FABCO INDUSTRIES, Inc
VEHICLE REFUELING/STORAGE LOT
TEST PROGRAM

Prepared by:

Fabco Industries
66 Central Ave
Farmingdale, NY 11735
Tel: 631 393 6024

Len Emma
John Markee

Executive Summary

As part of a cooperative program between a local municipal corporation and Fabco Industries, a Long Island based manufacturing firm, a series of tests were performed to determine the effectiveness of catch basin inserts in preventing the release of pollutants contained in storm water flowing off parking lots. The product installation and performance trials took place over a two-year period at two vehicle fueling and storage yards. The device being tested is the Fabco StormPod, a versatile catch basin insert that can be fitted with a variety of different media cartridges, which can retain various noxious substances and entrained debris.

In conclusion, it was found that the Fabco StormPod was effective in the capture and retention of pollutants and debris found in surface water runoff. Specifically, concentrations of 3 types of heavy metals were reduced by an average 65% while trace levels of oil and grease were treated to below detectable limits. Of particular significance is the fact that the individual units operated at an acceptable level of efficiency despite being in service for extended time periods approaching one year.

As a corollary finding, it is interesting to note that the commercially available Nalgene Sampling System employed for these tests was demonstrated to be well suited for this storm water sampling application.

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Introduction:

In November 2004, Fabco Industries, Inc, located in Bohemia, NY enter into a cooperative program with a local municipal corporation to test the effectiveness of our StormPod storm water filter unit in treating the surface water runoff entering its storm water sewers. Three maintenance yards were chosen for the study. In total 5 StormPod test units were installed into existing 24-inch diameter storm water drains.

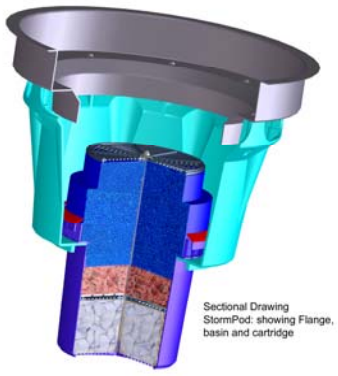
These locations were selected because they are used for vehicle refueling and storage and, as such, are expected to represent sites where automotive discharges and heavy metal corrosion products could be present as sources of stormwater contamination.

The Technology:

The StormPod is a simple filtering device that fits into a typical round parking lot or roadside drain. The mounting flange of the StormPod sits on the iron frame just below grate subsequently raising the grate a little less than 1/8". In this position surface water runoff leaving the paved surfaces surrounding the drain is funneled into the StormPod where it is filtered and discharged out the bottom to the storm water system.

A StormPod is comprised of three elements: a plastic flange to adapt the filter to a round grated frame opening, a plastic basin to collect runoff water, debris etc, and a filter cartridge that fits into an opening at the bottom of the basin.

The StormPod can be equipped with any of 4 standard user replaceable filter cartridges. Additionally the filter body design is adaptable to modification with other filtering technologies as they become available. In this study a prototype cartridge was employed that was built using a new filtering media identified as Poly-P. In all 3 types of cartridges were used in the study: Standard, Heavy metals and Poly-P.



Sectional Drawing StormPod: showing Flange, basin and cartridge

Testing /Sampling:

The sampling program was set-up to simultaneously collect both the untreated and treated streams of stormwater flowing through the unit. The equipment used was the NALGENE (I-CHEM) Storm Water Sampler (as shown in Appendix B, fig.1 & fig. 2). The use of this device permits the remote collection of a sample from the first flush of a qualifying event.

The Nalgene sampler assembly consists of a round black mounting tube and a translucent 1 liter, plastic sampling bottle that is inserted down into the tube. In order to minimize the effects of adsorption into plastic, the standard NALGENE sampling bottles were replaced with a *fluorinated plastic container.

* A fluorocarbon surface (both inside and outside) provides improved barrier properties and reduces absorption and penetration. Fluorination enhances long-term container performance and prevents permeation loss)

Prior to attaching the mounting tubes, a small hole (3”dia) was drilled in the bottom of the StormPod basin to allow water to pass out and into the sample bottle. A piece of round plastic material with a 4” diameter hole in the center was glued to the bottom of the filter cartridge. This flat plastic washer-like device insured that water leaving the cartridge would be directed out of a central hole into the mounting tube and to the sample bottles.

The black Nalgene tubes were mounted vertically (extending downwards) from the bottom of the StormPod basin and filter cartridge using clevis pins so that they could be removed when required.

After completing these preparatory steps the white sample bottles were then inserted into the mounting tubes and the assembly was fixed, using the clevis pins, to the StormPod basin and cartridge body. In this configuration the bottle under the Basin would collect the sample of untreated water whereas the bottle under the cartridge would catch a sample of treated water.

Site Descriptions:

Site 1: 2 StormPods were installed in round drains located approximately 30 feet apart (in-line length wise) at the center of a rectangular parking field approximately 200’ x 36’. Each unit serviced approximately one-half of the total paved surface area. For this test, the StormPod unit nearest the refueling pumps was used for testing.

Site 2: 2 StormPods were installed into drains that were situated an equal distance from the refueling pumps. Each basin serviced an area of approximately 60’ in diameter. It should be noted that during the course of the testing, due to changes in runoff patterns and the height of the water column that collected below the grate in the storm drains, it became necessary to use a total of 3 sites. However in so much that each of these basins was no more than 50 feet from the refueling pumps we considered all 3 as one site.

Site 3: This site did not provide enough space below the filtering unit for the installation of the sampling equipment. For this reason, Site 3 was not included in the study.

There was minimal vegetation present at each site. This aspect helped extend the periods between maintenance visits.

Objectives:

These field studies had several major objectives:

1. To determine whether the StormPod was effective in reducing automotive related pollutants in storm water
2. To Determine the maintenance requirements of the unit
3. To Characterize the spent cartridges and collected waste material for disposal

4. To Determine the feasibility of using the Nalgene sampling system on a StormPod unit
5. To Compare the effectiveness of various filter cartridges on the know pollutants

Testing Methods:

December 2004 to February 2005

During these late fall and winter months, Site 1 was revisited to check the status of the previously installed StormPod units. It was noted that each basin contained approximately 15-18 pounds of sediment and debris. Although there was no standing water, the basin still needed to be cleaned out. The sediment and debris were removed and new updated cartridges were installed. The new cartridges featured an improved foam pre-filter in order to allow additional sediment and debris to be collected and, thereby, to extend the maintenance interval.

An external laboratory evaluation of the spent cartridges showed contamination of the foam pre-filter by a fine residue of oil-laden grit. When the cartridges were opened for further inspection, it was discovered that the absorbent filter media materials inside had also retained oily contamination (See Appendix D New York Product Testing & Services Inc.).

Although visual inspection of the area indicated that the paved surface around the drains appeared to be very clean and without obvious traces of oily contamination, evaluation of the filter confirmed that the StormPod units did capture and retain these contaminants and prevent them from ultimately infiltrating into the sandy bottom of the catch basin sewer structure. Furthermore, the cartridge evaluation also confirmed that the filters although contaminated could be disposed of as non-hazardous waste.

February 2005 to October 2005

During this time span all 3 sites were inspected and maintained to ensure that the installed units were operating properly. The installations at Site 1 and Site 2 appeared to operate without any obvious problems. The operation of the unit at Site 3 could not be properly evaluated due to the high groundwater level in the surrounding area.

Inasmuch as Site 1 units had provided trouble-free operation, it was decided to replace the two cartridges so that a rigorous inspection could be performed on the internal filter components. Samples were taken of the storm basin soil residues and the filter components were transported back to the Fabco Facility (See Appendix D, EcotTest Laboratories, dated 10/28/05).

The soil samples were taken directly from the collected debris pile in the basin. These samples appeared as blackish sandy soil with a slight petroleum odor. Analysis was performed for oil/grease, pesticide derivatives and heavy metals. The results (as shown in Appendix D) indicated that there were no pesticide residues in the sediments. Chromium and lead were found to be present at parts per million levels, as is expected due to vehicle operation and storage in the surrounding areas. Only qualitative results were obtained for oil and grease owing to the analytical uncertainties associated with the limited size of the combined sample.

Again, a spent filter cartridge (from Site 1) was disassembled and samples of the spent filter media were collected and sent for disposal characterization. Visually, the

cartridge appeared to have received considerable stormwater discharge as evidenced by the amount of sediment and vegetative matter present in the catch basin. Fabco requested that the laboratory perform the EPA Toxic Component Leaching Procedure (TCLP) for the following three analytes: chromium, lead and benzene (see Appendix D, Ecotest Laboratories, dated 11/08/05). The presence of the heavy metals was indicated by the analyses of the storm basin residues as discussed above. Benzene was chosen because it is typically associated with the presence of petroleum products. The analytical results for each of the cartridge components indicated that neither the heavy metals nor the benzene were leached from these materials. These findings confirmed the results of the previous tests on filter cartridges. Based on these results, it would appear that the spent cartridges from this type of operation do not require disposal as RCRA hazardous wastes.

November 2005 to September 2006

In November 2005 it was decided to initiate a sampling program to evaluate the effectiveness of the installed StormPod units in reducing the release of oil/grease and heavy metals to the environment. Early attempts to collect usable samples were beset with a number of difficulties including equipment problems and the relative scarcity of adequate rain events. As a result, valid sampling did not begin until the late summer of 2006.

September 1st to September 23rd, 2006

Successful sampling was conducted at the Site 1 location using the Standard design cartridge.

September 23rd to December

The test cartridge and StormPod assembly was relocated to Site number 2 for further testing. In addition, two other metals-specific cartridges were tested at Site 2. In all cases, sampling was performed after a dry period of at least 72 hours.

December 13th: Testing resumed at Hauppauge: A new standard cartridge was installed at the start of this new study. Also, during the installation of the new cartridge, a sample of captured sediment was taken so that a Toxic Characteristic Leaching Procedure (TCLP) could be performed. The TCLP procedure is required by local, state and federal agencies to identify proper disposal of a contaminated waste.

Methods summary:

- Cleanout Frequency: 3 times per StormPod during a one year period.
- Recommended cleanout schedule: The StormPods should be cleaned in Feb-Mar, May-Jun and Oct-Dec
- Approx. Weight of debris removed per StormPod
    - Site 1 : 40 lbs sediment and vegetation
    - Site 2 : 15 lbs mainly sediments
    - Site 3: 60 lbs, water soaked sand and debris (unit constantly underwater)
- Cartridge replacement: Yearly*
- Disposal characterization: Testing of the spent cartridge and collected debris and sediments revealed low level contamination. Again, based on the results, it would appear that the spent cartridges and collected debris do not require disposal as RCRA hazardous wastes. (Appendix D)

- The StormPods had the Cartridges replaced multiple times during the year due to 1) a manufacturer's upgrade and 2) Abortive attempts to initiate a sampling program. However, testing of the cartridge in October 2005 after 8 months of in the ground operation confirmed that the unit was still functional and had remaining capacity. In general we have a high confidence level that the cartridge would have remained effective for its 1 year predicted life.

Field Report data: The EcoTest Laboratory in North Babylon, NY performed all analyses for the data generated during the three-month test period from September to December 2006.

Sampling Summary:

A total of 10 samples were taken during the course of this study. The study lasted from September 1st to December 1st for a total of 91 days. (See Appendix B for site specific sampling details)

Test	Rain Event	Location	24 Hour Rainfall [2]	Cartridge [1]	Analyte(s)	% Reduction
1	Sept 1	1	0.15"	Std 1, Trial 1	Oil & Grease	ND*
2	Sept 14	1	0.35"	Std 1, trial 2	Oil & Grease	45%
3	Sept 23	1	0.10"	Std 1, Trial 3	Metals	Cr – 92% Pb – 94%
4	Oct 4	2	0.29"	Std 1, Trial 4	Oil & Grease	ND*
5	Oct 11	2	2.47"	Std 1, Trial 5	Metals	Cr – 76% Pb – 88% Zn- 70%
6	Oct 27	2	0.27"	HV Metals, Trial 1	Metals	Pb – 36% Zn – 63%
7	Nov 7	2	0.10"	HV Metals Trial 2	Metals	Cr – 60% Pb – 75% Zn – 47%
8	Nov 12	2	0.19"	Poly-P, Trial 1	Metals	Insufficient Sample
9	Nov 23	2	1.37"	Poly-P, Trial 2	Metals	Cr – 44% Pb – 70% Zn – 49%
10	Dec 1	2	0.13"	Std 2	Oil & Grease	25%
11	Dec 13	1	0.16"	Std 3	Oil & Grease	ND

*ND: Oil and Grease was non-detectable in both treated and untreated samples

[1] Tests 1 thru 5 were completed using the same cartridge (total of 5 trials). The object of the testing was to obtain some measure of cartridge longevity. Similarly, tests 6 & 7 as well as 8 & 9 were run using the same cartridges.

[2] National Weather Service, Long Island MacArthur Airport

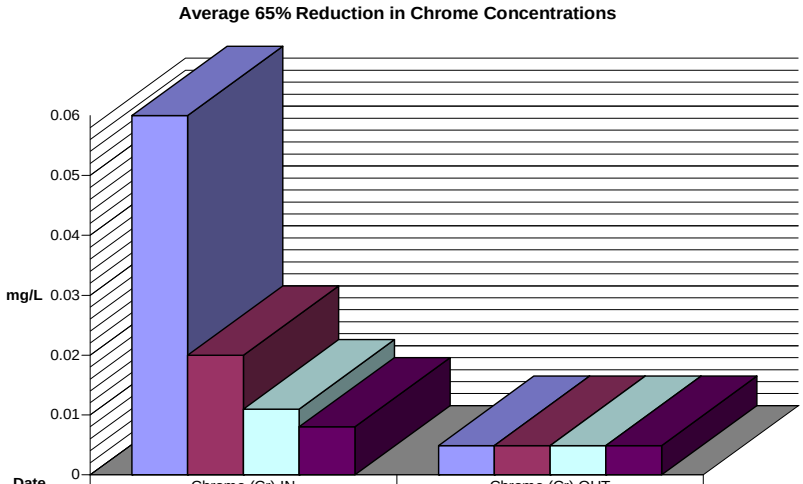
In general, all sampling at each of the two locations was accomplished using the same drain. However, after two instances at Site 2 wherein the output sampler failed to collect a full container, it was decided to move the modified catch basin assembly to a different drain that appeared to receive more flow during rain events. The sampling effort at this different drain resulted in two completely filled containers. Additionally, inspection of the paved surface surrounding the drain grate indicated that considerable flow had entered the area during the storm event.

The results of this study are summarized below and in the accompanying graphs (complete results in Appendix C). In addition to the three metals tabulated below,

analyses were also performed for Cadmium and Mercury. However the results indicated these materials were not present in measurable quantities.

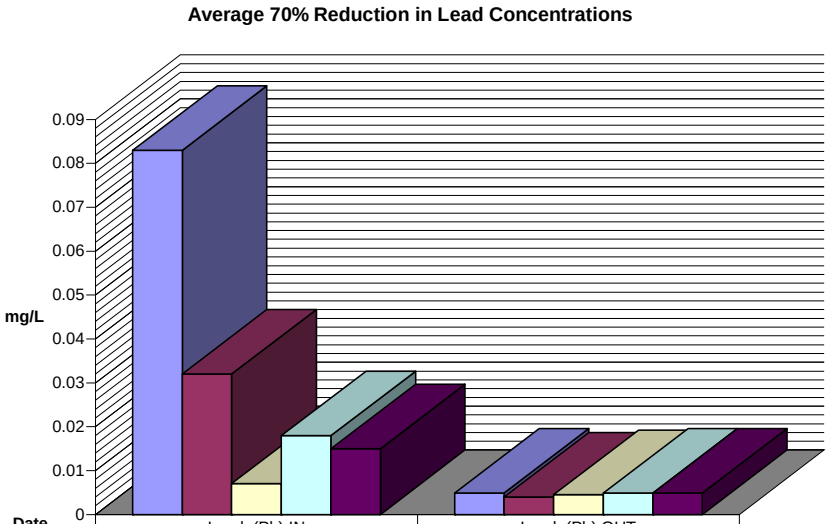
Pollutant	Minimum Reduction %	Maximum Reduction %	Average %	Graph
Oil and Grease	25%	45%	35%	-
Chrome	44	92	68%	1
Lead	36	94	73%	2
Zinc	47	70	57%	3

Graph 1: Reduction of Heavy metal Chromium form storm water



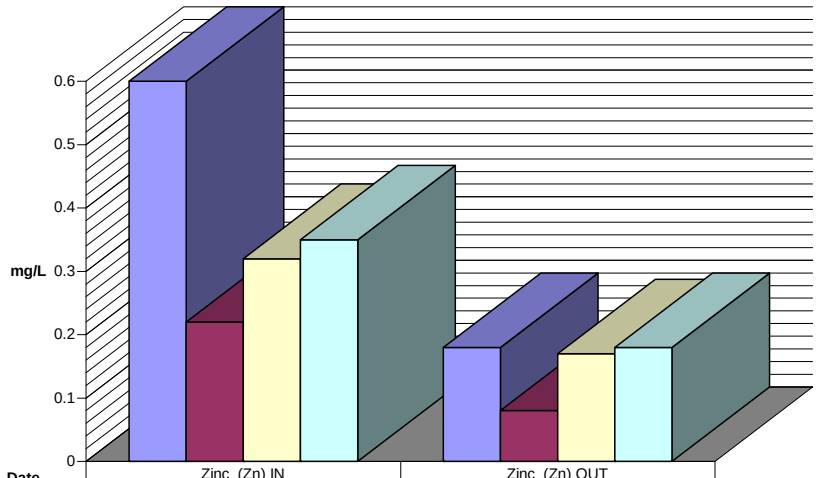
Date	Chrome (Cr) IN	Chrome (Cr) OUT
9/24/06	0.06	0.0049
10/13/06	0.02	0.0049
11/8/06	0.011	0.0049
11/27/06	0.008	0.0049

Graph 2: Reduction of Heavy metal Lead form storm water



Date	Lead (Pb) IN	Lead (Pb) OUT
9/24/06	0.083	0.0049
10/13/06	0.032	0.004
10/31/06	0.007	0.0045
11/8/06	0.018	0.0049
11/27/06	0.015	0.0049

Graph 3: Reduction of Heavy metal Zinc form storm water



Date	Zinc (Zn) IN	Zinc (Zn) OUT
10/13/06	0.6	0.18
10/31/06	0.22	0.08
11/8/06	0.32	0.17
11/27/06	0.35	0.18

Summary:

In relationship to the 5 stated test objectives:

1. Testing confirmed that the Fabco StormPod does provide substantial reductions in heavy metals as well as oil and grease in a stormwater runoff matrix. Despite the fact that the conclusion concerning oil and grease is substantiated by only limited data, it is, nonetheless, indicative of valid results.
2. Actual field experience confirmed that 3 cleanouts per year were required for effective operation. The StormPods should be cleaned in Feb-Mar, May-Jun and Oct-Dec.
3. It would appear, based on a limited sampling that the spent cartridges and collected debris do not require disposal as RCRA hazardous wastes.
4. The NALGENE Sampling System appeared to function in an adequate manner for the testing protocol. Although there were some test failures (Test 8), these can be attributed to insufficient water, being directed to the catch basin under test. After re-locating to another drain the sample bottles operated reliably through out the test.

   In regard to the possible adsorption of pollutants to the plastic sample bottles, the special fluorinated bottle seemed to operate as advertised, yielding good test results down to the 5 mg/L level.
5. Effectiveness of various filters:

The test can be divided into 2 broad categories: Oils & Grease and Heavy metals.

a. Oils & Grease: The results show that the standard Fabco filter reduced hydrocarbon compounds; oil & grease by an average 35%. It is important to note that only limited data are available for oil and grease probably due to the limited mobility of these materials on the asphalt surface surrounding the drains. Even though, the presence of these materials is clearly indicated by stains from past spills.

   Additionally, all the data points, both untreated and treated, recorded during the testing are very close to the Lower Detection Limit of the laboratory equipment – 5 mg/L. As such we are uncertain of exactly what lower level for oils was attained during treatment. However, even assuming a very conservative, estimated treatment level (4.5 mg/L) the average percent reduction of 35% is a significant reduction considering the extremely low level concentrations in the untreated water. Additionally, as the test was run on partially used cartridges, the results seem to support claims that accumulated oils and grease compounds captured by the cartridge are retained and not released during subsequent storm events.

b. The data obtained for heavy metals clearly stands on its own merits and also confirms that the filter cartridges can treat multiple pollutant species simultaneously.

   i. Overall the Standard cartridge and the special HV metals cartridges performed similarly during the test. However, we would expect that the extra filtering capacity available in the HV metals cartridge would allow the unit to treat both higher concentrations of heavy metals over a longer period time.

ii. The Poly-P filter cartridge although effective seems to have a lower efficiency when compared to either the HV metals or standard cartridge. However, the Poly-P material is tailored to nutrients removal. Its inclusion in this testing protocol was to confirm whether it could be effective on other pollutant species as well. While the results in terms of metals are lower than the other cartridges it is satisfying to see that it is more than a single purpose solution.

Conclusion:

The data collected during these tests at both sites indicate the existence of very low levels of oils and grease together with persistent levels of Chromium, Lead and Zinc. The heavy metal concentrations are consistent with values predicted by numerous storm water documents for vehicle related activities.

Based on our test results the use of a filter cartridge that is configured primarily for heavy metals with some oil and grease capability seems the best course of action. The heavy metal cartridge would continue to reduce the metals concentrations while the oil and grease capability would provide some added insurance to what seems to be a successful spill prevention program.

Appendices

Appendix A:

Detailed sampling information:

Site 1: 4 individual test cycles were performed at this site.

- On August 30th, 2006 a New Standard Cartridge (Std1) and StormPod unit complete with Nalgene Storm water samplers were installed at the site.
- Test 1) Lab test dated 9/6/06: **Standard Cartridge trial 1**: Analysis of the samples revealed concentrations of oils and grease below detectable limits. Basically nothing in – nothing out.
- Test 2) Lab test dated 9/29/06: **Standard cartridge – Trial 2**: A test for Oil and Grease confirmed 16 mg/L concentration in the untreated water and 8.8 mg/L after treatment. *A reduction of 45%*
- Test 3) Lab test dated 10/02/06: **Standard Cartridge – Trial 3**: A test for heavy metals lead (Pb) and Chromium (Cr)

HV Metal	Conc. Untreated, mg/L	Conc. Treated, mg/L	% reduction
Cr	0.06	<0.005	92%
Lead	0.083	<0.005	94%

Site 2: 7 individual tests were completed using 4 different cartridges

- Following the last sampling run at Site 1 the StormPod unit and cartridge was removed and re-installed at Site 2. The intention here was to see whether the cartridge would retain its effectiveness. Items 4 & 5 used this cartridge.
- Test 4) Lab test dated 10/16/06: **Standard cartridge trial 4:** Analysis of the samples revealed concentrations of oils and grease below detectable limits. Basically nothing in – nothing out.
- Test 5) Lab test dated 11/01/06: **Standard cartridge trial 5**: Test for 4 heavy metals:

HV Metal	Conc. Untreated, mg/L	Conc. Treated, mg/L	% reduction
Cd	<0.005	<0.005	-
Cr	0.02	<0.005	76%
Lead	0.032	<0.005	88%
Zn	0.6	0.18	70%

The original cartridge was then replaced with a filter cartridge specifically designed for heavy metals for sampling runs.

Test 6) Lab test dated 11/07/06: **HV metals cartridge – Trial 1**: Test for 4 heavy metals:

HV Metal	Conc. Untreated, mg/L	Conc. Treated, mg/L	% reduction
Cd	< 0.005	<0.005	-
Cr	< 0.005	<0.005	-
Lead	0.007	<0.005	36%
Zn	0.22	0.08	63%

- Test 7) Lab test dated 11/27/06: **HV metals cartridge – Trial 2:** Test for 3 heavy metals

HV Metal	Conc. Untreated, mg/L	Conc. Treated, mg/L	% reduction
Cr	0.011	< 0.005**	60%
Lead	0.018	< 0.005**	75%
Zn	0.32	0.17	47%

**Use 0.0045 in reduction calculation

After test 7 the cartridge was replaced with a specially designed unit containing a proprietary fill material.

Test 8) Lab test dated 12/05/06: **Poly-P Cartridge – Trial 1**: The drain selected for the test was situated in at a raised elevation in the parking field. As a result insufficient water was channeled to the drain for sampling requirements

For test 9, 2nd run on modified Poly-P

- Test 9) Lab test dated 12/05/06: **Poly-P cartridge – Trial 2**: Test for 4 heavy metals:

HV Metal	Conc. Untreated, mg/L	Conc. Treated, mg/L	% reduction
Cr	0.008	<0.005**	44%
Lead	0.015	<0.005**	70%
Zn	0.35	0.18	49%

**Use 0.0045 in reduction calculation

- Test 10) Lab test dated 12/05/06: New Standard Cartridge installed: Testing for oils and grease. Lab results show and untreated value of 6.1 and less than 5.0 for treated. For the purposes of calculations we used 4.5 as the value for the treated out which resulted in a conservative 25% reduction. In general oil and grease reductions are greater than 50%, which in this situation would have resulted in a treated value of 3.0 mg/L. When dealing with such low values, the final result maybe more important than the absolute reduction percentage. Earlier studies performed by Fabco show much greater effectiveness at higher concentrations.

- Test 11) Lab test dated 12/18/06: New standard cartridge: Results show Non detectable concentrations (< 5 mg/L) in both the Untreated and Treated samples.

Appendix A: Spread Sheet: Treatment of Heavy Metals

FABCO Industries

VEHICLE REFUELING/STORAGE LOT TEST PROGRAM

Collection Date	Cartridge	Rain Fall		Lead (Pb) IN	Lead (Pb) OUT	% Reduction		Chrome (Cr) IN	Chrome (Cr) OUT	% Reduction		Zinc (Zn) IN	Zinc (Zn) OUT	% Reduction	
9/24/06	Std	0.1		0.083	0.0049	94.1%		0.06	0.0049	91.8%		-	-	-	
10/13/06	Std	2.47		0.032	0.004	87.5%		0.02	0.0049	75.5%		0.6	0.18	70.0%	
10/31/06	Metals	0.27		0.007	0.0045	35.7%		<.005	<.005	-		0.22	0.08	63.6%	
11/8/06	Metals	0.1		0.018	0.0049	72.8%		0.011	0.0049	55.5%		0.32	0.17	46.9%	
11/27/06	Poly P	1.37		0.015	0.0049	67.3%		0.008	0.0049	38.8%		0.35	0.18	48.6%	
Average reduction						71.5%				65.4%				57.3%	
Collection Date	Cartridge	Rain Fall		Cadmium (Cd) IN	Cadmium (Cd) OUT	% Reduction		Mercury (Hg) IN	Mercury (Hg) OUT	% Reduction					
9/24/06	Std	0.1		-	-	-		-	-	-					
10/13/06	Std	2.47		<.005	<.005	-		-	-	-					
10/31/06	Metals	0.27		<.005	<.005	-		-	-	-					
11/8/06	Metals	0.1		-	-	-		-	-	-					
11/27/06	Poly P	1.37		-	-	-		0.0003	0.00025	-					
Average reduction										-					

Appendix B: Nalgene Storm water Sampler

Nalge Nunc International
International Department
75 Panorama Creek Drive
Rochester, NY 14625. U.S.A.
Catalog: Nalgene Labware
Category: Environmental
Catalog number: 1100
Product: Storm water sampler
www.nalgenelabware.com

1100 Storm Water Sampler

Materials:

- high density polyethylene, EPDM gasket, polypropylene ball valve and closure.

Collects a full one liter first flush grab sample into a 1000ml NALGENE® HDPE sample bottle within the first minutes of storm water outfall flow. Floating ball valve automatically closes off sample port after bottle is full to prevent comingling with later run-off and volatile analyte loss. Meets EPA NPDES MSGP (Fed. Reg. FRL-6880-5 10/20/00) and most state general permit grab sampling requirements. Sample bottle is leakproof when closure is applied. Sampling device intended for one-time use. Use with Storm Water Mounting Kit (catalog number 1150-1000). Not for oil and grease sample collection.

1150 Storm Water Mounting Kit

Materials:

- UV stabilized high-density polyethylene tube, 24" steel stake, stainless steel worm clamp and lanyard, nylon rivets, polyester screen, wire hanger, carabiner-style snap

Mounting tube can be positioned in storm water ditch, stream or grate outfalls. Use the wire hanger and carabiner-style snap to suspend the tube from a storm grate. For stream or ditch mounting, position the steel stake or a T-post in the outfall, and secure the mounting tube using the stainless steel worm clamp. Position once, and reload with disposable samplers (1100-1000 sold separately). Complete installation instructions included.

2197 Fluorinated Wide-Mouth Bottles

Materials:

- fluorinated polypropylene screw closure
- fluorinated high density polyethylene

Safe, durable, cost-efficient line of fluorinated wide-mouth bottles. Fluorinated surface provides improved barrier properties and reduces solvent absorption and permeation. Fluorination enhances long-term container performance, prevents material loss due to permeation and yields lower extractables. Wide-mouth design allows for easy filling and dispensing of solid and liquid materials. Split- and puncture-resistant. Recyclable.

NALGENE® Storm Water Sampler

The NALGENE® Storm Water Sampler is a convenient and affordable device for collecting quarterly storm water grab samples in compliance with EPA sampling requirements. The NALGENE Storm Water Sampler can collect a full one liter grab sample of first flush storm water through a storm water ditch, stream or storm grate outfall. Position the sampler in its protective mounting tube at a convenient time prior to a rain event, and leave it in place until after the storm. The sampler automatically collects the sample into a NALGENE sample bottle, shutting off after the bottle is full to prevent dilution with later runoff. The sample can be conveniently retrieved after the storm. No more standing in the rain waiting for water to flow, or missing sampling events.

Affordable

Compare with other mechanical or automated samplers. The NALGENE Storm Water Sampler is affordable enough to sample multiple outfalls in one rain event. The lowest cost EPA compliant alternative starts at over $350.00.

Satisfies EPA Sampling Requirements

The Storm Water Sampler collects a full liter of sample within the first 30 minutes of a qualifying rain event. The sampling mechanism closes after sample collection to prevent co-mingling with later run-off or volatile analyte loss.

Easy to Use

Position the reusable Mounting Kit once, then just re-load with samplers. No programming or complicated trip-switch mechanisms. Water simply flows through the sampler's collection funnel, and directly into a NALGENE sample bottle. When the bottle is full, a floating ball valve seals off the sample collection port.

When the sample is retrieved, the collection funnel is discarded, and replaced with a standard NALGENE closure for leakproof lab transport. Suspended solids are either collected in the bottle or trapped by the mounting tube's collection screen for visual evaluation.

Prevents Cross Contamination

The sampling device is disposable. Use it once, and throw it away! No decontamination required. No chance of cross-contamination between samples. The reusable mounting tube can be dedicated to a single outfall.

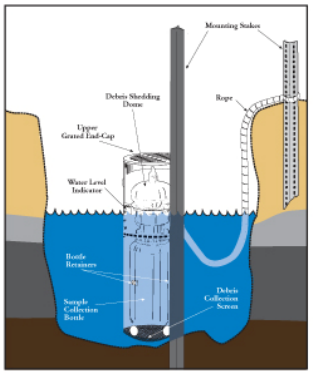
Convenient

The storm water sampler can be positioned in a storm water outfall prior to a qualifying rain event, and retrieved at a convenient time after the storm. No need to rush to remote sampling locations trying to catch the first 30 minutes of flow.

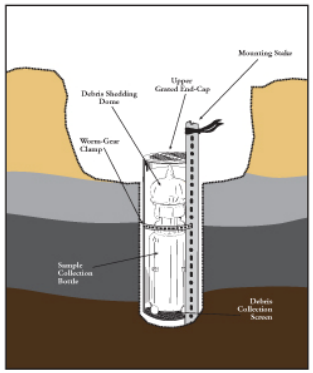
Versatile

The Storm Water Sampler can be mounted in a variety of outfall types including storm grates, ditches and streams. Positioning instructions are included with each sampler and mounting kit.

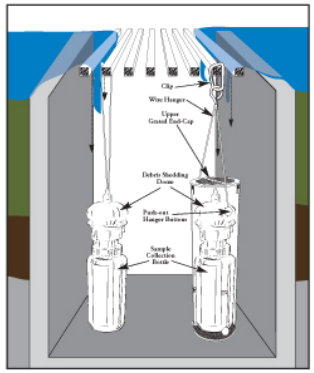
Mounting Kit Storm Water Sampler



Stream Mount



Ditch Mount



Grate Mount

Appendix B, fig 2

NALGENE® Storm Water Sampler and Mounting Kit
Cat. Nos. 1100-1000 and 1150-1000

Storm Water Sampler
NALGENE Cat. No. 1100-1000
(Single use Disposable)

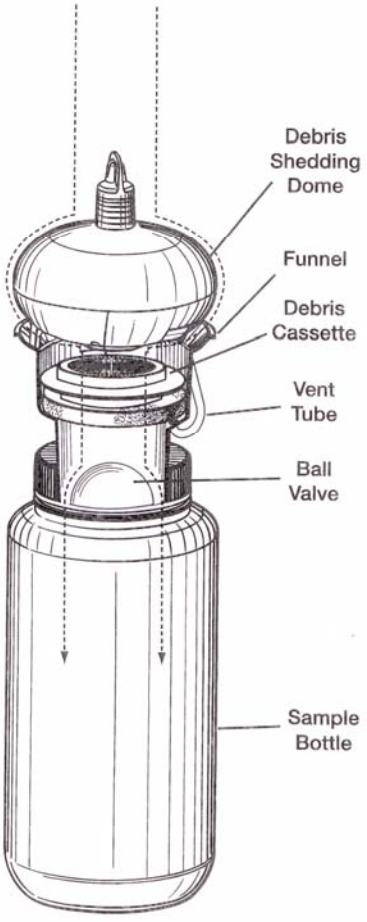
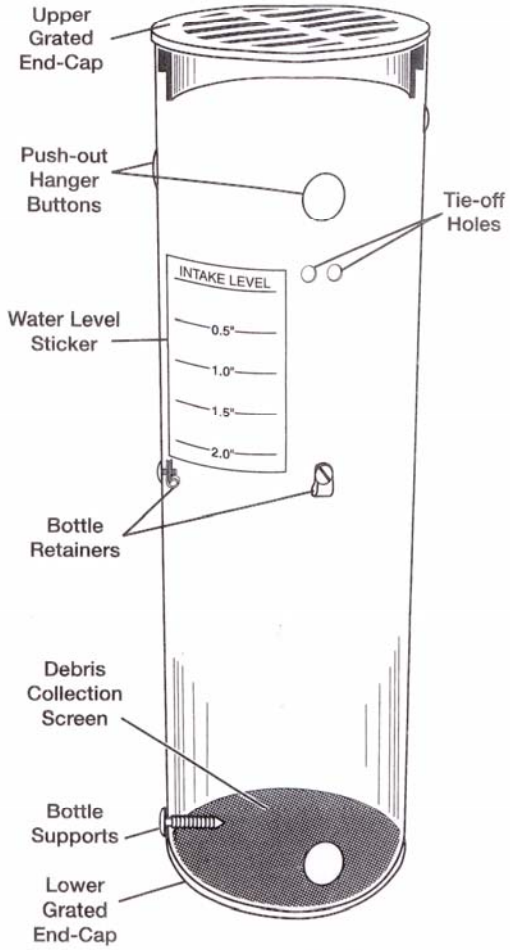


Fig. 1

Storm Water Mounting Kit
NALGENE Cat. No. 1150-1000
(Reusable)



Mounting Tube

Appendix C: Individual Test Reports

For Heavy Metals and Oils & Grease

Prepared by:

ECOTEST Laboratories, Inc

377 Sheffield Ave

North Babylon, NY 11703

(631) 422-5777

Fax: (631) 422-5770

www.ecotestlabs.com

Test	Rain Event	Location	Analytical Parameters	Report Date	Untreated Sample #	Treated Sample #
1	Sept 1	1	Oil & Grease	09/06/06	0291	0292
2	Sept 14	1	Oil & Grease	09/20/06	0296	0297
3	Sept 23	1	Metals	09/24/06	0249	0250
4	Oct 4	2	Oil & Grease	10/16/06	0316	0317
5	Oct 11	2	Metals	11/01/06	0318	0319
6	Oct 27	2	Metals	11/07/06	0322	0323
7	Nov 7	2	Metals	11/27/06	0324	0325
8	Nov 12	2	No data	ND	ND	ND
9	Nov 23	2	Metals	12/05/06	0331	0332
10	Dec 1	2	Oil & Grease	12/11/06*	0333	0334
11	Dec 13	1	In Process	12/18/06	0339	0340

Appendix D: Individual Test Reports

Prepared by:

ECOTEST Laboratories, Inc 377 Sheffield Ave North Babylon, NY 11703 (631) 422-5777 www.ecotestlabs.com	- Or -	New York Product Testing Services 110 Colin Drive Holbrook, NY 11741 (631) 472-7300 www.nypts.com

Disposal Characterization

1) Spent Cartridge

2) Analysis of collected Debris

3) Spent Cartridge

Test	Location	Item Tested	Analytical Parameters	Report Date	Test Method	Treated Sample #
1	Site 1	Spent Cartridge	Volatiles & Semi Volatiles	03/17/05	EPA 8260, 8270	1068245 1068246
2	Site 1	Collected debris	Oil & Grease Metals Pesticides	10/28/05	EPA 8081, 6010, 413.1 and SM182540G	0169, 0170, 0171
Test 3 represents TCLP testing on the individual components of a spent filter cartridge- 4 separate substances						
3	Site 1	Foam	Metals Benzene	11/08/05	EPA 6010, 8021, 1311	0172
		MYCELX	Metals Benzene	11/08/05	EPA 6010, 8021, 1311	0173
		XTEX	Metals Benzene	11/08/05	EPA 6010, 8021, 1311	0175
		Zeolite	Metals Benzene	11/08/05	EPA 6010, 8021, 1311	0174
4	Hauppauge	Collected Sediments	TCLP for metals Cr, Pb, Zn	11/22/06	EPA 6010, 1311	0336