

ANALYSIS OF SEDIMENTS RETAINED IN FABCO INDUSTRIES CATCH-BASIN INSERT FILTERS



Executive Summary

In cooperation with a local County DPW department, Fabco Industries evaluated typical sediments collected in StormBasins and/ or StormSacks located in two Long Island, NY communities. The test samples were taken from 3 units installed at two sites identified as 349 and 350. The sediments loads were analyzed for total weight, over all composition, particle size and nutrient concentrations.

The analysis confirmed:

1. Estimated year reductions of nearly 900 pounds from site 349 and 525 pounds at site 350
2. StormBasins and StormSacks retain a full range of sediment particle sizes with more than 40% falling in the all important sub-30 micron range.
3. The captured sediments showed average nutrients concentrations of 690 mg/Kg of Nitrogen compounds and 190 mg/Kg of phosphates
4. Both units captured quantities of organic and inorganic debris. Retaining organic debris, keeping it dry and available for easy cleanout before decomposition reduces potential subsequent release of stored nutrients.

The test information reported here is also presented in a companion report "Fabco Industries, Inc, Stormwater Nutrients: P & N Test Program. This second report confirms reductions of soluble P & N using Fabco's filter cartridges.

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The study was conducted over a 4 month period. The scope included: Measuring Total weight of collected material, weight of coarse debris, sediment size analysis and determination of P & N attached to the sediment load.

The sediment loads were collected from two (2) sites: 349 & 350. Each load was pre-screened with a coarse sieve to remove trash and debris before the sediment sample was taken and analyzed for nutrients. All analytical work was performed by Ecotest Laboratories, Inc, 7 Sheffield Ave, Babylon, NY 11703

Site descriptions:

Site 349 had two units installed in the parking lot of a small shopping center across the street from a local beach. Site 350 had 1 StormSack installed on a very busy, 4 lane urban Road.

Chart 1:

Site	Particle Size					Nutrient analysis			
	Total Load	Particle size >.5"	Particle size <.5"	Percent 43-85 um	Percent < 30 um	Tot. K. Nitrogen	Nitrate as N	Total Nitrogen	Total Phos.
349	281 lb	16 lb	266 lb	43.6%	48.8%	590 mg/Kg	8.2 mg/Kg	600 mg/Kg	200 mg/Kg
350	175 lb	20 lb	155 lb	53.5%	41.0%	780 mg/Kg	<1.0 mg/Kg	780 mg/Kg	180 mg/Kg

Summary

Extrapolating this data over a 12 month period more than 847 lbs in sediments would be captured at site 349 and 529 lbs at site 350. More than 40% of the sediments collected could be expected to be less than 30 microns.

Using the estimated yearly weights and the nutrient concentrations from chart 1 annual nutrient reductions can be calculated:

Est. reductions at Site 349: 216 grams TN & 72 grams TP

Est. reductions at Site 350: 164 grams TN & 38 grams TP

Using the average, annual P & N values 100 units would capture enough sediment to reduce Total nitrogen by 42 pounds and Total phosphorous by 12 pounds. These estimated reductions do not include any contribution from the organic debris that was screened prior to analysis.

Conclusions:

As part of a series of simple Best Management Practices the StormBasin/StormSack can assist the stormwater manager in complying with State and Federal water quality goals.

1. StormBasins/StormSacks will collect and hold a significant quantity of sediment, debris and trash during the course of a year. They retain a full range of sediment particle sizes, including the all important sub-30 micron range, thereby contributing to TSS reductions
2. Fabco Catch basin insert filters can assist managers in reaching there water quality/TMDL goals by retaining contaminated sediments. Although this study concentrated on P & N it would be reasonable to expect other pollutant types such as heavy metals, hydrocarbons and even pathogens would also exist in the sediments. Additional reductions could be obtained through the use of filter cartridges available with the StormBasin/StormPod products.
3. When combined with other simple stormwater programs such as spill prevention and existing street sweeping programs Fabco inserts, would help keep the paved areas cleaner, minimize the pollutants loads available to first flush action, and reduce the pollutants entering waterways either through the drains or directly from sheet flow off surrounding surfaces.