



The Role of Catch Basins in a CSO Floatables Control Program

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Abstract

Introduction

One of the major issues of urban wet weather pollution is the control of floatables pollution. Many urban areas experience beach wash-ups and shore-line accumulations of floatable materials such as plastic, paper and styrofoam items. Studies conducted in New York City have shown street litter to be a major contributor of floatables pollution to New York Harbor. Several floatables control methods are being considered including increased street sweeping, end of pipe treatment technologies, booming and skimming at CSO outfalls and catch basin controls. Catch basins, which exist in most urban areas, offer a means of controlling floatable material at the source. They are simple devices, which if properly maintained, can be very effective in removing floatable material from stormwater. This paper presents New York City's efforts in evaluating the effectiveness of catch basins, outlines the City-wide program to inspect, map and hood all catch basins and presents data which characterizes the effectiveness of the program.

Catch basin designs for most urban areas throughout the US are similar. The most important aspect of this design, with respect to floatables removal, is the presence of a hood or trap which is generally hung over the basin's outlet. The hood, which extends into the water surface, provides a seal which prevents the release of sewer odors into the surrounding neighborhood. The hood also acts as a baffle at the water surface which prevents the release of floatable material to the sewer system. Several studies conducted in New York City have shown hoods to be capable of retaining 70 to 90% of floatables entering the catch basin.

New York City is implementing a City-wide catch basin hooding program as part of its CSO control program. This effort includes inspection, inventory and mapping of all catch basins. There are approximately 135,000 basins distributed over 190,000 acres in New York City. Following the inspections, basins are cleaned and hoods are installed where needed. The program was started in February 1996 and is expected to be completed by the end of 1999.

A database is being constructed from the information being collected during the inspections which includes approximately 150 data items per basin. GIS mapping of the basins is being integrated with the database to produce a comprehensive management tool which will be used to direct future catch basin maintenance and repair activities. This program, with periodic basin inspections, will provide a means of maintaining hoods on catch basins and thereby ensure the effective use of catch basins as a floatables control.

The program is also very cost effective when compared to other floatable control technologies. Figure 1 presents approximate costs of several technologies, ranging from less than \$100 per acre to approximately \$10,000 per acre. As shown in the figure the cost of catch basin hooding is significantly less than most other options. Catch basin hooding also folds into existing catch basin maintenance programs very easily. New equipment, procedures and training are generally not necessary to put a program in place.

New York City constructed floatables booms around several CSO outfalls as part of an interim

floatables control program. Following wet weather events, floatable material captured by the booms is removed by skimmer boats and transported to roll-off containers. This program was in place prior to the catch basin hooding program and offered a means of assessing the effectiveness of the hooding program. Figure 2 presents a bar graph of City-wide floatables loads captured in the City's booms between January 1997 and September 1998. During this period catch basin hoods were installed in over 60% of the boomed drainage area. Concurrent to the hooding program a significant reduction in floatables loads was observed. By September 1998 the load was reduced by approximately 70% from the January 1997 levels. These loads will continue to be monitored as the hooding program approaches completion through 1999.

Catch basin hoods are proving to be a very effective means of controlling floatables in urban areas, both in terms of cost and capture efficiency. These devices control floatable material as close to the source as possible. The residuals created by the device can be collected during normal catch basin cleaning activities. They are simple low-tech devices that do not require any extensive facilities, staff or specialized training.

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