

## Summary Fact Sheet

**Category:** 2.0 Filtering Technologies

**Practice:** 2.1 Catch Basin Controls (Proprietary and Non-Proprietary)

**General Description:** Catch basin controls are devices and designs that prevent sediment, oils, floatable trash, and debris from being transmitted further along the storm drain system or control the peak release rate. Catch basins themselves capture and retain sediment, but other devices may be used to increase pollutant removal. Hydrodynamic separators (flow-through devices with a settling or separation unit) for example, remove sediments and other stormwater pollutants. Catch basin controls may be used by themselves or with other BMPs as part of a stormwater treatment train.

### Water Quantity Controls

Catch basin controls do not provide stormwater volume reductions. Catch basin outflow pipes or inlet structures can be designed to restrict flow (e.g. reducing pipe diameter).

### Water Quality Controls

Fairfax County has assigned a technology-based 15% phosphorus removal efficiency to hydrodynamic separators (Stormceptor, Vortechs, Downstream Defender, BaySaver).

Catch basin controls improve water quality by removing gross (large) pollutants from stormwater by trapping or other mechanical methods. The main method of improving water quality is the physical removal of pollutants (e.g., trash, debris, sediment) from stormwater prior to it entering the collection system. Nutrient removal is incidental to the removal of other pollutants. Total phosphorus concentrations can be reduced through effective sedimentation but soluble pollutants will pass through the catch basin unmodified.

**Location:** Catch basin controls can be placed in almost any specific location in a system, and may have ideal application as part of a treatment train system. These controls are ideal for use in potential stormwater “hotspots,” such as near gas stations, where higher concentrations of pollutants are more likely.

**Design Construction and Materials:** Design, material, and cost of catch basin control are dependent upon type and manufacturer. Several proprietary devices exist with a wide range of cost and function. Many of the newer hydrodynamic separators function on a vortex principle as a method of removing pollutants.

**Cost:** The cost for catch basin controls to treat runoff from ½ impervious acre is comprised of both the installation cost and annualized costs. These cost calculations were based upon installing catch basin controls in two stormwater inlets. Catch basin controls are assumed to have a lifespan of 25 years, at which point they will be removed and replaced. Controls range from simple inserts to complex combined systems costing tens of thousands of dollars.

Item	Required Cost per Year (2005 Dollars)													
	0	1	2	3	4	5	6	7	8	9	10	...	25	
Installation <sup>1</sup>	20,000													
Sediment and Debris Removal (every month)		500	500	500	500	500	500	500	500	500	500			
Remove & Replace														20,000
<b>Total Cost</b>	<b>20,000</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>			<b>20,000</b>
Annualized Cost	\$1,275 / year (includes replacement in year 25)													

<sup>1</sup>Developer Cost. Not included in annualized cost.

**Maintenance:** Maintenance of catch basin controls consists primarily of monthly inspection and removal of debris and sediments. Inspections may be visual or may use chemical tracers. Removal of debris and sediments may require the use of a pumper truck. Overall effectiveness is highly dependent upon routine maintenance. Subsequent storms can resuspend collected sediments and flush them down through the collection system. Without regular cleaning and removal of settled pollutants, resuspension of captured material can contribute to stormwater pollution. Studies have shown a three-fold increase in total sediment removed per year when comparing a monthly maintenance routine with that of an annual routine.

**Performance and Inspection:** To ensure proper performance, visually inspect the catch basins to ensure that sediments and debris are being captured and stormwater is able to convey into the stormwater collection system. Catch basins should be inspected and cleaned monthly to remove accumulated sediment and debris and prevent resuspension of captured sediments in subsequent storms. In addition to monthly inspections, catch basins should be inspected after extreme weather events.



**Trash Rack**

Source: University of California, Los Angeles PERMISSION PENDING

**Potential LEED Credits:**

Primary: N/A

Other: Innovation & Design Process (1-4 Points)

**Links to Additional Information:**

Fairfax County PFM:

<http://www.co.fairfax.va.us/dpwes/publications/pfm/6.htm>

Virginia Stormwater Management Handbook:

<http://www.dcr.virginia.gov/sw/stormwat.htm#pubs>

Northern Virginia BMP Handbook:

<http://www.novaregion.org/pdf/NVBMP-Handbook.pdf>