



## State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Nonpoint Pollution Control

Division of Water Quality

Post Office Box 029

Trenton, New Jersey 08625-029

609-633-7021 Fax: 609-984-2147

[http://www.state.nj.us/dep/dwq/bnpc\\_home.htm](http://www.state.nj.us/dep/dwq/bnpc_home.htm)

JON S. CORZINE  
Governor

MARK N. MAURIELLO  
Acting Commissioner

May 27, 2009

Thomas E. Pank  
1302 Rising Ridge Road  
Mount Airy, MD 21771

Re: Extension of Conditional Interim Certification for the BaySeparator by Baysaver Technologies, Inc.

**Expiration Date: May 15, 2011**

Dear Mr. Pank:

The Stormwater Management Rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by New Jersey Corporation for Advanced Technology and have been certified by the New Jersey Department of Environmental Protection (NJDEP).

The certification process has been revised. The revised process places MTDs into five categories. The BaySeparator by Baysaver Technologies, Inc. has been qualified for Category II, MTDs with Interim Certifications.

The NJDEP received the maintenance plan required under Category II and acknowledges that the requirements for this category are met; therefore, the expiration of the interim certification letter dated September 5, 2008 has been extended until May 15, 2011.

The Department anticipates proposing further adjustments to this process through the readoption of the Stormwater Management Rules. Additional information regarding the implementation of the Stormwater Management Rules N.J.A.C. 7:8 are available at [www.njstormwater.org](http://www.njstormwater.org). If you have any questions regarding the above information, please contact Ms. Sandra Blick of my office at (609) 633-7021.

Sincerely,

Barry Chalofsky, P.P., Chief  
Bureau of Nonpoint Pollution Control



JON S. CORZINE  
Governor

State of New Jersey  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Division of Watershed Management  
Office of the Director  
401 E. State Street, P.O. Box 418  
Trenton, NJ 08625-0418  
Telephone: (609) 984-0058  
Fax: (609) 633-0750

LISA P. JACKSON  
Commissioner

October 17, 2008

Tom Pank  
Baysaver Technologies, Inc.  
1302 Rising Ridge Road Unit 1  
Mount Airy, MD 21771

Re: Reinstatement of Conditional Interim Certification  
BaySeparator by BaySaver Technologies, Inc.

Issuance Date: September 5, 2008  
Expiration Date: September 5, 2010

Dear Mr. Pank:

This is in reference to the conditional interim certification cited above. Due to a typographical error, the expiration date of the original letter was not specifically indicated. The expiration date is September 5, 2010, as shown above.

Please note that this letter does not modify any of the conditions listed on the reinstatement document.

Please attach this letter to your copy of the reinstatement of the conditional interim certification. If you have any questions regarding the above information, please contact Sandra Blick of my office at (609) 633-1441.

Sincerely,

Lawrence J. Baier  
Director

Enclosure

c: Rhea Weinberg Brekke, NJCAT  
Tom Micai, NJDEP  
Mary Beth Brenner, NJDEP

NJDEP Interim Certification: BaySeparator by BaySaver

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LBGS#  
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State of New Jersey  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Division of Watershed Management  
Office of the Director  
401 E. State Street, P.O. Box 418  
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JON S. CORZINE  
Governor

LISA P. JACKSON  
Commissioner

September 5, 2008

**COPY**

Tom Pank  
Baysaver Technologies, Inc.  
1302 Rising Ridge Road Unit 1  
Mount Airy, MD 21771

Re: Reinstatement of Conditional Interim Certification  
BaySeparator by BaySaver Technologies, Inc.

Issuance Date:  
Expiration Date:

Dear Mr. Pank:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). BaySaver Technologies, Inc. has requested reinstatement of the Conditional Interim Certification for the BaySeparator System.

The BaySaver BaySeparator System is comprised of a primary manhole, a storage manhole and a BaySeparator unit as shown in Figure 1 below. NJCAT's verified claim states that "The BaySaver Separator Model 1K provides 51% Suspended Sediment Concentration (SSC) removal efficiency (as per NJDEP – treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 205 mg/L and average  $d_{50}$  particle size of 85 microns."

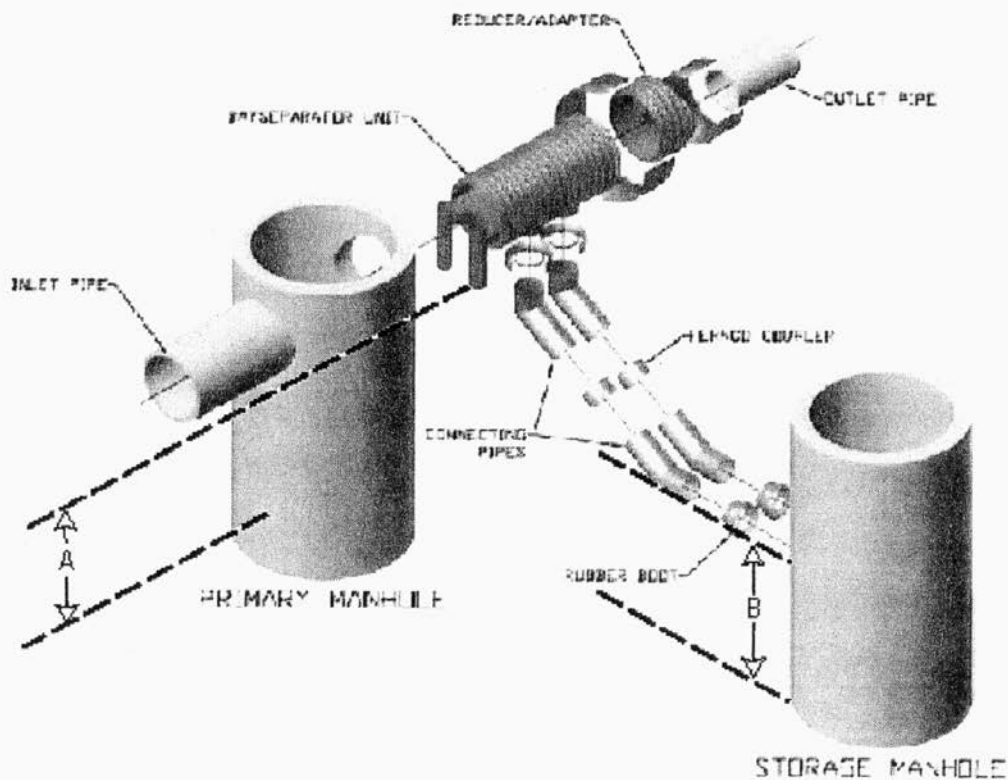
The NJDEP certifies the use of the BaySaver BaySeparator System at a TSS removal rate of 50%, subject to the following conditions:

1. The various models and associated water quality flow capacities shall be sized for the peak flow of the New Jersey water quality design storm per N.J.A.C. 7:8-5, as shown in Table 1.

**Table 1: BaySeparator System Sizing Parameters and Dimensions**

BaySaver Model	Peak Flow for WQ Storm in cfs	BaySaver Manhole Depth in feet	Manhole Diameter in inches	BaySeparator Diameter (feet)	T-Pipe Invert Above Floor in feet ("A" in Figure 1)	Connector Pipe Invert Above Floor in feet ("B" in Figure 1)
½ K	0.8	6	60	2	3	3
1 K	1.1	8	60	2	4	4
3 K	3.3	8	72	3	4	4
5 K	6.8	8	96	4	4	4
10 K	12.3	8	144	5	4	4

- The BaySeparator is certified as an off-line system only. Any flow above the New Jersey water quality design storm must be bypassed around the system.
- A hydrodynamic separator, such as the BaySeparator, cannot be used in series with another hydrodynamic separator to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

**Figure 1: BaySeparator System by BaySaver Technologies, Inc.**

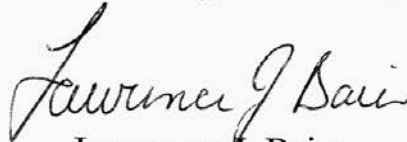
4. The maintenance plan for sites using this device shall incorporate, at a minimum, the maintenance requirements for the BaySeparator System shown in Appendix A below.

This letter reinstates BaySeparator by Baysaver for a period of two years unless a written extension has been issued by the Department. An additional extension of the interim certification will be considered by the Department only after the final field testing data has been received.

Additional information regarding the implementation of the Stormwater Management rules N.J.A.C. 7:8 are available at [www.njstormwater.org](http://www.njstormwater.org).

If you have any questions regarding the above information, please contact Sandra Blick of my office at (609) 633-1441.

Sincerely,

A handwritten signature in cursive script that reads "Lawrence J. Baier".

Lawrence J. Baier  
Director

c: Rhea Weinberg Brekke, NJCAT  
Tom Micai, NJDEP  
Mary Beth Brenner, NJDEP

# Appendix A: Maintenance Requirements for BaySeparator by BaySaver Technologies, Inc.

Effective performance of stormwater management best management practices requires regular and proper maintenance. Chapter 8 of the New Jersey Stormwater Best Management Practices Manual and N.J.A.C. 7:8-5.8 of the Stormwater Management rules provides additional information and requirements for preparing a maintenance plan for stormwater management facilities. Specific maintenance requirements for the BaySeparator manufactured treatment device by BaySaver Technologies are presented below. These requirements must be included in the stormwater management system's maintenance plan in order to achieve the TSS removal rate associated with this manufactured treatment device.

## **A. General Maintenance**

Any and all stormwater management system components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris, sediment, and oil accumulation at least four times annually as well as after every storm exceeding 1 inch of rainfall. Such components may include bottoms, trash racks, low flow channels, outlet structures, riprap or gabion aprons, and cleanouts. Disposal of debris, trash, sediment, and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations.

All maintenance plans must indicate the depth at which sediment must be removed for each MTD specified based on the model designation. At a minimum, removal of sediment, trash and/or oil must take place at or before half the available storage depth below each outlet pipe (shown as A and B of Figure 1 above) is lost for either manhole. For example, in model ½ K, A & B are both at three (3) feet; therefore, sediment, trash, and/or oil must be removed at or before it reaches 1.5 feet in either manhole.

## **B. Equipment and Training Requirements**

Inspection and removal of oil, trash and debris can be performed from the surface through 30-in manhole covers associated with the primary and storage manholes. Equipment to be used for the removal of sediment must be specified by the design engineer in the maintenance plan. For components where direct visual access is not possible, the maintenance plan must specify the equipment, procedures and training necessary to inspect parts in such areas.

## **C. Structural Components**

All structural components must be inspected for cracking, subsidence, spalling, erosion, and deterioration at least annually.

## **D. Replacement Parts**

Certain components of this device are only available through the manufacturer in order to achieve the TSS removal certified by the Department. The following components of the BaySeparator System must be purchased from BaySaver Technologies: BaySeparator unit, reducer adapters and connecting pipes.



## State of New Jersey

Department of Environmental Protection

Division of Science, Research and Technology

Bureau of Sustainable Communities & Innovative Technologies

PO Box 409

Trenton, NJ 08625-0409

Tel: 609-292-9692

FAX: 609-292-7340

Richard J. Codey  
Acting Governor

Bradley M. Campbell  
Commissioner

March 23, 2005

Austin Meyermann  
Director of Operations  
BaySaver Technologies, Inc.  
1302 Rising Ridge Road  
Unit 1  
Mount Airy, MD 21771

**RE:** Interim Certification of the BaySaver Separator Device.

Dear Mr. Meyermann:

In accordance with the Energy and Environmental Technology Verification (EETV) Act at N.J.S.A. 13:1D-134, the New Jersey Department of Environmental Protection (NJDEP) is pleased to issue a **Conditional Interim Certification** for the BaySaver Separator Model 1K developed by BaySaver Technologies, Inc. This technology is hydraulically designed to use gravitational separation as a means of capturing sediments. This conditional interim certification is being issued as a result of the submission of the New Jersey Corporation for Advanced Technology (NJCAT) verification report, dated December 2004. **This certification letter must be used in conjunction with the Interim Certification Findings document.**

According to NJCAT's verification report, and as indicated in the attached Conditional Interim Certification Findings, the BaySaver Separator Model 1K provides 51% Suspended-Sediment Concentration (SSC) removal efficiency (as per NJDEP treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 205 mg/L and an average  $d_{50}$  particle size of 85 microns. Also, SSC removal testing was conducted with sediment pre-loaded in the lower chamber to 50% sediment capacity for the 1K unit. Based on this demonstrated laboratory performance, the NJDEP acknowledges that the BaySaver Separator Model 1K, with the appropriate design modifications, has the capability of achieving in field applications, at a minimum, a TSS removal efficiency of 50%, providing that the manhole diameter is increased. *Therefore, NJDEP certifies that the BaySaver Separator Model 1K with a manhole size diameter of 60 inches is capable of achieving a TSS removal efficiency of 50% from stormwater runoff at a maximum designed flow rate of 1.1 cfs, and shall be permitted accordingly.* In addition, the following conditions shall apply to the conditional interim certification:

1. The **BaySaver Separator Model 1K** should be the first component, if used as part of a treatment train (i.e., utilized in front of best management practices such as detention, retention, and infiltration basins, etc., as defined in the NJ Stormwater Best Management Practices Manual).
2. The **BaySaver Separator Model 1K** shall be designed in accordance with New Jersey's water quality design storm, as required in the Stormwater Management Rules (N.J.A.C. 7:8).
3. A Quality Assurance Project Plan supporting the Technology Acceptance and Reciprocity Partnership (TARP) Tier II Protocol for Stormwater Best Management Practice Demonstration (July, 2003), and including any additional field testing requirements that the NJDEP shall request, shall be submitted to NJDEP and/or NJCAT within six (6) months from the date of this Conditional Interim Certification letter.
4. Field evaluation data that are consistent with the Tier II Protocol and any additional NJDEP requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. Additional BaySaver models, as described in **Table 1** of the Interim Certification Findings, can be used for the respective designed flow rates since the design of these units is the same as the **BaySaver Separator Model 1K**.
6. **This certification letter must be used in conjunction with the Interim Certification Findings.**

As specified in the Interim Certification Findings, the manhole sizes for the various BaySaver Separator models to be used in New Jersey are larger than those specified in the verification report. Therefore, the devices installed in New Jersey must satisfy the dimensions specified in Table 1 of the Interim Certification Findings. Please note that this approval letter shall expire on June 30, 2007, unless extended by NJDEP. For final certification of the BaySaver Separator, verified data must be generated from a full-scale field demonstration utilizing the TARP Tier II Protocol and additional NJDEP's field testing requirements. If you have any questions about this conditional interim certification, please contact Ravi Patraju of my staff at (609) 292-0125.

Sincerely,



Martin Rosen  
Chief - Bureau of Sustainable Communities  
and Innovative Technologies

Enclosure

c: Lisa Jackson, Assistant Commissioner, Land Use Management  
Sam Wolfe, Assistant Commissioner, Environmental Regulation  
Larry Baier, Director, Watershed Management Program  
Eileen Murphy, Director, Division of Science, Research, and Technology  
Mark Mauriello, Director, Land Use Regulation  
Narinder Ahuja, Director, Division of Water Quality  
Rhea Brekke, Executive Director, New Jersey Corporation for Advanced Technology



## Conditional Interim Certification Findings

### NJDEP Technology Certification Program:

Bureau of Sustainable Communities & Innovative Technologies  
Division of Science, Research & Technology  
401 E State Street, P.O. Box 409  
Trenton, NJ 08625  
(609) 292-9692

### Manufactured Treatment Device:

BaySaver Separation System

### Applicant Information:

BaySaver Technologies, Inc.  
1302 Rising Ridge Road  
Unit 1  
Mount Airy, MD 21771  
800-229-7283

### Technology Description:

A description of the BaySaver Separation System is reproduced from the New Jersey Corporation for Advanced Technology (NJCAT) verification report as follows:

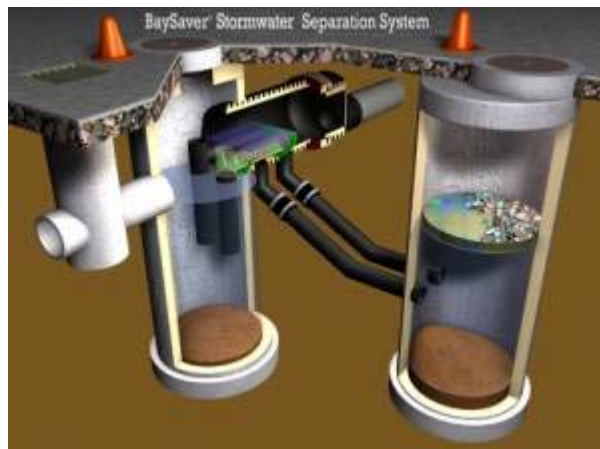
The BaySaver system is hydraulically designed to use gravitational separation as a means of capturing sediments, and free floating oils, trash, and debris. The dual settling chambers and the internal flow splitter act in tandem to provide different levels of treatment for different runoff intensities. Coarse sediments are removed in the first structure, and finer sediments and floating pollutants are removed and trapped in the second. This is the case during the periods of low flow that comprise the majority of storm events.

During more intense storms, water is pushed up the T-pipes from below the surface in the first manhole. This water is free of floatable pollutants and large suspended sediments. At moderate flow rates, the T-pipes convey water from the center of the first manhole and discharge it directly downstream. Operating in conjunction with the T-pipes, influent water is diverted into the second manhole by the surface skimming trapezoidal weir. In this manner, the BaySaver Separation System continues to remove fine sediments and floatable pollutants in the second manhole as flow rates increase throughout the system.

The BaySaver Separator Unit includes an internal bypass that conveys high energy flows directly downstream. Bypass mode is effective when

the flow rates begin approaching the peak design flow. By bypassing extreme flows, the BaySaver Separator Unit prevents the re-suspension and discharge of the pollutants that are already trapped within the system.

The BaySaver Separation System is a versatile and flexible BMP device that can be retrofitted into existing storm drains or incorporated into new and existing developments. These systems can be used to improve the quality of stormwater runoff from high traffic areas, to contain potential oil spills, as a pretreatment step in a treatment train, and for other applications.



**Figure 1. BaySaver Separation System**

New Jersey Corporation for Advanced Technology Verified Claim:

**The BaySaver Separator Model 1K provides 51% Suspended-Sediment Concentration (SSC) removal efficiency (as per NJDEP treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 205 mg/L and an average  $d_{50}$  particle size of 85 microns. SSC removal testing was conducted with sediment pre-loaded in the lower chamber to 50% sediment capacity for the 1K unit.**

Technology Limitations/Concerns:

- Since the overall efficiency removal was only demonstrated at 51%, the NJDEP feels that a design safety factor is required, which is addressed in the certification section below.
- Lack of maintenance may cause the system to operate at a reduced efficiency and eventually fill with sediment. Therefore, inspections of accumulated pollutants should be performed as recommended by the manufacturer. Inspections would need to be conducted more frequently in the winter where sanding operations may lead to rapid accumulations.

<b>BaySaver Model</b>	<b>Maximum Treatment Flow (cfs)</b>	<b>Peak Design Flow (cfs)</b>	<b>BaySaver Manhole Depth (feet)</b>	<b>BaySaver Unit Diameter (feet)</b>	<b>Standard Manhole Size (inches)</b>	<b>New Jersey Manhole Size (inches)</b>	<b>% Increase in Surface Area</b>
½K	0.8	6.8	6	2	48	<b>60</b>	56.3
1K	1.1	7.5	8	2	48	<b>60</b>	56.3
3K	3.3	23.1	8	3	60	<b>72</b>	44.0
5K	6.8	47.3	8	4	72	<b>96</b>	77.8
10K	12.3	83	8	5	120	<b>144</b>	44.0

**Table 1.** Design Specifications of Units in New Jersey

NJDEP Conditional Interim Certification:

Based on the demonstrated laboratory performance, NJDEP acknowledges that the BaySaver Separator Model 1K has the capability of achieving in field applications, at a minimum, a TSS removal efficiency of 50%, providing that the manhole diameter is increased. Therefore, **NJDEP certifies that the BaySaver Separator Model 1K is capable of achieving a TSS removal efficiency of 50% from stormwater runoff at a maximum designed flow rate of 1.1 cfs with a manhole size diameter of 60 inches,** and shall be permitted accordingly. Since this technology was verified for 51% TSS removal, the manhole sizes for the various BaySaver Separator models to be used in New Jersey are larger than those specified in the verification report in order to establish a safety factor. In addition, the following conditions shall apply to the conditional interim certification:

1. The **BaySaver Separator Model 1K** should be the first component, if used as part of a treatment train (i.e., utilized in front of best management practices such as detention, retention, and infiltration basins, etc., as defined in the NJ Stormwater Best Management Practices Manual).
2. The **BaySaver Separator Model 1K** shall be designed in accordance with New Jersey's water quality design storm, as required in the Stormwater Management Rules (N.J.A.C. 7:8).
3. A Quality Assurance Project Plan supporting the Technology Acceptance and Reciprocity Partnership (TARP) Tier II Protocol for Stormwater Best Management Practice Demonstration (July, 2003), and including any additional field testing requirements that the NJDEP shall request, shall be submitted to NJDEP and/or NJCAT within six (6) months from the date of this Conditional Interim Certification letter.
4. Field evaluation data that are consistent with the Tier II Protocol and any additional NJDEP requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. Additional BaySaver models, as described in Table 1, can be used for the respective designed flow rate since the design of these units is the same as the **BaySaver Separator Model 1K**.
6. The appropriate devices satisfying site selection and sizing criteria must be consistent with the specifications as described in Table 1.