

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

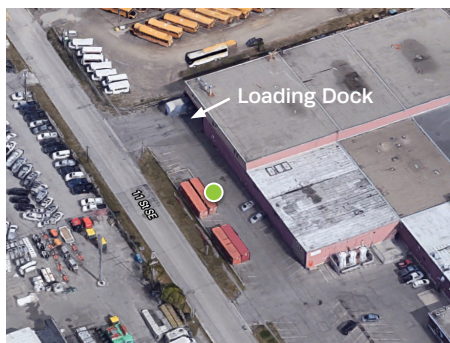


Figure 1 The LittaTrap Location is marked in green. The nearby parking lots and shipping dock are significant sources of litter

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.

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.

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.

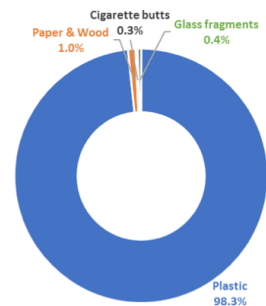


Figure 5 shows the litter composition

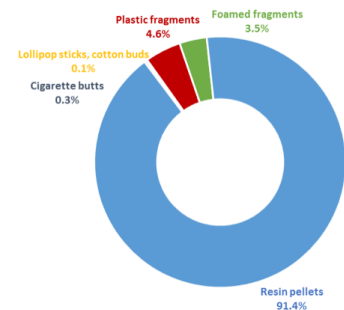


Figure 6 shows the plastic composition