



# SorbtiveFILTER – Sizing & Design Considerations

## Configuration and Size Determination

SorbtiveFILTER Model	Maximum Number of Cartridges	Maximum Treatment Flow Rate			Minimum Sediment Mass Removal Capacity	Minimum Total Phosphorus Mass Removal Capacity
		gpm	CFS	L/S	Pounds	Pounds
Catch Basin – SFCB1	1	18	0.04	1.1	115	0.15
Catch Basin – SFCB2	2	36	0.08	2.2	230	0.30
4ft man hole – SFM4	3	54	0.12	3.4	345	0.45
5ft man hole – SFM5	5	90	0.20	5.7	575	0.75
4X6 vault – SF46	6	108	0.24	6.8	690	0.90
6ft man hole – SFM6	7	126	0.28	8.0	805	1.05
6X6 vault - SF66	9	162	0.36	10.2	1,035	1.35
6X8 vault – SF68	10	180	0.40	11.4	1,150	1.50
8ft man hole – SFM8	14	252	0.56	15.9	1,610	2.10
6X10 vault – SF610	14	252	0.56	15.9	1,610	2.10
6X12 vault – SF612	20	360	0.80	22.7	2,300	3.00
10ft man hole – SFM10	21	378	0.84	23.9	2,415	3.15
8X12 vault – SF812	23	414	0.92	26.1	2,645	3.45
12ft man hole – SFM12	32	576	1.29	36.4	3,680	4.80
8X16 vault – SF816	36	648	1.45	40.9	4,140	5.40
8X18 vault – SF818	41	738	1.65	46.6	4,715	6.15

**Note:** Alternate models and custom configurations available, including structures without pre-treatment when applied downstream of detention.

## SIZING

**Based on flow rate** - each standard cartridge is designed to treat a maximum of 18-gpm. Flow-based sizing would typically be employed if no upstream detention is utilized.

**Based on mass pollutant loading** - each standard cartridge is designed to capture a minimum 115 pounds of sediment and minimum 0.15 pounds of total phosphorus. Mass pollutant-based sizing would typically be employed when upstream detention is utilized.

Notes:

- Refer to your local regulations and runoff hydrology design guidance to identify the required treatment flow rate or Water Quality Volume (WQ<sub>v</sub>) and treatment train requirements. A common design basis for water quality is identification of the treatment rate for 90% of the WQ<sub>v</sub>.
- Alternate configurations or connections available to meet site conditions or requirements.
- Variable cartridge heights available allowing for increased or decreased volumes of granular media and resulting corresponding treatment flow rates.
- Contact Imbrium Systems for design guidance and options.

### **Low hydraulic Drop**

- SorbtiveFILTER offers filtration treatment with less than 2.0 feet (23.5-inches) pipe invert drop through system

### **SorbativeFILTER cartridges**

- SorbtiveFILTER is comprised of one or more filter cartridges, filled with SorbtiveMEDIA housed in a variety of pre-cast configurations.
- Standard cartridges measure 18-inches in diameter and a height of 23-inches.
- Standard treatment flow rate = 18-gallons per minute per cartridge, which corresponds to a surface loading treatment rate of 2.09 gpm/ft<sup>2</sup>.
- Uniform sediment loading of 115-pounds minimum increases cartridge longevity.
- Cartridges are re-fillable.
- Cartridges can be modified to help meet your sites' needs and constraints.

### **Draindown**

SorbativeBRICK's (high surface area, Sorbtive-treated porous bricks) serve to draindown the system while adding additional sediment and dissolved phosphorus treatment, functioning primarily after the storm subsides. Drain down of remaining runoff within the SorbtiveFILTER structure will slowly be filtered and treated within 40-hours post-storm. SorbtiveBRICKS are manually washable, and replaceable as required.

### **By-Pass**

As with all filtration practices, a by-pass should be part of the treatment system design to maintain effectiveness. Implementation of an upstream by-pass diversion structure should be required to direct the water quality flow (WQ<sub>f</sub>) to the inlet of the SorbtiveFILTER and divert high flows around the treatment system. For smaller SorbtiveFILTER units, and custom configurations an internal by-pass can be made available.

### **Inspection & Maintenance**

Regular inspection and maintenance is a proven, cost-effective way to maximize water quality protection for all stormwater treatment practices, and is required to ensure proper functioning of the SorbtiveFILTER.

- Inspection of the SorbtiveFILTER system is easily performed from the surface.
- Maintenance of SorbtiveFILTER system including the cartridges and SorbtiveBRICKS requires confined space entry into the structure. Maintenance would be conducted when sediment depth reaches 6-inches, or draindown extends beyond 40-hours.
- The SorbtiveFILTER's patent pending technology that has no moving parts, keeping the pollutant removal process and maintenance effective and simple.

The primary controlling factor for performing SorbtiveFILTER maintenance is sediment load and capture. Typical site sediment loadings indicate maintenance frequency can be approximately one to three years (based on sediment loading and capacity demonstrated in the field). Extending maintenance beyond the first year should be based on historical inspection results, site conditions and resulting pollutant loading.

The sorption capacity of SorbtiveMEDIA based on bed volumes and typical urban phosphorus loads, in many cases will outlasts the SorbtiveFILTER's ability to capture sediment.

## **Pre-treatment**

SorbtiveFILTER is a proven standalone treatment system. To achieve increased performance and extend maintenance frequency, implementation of additional upstream pre-treatment such as use of the Stormceptor® System, or the application of various detention and pretreatment measures should be considered.

## **Support**

- SorbtiveFILTER Drawings, Specifications and additional Technical information is available at; [www.imbriumsystems.com](http://www.imbriumsystems.com)
- Please contact us for site-specific design support such as; internal by-passes, alternative cartridge heights, alternative system configurations, or for additional technical assistance.
- Ordering the following replacement components or material:
  - SorbtiveFILTER cartridges
  - SorbtiveMEDIA
  - SorbtiveBRICK

These items can be ordered by contacting Imbrium Systems at:

United States

(888) 279-8826

[www.imbriumsystems.com](http://www.imbriumsystems.com)

Canada & International

(800) 565-4801

[www.imbriumsystems.com](http://www.imbriumsystems.com)

## **About Imbrium**

Imbrium Systems designs and develops stormwater treatment technologies to protect water resources from pollutants. Imbrium has a strong innovation track record in the stormwater treatment industry as the creator of the Jellyfish fine sediment filter, SorbtiveMEDIA and SorbtiveFILTER with an unsurpassed 30,000 installations worldwide of the Stormceptor technology.