City of Hamilton – Waterfront

PUBLIC WORKS

Despite the area enforcing a full smoking ban, cigarettes were still the most frequently caught substance.

APPLICATION
Public Works

CUSTOMER
City of Hamilton

Enviropod completed a three-month trial with the City of Hamilton, placing a LittaTrap unit at the Hamilton Waterfront building on Discovery Drive.

The trial spanned between July through till September in 2019.

This particular LittaTrap was placed in a significantly quieter location to test whether LittaTrap's are still effective in cleaner and more controlled environments.

Despite the small loading zone, the LittaTrap still captured a total of 98 gross pollutants over the three-month period. Despite the area enforcing a full smoking ban, cigarettes were still the most frequently caught substance, with 46 of the 103 pollutants comprised of cigarettes. One of the most harmful substances to aquatic life, the LittaTrap highlights the need for more widespread recognition to be placed on correct disposal of cigarettes.

Enviropod is now continuing its work with the City of Hamilton and looking to now test LittaTrap units in various downtown locations.

LittaTrap contents from loading zone

City of Barrie Pedestrian Areas and Litter Hotspot Study

PUBLIC WORKS

Between June–December 2019, the LittaTrap unit caught a total of 473 gross pollutants. Almost 60 percent of all pollutants were cigarettes.

APPLICATION

Public Works

CUSTOMER

City of Barrie

Enviropod are currently in the process of a yearlong trial with the City of Barrie, placing a single LittaTrap unit outside a pedestrian hotspot on Dunlop Street. The yearlong trial will allow Enviropod to identify patterns such as the busiest months and monitor the snow melt period. The snowmelt period has been identified by Enviropod as the busiest in Canada for trash capture, and the trial will help Enviropod identify this.

BetweenJune–December 2019, the LittaTrap unit caught a total of 473 gross pollutants. Almost 60 percent of all pollutants were comprised of cigarettes. They continue their trend across all LittaTrap trials as the number one pollutant of our waterways.The rest of the loading was made up of plastic food wrappers, confetti, chewing gum, polystyrene and a hypodermic needle. These pollutants all cause significant damage to our waterways, specifically hypodermic needles. As toxic pollutants, it is critical to remove them from our waterways going forward. The Barrie trial highlights the significant quantities of toxic pollutants currently reaching our waterways.

During this time frame, Enviropod was also able to establish a connection between the season and the total number of pollutants reaching the LittaTrap. The summer months (June–September) received significantly higher loadings the winter months (October–December). This highlights the need for increased LittaTrap usage and more public awareness campaigns on proper trash management practices during the busier summer months.

Loading from September including a lighter and a hypodermic needle

LittaTrap™

Hood Packaging LittaTrap™ Trial, Calgary, Canada

HOOD PACKAGING CORPORATION®

The effects of plastic pollution on rivers, lakes, and other water sources is one of the top environmental challenges facing the world today. It is estimated that 9,887 metric tonnes per year of plastic debris enter the Great Lakes with an estimated 1,400 tonnes into Lake Ontario.

Preventing plastics from getting into the marine environment is a high priority for the Canadian Government with their 2018 adoption of the Ocean Plastics Charter to demonstrate their commitment to the growing global plastic pollution problem.

Stormwater discharge is one of the leading sources of freshwater pollution because they discharge directly into the nearest freshwater source. Hood Packaging, a plastics manufacturing supplier, contacted Enviropod Canada Limited to assist with lowering the company's environmental impact by preventing plastic resin pellets and other debris from entering the stormwater system. Enviropod installed a LittaTrap™ device in a stormwater drain in front of one of their manufacturing buildings as a pilot study project to quantify its effectiveness to capture resin pellets from manufacturing activities shown in Figure 1.

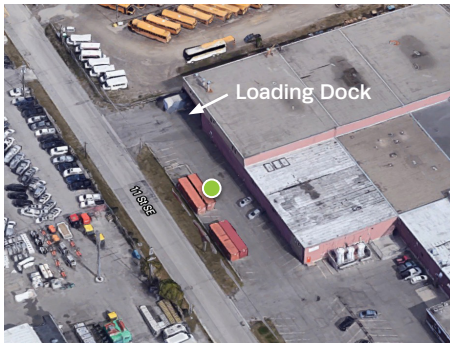

Figure 1 The LittaTrap Location is marked in green. The nearby parking lots and shipping dock are significant sources of litter

This report summarizes the litter and resin pellets caught in the LittaTrap™ over the three-month testing period. The LittaTrap™ with a 1000-micron performance liner captures gross pollutants and other pollutants greater than 1 mm in diameter before they are transported into receiving waters.

The LittaTrap™ is an innovative catch basin insert that has been designed to capture trash and debris and enhance the performance of a catch basin in capturing and retaining sediment. The product has been laboratory tested and shown to capture 99% of trash debris (>5mm) and improve the capture of TSS by the catch basin by 40%. The performance of trash capture can be enhanced with the use of liners with smaller apertures to target specific contaminants. This performance of this LittaTrap was enhanced with a 1000-micron performance liner to capture gross pollutants and other pollutants greater than 1 mm in diameter.

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THE TESTING SITE

The trial catch basin is near a truck loading dock, and employee and visitor car parking area. Loading docks contribute to litter "hotspots" because of the increased risk of accidental spills that allow litter and resin pellets to be carried away by water and wind. Parking areas also contribute to litter "hotspots" due to the high amount of pedestrian traffic. Although the Hood Packaging site is well kept and maintained, during installation, there were a considerable amount of resin pellets visible in the catch basin and surrounding area, as seen in Figure 3 below. Without the LittaTrap™, these pellets would likely be carried by rainfall into the stormwater system, where it will become dangerous to the receiving environment.

Figure 2 shows the loading dock as well as the visitor and employee parking area near the catch pit

Figure 3 shows the litter in and around the catchpit prior to the LittaTrap installation

INSPECTION AND MAINTENANCE

The LittaTrap™ inspections were carried out monthly for three months, following appropriate health and safety protocols. During dry weather, the litter and debris captured in the LittaTrap™ were removed and then sorted, as shown in Figure 4 below. The sorted litter was counted and weighed. The catch basin was also inspected for evidence of bypass as well as general hydraulic performance to ensure the units capture effectiveness. During the first collection, the insert was not sitting level in the frame, and some resin pellets bypassed the LittaTrap™. Once the seal was corrected, there was no further indication of bypass during the subsequent inspections. Following the pilot, it is recommended that visual inspections are carried out monthly for the following year to determine maintenance requirements and the unit is then maintained before it reaches 80 percent capacity.

Figure 4 shows the litter from one of the collections sorted into individual categories (not to scale)

RESULTS

Each month, the amount of material caught by the LittaTrap™ varied greatly. From over 400 pieces captured from August to September, to 70 pieces of litter captured from September to October. Out of the total 722 pieces of litter caught, 712 of those pieces were plastics with 651 being resin pellets.

The composition of litter and plastics is shown, respectively, Figure 5 and Figure 6.

Even though cigarette butts are now widely accepted as a type of plastic, they are given their section in this report because it is the most observed type of litter in the world.

Cigarette butts are the highest percentage of plastic per litter piece found in other Canadian LittaTrap™ trials conducted by Enviropod.

Resin pellets, also known as 'nurdles,' are one of the most prevalent forms of waterborne debris and are found in waterways and on beaches all over the world.

During the trial period of 99 days, 712 plastic litter items were collected. If we took this loading rate and extrapolated out, this single catch basin could catch around 2,500 pieces of plastic each year.

Plastics will continue to be a staple for modern living for the foreseeable future, but the associated impacts can be mitigated. This site is one of 23 Hood Packaging locations in North America; if the other locations also had LittaTrap™ inserts installed the benefits to the environment would be significant.

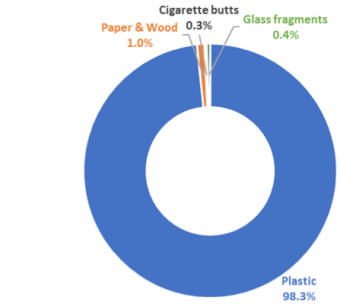


Figure 5 shows the litter composition

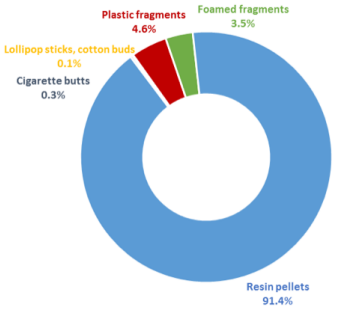


Figure 6 shows the plastic composition

LittaTrap™

Preventing Plastic Pellet Loss

Medical Plastics

LITTER HOT SPOT – MANUFACTURING

A LittaTrap™ was installed at a plastic manufacturer in Auckland, New Zealand and monitored over a 12 month period.

Plastics New Zealand have been running the global Operation Clean Sweep programme for a number of years in New Zealand. The programme recommends changes to manufacturing sites to assist in protecting the waterways from plastic pollution.

A range of solutions are recommended to help manage accidental plastic pellet loss. One of these solutions is the option to retrofit filters inside stormwater catch basins in high risk areas such as loading/unloading zones, waste skips, and regrind operations where there are often spills of pellets and other plastic fragments.

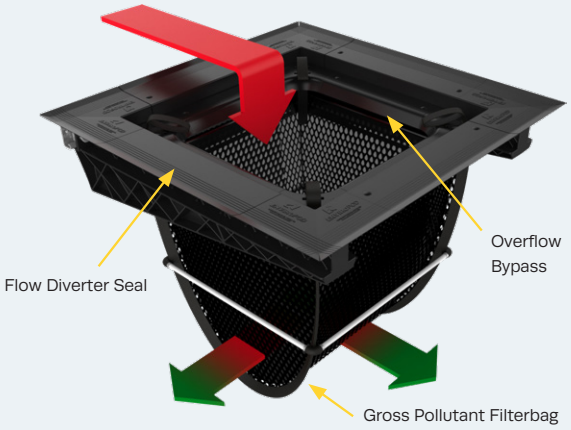
Installing a filter into a catch basin prevents any accidentally spilled material from heading down the drain into the local waterway.

It was recommended that Auckland–based Plastic Association member, Medical Plastics Ltd, install a LittaTrap in a stormwater drain in their carpark to monitor the effectiveness of its performance in preventing plastic pellet loss.

Medical Plastics is a clean site; however, with all manufacturing sites, there can be a chance of accidental spills.

At this site, the waste and recycling bins are in the same area as the loading and unloading zone, all of which flow to one stormwater drain where the LittaTrap was installed.

The LittaTrap was monitored and reported on over a 12 month period providing quantitative and qualitative data on the type and quantity of pollutants captured.



The LittaTrap™ is a versatile catch basin insert system. It is easily installed in new or existing catchpits and may be configured to capture sediment or gross pollutants. For this trial the LittaTrap™ was installed with a 1mm fibreglass liner for full capture of the smallest particles. The LittaTrap™ is hand maintainable, allowing for low cost and frequent maintenance. Installing a LittaTrap™ will capture both positive and neutrally buoyant materials, including plastic pellets which are typically washed down a stormwater drain when it rains.

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RESULTS

In the 12 months of sampling, 4.853kg of material was retained in a single LittaTrap. Apart from the odd cigarette butt and a bit of leaf litter, the majority of material caught was plastic – mainly small plastic pellets. Each of these pellets weighs 0.0221 grams, and with almost 5 kgs of primarily plastic debris, this equals approximately 220,000 pellets captured and retained by one LittaTrap.

5kg

of resin pellets, sprues and other plastic debris collected since installation

SAMPLE WEIGHT (G) OVER TIME INSTALLED