 1150	pizza box	26	100.0%
	DOVE BAR	food wrap	13	100.0%
	5 HOUR ENERGY	drink pouch	9	100.0%
	WORLDS FINEST	candy	9	100.0%
	BUC EES	paper cup	9	100.0%
	TURTLE CANDY WRAP	candy	10	100.0%
	SWEETHART	lid	9	100.0%
	SPRING H2O	water jug	9	100.0%
	DASKIN	water jug	9	100.0%
	TROLLI	candy	9	100.0%
	premier	packaging product	10	100.0%
	jack links	packaging product	10	100.0%
	extra gum	aluminum foil product packet	10	100.0%
	fancy	condiment pack	30	100.0%
	glad	food storage bag	10	100.0%
	premium ice	ice bag	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Band-aids	bandage	11	100.0%
	Bic	bag	10	13.3%
		marker	10	12.2%
		pen	24	30.0%
		pen top	23	29.0%
		top	12	15.5%
	Big Red	bubble wrap	219	100.0%
	Braum's	bag	11	100.0%
	Burger King	coupon	10	48.5%
		paper cup	11	51.5%
	Charms	tissue/towel	52	100.0%
	Clorox	bottle	33	100.0%
	Country Club	marker	12	100.0%
	Crest	cardboard	11	34.0%
		tooth paste	21	66.0%
	Dillard's	bag	11	100.0%
	Energizer	battery	22	65.7%
		box piece	11	34.3%
	General Electric	glass, broken	12	100.0%
	Halls	paper pieces	37	100.0%
	HEB	bag	104	18.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	HEB	paper pieces	365	63.5%
		plastic	79	13.7%
		plastic pieces	17	3.0%
		snack wrap	10	1.8%
	Hefty	bag	85	75.4%
		garbage bag (empty)	13	11.2%
		garbage bag (full)	15	13.5%
	Home Interiors	ceramic piece	11	31.4%
		grocery bag	23	68.6%
	Kleenex	container	11	100.0%
	K-mart	bag	11	100.0%
	Kodak	film canister	13	24.7%
		foil	10	19.2%
		photo	30	56.1%
	Kroger	glove	42	61.5%
		grocery bag	26	38.5%
	Magnum	condom pack	21	100.0%
	McDonalds	paper cup	11	100.0%
	Mrs. Baird	plastic	10	100.0%
	Panasonic	box piece	11	100.0%
	Rolaids	medicine container	7	100.0%
	State of Texas	corrugated box piece	52	52.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	State of Texas	cough drops	15	14.6%
		mail	23	22.9%
		sheet	10	10.2%
	Subway	tissue/towel	122	100.0%
	Texaco	bag	22	100.0%
	Town and Country	cup	11	42.1%
		grocery bag	15	57.9%
	Trojan	condom pack	41	63.5%
		condoms	24	36.5%
	Tylenol	bottle	11	13.8%
		pill bottle	13	15.2%
		pill container	11	12.9%
		pill wrap	48	58.1%
	Vics Vapor Rub	bottle	10	100.0%
	Visine	container	10	44.1%
		miscellaneous	12	55.9%
	Wal-mart	bag	504	63.2%
		cardboard piece	10	1.3%
		container	11	1.4%
		furniture	15	1.9%
		grocery bag	42	5.2%
		pill bottle	31	3.9%
		pill wrap	21	2.6%
		plastic	82	10.3%
		plastic pieces	33	4.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Wal-mart	receipt	37	4.6%
		Unknown	11	1.4%
	Wendy's	corrugated box piece	17	15.0%
		paper pieces	11	9.9%
		plastic pieces	70	60.1%
		tape	17	15.0%
	Whataburger	sock	11	100.0%
	Winchester	cardboard	9	23.2%
		shotgun shell	29	76.8%
	Ziploc	bag	23	40.2%
		cardboard piece	11	20.1%
		note pad	10	18.4%
		plastic pieces	12	21.4%
	Unknown	ac filter	93	0.2%
		air freshner	24	0.0%
		aluminum wrap	372	0.7%
		audio cassette	49	0.1%
		baby nipple	11	0.0%
		bag	2793	5.5%
		balloon	166	0.3%
		bandage	83	0.2%
		bandana	10	0.0%
		battery	123	0.2%
		battery part	11	0.0%
		bedding	12	0.0%
		block	21	0.0%
		bottle	24	0.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	bottle cap	408	0.8%
		bowl	22	0.0%
		box piece	69	0.1%
		broom	9	0.0%
		bubble wrap	53	0.1%
		bucket	10	0.0%
		calendar	30	0.1%
		camo netting	31	0.1%
		candle holder	44	0.1%
		card	38	0.1%
		card, business	45	0.1%
		cardboard	30	0.1%
		cardboard piece	994	2.0%
		carpet	77	0.2%
		cd	387	0.8%
		CD wrap	160	0.3%
		cellophane storage bags	107	0.2%
		ceramic piece	117	0.2%
		cloth, vinyl	106	0.2%
		coloring book	11	0.0%
		comb	33	0.1%
		computer part	10	0.0%
		condom pack	21	0.0%
		condoms	12	0.0%
		container	83	0.2%
		container pieces	26	0.1%
		cooler lid	35	0.1%
		cooler pieces	1963	3.9%
		corrugated box	39	0.1%
		corrugated box piece	150	0.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	corrugated cardboard	64	0.1%
		cotton	61	0.1%
		cotton balls	1696	3.4%
		cotton fluff	20	0.0%
		crayon	42	0.1%
		credit card	59	0.1%
		cup	47	0.1%
		cup lid	356	0.7%
		diaper	451	0.9%
		drinking glass	10	0.0%
		drinking straw	54	0.1%
		dryer sheet	116	0.2%
		duct tape	28	0.1%
		ear protection	24	0.0%
		extension cord	31	0.1%
		eye glasses	42	0.1%
		filling station napkin	10	0.0%
		film canister	23	0.0%
		flag	11	0.0%
		flashlight	22	0.0%
		foam	32	0.1%
		foam block	118	0.2%
		foil	126	0.2%
		foil tape	66	0.1%
		furniture	34	0.1%
		fuse	10	0.0%
		garbage bag (empty)	53	0.1%
		garbage bag (full)	24	0.0%
		garden container	22	0.0%
		garment bag	30	0.1%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	gift wrap	49	0.1%
		glass earpieces	11	0.0%
		glass frames	11	0.0%
		glass, broken	31	0.1%
		glove	616	1.2%
		golf ball	105	0.2%
		grocery bag	39	0.1%
		hair beret	11	0.0%
		hair net	23	0.0%
		hard hat	23	0.0%
		hari brush	49	0.1%
		hpodermic needle	15	0.0%
		key	9	0.0%
		knife	67	0.1%
		lid	129	0.3%
		lipstick	33	0.1%
		lock	23	0.0%
		lottery ticket	359	0.7%
		mail	123	0.2%
		map	35	0.1%
		marker	51	0.1%
		mask	30	0.1%
		medicine container	201	0.4%
		medicine container	109	0.2%
		medicine dropper	13	0.0%
		miscellaneous	196	0.4%
		mouth wash bottle	26	0.1%
		note pad	44	0.1%
		office supplies	46	0.1%
		pacifier	23	0.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	package	56	0.1%
		packing material	55	0.1%
		packing tape	7	0.0%
		paint lid	13	0.0%
		pants	46	0.1%
		pantyhose	23	0.0%
		paper	15307	30.3%
		paper cup	33	0.1%
		paper pieces	2901	5.7%
		paper towel	3225	6.4%
		part	10	0.0%
		particle board	33	0.1%
		pen	21	0.0%
		pen top	20	0.0%
		pencil	13	0.0%
		pie tin	11	0.0%
		pill bottle	68	0.1%
		pill container	39	0.1%
		pill wrap	10	0.0%
		plant box	11	0.0%
		plastic	72	0.1%
		plastic pieces	1612	3.2%
		plastic sheets	85	0.2%
		plate	297	0.6%
		plywood	21	0.0%
		pornography	15	0.0%
		pvc	17	0.0%
		q-tip	286	0.6%
		rag	125	0.2%
		receipt	22	0.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	ribbon	34	0.1%
		rubberband	470	0.9%
		sheet	10	0.0%
		shell casing	10	0.0%
		shingles	23	0.0%
		shirt	314	0.6%
		shoe	114	0.2%
		shoe insole	50	0.1%
		shoe lace	60	0.1%
		shop rag	23	0.0%
		six pack ring	57	0.1%
		skirt	55	0.1%
		snack wrap	11	0.0%
		sock	199	0.4%
		speaker cover	12	0.0%
		sponge	33	0.1%
		strap	12	0.0%
		string	18	0.0%
		sunglass rims	53	0.1%
		sunglasses	76	0.2%
		tampon	23	0.0%
		tape	13	0.0%
		tissue/towel	7921	15.7%
		towel holder	157	0.3%
		toy	77	0.2%
		t-shirts	164	0.3%
		tube	7	0.0%
		twist tie	10	0.0%
		underwear	68	0.1%
		video tape	12	0.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Unknown	wallet	12	0.0%
		wash cloth	87	0.2%
		wire	15	0.0%
		wrap	20	0.0%
		newspaper bag	85	0.2%
		wrapping paper	25	0.0%
		brush	11	0.0%
		chapstick	11	0.0%
		mop	7	0.0%
		shower curtain	7	0.0%
		scissors	7	0.0%
		napkin	25	0.0%
		aluminum foil product packet	10	0.0%
		firecracker, pyrotechnic	10	0.0%
		packaging product	10	0.0%
		trash bag drawstring	10	0.0%
		paper towel roll	10	0.0%
		play money, novelty bills	294	0.6%
		food storage bag	76	0.1%
		food container seal	86	0.2%
		dog leash	11	0.0%
		CD Player	10	0.0%
		Beach Ball	9	0.0%
		Unknown	44	0.1%
	HI-C	drink pouch	7	100.0%
	Dairy Queen	paper pieces	11	100.0%
	Dixie	container	59	100.0%
	Southwestern Bell	paper	12	50.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Southwestern Bell	phone book	12	50.0%
	John Deere	hair net	12	100.0%
	Bounty	bandage	15	100.0%
	Bud Light	cooler pieces	438	100.0%
	Compass Bank	balloon	10	44.1%
		paper pieces	12	55.9%
	Pizza Hut	menu	219	100.0%
	Lifestyles	condom pack	26	100.0%
	RAIN-X	plastic	8	100.0%
	Benadryl	miscellaneous	10	100.0%
	Blistex	miscellaneous	12	36.2%
		chapstick	21	63.8%
	GAP	Unknown	12	100.0%
	Comet Cleaners	can	12	100.0%
	Federal	sandpaper	10	100.0%
	Dollar General	bag	15	35.0%
		grocery bag	28	65.0%
	Husky	garbage bag (empty)	8	13.3%
		garbage bag (full)	49	86.7%
	Sylvania	light bulb	13	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	Auto Trader	book	12	100.0%
	Marvel	calendar	10	100.0%
	Walgreen's	bag	34	30.4%
		medicine container	15	13.2%
		pill bottle	23	20.7%
		pill container	24	21.9%
		receipt	15	13.8%
	Advil	medicine container	34	35.8%
		medicine container	15	15.5%
		pill container	13	13.9%
		pill wrap	23	24.0%
		packaging product	10	10.8%
	Instapack	cooler pieces	10	100.0%
	Igloo	cooler lid	23	48.1%
		cooler pieces	24	51.9%
	Fischer Price	toy	11	100.0%
	Hanes	shirt	8	26.1%
		underwear	24	73.9%
	Rubber Maid	glove	10	100.0%
	Remington	box piece	11	53.5%
		shotgun shell	10	46.5%
	Petsmart	bag	11	100.0%
	liquid nails	Unknown	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	ceiling tiles	Unknown	9	100.0%
	sweater cap	Unknown	12	100.0%
	hair comb	comb	12	100.0%
	plastic garbage bag	garbage bag (empty)	37	100.0%
	shoe	shoe	12	100.0%
	christmas gift wrap	gift wrap	24	100.0%
	latex glove	glove	37	100.0%
	condom	condoms	12	100.0%
	white cloud baby diaper	diaper	12	100.0%
	plastic trash can lid	trash can lid	12	100.0%
	memorex plastic cd	cd	12	100.0%
	bucees	condiment pack	10	100.0%
	equate floss	Unknown	10	100.0%
	target	cloth, vinyl	26	100.0%
	red door	perfume bottle	13	100.0%
	nike	shoe	13	100.0%
	huggies	diaper	11	100.0%
	dolce and gabbana	perfume bottle	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	pierre dumas	shoe	11	100.0%
	sony	battery part	11	100.0%
	callaway	golf ball	11	100.0%
	pinnacle	golf ball	11	100.0%
	cdc	golf ball	11	100.0%
	cvs	tissue/towel	11	100.0%
	spring llc	grocery bag	10	100.0%
	aleve	hub cap	13	63.6%
		pill bottle	7	36.4%
	motrin	pill wrap	10	100.0%
	aircomm	shoe	10	100.0%
	gead sense	medicine container	10	100.0%
	home depot	pencil	9	100.0%
	masenite	food storage bag	9	100.0%
	samsung	cell phone	11	100.0%
	topflight	packaging product	11	100.0%
	beckton dickeson	packaging product	11	100.0%
	germ x	packaging product	11	100.0%
	tdk	cd	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Household/Personal	fbi	Window Screen	11	100.0%
	ANGELS	baseball card	9	100.0%
	MICROTEX	tissue/towel	9	100.0%
	ROBERT STOCK	shirt	9	100.0%
	PLANET BEACH	mail	9	100.0%
	FOAM RUBBER RUBBER GLOVE	foam block	39	100.0%
	CLOTHES HANGER	wire	13	100.0%
	PLASTIC PIECES	plastic pieces	39	100.0%
	CD WRAPPER	CD wrap	13	100.0%
	RUFFLES	mail	13	100.0%
	HOT WHEELS PACK	toy	13	100.0%
	BLUE TOWEL	rag	9	100.0%
	ALUMINUM FOIL	aluminum wrap	17	100.0%
	BOUNCE	Fabric Softener	9	100.0%
	chapstick	lip balm	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	7-Eleven	cup	742	100.0%
	7-Up	soda can	242	100.0%
	A&W	bottle cap	10	5.7%
		soda bottle	36	19.5%
		soda can	137	74.8%
	Big Red	bottle	30	11.8%
		soda bottle	78	30.6%
		soda can	146	57.6%
	Braum's	cup	15	31.2%
		paper cup	32	68.8%
	Burger King	cup	241	50.3%
		cup and straw	26	5.3%
		cup pieces	37	7.6%
		drinking straw	73	15.2%
		lid	10	2.0%
		paper cup	94	19.5%
	Capri Sun	drink pouch	292	100.0%
	Charms	soda can	50	100.0%
	Church's Chicken	cup	43	79.9%
		paper cup	11	20.1%
	Circle K	cup	256	84.4%
		cup and straw	37	12.0%
		hot beverage cup	11	3.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Clearly Canadian	beer bottle	11	33.7%
		bottle cap	11	33.7%
		packaging product	11	32.7%
	Clorox	soda bottle	85	100.0%
	Coca-Cola	bottle	240	4.2%
		bottle cap	11	0.2%
		box piece	11	0.2%
		can	455	8.0%
		cardboard piece	11	0.2%
		carton	30	0.5%
		cup	78	1.4%
		cup lid	44	0.8%
		cup pieces	13	0.2%
		paper cup	28	0.5%
		plate	15	0.3%
		soda bottle	1512	26.6%
		soda can	3198	56.3%
		Unknown	31	0.6%
	Cooler	can	21	100.0%
	Dr. Pepper	bottle	279	4.5%
		can	623	10.1%
		carton	35	0.6%
		cup	43	0.7%
		six pack container	10	0.2%
		soda bottle	2028	32.7%
		soda can	3181	51.3%
	Evian	bottle	47	61.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Evian	water jug	21	27.2%
		bottled water container	9	11.3%
	Fresca	can	10	33.9%
		soda can	20	66.1%
	Gatorade	bottle	898	57.2%
		bottle cap	48	3.1%
		label	64	4.1%
		soda bottle	527	33.6%
		sports drink(electrolytes0	32	2.1%
	Golden State	cup	9	100.0%
	Hawaiiin Punch	bottle	11	23.3%
		bottle cap	12	25.6%
		soda bottle	12	26.4%
		soda can	11	24.8%
	HEB	bottle	17	7.0%
		soda bottle	10	4.2%
		soda can	220	88.8%
	Jack in the Box	cup	138	36.4%
		cup and straw	48	12.6%
		cup lid	12	3.2%
		paper cup	181	47.7%
	Juicy Fruit	drink pouch	12	100.0%
	Kentucky Fried Chicken	cup	44	100.0%
	Kroger	bottle	11	45.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Kroger	popsicle stick	13	54.8%
	Lipton	bottle	118	34.0%
		bottles - broken	41	11.7%
		can	90	26.1%
		soda bottle	53	15.4%
	Lipton	soda can	44	12.7%
	McDonalds	bottle	9	0.7%
		cup	888	65.8%
		cup and straw	61	4.5%
		cup holder	13	0.9%
		cup pieces	82	6.1%
		drinking straw	19	1.4%
		drinking straw wrapper	11	0.8%
		paper cup	209	15.5%
		paper pieces	23	1.7%
		plastic pieces	13	1.0%
		soda can	10	0.8%
		smoking cessation packet	10	0.8%
	Minute Maid	bottle	123	42.0%
		carton	11	3.7%
		corrugated box	10	3.6%
		drink pouch	35	11.9%
		soda bottle	88	30.1%
		soda can	26	8.8%
	Mountain Dew	bottle	51	3.6%
		can	32	2.2%
		carton	15	1.1%
		container	11	0.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Mountain Dew	soda bottle	590	41.3%
		soda can	730	51.1%
	Mr.Pibb	can	13	8.1%
		cup	10	6.3%
		soda bottle	44	27.7%
		soda can	93	57.9%
	Nestea	bottle	21	12.9%
		can	30	19.1%
		cup	52	32.8%
		soda bottle	33	20.9%
		soda can	23	14.3%
	Nestle	bottle	410	68.6%
		label	11	1.9%
		lid	10	1.6%
		soda bottle	111	18.5%
		soda can	10	1.7%
		wrap	26	4.4%
		bottled water container	19	3.3%
	Night Train	soda bottle	15	100.0%
	NuGrape	soda bottle	11	50.0%
		soda can	11	50.0%
	Oak Farm	bottle	207	75.6%
		carton	11	4.2%
		drinking glass	45	16.5%
		water jug	10	3.7%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Ocean Spray	bottle	34	73.4%
		soda can	12	26.6%
	Ozarka	bottle	1069	92.1%
		soda bottle	91	7.9%
	Pepsi	bottle	56	3.4%
		bottle cap	72	4.4%
		can	150	9.2%
		cup	11	0.7%
		cup lid	10	0.6%
		paper cup	17	1.1%
		plastic	11	0.7%
		soda bottle	419	25.7%
		soda can	870	53.5%
		Unknown	10	0.6%
	Peter Paul	soda can	21	100.0%
	Popeye's	cup	70	76.6%
		paper cup	21	23.4%
	Power Aid	bottle	47	38.4%
		soda bottle	45	36.6%
		energy drink	30	24.9%
	RC Cola	bottle	24	13.0%
		soda bottle	22	12.0%
		soda can	137	75.0%
	Sam's	bottle	116	30.6%
		can	10	2.5%
		corrugated box	11	3.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Sam's	soda bottle	99	26.0%
		soda can	124	32.5%
		bottled water container	20	5.3%
	Snapple	bottle	32	58.3%
		glass pieces	10	19.2%
		glass, broken	12	22.5%
	Sonic	cup	1076	44.6%
		cup and straw	124	5.1%
		cup pieces	528	21.9%
		drinking straw wrapper	47	2.0%
		paper cup	526	21.8%
		popsicle stick	91	3.8%
		soda bottle	12	0.5%
		soda can	10	0.4%
	Sprite	bottle	175	12.0%
		can	95	6.5%
		carton	24	1.6%
		plate	15	1.0%
		soda bottle	673	46.1%
		soda can	479	32.8%
	Subway	cup	225	87.3%
		cup lid	11	4.4%
		paper cup	21	8.3%
	Sunkist	bottle	45	7.6%
		can	63	10.8%
		drink pouch	10	1.6%
		soda bottle	225	38.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Sunkist	soda can	242	41.4%
	Sunny Delight	bottle	60	100.0%
	Taco Bell	cup	253	76.5%
		cup pieces	12	3.7%
		miscellaneous	23	6.8%
		paper cup	43	13.0%
	Taco Cabana	cup	22	22.6%
		cup pieces	10	10.8%
		paper cup	64	66.6%
	Texaco	cardboard piece	15	57.1%
		cup	11	42.9%
	Town and Country	cup	111	83.6%
		cup pieces	12	8.8%
		hot beverage cup	10	7.6%
	Tropicana	bottle	70	100.0%
	V-8	bottle	20	26.0%
		cup lid	11	14.6%
		soda bottle	33	43.3%
		soda can	12	16.0%
	Very Fine	bottle	13	100.0%
	Wal-mart	bottle	122	39.3%
		can	93	29.9%
		cup	96	30.8%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Welches	bottle	44	43.5%
		carton	9	8.7%
		soda can	48	47.8%
	Wendy's	cup	123	25.7%
		cup and straw	117	24.4%
		cup lid	96	19.9%
		cup pieces	66	13.8%
		drinking straw wrapper	15	3.2%
		paper cup	54	11.2%
		plastic	9	1.8%
	Whataburger	cup	304	43.8%
		cup pieces	347	50.0%
		drinking straw wrapper	11	1.6%
		paper cup	32	4.6%
	Yoo Hoo	drink pouch	10	29.6%
		soda can	25	70.4%
	Unknown	bottle	2234	5.3%
		bottle cap	809	1.9%
		bottle rings	7	0.0%
		bottles - broken	9	0.0%
		can	245	0.6%
		cup	2535	6.0%
		cup and straw	695	1.7%
		cup holder	193	0.5%
		cup lid	4262	10.1%
		cup pieces	10262	24.4%
		drink pouch	83	0.2%
		drink ring	188	0.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Unknown	drinking glass	11	0.0%
		drinking straw	4924	11.7%
		drinking straw wrapper	187	0.4%
		glass, broken	30	0.1%
		lid	342	0.8%
		lid with straw	129	0.3%
		miscellaneous	11	0.0%
		paper cup	720	1.7%
		paper pieces	674	1.6%
		plastic	78	0.2%
		plastic pieces	6929	16.5%
		popsicle stick	261	0.6%
		receipt	249	0.6%
		shell casing	9	0.0%
		six pack	46	0.1%
		six pack ring	33	0.1%
		soda bottle	4930	11.7%
		soda can	774	1.8%
		top	13	0.0%
		water jug	20	0.0%
		energy drink	20	0.0%
		bottled water container	119	0.3%
		hot beverage cup	10	0.0%
		Unknown	39	0.1%
	HI-C	box piece	11	100.0%
	Long John Silvers	cup	11	100.0%
	Dairy Queen	cup	461	79.9%
		cup lid	11	1.9%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Dairy Queen	cup pieces	83	14.4%
		paper cup	21	3.7%
	Fargo	soda bottle	11	100.0%
	Dixie	cup	21	100.0%
	Chicken Express	cup	123	36.0%
		cup pieces	219	64.0%
	Amrep	can	12	100.0%
	Hill Country Fair	bottle	28	27.2%
		soda can	50	49.2%
		Unknown	24	23.7%
	Dr.B	bottle	9	23.8%
		soda can	28	76.2%
	Barq's	soda bottle	32	75.0%
		soda can	11	25.0%
	Pizza Hut	cup	11	100.0%
	Grandy's	paper cup	116	100.0%
	Slim Fast	can	11	24.7%
		soda can	34	75.3%
	Fruitopia	bottle	11	100.0%
	Tiger Mart	cup	48	100.0%
	Red Bull	can	433	27.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	Red Bull	soda can	1058	66.9%
		energy drink	91	5.8%
	TreeTop	bottle	12	100.0%
	PumpCo	soda can	57	100.0%
	Chick Fil-A	cup	36	31.6%
		cup lid	10	8.4%
		cup pieces	36	31.8%
		paper cup	32	28.2%
	Blow Pop	soda can	20	100.0%
	Blue Ox	Unknown	9	100.0%
	Texas Burger	cup	57	100.0%
	DejaBlue	bottle	243	84.1%
		bottle cap	23	7.9%
		cup lid	11	3.8%
		soda bottle	12	4.2%
	Borden	bottle	144	47.0%
		soda bottle	162	53.0%
	Nesquick	bottle	11	100.0%
	Squirt	soda bottle	10	48.5%
		soda can	11	51.5%
	Canada Dry	bottle	11	100.0%
	Easy Mart	cup	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	NDS	can	12	100.0%
	Sierra Mist	plastic pieces	26	41.1%
		soda bottle	24	38.4%
		soda can	13	20.5%
	Bill Miller	cup	9	100.0%
	Chucky Cheese	paper cup	24	100.0%
	American Dream	cup	13	100.0%
	Love's	cup	39	79.5%
		hot beverage cup	10	20.5%
	Shipley's Donuts	cup	10	100.0%
	Dasani	bottle	535	87.0%
		carton	15	2.5%
		label	32	5.1%
		soda bottle	26	4.2%
		wrap	7	1.2%
	Mellow Yellow	soda bottle	10	100.0%
	community coffee	cup	21	100.0%
	monster energy drink	soda can	73	100.0%
	crunk energy drink	soda can	12	100.0%
	big k	soda can	10	100.0%
	fanta	bottle cap	7	15.5%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	fanta	soda bottle	20	42.2%
		soda can	10	21.1%
		water jug	10	21.1%
	aquafina	bottle	10	34.0%
		water jug	20	66.0%
	baskin robins	cup	10	100.0%
	icee cup	cup	10	100.0%
	starbucks coffee	bottle	21	20.9%
		bottle cap	9	8.5%
		cup holder	11	10.5%
		paper cup	43	41.8%
		energy drink	10	9.9%
		hot beverage cup	9	8.5%
	qt	cup	56	100.0%
	java classics	cup	77	100.0%
	flying java	cup	13	100.0%
	aquafina	bottle	110	100.0%
	red door	plastic pieces	13	100.0%
	taco mayo	paper cup	11	100.0%
	pure life	bottle	86	100.0%
	race trac	cup	11	20.0%
		paper cup	43	80.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	target	cup	32	100.0%
	full throttle	bottle	21	100.0%
	barritos	soda bottle	107	100.0%
	monster	can	11	100.0%
	venom	can	11	100.0%
	walgreens	bottled water container	11	100.0%
	simply lemonade	bottle	21	66.7%
		soda bottle	11	33.3%
	redline	energy drink	11	100.0%
	spike	bottle	21	100.0%
	shepps	bottle	21	100.0%
	5-hour	energy drink	11	100.0%
	6-hour	energy drink	11	33.3%
		Unknown	21	66.7%
	4-hour	energy drink	43	100.0%
	pepsi one	soda can	21	100.0%
	thriftway	bottle	15	100.0%
	spring llc	bottle	7	100.0%
	shurfine	bottle	7	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	skys best	bottle	10	100.0%
	monster rockstar	energy drink	41	100.0%
	sprite lite	soda can	10	100.0%
	glaceau vitamin water	bottled water container	21	100.0%
	flying j	cup	10	33.3%
		hot beverage cup	20	66.7%
	aquafina	bottled water container	41	100.0%
	h2o on the go	bottles - broken	10	100.0%
	full throttle	energy drink	20	100.0%
	arizona iced tea	canned beverage	10	100.0%
	lowes grocery	soda can	10	100.0%
	chicos tacos	cup	10	100.0%
	clamato	bottle	11	100.0%
	casera beverages	soda bottle	11	100.0%
	g2 electrolyte drink	sports drink(electrolytes0	11	100.0%
	corner store	cup	21	100.0%
	weinershnitzel	cup	11	100.0%
	cappuccino capriccio	hot beverage cup	11	100.0%
	socke energy drink	energy drink	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Non Alcoholic Beverage	arizona iced tea	can	11	100.0%
	PANDA EXPRESS	paper cup	9	100.0%
	MISC PAPER CUP	paper cup	39	100.0%
	MONSTER ENVY	soda can	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Other	Bic	plastic	9	100.0%
	Circle K	plastic	247	100.0%
	Dorito's	plastic	15	100.0%
	Planters	electrical outlet	9	100.0%
	State of Texas	paper pieces	156	100.0%
	Wal-mart	cardboard	78	68.2%
		miscellaneous	37	31.8%
	Wendy's	chair stuffing	9	100.0%
	Unknown	bolt cover	21	0.5%
		card, business	94	2.3%
		cardboard	111	2.7%
		cloth, vinyl	111	2.7%
		container	24	0.6%
		cooler lid	13	0.3%
		feed sack	11	0.3%
		foam rubber	10	0.3%
		glass, broken	68	1.7%
		glove	31	0.7%
		health item	72	1.7%
		hunting bow	11	0.3%
		label	10	0.3%
		lid	12	0.3%
		magnet	24	0.6%
		mask	1019	24.6%
		metal cap	11	0.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Other	Unknown	mirror	125	3.0%
		miscellaneous	1468	35.5%
		office supplies	183	4.4%
		package	39	0.9%
		packing material	76	1.8%
		pantyhose	229	5.5%
		particle board	52	1.3%
		six pack container	83	2.0%
		strap	10	0.2%
		string	31	0.8%
		twine	44	1.1%
		velcro	25	0.6%
		wire	13	0.3%
		Feathers	103	2.5%
	John Deere	paper towel	144	100.0%
	Hill Country Fair	glass, broken	146	100.0%
	3M	cardboard piece	34	100.0%
	Golden Chick	magnet	11	100.0%
	Blue Ox	block	15	100.0%
	Domino's	magnet	11	100.0%
	United Rental	paper pieces	11	100.0%
	avon	Unknown	9	100.0%
	first response pregnancy	Unknown	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Other	wood pieces	Unknown	17	100.0%
	tennis ball	Unknown	12	100.0%
	plastic containers	container	49	100.0%
	cardboard	cardboard	49	100.0%
	scratch off ticket	ticket	12	100.0%
	mre container	container	12	100.0%
	danger scene plastic tape	tape	12	100.0%
	small pieces of paper	paper pieces	329	100.0%
	FILM CONTAINER	glove	13	100.0%
	COLONIAL GRANDE	calendar	9	100.0%
	METAL PIECE	Unknown	9	100.0%
	BUDDY BUCKS	coupon	9	100.0%
	TAR MAC	Unknown	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	Auto Zone	receipt	10	100.0%
	Burger King	paper pieces	11	100.0%
	Chevron	receipt	8	100.0%
	Church's Chicken	receipt	15	100.0%
	HEB	coupon	17	8.0%
		deposit slip	9	4.0%
		Newspaper	26	11.9%
		plastic pieces	57	26.1%
		receipt	109	50.0%
	Jack in the Box	receipt	11	100.0%
	Randall's	receipt	8	100.0%
	State of Texas	block	10	0.6%
		label	7	0.4%
		lottery ticket	1721	97.5%
		paper pieces	15	0.9%
		ribbon	11	0.6%
	Strohs	lottery ticket	9	100.0%
	Taco Bell	paper pieces	11	100.0%
	Wal-mart	Newspaper	9	3.2%
		paper	65	24.0%
		plastic pieces	34	12.6%
		receipt	164	60.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	Unknown	calendar	7	0.0%
		card	21	0.1%
		card, business	10	0.0%
		cardboard	52	0.2%
		cardboard piece	376	1.8%
		deposit slip	12	0.1%
		flier/catalog	11	0.1%
		Newspaper	116	0.5%
		instructions	20	0.1%
		invoice	54	0.3%
		label	123	0.6%
		lottery ticket	919	4.3%
		magazine	188	0.9%
		menu	13	0.1%
		miscellaneous	136	0.6%
		newspaper bag	601	2.8%
		office supplies	9	0.0%
		packing slip	30	0.1%
		pad	13	0.1%
		pantyhose	94	0.4%
		paper	7024	33.2%
		paper pieces	10023	47.4%
		paper towel	39	0.2%
		parking ticket	11	0.1%
		phone book	11	0.1%
		pill container	91	0.4%
		plastic pieces	48	0.2%
		plywood	11	0.1%
		pornography	138	0.7%
		receipt	354	1.7%
		ticket	339	1.6%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	Unknown	lotto ticket	209	1.0%
		packaging product	11	0.1%
		barcode label	17	0.1%
		line ruled school paper	9	0.0%
		Unknown	24	0.1%
	Compass Bank	paper pieces	11	100.0%
	Austin American Statesman	paper	10	27.3%
		paper pieces	17	45.5%
		Unknown	10	27.3%
	Dollar General	plastic pieces	12	58.3%
		receipt	9	41.7%
	Auto Trader	magazine	10	100.0%
	San Antonio Express	Newspaper	226	100.0%
	Chucky Cheese	paper pieces	31	100.0%
	Walgreen's	paper pieces	11	56.8%
		advertising circular	9	43.2%
	Love's	brochure	10	100.0%
	Hanes	plastic	12	100.0%
	Dunkin Donuts	plastic	12	100.0%
	Petsmart	flier/catalog	12	100.0%
	scratch off ticket	lottery ticket	12	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	Houston chronicle newspaper	Newspaper	12	100.0%
	baytown sun newspaper	Newspaper	37	100.0%
	cardboard small pieces	cardboard piece	61	100.0%
	pizza inn	lottery ticket	13	100.0%
	geico insurance	bill statement	13	100.0%
	states farm	insurance card	11	100.0%
	target	receipt	11	100.0%
	patriot	cardboard piece	11	100.0%
	home depot	receipt	11	100.0%
	washington mutual	deposit slip	21	100.0%
	mutro matic	cardboard	11	100.0%
	methodist	card, business	11	100.0%
	crunch and munch	instructions	7	100.0%
	fiesta cigarettes	receipt	10	100.0%
	apple computer	instructions	7	100.0%
	ft davis state bank	office supplies	7	50.0%
		bank money envelope	7	50.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	west texas national bank	bank money envelope	10	100.0%
	tlr hydraulics	card, business	10	100.0%
	terrible herbs oil	card, business	10	100.0%
	d fab robar	packing slip	20	100.0%
	united states gov	form	9	100.0%
	el paso employee federal credit union	bank money envelope	9	100.0%
	mucinex	instructions	11	100.0%
	karens t shirts	advertising circular	11	100.0%
	rm personna	operator permit	11	100.0%
	elite	packaging product	11	100.0%
	regis bernard furniture	advertising circular	11	100.0%
	sawder	advertising circular	11	100.0%
	el rodeo dance hall	flier/catalog	11	100.0%
	verizon wireless	flier/catalog	11	100.0%
	nfl	sports card	11	100.0%
	wid	receipt	32	100.0%
	COSMOPOLITAN	magazine	9	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Printed	INSERT	Newspaper	9	100.0%
	THE DAILY NEWS	Newspaper	9	100.0%
	TAYLOR	instructions	9	100.0%
	SCRATCH OFF	lottery ticket	12	100.0%
	COIN WRAPPER	plastic	9	100.0%
	SCRATCH OFF	lottery ticket	9	100.0%
	SUMMIT FLOORS	Newspaper	9	100.0%
	CITY OF HOU	parking ticket	9	100.0%
	TX LOTTERY	lottery ticket	26	100.0%
	LOTTERY TICKET	lottery ticket	13	100.0%
	HOUSTON DEFENDER	Newspaper	9	100.0%
	SCRAP PAPER	paper pieces	122	100.0%
	REMINGTON COLLEGE	paper	9	100.0%
	chapstick	label	11	100.0%
	tacos mi rancho	card, business	10	100.0%
	e-2 explanations	instructions	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Bic	cigarette lighter	120	62.3%
	Bic	lighter	73	37.7%
	Circle K	cigarette lighter	12	32.6%
		lighter	24	67.4%
	Keystone	chewing tobacco	29	100.0%
	Super Value	cigarette pack	10	100.0%
	Winchester	cigarette butt	574	100.0%
	Unknown	box piece	64	0.1%
		chewing tobacco	187	0.2%
		cigar	30	0.0%
		cigar butt	5667	6.5%
		cigar holder	354	0.4%
		cigar tip	2165	2.5%
		cigar wrap	171	0.2%
		cigarette butt	75848	86.6%
		cigarette carton	33	0.0%
		cigarette foil	150	0.2%
		cigarette holder	342	0.4%
		cigarette lighter	198	0.2%
		cigarette pack	1033	1.2%
		cigarette papers	15	0.0%
		foil	265	0.3%
		glove	15	0.0%
		hub cap	406	0.5%
		leather piece	261	0.3%
		lighter	233	0.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Unknown	match book	27	0.0%
		snuff	130	0.1%
	Marlboro	cardboard	11	0.0%
		carton	15	0.0%
		cigar butt	1320	4.0%
		cigarette	52	0.2%
		cigarette butt	28504	87.1%
		cigarette carton	322	1.0%
		cigarette lighter	11	0.0%
		cigarette pack	2410	7.4%
		cigarette papers	52	0.2%
		cigarette pack	21	0.1%
	Marlboro Light	cardboard	11	0.0%
		ceramic piece	49	0.2%
		cigar butt	2457	8.5%
		cigarette	11	0.0%
		cigarette butt	24002	83.2%
		cigarette carton	219	0.8%
		cigarette pack	1946	6.7%
		mylar	130	0.5%
		rag	10	0.0%
		cigarette pack	10	0.0%
	GPC	cigarette butt	31	75.0%
		paper pieces	10	25.0%
	Salem	cardboard	33	0.4%
		ceramic piece	12	0.1%
		cigar butt	1017	10.9%
		cigar tip	407	4.4%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Salem	cigarette butt	7508	80.5%
		cigarette carton	13	0.1%
		cigarette pack	337	3.6%
	Winston	cigar butt	669	8.9%
		cigar tip	115	1.5%
		cigarette butt	6280	83.5%
		cigarette carton	11	0.1%
		cigarette pack	450	6.0%
	Winston Lights	cigar butt	769	24.8%
		cigarette butt	2277	73.5%
		cigarette carton	9	0.3%
		cigarette pack	43	1.4%
	Misty	cigarette butt	37	63.2%
		cigarette pack	22	36.8%
	Camel	cardboard	11	0.1%
		cigar butt	2339	23.1%
		cigarette	11	0.1%
		cigarette butt	7312	72.2%
		cigarette carton	56	0.6%
		cigarette pack	395	3.9%
	Doral	cigar butt	1411	13.7%
		cigarette butt	8385	81.7%
		cigarette carton	60	0.6%
		cigarette pack	409	4.0%
	Basic	ceramic piece	12	0.3%
		cigar butt	10	0.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Basic	cigarette butt	3381	89.8%
		cigarette carton	12	0.3%
		cigarette pack	348	9.2%
	Skoal	chewing tobacco	265	80.9%
		snuff	62	19.1%
	Fargo	cigar butt	730	100.0%
	Newport	cigar butt	1136	12.3%
		cigarette	12	0.1%
		cigarette butt	7591	82.3%
		cigarette carton	46	0.5%
		cigarette pack	397	4.3%
		cigarette pack	42	0.5%
	Cambridge	cigarette pack	19	100.0%
	Rocky Top Root Beer	cigarette butt	2438	100.0%
	USA	cigar butt	183	34.3%
		cigarette butt	312	58.6%
		cigarette pack	38	7.1%
	Marlboro 100's	cardboard	66	0.3%
		cigar butt	2292	10.7%
		cigarette butt	18464	86.4%
		cigarette carton	95	0.4%
		cigarette pack	439	2.1%
		cigarette pack	10	0.0%
	USA Gold 100's	cigar butt	97	82.8%
		cigarette pack	20	17.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Kool 100's	cigar butt	24	13.3%
		cigarette butt	130	71.3%
		cigarette carton	17	9.5%
		cigarette pack	11	5.9%
	Virginia Slims	cardboard	11	0.1%
		ceramic piece	12	0.1%
		cigar butt	11	0.1%
		cigarette butt	9679	97.9%
		cigarette carton	11	0.1%
		cigarette pack	158	1.6%
	Salem Ultra Light 100's	cardboard	11	0.2%
		cigar butt	821	13.5%
		cigarette butt	5245	86.2%
		cigarette pack	10	0.2%
	Camel Lights	cigar butt	808	18.2%
		cigarette butt	3557	80.1%
		cigarette carton	11	0.3%
		cigarette pack	43	1.0%
		cigarette pack	20	0.5%
	Maverick	cigarette butt	65	100.0%
	USA Gold	cigarette butt	23	68.6%
		cigarette pack	10	31.4%
	Kent	cigar butt	145	100.0%
	Smoke 1	cigarette butt	11	100.0%
	KOOL	ceramic piece	12	0.2%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	KOOL	cigarette butt	4399	87.4%
		cigarette carton	72	1.4%
		cigarette pack	552	11.0%
	Black & Mild	cigar box	46	9.5%
		cigar butt	245	50.6%
		cigar case	17	3.6%
		cigar tip	31	6.5%
		cigarette butt	44	9.1%
		cigarette carton	11	2.3%
		cigarette pack	89	18.4%
	Chesterfried	cigarette butt	39	100.0%
	Husky	chewing tobacco	13	100.0%
	Viceroy	cigarette pack	10	100.0%
	Benson & Hedges	cigar butt	172	8.6%
		cigarette butt	1792	89.5%
		cigarette pack	37	1.8%
	Copenhagen	chewing tobacco	267	62.7%
		snuff	158	37.3%
	Swisher Sweet	cigar	11	3.5%
		cigar box	68	20.8%
		cigar butt	79	24.0%
		cigar case	23	7.0%
		cigar tip	12	3.6%
		cigar wrap	10	3.1%
		cigarette butt	27	8.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	Swisher Sweet	cigarette pack	98	29.8%
	Lucky Strike	cigarette butt	13	57.6%
		cigarette pack	10	42.4%
	pall mall	cigarette butt	316	100.0%
	no name cigarettes	cigarette butt	231	100.0%
	no name cigarette foil paper	cigarette foil	12	100.0%
	christmas gift wrap	cigar butt	146	100.0%
	no brand cigarette butts	cigarette butt	158	100.0%
	doral	cigarette carton	10	100.0%
	garcia vega	cigar case	13	100.0%
	crush	cigarette butt	183	100.0%
	supreme blend	cigar box	13	100.0%
	carnival	cigarette butt	659	77.3%
		cigarette pack	193	22.7%
	pall mall	cigarette butt	491	69.6%
		cigarette pack	215	30.4%
	vantage	cigarette butt	228	100.0%
	l and m	cigarette butt	88	100.0%
	sky dancer	cigarette pack	11	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	sante fe	cigarette pack	11	100.0%
	patriot	cigarette pack	11	100.0%
	grizzly	snuff	21	100.0%
	parliament	cigarette butt	215	100.0%
	skydancer	cigarette butt	22	75.0%
		cigarette carton	7	25.0%
	skys best	cigarette butt	7	100.0%
	fiesta cigarettes	cigarette carton	7	100.0%
	cigarette	smoking cessation packet	10	100.0%
	d fab robar	cigarette butt	78	100.0%
	pall mall cigarettes, orange	cigarette butt	9	100.0%
	pall mall menthol cigarettes	cigarette butt	35	100.0%
	newport light cigarettes	cigarette butt	9	100.0%
	seneca cigarettes	cigar butt	11	38.2%
		cigarette butt	17	61.8%
	marlboro Menthol 100's	cigarette butt	52	100.0%
	camel crush cigarettes	cigar butt	54	60.7%
		cigarette butt	35	39.3%

Litter Use	Brand Code	Item Code	Tally Count	%
Tobacco	camel menthol cigarettes	cigarette butt	9	100.0%
	gambler cigarettes	cigarette butt	9	100.0%
	smoke one fersythe	cigarette pack	21	100.0%
	sport cigarettes	cigar butt	11	100.0%
	capri	cigar butt	43	100.0%
	vantage cigarettes	cigar butt	11	100.0%
	MALBORN	cigar butt	956	100.0%
	LONGHORN	snuff	13	100.0%
	ROMROY	cigar wrap	9	100.0%
	PINGUINO	cigar box	9	100.0%
	DJARUM MENTHOL	Unknown	183	100.0%
	seneca cigarettes , king size	cigarette pack	10	100.0%
	pall mall cigarettes	cigar butt	21	34.6%
		cigarette butt	30	49.0%
		cigarette pack	10	16.3%
	marlboro menthol	cigar butt	193	79.2%
		cigarette butt	51	20.8%
	sport cigarettes	cigarette butt	10	100.0%
	parliament cigarettes	cigarette butt	10	100.0%

Litter Use	Brand Code	Item Code	Tally Count	%
tobacco	doral lights	cigarette butt	10	100.0%
	pall mall menthol cigarettes	cigarette butt	51	100.0%

Appendix 5: Detailed List of Litter Items

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Unknown	317,031	51.3%	State Of Texas	2,186	0.4%
Marlboro	33,936	5.5%	Michelob	2,124	0.3%
Marlboro Light	28,845	4.7%	Benson & Hedges	2,001	0.3%
Marlboro 100's	21,366	3.5%	Wal-Mart	1,877	0.3%
Doral	10,265	1.7%	Whataburger	1,816	0.3%
Camel	10,134	1.6%	Wendy's	1,810	0.3%
Bud Light	10,056	1.6%	Red Bull	1,799	0.3%
Virginia Slims	9,968	1.6%	Pepsi	1,705	0.3%
Salem	9,347	1.5%	John Deere	1,667	0.3%
Newport	9,224	1.5%	Gatorade	1,647	0.3%
Winston	7,525	1.2%	Taco Bell	1,568	0.3%
Dr. Pepper	6,334	1.0%	Mountain Dew	1,511	0.2%
Salem Ultra Light 100's	6,202	1.0%	Sprite	1,461	0.2%
Coca-Cola	5,735	0.9%	Burger King	1,423	0.2%
McDonalds	5,648	0.9%	Ozarka	1,229	0.2%
KOOL	5,048	0.8%	Natural Lite	1,209	0.2%
Camel Lights	4,440	0.7%	Heb	1,112	0.2%
Sonic	4,023	0.7%	Grandma's Cookies	987	0.2%
Basic	3,764	0.6%	Frito Lay	963	0.2%
Budweiser	3,732	0.6%	Malborn	956	0.2%
Coors Light	3,520	0.6%	Dairy Queen	955	0.2%
Keystone	3,158	0.5%	Snickers	881	0.1%
Winston Lights	3,097	0.5%	Nestle	862	0.1%
Miller Lite	3,048	0.5%	Carnival	853	0.1%
Busch	2,731	0.4%	Sunkist	823	0.1%
Rocky Top Root Beer	2,438	0.4%	Circle K	785	0.1%
Jack In The Box	2,307	0.4%	Church's Chicken	744	0.1%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
7-Eleven	742	0.1%	Reese's	368	0.1%
Fargo	741	0.1%	Popeye's	362	0.1%
Pall Mall	705	0.1%	Wrigley's	359	0.1%
Miller	692	0.1%	Hunts	356	0.1%
Fruit & Grain	666	0.1%	Pizza Hut	351	0.1%
Subway	631	0.1%	M & M	349	0.1%
Dasani	626	0.1%	Christmas Gift Wrap	348	0.1%
Winchester	620	0.1%	Planters	346	0.1%
Cheetos	614	0.1%	Coors	346	0.1%
Bengal	582	0.1%	Lipton	346	0.1%
Corona	573	0.1%	3m	336	0.1%
USA	533	0.1%	Ziploc	330	0.1%
Hershey's	532	0.1%	Heinz	329	0.1%
Milwaukee's Best	523	0.1%	Small Pieces Of Paper	329	0.1%
Capri Sun	493	0.1%	Swisher Sweet	327	0.1%
Shiner Bock	487	0.1%	Skoal	327	0.1%
Black & Mild	484	0.1%	Pall Mall	316	0.1%
Big Red	483	0.1%	Kent	316	0.1%
Unable To Identify	482	0.1%	Nabisco	311	0.1%
Sam's	454	0.1%	Borden	306	0.0%
Lay's	445	0.1%	Oak Farm	306	0.0%
Copenhagen	425	0.1%	Slim Jim	299	0.0%
Hefty	419	0.1%	Hostess	294	0.0%
Kentucky Fried Chicken	404	0.1%	Minute Maid	293	0.0%
Hill Country Fair	397	0.1%	Dejablue	289	0.0%
Chick Fil-A	390	0.1%	Bic	280	0.0%
Doritos's	380	0.1%	Starbucks Coffee	252	0.0%
Chicken Express	376	0.1%	Mrs. Baird	252	0.0%
Little Debbie	370	0.1%	Reddy Ice	249	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Blue Bell	248	0.0%	Lone Star	170	0.0%
Heineken	247	0.0%	Cambridge	163	0.0%
Marlboro Menthol	244	0.0%	Cheese Nips	162	0.0%
Milky Way	242	0.0%	Mr. Pibb	160	0.0%
7-Up	242	0.0%	Penzoil	160	0.0%
Dodge	232	0.0%	Nestea	159	0.0%
No Name Cigarettes	231	0.0%	No Brand Cigarette Butts	158	0.0%
Smirnoff	231	0.0%	Dos Equis	150	0.0%
Vantage	228	0.0%	Kraft	149	0.0%
San Antonio Express	226	0.0%	Jolly Rancher	148	0.0%
Trident	225	0.0%	Clear Plastic Wrap	146	0.0%
Twix	218	0.0%	Little Ceasar's	143	0.0%
Parliament	215	0.0%	Polar Ice	137	0.0%
Old Milwaukee	210	0.0%	Plastic Cup Lids	134	0.0%
Jack Links	206	0.0%	Plastic Containers	134	0.0%
Taco Cabana	198	0.0%	Lance	133	0.0%
Kroger	196	0.0%	Misty	131	0.0%
Walgreen's	193	0.0%	Mars	127	0.0%
Kit Kat	192	0.0%	Kellogg's	126	0.0%
Braum's	192	0.0%	Grandy's	125	0.0%
Town And Country	188	0.0%	Power Aid	122	0.0%
A&W	183	0.0%	Scrap Paper	122	0.0%
Crush	183	0.0%	Anheuser Busch	121	0.0%
KOOL 100's	183	0.0%	Pringles	119	0.0%
RC Cola	183	0.0%	Clorox	118	0.0%
Djarum Menthol	183	0.0%	USA Gold 100's	118	0.0%
Ford	174	0.0%	Long John Silvers	111	0.0%
Butterfinger	170	0.0%	Aquafina	110	0.0%
Auto Zone	170	0.0%	Tylenol	109	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Shipley's Daunts	107	0.0%	V-8	76	0.0%
Barritos	107	0.0%	Armor-All	75	0.0%
Whoppers	104	0.0%	Dollar General	75	0.0%
Charms	102	0.0%	Tecate	74	0.0%
Fiesta Mart	100	0.0%	Monster Energy Drink	73	0.0%
Welches	100	0.0%	Plastic Drink Cups	73	0.0%
Funyun's	99	0.0%	Plastic Bags	73	0.0%
D Fab Robar	98	0.0%	Corn Nuts	71	0.0%
Race Trac	97	0.0%	Slim Fast	70	0.0%
Almond Joy	96	0.0%	Husky	70	0.0%
Dixie	95	0.0%	Tropicana	70	0.0%
Advil	94	0.0%	Nutrena	69	0.0%
Starburst	90	0.0%	Clearly Canadian	68	0.0%
Camel Crush Cigarettes	88	0.0%	Pabst	67	0.0%
L And M	88	0.0%	Lunchables	66	0.0%
Bartels And James	87	0.0%	Maverick	65	0.0%
Love's	87	0.0%	Trojan	65	0.0%
Pure Life	86	0.0%	Sierra Mist	63	0.0%
Quaker	86	0.0%	Pall Mall Cigarettes	62	0.0%
Drinking Straw No Brand	85	0.0%	Strohs	61	0.0%
Plastic Cup Lids	85	0.0%	Nehi	61	0.0%
Keebler	84	0.0%	Plastic Ice Bag	61	0.0%
Moon Pies	82	0.0%	Cardboard Small Pieces	61	0.0%
Snapple	81	0.0%	Seagrams	60	0.0%
Sunny Delight	80	0.0%	Fanta	58	0.0%
Mercedes	78	0.0%	Dr Hytop	58	0.0%
Colt 45	78	0.0%	Ruffles	58	0.0%
Java Classics	77	0.0%	Texas Burger	57	0.0%
Evian	77	0.0%	Bill Miller	57	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Pumpco	57	0.0%	Hi-C	46	0.0%
Ocean Spray	57	0.0%	Hawaiin Punch	46	0.0%
Qt	56	0.0%	Lemon Heads	45	0.0%
Zima	56	0.0%	Plastic Garbage Bag	45	0.0%
Bacardi	56	0.0%	Jack Daniels	45	0.0%
Chucky Cheese	56	0.0%	Hanes	44	0.0%
Havoline	55	0.0%	Now & Later	44	0.0%
Chevrolet	55	0.0%	Austin Quality	43	0.0%
Airhead	54	0.0%	Barq's	43	0.0%
Chesterfried	54	0.0%	Target	43	0.0%
Blow Pop	53	0.0%	Bud Ice	43	0.0%
Kodak	53	0.0%	4-Hour	43	0.0%
Sara Lee	53	0.0%	Capri	43	0.0%
Misc Auto Part	52	0.0%	Budweiser Select	42	0.0%
Marlboro Menthol 100's	52	0.0%	Gpc	42	0.0%
Card Bombay Purse	52	0.0%	Flying J	41	0.0%
Cooler	52	0.0%	Aquafina	41	0.0%
Monster Rockstar	51	0.0%	Target	39	0.0%
Pall Mall Menthol Cigarettes	51	0.0%	Foam Rubber Rubber Glove	39	0.0%
Skydancer	51	0.0%	Misc Paper Cup	39	0.0%
Campbell's	50	0.0%	Plastic Pieces	39	0.0%
Sun Mart	49	0.0%	Dentyne	39	0.0%
Bit-O-Honey	49	0.0%	Austin American Statesman	38	0.0%
Cardboard	49	0.0%	Frigo	37	0.0%
Texaco	48	0.0%	Halls	37	0.0%
Tiger Mart	48	0.0%	Dr.B	37	0.0%
Igloo	47	0.0%	Paper Straw Wrapper	37	0.0%
Twizzlers	47	0.0%	Hunts Brothers Pizza	37	0.0%
Domino's	47	0.0%	Latex Glove	37	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Baytown Sun Newspaper	37	0.0%	Fresca	31	0.0%
Canadian Mist	37	0.0%	Aquafina	31	0.0%
Gallo Wine	37	0.0%	Jazzercise	30	0.0%
Lifesavers	36	0.0%	Fancy	30	0.0%
Yoo Hoo	35	0.0%	Community Coffee	30	0.0%
Chick-O-Stick	35	0.0%	Sun-Maid	29	0.0%
Pall Mall Menthol Cigarettes	35	0.0%	Seneca Cigarettes	28	0.0%
Taco Bueno	35	0.0%	Portion Pak Inc	28	0.0%
Mickey's	34	0.0%	Dunkin Donuts	27	0.0%
Home Interiors	34	0.0%	Winn Dixie	26	0.0%
Comet Cleaners	34	0.0%	Lifestyles	26	0.0%
Blistex	34	0.0%	Red Door	26	0.0%
Energizer	33	0.0%	Brand 1150	26	0.0%
USA Gold	33	0.0%	Tape	26	0.0%
Compass Bank	33	0.0%	Rubber Strip	26	0.0%
Mounds	33	0.0%	Rubber Cylenders	26	0.0%
Blue Ox	33	0.0%	TX Lottery	26	0.0%
Crest	33	0.0%	Thriftway	25	0.0%
Tom's	32	0.0%	Shurfine	25	0.0%
Keystone Light	32	0.0%	Southwestern Bell	24	0.0%
Bimbo	32	0.0%	Peter Piper	24	0.0%
Simply Lemonade	32	0.0%	Auto Light Reflector	24	0.0%
6-Hour	32	0.0%	Auto Part	24	0.0%
Michelob Ultra	32	0.0%	Gallo Wine Carton	24	0.0%
Wid	32	0.0%	Scratch Off Ticket	24	0.0%
Sour Punch	31	0.0%	Oreo Cookie Wrapper	24	0.0%
B-4 Auto Parts	31	0.0%	Blue Bunny Ice Cream Wrapper	24	0.0%
Schlitz	31	0.0%	Heath	24	0.0%
Skittles	31	0.0%	Mr Goodbar	24	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Tootsie Roll	24	0.0%	Corner Store	21	0.0%
Petsmart	23	0.0%	Smoke One Fersythe	21	0.0%
Nesquick	23	0.0%	Dela Ross	21	0.0%
Lucky Strike	23	0.0%	Ice House	21	0.0%
Pearl	23	0.0%	Glaceau Vitamin Water	21	0.0%
Auto Trader	23	0.0%	Blue Bunny	21	0.0%
Boone's Farm	22	0.0%	Chapstick	21	0.0%
Wilson's	22	0.0%	Peter Paul	21	0.0%
Castrol Oil	22	0.0%	Remington	21	0.0%
Visine	22	0.0%	Aleve	20	0.0%
Squirt	21	0.0%	Chex Mix	20	0.0%
Janet Lee	21	0.0%	Napa Auto Parts	20	0.0%
Magnum	21	0.0%	Eckerd Drugs	20	0.0%
Nugrape	21	0.0%	Yoplait	20	0.0%
Full Throttle	21	0.0%	Cesar Canine Cuisine	20	0.0%
Patriot	21	0.0%	Full Throttle	20	0.0%
Grizzly	21	0.0%	Crunch And Munch	18	0.0%
Washington Mutual	21	0.0%	Double Bubble	18	0.0%
Jim Beam	21	0.0%	Spring LLC	18	0.0%
Charmin	21	0.0%	Skys Best	18	0.0%
Skittles	21	0.0%	Fiesta Cigarettes	18	0.0%
Raisinettes	21	0.0%	Bubblicious Gum	18	0.0%
Walgreens	21	0.0%	Apple Computer	18	0.0%
Spike	21	0.0%	Murphys Restaurant	18	0.0%
Shepps	21	0.0%	Rain-X	18	0.0%
Pop Tart	21	0.0%	Car Fresh	17	0.0%
Eclipse	21	0.0%	Unknown	17	0.0%
Orbit	21	0.0%	Wood Pieces	17	0.0%
Pepsi One	21	0.0%	Industrial Sol	17	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Aluminum Foil	17	0.0%	Electric Outlet	13	0.0%
Nerds Candy	16	0.0%	Clothes Hanger	13	0.0%
All Sport	15	0.0%	Car Mirror	13	0.0%
Night Train	15	0.0%	Misc Metal Pieces	13	0.0%
Tom Thumb	15	0.0%	CD Wrapper	13	0.0%
Ft Davis State Bank	15	0.0%	Dove Bar	13	0.0%
Bounty	15	0.0%	Ruffles	13	0.0%
Kudo's	15	0.0%	Plastic Bushing	13	0.0%
Palmetco	14	0.0%	Hot Wheels Pack	13	0.0%
Three Musketeers	13	0.0%	Auto Wheel Cover	13	0.0%
Very Fine	13	0.0%	Lottery Ticket	13	0.0%
Koito	13	0.0%	Milk Duds	13	0.0%
EveNFLo	13	0.0%	Bake-Ens	13	0.0%
Sylvania	13	0.0%	American Dream	13	0.0%
Alamo Street	13	0.0%	Country Club	12	0.0%
Pizza Inn	13	0.0%	Fosters	12	0.0%
Flying Java	13	0.0%	General Electric	12	0.0%
Garcia Vega	13	0.0%	Juicy Fruit	12	0.0%
Oscar Meyer	13	0.0%	Lowenbrau	12	0.0%
Carls Jr	13	0.0%	Wonka's	12	0.0%
E And J	13	0.0%	Amrep	12	0.0%
Geico Insurance	13	0.0%	Ring Pop	12	0.0%
Supreme Blend	13	0.0%	Motor Craft	12	0.0%
Nike	13	0.0%	Gap	12	0.0%
Film Container	13	0.0%	Treetop	12	0.0%
Orange Construction Cone	13	0.0%	Good Day	12	0.0%
Lug Nut	13	0.0%	Nds	12	0.0%
Hammer Part	13	0.0%	Bugles	12	0.0%
Longhorn	13	0.0%	Zima	12	0.0%

Brand Code	Tally Count	%
Crunk Energy Drink	12	0.0%
No Name Cigarette Foil Paper	12	0.0%
Tennis Ball	12	0.0%
PCP Pipe 7 Inch Piece	12	0.0%
Auto Molding Piece	12	0.0%
Sweater Cap	12	0.0%
Haircomb	12	0.0%
Potters Vodka Bottle	12	0.0%
Shoe	12	0.0%
Windshield Sun Screen	12	0.0%
Chardonnay Paper Handler Tray	12	0.0%
Mre Container	12	0.0%
Danger Scene Plastic Tape	12	0.0%
Houston Chronicle Newspaper	12	0.0%
Sabritones	12	0.0%
Condom	12	0.0%
White Cloud Baby Diaper	12	0.0%
Plastic Trash Can Lid	12	0.0%
Ensure	12	0.0%
Memorex Plastic CD	12	0.0%
Scratch Off	12	0.0%
Red Dog	12	0.0%
Band-Aids	11	0.0%
Dillard's	11	0.0%
Fram	11	0.0%
Kleenex	11	0.0%
K-Mart	11	0.0%
Panasonic	11	0.0%
Golden Chick	11	0.0%

Brand Code	Tally Count	%
Smoke 1	11	0.0%
United Rental	11	0.0%
Canada Dry	11	0.0%
Fischer Price	11	0.0%
Arctic Ice	11	0.0%
Guinness	11	0.0%
Rolling Rock	11	0.0%
Pemmican	11	0.0%
Fruitopia	11	0.0%
Junior Mints	11	0.0%
Pyramid	11	0.0%
Hartz	11	0.0%
Smirnoff	11	0.0%
Taco Mayo	11	0.0%
Drumstick	11	0.0%
States Farm	11	0.0%
Huggies	11	0.0%
Stride	11	0.0%
Fancy Ketchup	11	0.0%
Munchos	11	0.0%
Oreos	11	0.0%
Hot Pocket	11	0.0%
Jimmy Dean	11	0.0%
Dolce And Gabbana	11	0.0%
Sky Dancer	11	0.0%
Sante Fe	11	0.0%
Hennessey	11	0.0%
Cocks	11	0.0%
Sutter Home	11	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Home Depot	11	0.0%	Bud Light Lime Beer	11	0.0%
Mutro Matic	11	0.0%	Clamato	11	0.0%
Fruit Gushers	11	0.0%	Tilt Malt Beverage	11	0.0%
Methodist	11	0.0%	Casera Beverages	11	0.0%
Clover Hill	11	0.0%	G2 Electrolyte Drink	11	0.0%
Japones	11	0.0%	Weinershnitzel	11	0.0%
1000 Grand	11	0.0%	Cappuccino Capriccio	11	0.0%
Risen	11	0.0%	Socke Energy Drink	11	0.0%
Russell Stovers	11	0.0%	Popcorn Chicken	11	0.0%
Tanqueray	11	0.0%	Fresh Choices (Valero)	11	0.0%
Monster	11	0.0%	Samsung	11	0.0%
Venom	11	0.0%	Mucinex	11	0.0%
Sparks	11	0.0%	Karens T Shirts	11	0.0%
Pierre Dumas	11	0.0%	Montagna	11	0.0%
Sony	11	0.0%	Corona Beer	11	0.0%
Callaway	11	0.0%	Arizona Iced Tea	11	0.0%
Pinnacle	11	0.0%	Payday	11	0.0%
CDC	11	0.0%	Popsicle	11	0.0%
Redline	11	0.0%	Topflight	11	0.0%
CVS	11	0.0%	Rm Personna	11	0.0%
Cracker Jack	11	0.0%	Elite	11	0.0%
Double Mint	11	0.0%	Regis Bernard Furniture	11	0.0%
Gilco	11	0.0%	Sawder	11	0.0%
Ac Delco	11	0.0%	Bimbo	11	0.0%
5-Hour	11	0.0%	Import Solutions	11	0.0%
Krystal	11	0.0%	Beckton Dickeson	11	0.0%
Zinfandel	11	0.0%	Mike Ike Candy	11	0.0%
Extra	11	0.0%	El Rodeo Dance Hall	11	0.0%
Phillips	11	0.0%	Verizon Wireless	11	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
NFL	11	0.0%	Hardees	10	0.0%
Sport Cigarettes	11	0.0%	Armour Feeds	10	0.0%
Germ X	11	0.0%	Motrin	10	0.0%
TDK	11	0.0%	Ex3 Energy Burst	10	0.0%
FBI	11	0.0%	Crystal Light	10	0.0%
Vantage Cigarettes	11	0.0%	Sweetheart	10	0.0%
Leaf	10	0.0%	David	10	0.0%
VICS Vapor Rub	10	0.0%	West Texas National Bank	10	0.0%
Marvel	10	0.0%	H2o On The Go	10	0.0%
Instapack	10	0.0%	Aircomm	10	0.0%
Goldschlagger	10	0.0%	Cigarette	10	0.0%
Mellow Yellow	10	0.0%	Arizona Iced Tea	10	0.0%
Rubber Maid	10	0.0%	Lowes Grocery	10	0.0%
Stars And Stripes	10	0.0%	Chicos Tacos	10	0.0%
Armour	10	0.0%	Gead Sense	10	0.0%
Turtle Candy Wrap	10	0.0%	Tlr Hydraulics	10	0.0%
Super Value	10	0.0%	Terrible Herbs Oil	10	0.0%
Owen's	10	0.0%	Premier	10	0.0%
Big K	10	0.0%	Jack Links	10	0.0%
Dental Floss	10	0.0%	Extra Gum	10	0.0%
Bucees	10	0.0%	Glad	10	0.0%
Baskin Robins	10	0.0%	Premium Ice	10	0.0%
Ice Cup	10	0.0%	Tacos Mi Rancho	10	0.0%
Ups	10	0.0%	E-2 Explanations	10	0.0%
Doral	10	0.0%	Seneca Cigarettes , King Size	10	0.0%
Equate Floss	10	0.0%	Sport Cigarettes	10	0.0%
Back To Nature	10	0.0%	Parliament Cigarettes	10	0.0%
Sprite Lite	10	0.0%	Doral Lights	10	0.0%
Starkist	10	0.0%	Carquest	10	0.0%

Brand Code	Tally Count	%	Brand Code	Tally Count	%
Benadryl	10	0.0%	Robert Stock	9	0.0%
Federal	10	0.0%	Colonial Grande	9	0.0%
Easy Mart	10	0.0%	Ricks	9	0.0%
Viceroy	10	0.0%	Planet Beach	9	0.0%
Golden State	9	0.0%	Maruchan	9	0.0%
Hill Country	9	0.0%	Insert	9	0.0%
Power Block	9	0.0%	The Daily News	9	0.0%
Liquid Nails	9	0.0%	State Farm	9	0.0%
Avon	9	0.0%	Taylor	9	0.0%
First Response Pregnancy	9	0.0%	Evans Farm	9	0.0%
Ceiling Tiles	9	0.0%	Hart	9	0.0%
Upstate Farms	9	0.0%	Romroy	9	0.0%
Carls Jr	9	0.0%	Metal Piece	9	0.0%
United States Gov	9	0.0%	Blue Towel	9	0.0%
Dannon	9	0.0%	5 Hour Energy	9	0.0%
Home Depot	9	0.0%	Coin Wrapper	9	0.0%
Harvest	9	0.0%	Buddy Bucks	9	0.0%
Deli Express	9	0.0%	Scratch Off	9	0.0%
Masenite	9	0.0%	Steel Strup	9	0.0%
El Paso Employee Federal Credit Union	9	0.0%	Summit Floors	9	0.0%
Pall Mall Cigarettes, Orange	9	0.0%	Tar Mac	9	0.0%
Newport Light Cigarettes	9	0.0%	Iowa	9	0.0%
Camel Menthol Cigarettes	9	0.0%	City Of Houston	9	0.0%
Gambler Cigarettes	9	0.0%	World's Finest	9	0.0%
Cosmopolitan	9	0.0%	Pinguino	9	0.0%
Angels	9	0.0%	Tyden Brm	9	0.0%
Panda Express	9	0.0%	Buc Ees	9	0.0%
Microtex	9	0.0%	Monster Envy	9	0.0%
Hunt Bros Pizza	9	0.0%	Sweethart	9	0.0%

Brand Code	Tally Count	%
Houston Defender	9	0.0%
Aqua Klean	9	0.0%
Spring H2o	9	0.0%
Remington College	9	0.0%
Daskin	9	0.0%
Trolli	9	0.0%
Bounce	9	0.0%
Chevron	8	0.0%

Brand Code	Tally Count	%
Randall's	8	0.0%
Rolaids	7	0.0%
Waco Tribune	7	0.0%
Stanley	7	0.0%
Sunbelt Foods	7	0.0%
Austin Toasty Crackers	7	0.0%
General Mills Fiber Bag	7	0.0%
Total	617,858	100.0%

Appendix 6: Detailed List of Litter Brand Names

Brand	Tally Count	%	Brand	Tally Count	%
Unknown	324,562	52.5%	Miller Lite	3,033	0.5%
Marlboro	32,720	5.3%	Busch	2,731	0.4%
Marlboro Light	28,845	4.7%	Rocky Top Root Beer	2,438	0.4%
Marlboro 100's	21,366	3.5%	State of Texas	2,176	0.4%
Doral	10,265	1.7%	Benson & Hedges	2,001	0.3%
Camel	10,124	1.6%	Wal-mart	1,877	0.3%
Bud Light	10,045	1.6%	Whataburger	1,805	0.3%
Virginia Slims	9,882	1.6%	Jack in the Box	1,787	0.3%
Salem	9,327	1.5%	Wendy's	1,688	0.3%
Newport	9,224	1.5%	Pepsi	1,628	0.3%
Winston	7,525	1.2%	Gatorade	1,614	0.3%
Dr. Pepper	6,243	1.0%	Red Bull	1,582	0.3%
Salem Ultra Light 100's	6,088	1.0%	Taco Bell	1,568	0.3%
Coca-Cola	5,700	0.9%	Sprite	1,461	0.2%
McDonalds	5,648	0.9%	Mountain Dew	1,440	0.2%
KOOL	5,048	0.8%	Burger King	1,400	0.2%
Camel Lights	4,440	0.7%	Ozarka	1,229	0.2%
Sonic	4,023	0.7%	Natural Lite	1,209	0.2%
Basic	3,764	0.6%	HEB	1,112	0.2%
Budweiser	3,732	0.6%	Grandma's Cookies	987	0.2%
Coors Light	3,445	0.6%	Frito Lay	963	0.2%
Keystone	3,097	0.5%	Dairy Queen	955	0.2%
Winston Lights	3,097	0.5%	MALBORN	956	0.2%

Brand	Tally Count	%	Brand	Tally Count	%
Snickers	881	0.1%	Capri Sun	435	0.1%
Nestle	862	0.1%	Copenhagen	425	0.1%
carnival	853	0.1%	Hefty	407	0.1%
Circle K	748	0.1%	Kentucky Fried Chicken	393	0.1%
7-Eleven	742	0.1%	Chick Fil-A	390	0.1%
Church's Chicken	744	0.1%	Hill Country Fair	385	0.1%
Michelob	742	0.1%	Chicken Express	376	0.1%
Fargo	741	0.1%	Little Debbie	370	0.1%
pall mall	705	0.1%	Reese's	368	0.1%
Miller	692	0.1%	Popeye's	362	0.1%
Subway	631	0.1%	Dorito's	356	0.1%
John Deere	631	0.1%	Wrigley's	359	0.1%
Dasani	626	0.1%	Hunts	356	0.1%
Winchester	620	0.1%	Pizza Hut	351	0.1%
Chee-tos	614	0.1%	Coors	346	0.1%
Sunkist	595	0.1%	Lipton	346	0.1%
Bengal	582	0.1%	Planters	346	0.1%
Corona	573	0.1%	M & M	339	0.1%
Hershey's	532	0.1%	3M	336	0.1%
USA	533	0.1%	Heinz	329	0.1%
Milwaukee's Best	523	0.1%	Ziploc	330	0.1%
Shiner Bock	487	0.1%	Skoal	327	0.1%
Big Red	483	0.1%	Swisher Sweet	327	0.1%
Black & Mild	484	0.1%	small pieces of paper	329	0.1%
Sam's	454	0.1%	Kent	316	0.1%
Lay's	445	0.1%	pall mall	316	0.1%

Brand	Tally Count	%	Brand	Tally Count	%
Nabisco	311	0.1%	Braum's	192	0.0%
Oak Farm	306	0.1%	Kit Kat	192	0.0%
Borden	306	0.1%	Walgreen's	193	0.0%
Hostess	294	0.0%	A&W	183	0.0%
Slim Jim	299	0.0%	RC Cola	183	0.0%
Minute Maid	293	0.0%	Taco Cabana	187	0.0%
DejaBlue	289	0.0%	Town and Country	188	0.0%
Bic	280	0.0%	Kool !00's	183	0.0%
Mrs. Baird	252	0.0%	crush	183	0.0%
starbucks coffee	252	0.0%	DJARUM MENTHOL	183	0.0%
Blue Bell	248	0.0%	Ford	174	0.0%
Reddy Ice	249	0.0%	christmas gift wrap	170	0.0%
7-Up	242	0.0%	Lone Star	170	0.0%
Milky Way	242	0.0%	Auto Zone	162	0.0%
marlboro menthol	244	0.0%	Butterfinger	160	0.0%
Smirnoff	231	0.0%	Mr.Pibb	160	0.0%
San Antonio Express	226	0.0%	Nestea	159	0.0%
no name cigarettes	231	0.0%	Penzoil	160	0.0%
vantage	228	0.0%	Cambridge	163	0.0%
Trident	225	0.0%	no brand cigarette butts	158	0.0%
Heineken	217	0.0%	Dos Equis	150	0.0%
Twix	218	0.0%	Jolly Rancher	148	0.0%
parliament	215	0.0%	Kraft	149	0.0%
Old Milwaukee	210	0.0%	clear plastic wrap	146	0.0%
Jack Links	206	0.0%	Lance	133	0.0%
Kroger	196	0.0%	Polar Ice	137	0.0%

Brand	Tally Count	%	Brand	Tally Count	%
plastic cup lids	134	0.0%	d fab robar	98	0.0%
plastic containers	134	0.0%	Dixie	95	0.0%
Mars	127	0.0%	Advil	94	0.0%
Misty	131	0.0%	Bartels and James	87	0.0%
Cheese Nips	128	0.0%	Keebler	84	0.0%
Anheuser Busch	121	0.0%	Quaker	86	0.0%
Power Aid	122	0.0%	Love's	87	0.0%
Kellogg's	126	0.0%	drinking straw no brand	85	0.0%
Grandy's	125	0.0%	plastic cup lids	85	0.0%
SCRAP PAPER	122	0.0%	l and m	88	0.0%
Clorox	118	0.0%	pure life	86	0.0%
Pringles	119	0.0%	camel crush cigarettes	88	0.0%
USA Gold 100's	118	0.0%	Colt 45	78	0.0%
aquafina	110	0.0%	Starburst	81	0.0%
Fruit & Grain	104	0.0%	Tylenol	83	0.0%
Shipley's Donuts	107	0.0%	mercedes	78	0.0%
Whoppers	104	0.0%	java classics	77	0.0%
barritos	107	0.0%	Armor-All	75	0.0%
Almond Joy	96	0.0%	Evian	77	0.0%
Charms	102	0.0%	V-8	76	0.0%
Welches	100	0.0%	Tecate	74	0.0%
Long John Silvers	99	0.0%	Moon Pies	71	0.0%
Fiesta Mart	100	0.0%	Dollar General	75	0.0%
Little Ceasar's	98	0.0%	monster energy drink	73	0.0%
Funyun's	99	0.0%	plastic drink cups	73	0.0%
race trac	97	0.0%	plastic bags	73	0.0%

Brand	Tally Count	%
Clearly Canadian	68	0.0%
Corn Nuts	71	0.0%
Pabst	67	0.0%
Sunny Delight	70	0.0%
Trojan	65	0.0%
Tropicana	70	0.0%
Slim Fast	70	0.0%
Maverick	65	0.0%
Lunchables	66	0.0%
Nutrena	69	0.0%
Husky	70	0.0%
Nehi	61	0.0%
Seagrams	60	0.0%
Strohs	61	0.0%
Sierra Mist	63	0.0%
plastic ice bag	61	0.0%
cardboard small pieces	61	0.0%
pall mall cigarettes	62	0.0%
Bacardi	56	0.0%
Chevrolet	55	0.0%
Havoline	55	0.0%
Kodak	53	0.0%
Ocean Spray	57	0.0%
Snapple	54	0.0%
Ruffles	58	0.0%
PumpCo	57	0.0%

Brand	Tally Count	%
Blow Pop	53	0.0%
Texas Burger	57	0.0%
Chesterfried	54	0.0%
Airhead	54	0.0%
Sara Lee	53	0.0%
Bill Miller	57	0.0%
Chucky Cheese	56	0.0%
fanta	58	0.0%
qt	56	0.0%
Cooler	52	0.0%
Texaco	48	0.0%
Tiger Mart	48	0.0%
Domino's	47	0.0%
Sun Mart	49	0.0%
Twizzlers	47	0.0%
Bit-O-Honey	49	0.0%
Campbell's	50	0.0%
Igloo	47	0.0%
cardboard	49	0.0%
skydancer	51	0.0%
monster rockstar	51	0.0%
marlboro Menthol 100's	52	0.0%
MISC AUTO PART	52	0.0%
CARD BOMBAY PURSE	52	0.0%
pall mall menthol cigarettes	51	0.0%
Austin Quality	43	0.0%

Brand	Tally Count	%
Hawaiin Punch	46	0.0%
Jack Daniels	45	0.0%
GPC	42	0.0%
HI-C	46	0.0%
Barq's	43	0.0%
Now & Later	44	0.0%
Hanes	44	0.0%
plastic garbage bag	45	0.0%
lemon heads	45	0.0%
target	43	0.0%
budweiser select	42	0.0%
bud ice	43	0.0%
4-hour	43	0.0%
flying j	41	0.0%
aquafina	41	0.0%
capri	43	0.0%
Dentyne	39	0.0%
Halls	37	0.0%
Home Interiors	34	0.0%
Mickey's	34	0.0%
Yoo Hoo	35	0.0%
Frigo	37	0.0%
Dr.B	37	0.0%
Austin American Statesman	38	0.0%
Lifesavers	36	0.0%
Chick-O-Stick	35	0.0%

Brand	Tally Count	%
paper straw wrapper	37	0.0%
hunts brothers pizza	37	0.0%
latex glove	37	0.0%
baytown sun newspaper	37	0.0%
canadian mist	37	0.0%
target	39	0.0%
taco bueno	35	0.0%
pall mall menthol cigarettes	35	0.0%
FOAM RUBBER RUBBER GLOVE	39	0.0%
MISC PAPER CUP	39	0.0%
PLASTIC PIECES	39	0.0%
GALLO WINE	37	0.0%
Crest	33	0.0%
Energizer	33	0.0%
Fresca	31	0.0%
Schlitz	31	0.0%
Tom's	32	0.0%
Zima	34	0.0%
Compass Bank	33	0.0%
Jazzercise	30	0.0%
USA Gold	33	0.0%
Blistex	34	0.0%
Blue Ox	33	0.0%
Sour Punch	31	0.0%
B-4 Auto Parts	31	0.0%
Mounds	33	0.0%

Brand	Tally Count	%
community coffee	30	0.0%
aquafina	31	0.0%
keystone light	32	0.0%
bimbo	32	0.0%
simply lemonade	32	0.0%
6-hour	32	0.0%
skittles	31	0.0%
seneca cigarettes	28	0.0%
micelob ultra	32	0.0%
wid	32	0.0%
fancy	30	0.0%
Boone's Farm	22	0.0%
Pearl	23	0.0%
Visine	22	0.0%
Wilson's	22	0.0%
Southwestern Bell	24	0.0%
Tootsie Roll	24	0.0%
Lifestyles	26	0.0%
Castrol Oil	22	0.0%
Nesquick	23	0.0%
Auto Trader	23	0.0%
Peter Piper	24	0.0%
Lucky Strike	23	0.0%
Dunkin Donuts	27	0.0%
Petsmart	23	0.0%
auto light reflector	24	0.0%

Brand	Tally Count	%
auto part	24	0.0%
gallo wine carton	24	0.0%
scratch off ticket	24	0.0%
oreo cookie wrapper	24	0.0%
blue bunny ice cream wrapper	24	0.0%
heath	24	0.0%
mr goodbar	24	0.0%
red door	26	0.0%
thriftway	25	0.0%
shurfine	25	0.0%
portion pak inc	28	0.0%
BRAND 1150	26	0.0%
TAPE	26	0.0%
RUBBER STRIP	26	0.0%
RUBBER CYLENDERS	26	0.0%
TX LOTTERY	26	0.0%
Car Fresh	17	0.0%
Ice House	21	0.0%
Janet Lee	21	0.0%
Magnum	21	0.0%
Napa Auto Parts	20	0.0%
NuGrape	21	0.0%
Peter Paul	21	0.0%
Double Bubble	18	0.0%
Sun-Maid	19	0.0%
RAIN-X	18	0.0%

Brand	Tally Count	%	Brand	Tally Count	%
Squirt	21	0.0%	chex mix	20	0.0%
Remington	21	0.0%	nerds candy	16	0.0%
wood pieces	17	0.0%	glaceau vitamin water	21	0.0%
full throttle	21	0.0%	yoplait	20	0.0%
patriot	21	0.0%	cesar canine cuisine	20	0.0%
grizzly	21	0.0%	blue bunny	21	0.0%
washington mutual	21	0.0%	full throttle	20	0.0%
jim beam	21	0.0%	corner store	21	0.0%
charmin	21	0.0%	smoke one fersythe	21	0.0%
skittles	21	0.0%	dela ross	21	0.0%
crunch and munch	18	0.0%	INDUSTRIAL SOL	17	0.0%
raisinettes	21	0.0%	ALUMINUM FOIL	17	0.0%
walgreens	21	0.0%	chapstick	21	0.0%
spike	21	0.0%	Arctic Ice	11	0.0%
shepps	21	0.0%	Band-aids	11	0.0%
pop tart	21	0.0%	Country Club	12	0.0%
eclipse	21	0.0%	Dillard's	11	0.0%
orbit	21	0.0%	Fosters	12	0.0%
pepsi one	21	0.0%	Fram	11	0.0%
spring llc	18	0.0%	General Electric	12	0.0%
skys best	18	0.0%	Guinness	11	0.0%
fiesta cigarettes	18	0.0%	Juicy Fruit	12	0.0%
bubblicious gum	18	0.0%	Kleenex	11	0.0%
apple computer	18	0.0%	K-mart	11	0.0%
murphys restaurant	18	0.0%	Leaf	10	0.0%
aleve	20	0.0%	Lowenbrau	12	0.0%

Brand	Tally Count	%	Brand	Tally Count	%
Night Train	15	0.0%	EvenFlo	13	0.0%
Panasonic	11	0.0%	Smoke 1	11	0.0%
Red Dog	12	0.0%	Pyramid	11	0.0%
Rolling Rock	11	0.0%	Comet Cleaners	12	0.0%
Super Value	10	0.0%	Palmetco	14	0.0%
Three Musketeers	13	0.0%	United Rental	11	0.0%
Tom Thumb	15	0.0%	Good Day	12	0.0%
Very Fine	13	0.0%	Federal	10	0.0%
Vics Vapor Rub	10	0.0%	Hartz	11	0.0%
Winn Dixie	13	0.0%	Canada Dry	11	0.0%
Koito	13	0.0%	Easy Mart	10	0.0%
Milk Duds	13	0.0%	NDS	12	0.0%
Pemmican	11	0.0%	Viceroy	10	0.0%
Bake-Ens	13	0.0%	Sylvania	13	0.0%
Bounty	15	0.0%	Kudo's	15	0.0%
Wonka's	12	0.0%	Marvel	10	0.0%
Amrep	12	0.0%	Owen's	10	0.0%
Ring Pop	12	0.0%	American Dream	13	0.0%
Fruitopia	11	0.0%	Instapack	10	0.0%
CarQuest	10	0.0%	Alamo Street	13	0.0%
Motor Craft	12	0.0%	Fischer Price	11	0.0%
Junior Mints	11	0.0%	Bugles	12	0.0%
Golden Chick	11	0.0%	Zima	12	0.0%
Benadryl	10	0.0%	Goldschlagger	10	0.0%
GAP	12	0.0%	Smirnoff	11	0.0%
TreeTop	12	0.0%	Mellow Yellow	10	0.0%

Brand	Tally Count	%	Brand	Tally Count	%
Rubber Maid	10	0.0%	ups	10	0.0%
crunk energy drink	12	0.0%	doral	10	0.0%
no name cigarette foil paper	12	0.0%	equate floss	10	0.0%
tennis ball	12	0.0%	back to nature	10	0.0%
pcp pipe 7 inch piece	12	0.0%	pizza inn	13	0.0%
auto molding piece	12	0.0%	flying java	13	0.0%
sweater cap	12	0.0%	garcia vega	13	0.0%
haircomb	12	0.0%	oscar meyer	13	0.0%
potters vodka bottle	12	0.0%	carls jr	13	0.0%
shoe	12	0.0%	e and j	13	0.0%
windshield sun screen	12	0.0%	geico insurance	13	0.0%
chardonnay paper handler tray	12	0.0%	supreme blend	13	0.0%
mre container	12	0.0%	nike	13	0.0%
danger scene plastic tape	12	0.0%	taco mayo	11	0.0%
Houston chronicle newspaper	12	0.0%	drumstick	11	0.0%
sabritones	12	0.0%	states farm	11	0.0%
condom	12	0.0%	huggies	11	0.0%
white cloud baby diaper	12	0.0%	stride	11	0.0%
plastic trash can lid	12	0.0%	fancy ketchup	11	0.0%
ensure	12	0.0%	munchos	11	0.0%
memorex plastic cd	12	0.0%	oreos	11	0.0%
big k	10	0.0%	hot pocket	11	0.0%
bucees	10	0.0%	jimmy dean	11	0.0%
baskin robins	10	0.0%	dolce and gabbana	11	0.0%
icee cup	10	0.0%	sky dancer	11	0.0%
			sante fe	11	0.0%

Brand	Tally Count	%	Brand	Tally Count	%
hennessey	11	0.0%	ac delco	11	0.0%
cocks	11	0.0%	5-hour	11	0.0%
sutter home	11	0.0%	krystal	11	0.0%
home depot	11	0.0%	zinfandel	11	0.0%
mutro matic	11	0.0%	extra	11	0.0%
fruit gushers	11	0.0%	phillips	11	0.0%
methodist	11	0.0%	stars and stripes	10	0.0%
clover hill	11	0.0%	armour	10	0.0%
japones	11	0.0%	ft davis state bank	15	0.0%
1000 grand	11	0.0%	sprite lite	10	0.0%
risen	11	0.0%	starkist	10	0.0%
russell stovers	11	0.0%	hardees	10	0.0%
tanqueray	11	0.0%	armour feeds	10	0.0%
monster	11	0.0%	motrin	10	0.0%
venom	11	0.0%	ex3 energy burst	10	0.0%
sparks	11	0.0%	crystal light	10	0.0%
pierre dumas	11	0.0%	sweetheart	10	0.0%
sony	11	0.0%	david	10	0.0%
callaway	11	0.0%	west texas national bank	10	0.0%
pinnacle	11	0.0%	h2o on the go	10	0.0%
cdc	11	0.0%	aircomm	10	0.0%
redline	11	0.0%	cigarette	10	0.0%
cvs	11	0.0%	arizona iced tea	10	0.0%
cracker jack	11	0.0%	lowes grocery	10	0.0%
double mint	11	0.0%	chicos tacos	10	0.0%
gilco	11	0.0%	gead sense	10	0.0%

Brand	Tally Count	%
tlr hydraulics	10	0.0%
terrible herbs oil	10	0.0%
bud light lime beer	11	0.0%
clamato	11	0.0%
tilt malt beverage	11	0.0%
casera beverages	11	0.0%
g2 electrolyte drink	11	0.0%
weinershnitzel	11	0.0%
cappuccino capriccio	11	0.0%
socke energy drink	11	0.0%
popcorn chicken	11	0.0%
fresh choices (valero)	11	0.0%
samsung	11	0.0%
mucinex	11	0.0%
karens t shirts	11	0.0%
montagna	11	0.0%
corona beer	11	0.0%
arizona iced tea	11	0.0%
payday	11	0.0%
popsicle	11	0.0%
topflight	11	0.0%
rm persona	11	0.0%
elite	11	0.0%
regis bernard furniture	11	0.0%
sawder	11	0.0%
bimbo	11	0.0%

Brand	Tally Count	%
import solutions	11	0.0%
beckton dickeson	11	0.0%
mike ike candy	11	0.0%
el rodeo dance hall	11	0.0%
verizon wireless	11	0.0%
nfl	11	0.0%
sport cigarettes	11	0.0%
germ x	11	0.0%
tdk	11	0.0%
fbi	11	0.0%
vantage cigarettes	11	0.0%
FILM CONTAINER	13	0.0%
ORANGE CONSTRUCTION CONE	13	0.0%
LUG NUT	13	0.0%
HAMMER PART	13	0.0%
LONGHORN	13	0.0%
ELECTRIC OUTLET	13	0.0%
CLOTHES HANGER	13	0.0%
CAR MIRROR	13	0.0%
SCRATCH OFF	12	0.0%
MISC METAL PIECES	13	0.0%
CD WRAPPER	13	0.0%
DOVE BAR	13	0.0%
RUFFLES	13	0.0%
PLASTIC BUSHING	13	0.0%
HOT WHEELS PACK	13	0.0%

Brand	Tally Count	%
AUTO WHEEL COVER	13	0.0%
TURTLE CANDY WRAP	10	0.0%
LOTTERY TICKET	13	0.0%
premier	10	0.0%
jack links	10	0.0%
extra gum	10	0.0%
glad	10	0.0%
premium ice	10	0.0%
tacos mi rancho	10	0.0%
e-2 explanations	10	0.0%
seneca cigarettes , king size	10	0.0%
sport cigarettes	10	0.0%
parliament cigarettes	10	0.0%
doral lights	10	0.0%
Chevron	8	0.0%
Golden State	9	0.0%
Randall's	8	0.0%
Rolaids	7	0.0%
Hill Country	9	0.0%
Power Block	9	0.0%
Stanley	7	0.0%
liquid nails	9	0.0%
avon	9	0.0%
first response pregnancy	9	0.0%
ceiling tiles	9	0.0%
sunbelt foods	7	0.0%

Brand	Tally Count	%
austin toasty crackers	7	0.0%
general mills fiber bag	7	0.0%
upstate farms	9	0.0%
carls jr	9	0.0%
united states gov	9	0.0%
dannon	9	0.0%
home depot	9	0.0%
harvest	9	0.0%
deli express	9	0.0%
masenite	9	0.0%
el paso employee federal credit union	9	0.0%
pall mall cigarettes, orange	9	0.0%
newport light cigarettes	9	0.0%
camel menthol cigarettes	9	0.0%
gambler cigarettes	9	0.0%
COSMOPOLITAN	9	0.0%
ANGELS	9	0.0%
PANDA EXPRESS	9	0.0%
MICROTEX	9	0.0%
HUNT BROS PIZZA	9	0.0%
ROBERT STOCK	9	0.0%
COLONIAL GRANDE	9	0.0%
RICKS	9	0.0%
PLANET BEACH	9	0.0%
MARUCHAN	9	0.0%
INSERT	9	0.0%

Brand	Tally Count	%
THE DAILY NEWS	9	0.0%
TAYLOR	9	0.0%
EVANS FARM	9	0.0%
HART	9	0.0%
ROMROY	9	0.0%
METAL PIECE	9	0.0%
BLUE TOWEL	9	0.0%
5 HOUR ENERGY	9	0.0%
COIN WRAPPER	9	0.0%
BUDDY BUCKS	9	0.0%
SCRATCH OFF	9	0.0%
STEEL STRUP	9	0.0%
SUMMIT FLOORS	9	0.0%
TAR MAC	9	0.0%
IOWA	9	0.0%

Brand	Tally Count	%
CITY OF HOU	9	0.0%
WORLDS FINEST	9	0.0%
PINGUINO	9	0.0%
TYDEN BRM	9	0.0%
BUC EES	9	0.0%
MONSTER ENVY	9	0.0%
SWEETHART	9	0.0%
HOUSTON DEFENDER	9	0.0%
AQUA KLEAN	9	0.0%
SPRING H2O	9	0.0%
REMINGTON COLLEGE	9	0.0%
DASKIN	9	0.0%
TROLLI	9	0.0%
BOUNCE	9	0.0%

Appendix 7: Comparative Analysis of Litter Data with and without Cigarette Butts

System-wide Statistics

Table A7. 1 Number of Litter Items by Road Type

	Including Cigarette Butt Litter			Excluding Cigarette Butt Litter		
	2005	2009	Percent Change	2005	2009	Percent Change
Interstate Highway (3,233)	72,971,697	94,121,255	29%	54,815,307	52,839,405	-4%
US Highway (12,104)	153,035,881	218,168,944	43%	104,402,341	154,866,269	48%
State Highway (16,331)	170,488,104	260,656,708	53%	121,622,506	192,921,872	59%
FM Roadways (40,965)	430,709,842	528,823,879	23%	292,265,809	339,565,496	16%
Total (72,633)	827,205,524	1,101,770,786	33%	573,105,963	740,193,042	29%

Projected amounts per entire state road system.

2009 Litter Statistics Including and Excluding Cigarette Butt Litter

Table A7. 2 Litter by Physical Composition

	2009			
	Including Cigarette Butt Litter		Excluding Cigarette Butt Litter	
	Count	Percent	Count	Percent
Paper & Paperboard	390,714	63%	169,729	43%
Plastic	117,904	19%	117,904	30%
Metals	42,291	7%	42,291	11%
Rubber/Leather	39,271	6%	39,271	10%
Glass	13,189	2%	13,189	3%
Textiles	6,999	1%	6,999	2%
Wood	2,477	<1%	2,477	1%
Other	5,013	1%	5,013	1%
Total	617,858	100%	396,874	100%

Table A7. 3 Litter by Use

	2009			
	Including Cigarette Butt Litter		Excluding Cigarette Butt Litter	
	Count	Percent	Count	Percent
Tobacco	263,409	43%	42,424	11%
Household/Personal	55,606	9%	55,606	14%
Food	43,233	7%	43,233	11%
Non-alcoholic Beverage	80,882	13%	80,882	20%
Alcoholic Beverage	34,646	6%	34,646	9%
Construction/Industrial	61,931	10%	61,931	16%
Printed	24,671	4%	24,671	6%
Other	7,535	1%	7,535	2%
Automotive	45,945	7%	45,945	12%
Total	617,858	100%	396,874	100%

Distribution of Litter by Common Segments and Overall (2005 and 2009):

Including Cigarette Butt Litter

Table A7. 4 Litter by Use

	Common Segments			Overall		
	2005	2009	Diff (% points)	2005	2009	Diff (% points)
Tobacco	33%	43%	10%	33%	43%	10%
Household/Personal	4%	9%	5%	4%	9%	5%
Food	29%	7%	-22%	29%	7%	-22%
Non-alcoholic Beverage	10%	14%	4%	11%	13%	2%
Alcoholic Beverage	6%	5%	-1%	6%	6%	0%
Construction/Industrial	8%	10%	2%	8%	10%	2%
Printed	8%	4%	-4%	8%	4%	-4%
Other	0%	1%	1%	0%	1%	1%
Automotive	1%	7%	6%	1%	7%	6%
Total	100%	100%		100%	100%	

Table A7. 5 Litter by Physical Composition

	Common Segments			Overall		
	2005	2009	Diff (% points)	2005	2009	Diff (% points)
Paper & Paperboard	61%	63%	2%	61%	63%	2%
Plastic	26%	20%	-6%	25%	19%	-6%
Metals	9%	6%	-3%	10%	7%	-3%
Rubber/Leather	<1%	6%	6%	<1%	6%	5%
Glass	1%	2%	1%	1%	2%	1%
Textiles	1%	1%	0%	1%	1%	0%
Wood	0%	0%	0%	<1%	<1%	<1%
Other	1%	1%	0%	1%	< 1%	<1%
Total	100%	100%		100%	100%	

Distribution of Litter by Common Segments and Overall (2005 and 2009):

Excluding Cigarette Butt Litter

Table A7. 6 Litter by Use

	Common Segments			Overall		
	2005	2009	Diff (% points)	2005	2009	Diff (% points)
Tobacco	7%	11%	4%	7%	11%	4%
Household/Personal	5%	14%	9%	5%	14%	9%
Food	40%	11%	-29%	39%	11%	-28%
Non-alcoholic Beverage	14%	21%	7%	15%	20%	5%
Alcoholic Beverage	9%	9%	0%	9%	9%	0%
Construction/Industrial	11%	16%	5%	11%	16%	5%
Printed	11%	6%	-5%	11%	6%	-5%
Other	0%	2%	2%	0%	2%	2%
Automotive	2%	11%	9%	2%	12%	10%
Total	100%	100%		100%	100%	

Table A7. 7 Litter by Physical Composition

	Common Segments			Overall		
	2005	2009	Diff (% points)	2005	2009	Diff (% points)
Paper & Paperboard	46%	42%	-4%	46%	43%	-3%
Plastic	35%	31%	-4%	35%	30%	-5%
Metals	13%	10%	-3%	13%	11%	-2%
Rubber/Leather	0%	10%	10%	0%	10%	10%
Glass	2%	3%	1%	2%	3%	1%
Textiles	2%	2%	0%	2%	2%	0%
Wood	0%	1%	0%	0%	1%	1%
Other	2%	1%	-1%	2%	1%	-1%
Total	100%	100%		100%	100%	