State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
401-02B
Bureau of Nonpoint Pollution Control
Division of Water Quality
Post Office Box 420
Trenton, New Jersey 08625-0420
609-633-7021 Fax: 609-777-0432
http://www.state.nj.us/dep/dwq/bnpc_home.htm

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

August 31, 2011

Joel Garbon
Imbrium Systems
3811 S.W. Corbett Avenue
Portland, OR 97239

Re: MTD Laboratory Test Certification for the Stormceptor STC by Imbrium Systems Corporation

Effective Date: September 1, 2011
Expiration Date: September 1, 2013
TSS Removal Rate: 50%

Dear Mr. Garbon:

The Stormwater Management Rules at N.J.A.C. 7:8 allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards provided that the pollutant removal rates have been verified by New Jersey Corporation for Advanced Technology, NJCAT, and certified by the New Jersey Department of Environmental Protection (NJDEP).

The certification process was revised through the "Transition for Manufactured Treatment Devices," dated July 15, 2011. NJDEP has determined that Stormceptor STC by Imbrium Systems is consistent with the criteria under *A. Manufactured Treatment Devices with Interim Certifications*. Therefore, **NJDEP certifies the use of the Stormceptor STC by Imbrium Systems with a 50% TSS removal rate, provided that the project design is consistent with the following conditions:**

1. The model selected for the project design must be sized in accordance with Table 1 and based on the peak flow of the New Jersey Water Quality Design Storm as specified in N.J.A.C. 7:8-5.

2. The Stormceptor STC can be used on-line and off-line.

3. A hydrodynamic separator, such as the Stormceptor STC, 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.

4. The maintenance plan for the sites using this device shall incorporate at a minimum, the maintenance requirements for the Stormceptor STC, attached.

Table 1

Stormceptor STC Model	Settling Chamber Diameter in	Settling Chamber Surface Area ft^2	Treatment Flow Rate cfs(gpm)	Hydraulic Loading Rate gpm/ft^2
STC 450	48	12.6	0.28 (127)	10.1
STC 900	72	28.3	0.64 (285)	10.1
STC 1200	72	28.3	0.64 (285)	10.1
STC 1800	72	28.3	0.64 (285)	10.1
STC 2400	96	50.3	1.13 (507)	10.1
STC 3600	96	50.3	1.13 (507)	10.1
STC 4800	120	78.5	1.77 (793)	10.1
STC 6000	120	78.5	1.77 (793)	10.1
STC 7200	144	113.1	2.54 (1141)	10.1
STC 11000	2X 120	157.1	3.53 (1585)	10.1
STC 13000	2X 120	157.1	3.53 (1585)	10.1
STC 16000	2X 144	226.2	5.09 (2282)	10.1

In addition to the attached, any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8, must include a detailed maintenance plan. The detailed maintenance plan must include all of the items identified in Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance of the New Jersey Stormwater Best Management Manual.

NJDEP 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. If you have any questions regarding the above information, please contact Ms. Sandra Blick of my office at (609) 633-7021.

Sincerely,

Ed Frankel, P.P., Acting Bureau Chief
Bureau of Nonpoint Pollution Control

C: Richard S. Magee, NJCAT
Chron file

Stormceptor® STC
Inspection and Maintenance Information

Stormceptor® Inspection and Maintenance

Regular inspection and maintenance is a proven, cost-effective way to maximize water resource protection for all stormwater pollution control practices, and are required to insure proper functioning of the Stormceptor System. Both inspection and maintenance of the Stormceptor system is easily performed from the surface. Stormceptor's patented technology has no moving parts, simplifying the inspection and maintenance process.

Please refer to the following information and guidelines before conducting inspection and maintenance activities.

When is inspection needed?

- Post-construction inspection is required prior to putting the Stormceptor System into service.
- Routine inspections are recommended during the first year of operation to accurately assess the sediment accumulation.
- Specifically for New Jersey installations, regulations require all BMPs to be inspected a minimum four times per year and after every storm with greater than one inch of rainfall.
- Inspection frequency in subsequent years is based on the maintenance plan developed in the first year.
- Inspections should also be performed immediately after an oil, fuel or other chemical spill.

When is maintenance cleaning needed?

- For optimum performance, the unit should be cleaned out once the sediment depth reaches 15% of the unit's total storage capacity (see Table 1). Generally, the minimum cleaning frequency is once annually, although the frequency can be based on historical inspection results.
- The unit should be cleaned out immediately after an oil, fuel or chemical spill.

Table 1

Sediment Maintenance Depth* and Oil Capacity		
STC Model	**Sediment Depth*** (inches)	**Oil Capacity** (gallons)
450i	8	86
900	8	251
1200	10	251
1800	15	251
2400	12	840

3600	17	840
4800	15	909
6000	18	909
7200	15	1059
11000	17	2797
13000	20	2797
16000	17	3055
* based on 15% of the lower chamber volume		

What conditions can compromise the Stormceptor System performance?

- If the system is not maintained regularly and fills with sediment and debris beyond the capacity indicated in Table 1, sediment removal efficiency may be reduced.
- If an oil spill(s) exceeds the oil capacity of the system, subsequent spills may not be captured.
- If debris clogs the inlet of the system, removal efficiency of sediment and hydrocarbons may be reduced.
- If a downstream blockage occurs, a backwater condition may occur in the system and removal efficiency of sediment and hydrocarbons may be reduced.

What training is required?

The Stormceptor System is inspected and maintained by professional vacuum cleaning service providers with experience in the maintenance of underground tanks, sewers and catch basins. For typical inspection and maintenance activities, no specific supplemental training is required for the Stormceptor System. Information provided in this document or the Stormceptor Operation and Maintenance Manual (provided to the system owner) contains sufficient guidance to maintain the system properly.

In unusual circumstances, such as if a damaged component needs replacement or some other condition requires manned entry into the vessel, confined space entry procedures must be followed. Only professional maintenance service providers trained in these procedures should enter the vessel. Service provider companies typically have personnel who are trained and certified in confined space entry procedures according to local, state, and federal standards.

What equipment is typically required for inspection?

- Manhole access cover lifting tool
- Oil dipstick
- Sediment probe
- Flashlight
- Camera
- Data log
- Safety cones and caution tape
- Hard hat, safety shoes, safety glasses, and chemical-resistant gloves

How is the Stormceptor System inspected?

- The Stormceptor System can be inspected through a standard surface manhole

access cover.

- Sediment and oil depth inspections are performed with a sediment probe and oil dipstick. Oil depth is measured through the oil inspection port. Sediment depth can be measured through the oil inspection port or exit riser pipe.
- Inspections also involve a visual inspection of the internal components of the system.

What equipment is typically required for maintenance?

- Vacuum truck equipped with water hose and jet nozzle
- Small pump and tubing for oil removal
- Manhole access cover lifting tool
- Oil dipstick
- Sediment probe
- Flashlight
- Camera
- Data log
- Safety cones and caution tape
- Hard hats, safety shoes, safety glasses, chemical-resistant gloves, and hearing protection for service providers
- Gas analyzer, respiratory gear, and safety harness for specially trained personnel if confined space entry is required

How is the Stormceptor System maintained?

- The Stormceptor System can be maintained through a standard surface manhole access cover.
- Insert the oil dipstick into the oil inspection port. If oil is present, pump off the oil layer into separate containment using a small pump and tubing.
- Maintenance cleaning of accumulated sediment is performed with a vacuum truck.
- For 6-ft diameter models and larger, the vacuum hose is inserted into the lower chamber via the 24-inch outlet riser pipe.
- For 4-ft diameter model, the removable drop tee is lifted out, and the vacuum hose is inserted into the lower chamber via the 12-inch drop tee hole.
- Using the vacuum hose, decant the water from the lower chamber to the sanitary sewer, if permitted by the local regulating authority, or into a separate containment tank.
- Remove the sludge from the bottom of the unit using the vacuum hose.
- Re-fill the lower chamber with water where required by the local jurisdiction.
- Units that have not been maintained regularly, have surpassed the maximum recommended sediment capacity, or contain damaged components may require manned entry by trained personnel using proper confined space entry procedures.

What is required for proper disposal?

- Disposal requirements for recovered pollutants may vary depending on local guidelines. In most areas the sediment, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste.

What about oil spills?

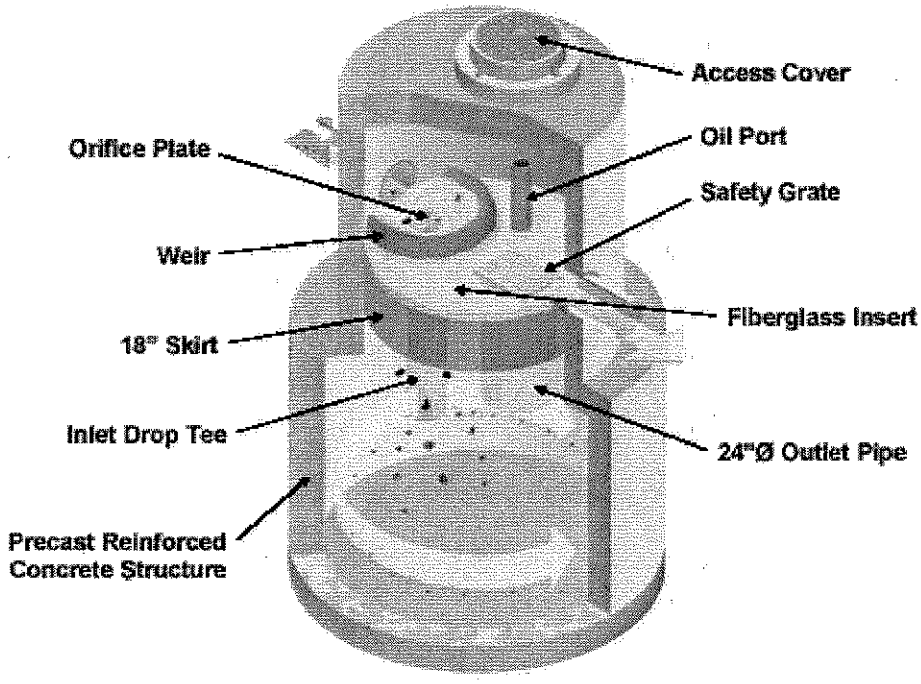
- Petroleum-based pollutants captured by the Stormceptor system (oil/chemical/fuel spills) should be removed and disposed of by a licensed waste management company.
- Although Stormceptor captures virtually all free oil, a sheen at the outlet **does not** mean the unit isn't working. A rainbow or sheen can be visible at oil concentrations of less than 10 mg/L (ppm).

What factors affect the costs involved with inspection/maintenance?

- Inspection and maintenance costs are based on unit size, sediment/oil/hazardous material loads, transportation distances, tipping fees, disposal requirements and other local regulations.

System schematic and component functions

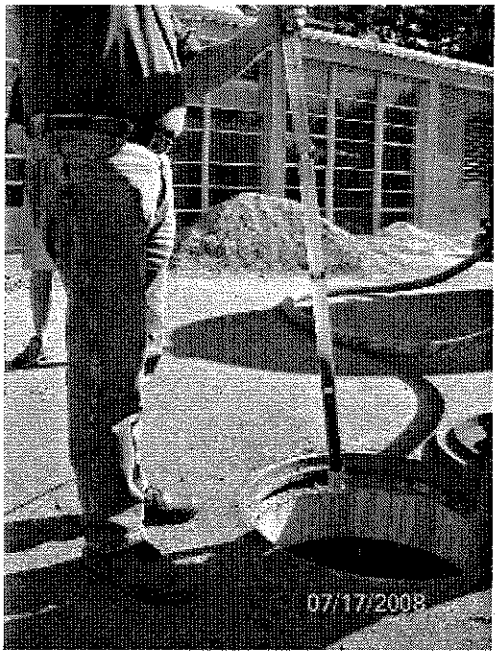
Below is a schematic of the Stormceptor System with key components identified and their functions briefly described.

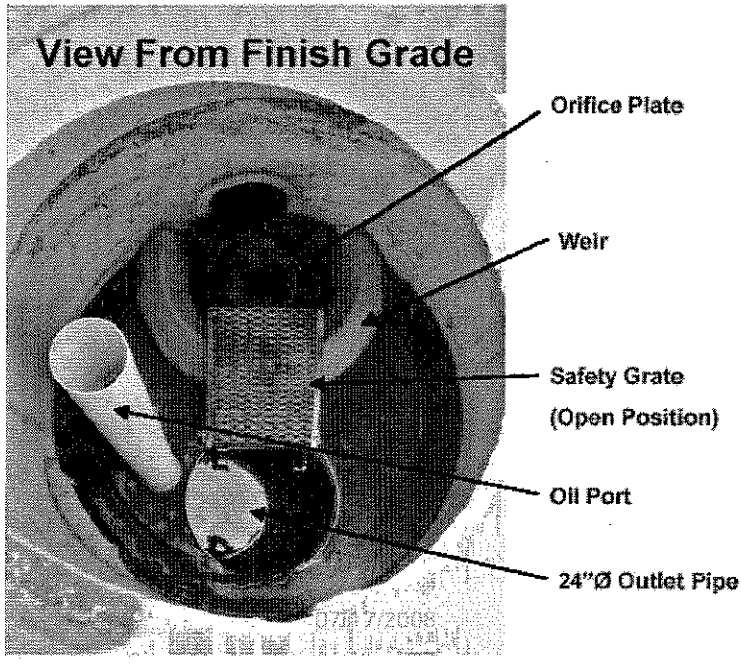


- **Manhole access cover** – provides access to the subsurface components
- **Precast reinforced concrete structure** – provides the vessel's watertight structural support
- **Fiberglass insert** – separates vessel into upper and lower chambers
- **Weir** – directs incoming stormwater and oil spills into the lower treatment chamber
- **Orifice plate** – controls water flow rate into the lower treatment chamber and prevents scour of accumulated pollutants
- **Inlet drop tee** – conveys stormwater into the lower treatment chamber and splits flow into two opposite tangential streams
- **Fiberglass skirt** – provides double-wall containment of hydrocarbons
- **Outlet riser pipe** – conveys treated water to the upper chamber; primary vactor access port for sediment removal

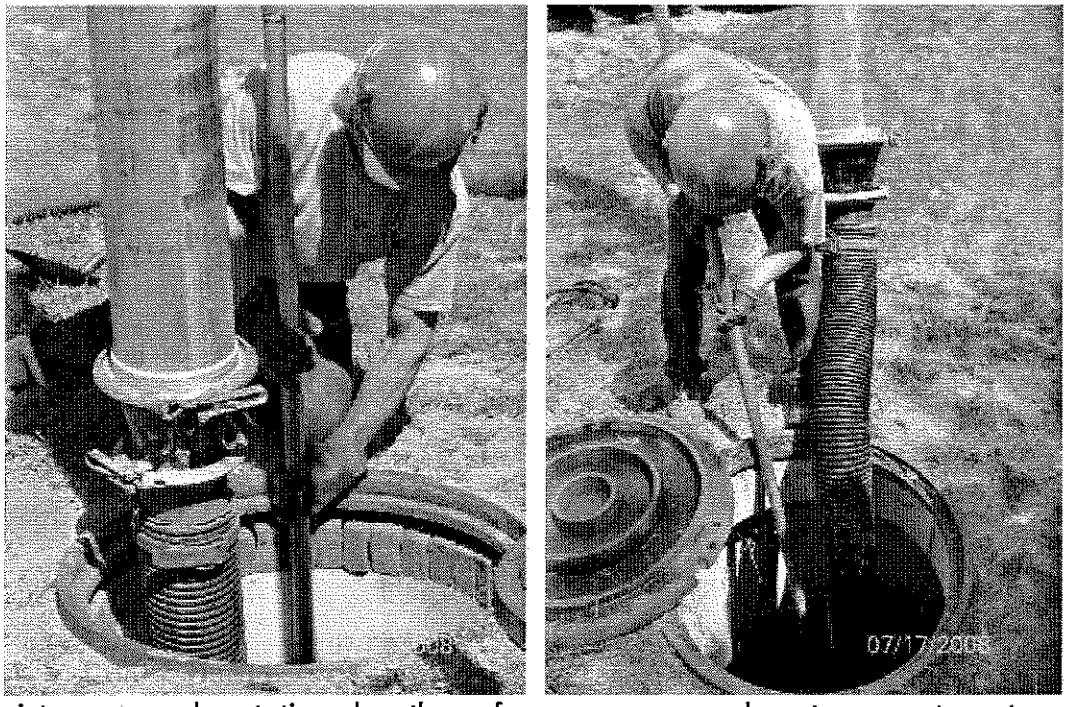
- **Oil inspection port** – primary access for measuring oil depth and oil removal
- **Safety grate** – safety measure to cover riser pipe in the event of manned entry into vessel

The Stormceptor System has no moving parts to wear out and therefore maintenance activities are generally focused on pollutant removal.





The depth of sediment can be measured from the surface by using a sediment probe or dipstick tube equipped with a ball check valve and inserted through the 24-inch outlet riser pipe. Oil level can similarly be checked through the oil inspection port.



A maintenance worker stationed on the surface uses a vacuum hose to evacuate water, sediment, and debris from the system.

Purchasing replacement parts

Since there are no moving parts in the Stormceptor System, broken, damaged, or worn parts are not typically encountered. However, if replacements parts are necessary, they may be obtained by contacting the following supplier of authentic Stormceptor components.

In New Jersey, contact:

Camtek Construction Products Corp.
3481 Treeline Drive
Murrysville, PA 15668
Phone: (724) 327-3400

The benefits of regular inspection and maintenance are many – from ensuring maximum operation efficiency, to keeping maintenance costs low, to the continued protection of natural waterways – and provide the key to Stormceptor's long and effective service life.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

Division of Water Quality
401 East State Street
Post Office Box 029
Trenton, New Jersey 08625-029

BOB MARTIN
Commissioner

September 10, 2010

Scott Perry, CPSWQ
Group Manager
Imbrium Systems
7564 Standish Place, Suite 112
Rockville, MD 20855

Re: On-line Conditional Interim Certification for the Stormceptor STC by Imbrium Systems

Expiration Date: May 15, 2011

Dear Mr. Perry:

This letter is in response to your request for the Stormceptor STC by Imbrium Systems to be used as an on-line device. The Department has reviewed your verification report supplied by NJCAT and has received the required signed statement from the verification entity, manufacturer and testing entity, which listed the protocol requirements and indicated that all of the requirements of the protocol were met or exceeded. Based on a review of the information received the Stormceptor STC by Imbrium Systems can be used as an off-line or on-line device.

Additional information regarding the implementation of the Stormwater Management Rules, N.J.A.C. 7:8, are available at 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

C: Chron File
Richard Magee, NJCAT
Elizabeth Dragon, BNPC
Marybeth Brenner, NJDEP
Tom Micai, DLUR

State of New Jersey

JON S. CORZINE
Governor

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

MARK N. MAURIELLO
Acting Commissioner

June 1, 2009

Joel Garbon
3811 S.W. Corbett Avenue
Portland, OR 97239

Re: Extension of Conditional Interim Certification for the Stormceptor STC by Imbrium Systems

Expiration Date: May 15, 2011

Dear Mr. Garbon:

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 Stormceptor STC by Imbrium Systems 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 February 15, 2005 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. 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

Richard J. Codey
Acting Governor

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

Bradley M. Campbell
Commissioner

February 15, 2005

Penh Tov
Stormceptor® Group of Companies
12 Madison Avenue
Toronto, ON M5R 2S1

RE: Interim Certification of the Stormceptor® System Model STC 900 Stormwater Treatment System by Stormceptor® Group of Companies.

Dear Ms. Tov:

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 Stormceptor® System Model STC 900 that was developed by the Stormceptor® Group of Companies. This technology is a hydrodynamic separator designed to enhance gravitational separation of floating and settling materials from stormwater runoff. This conditional interim certification is being issued based on the New Jersey Corporation for Advanced Technology (NJCAT) verification report, dated September 2004.

According to NJCAT's verification report, and as indicated in the attached Conditional Interim Certification Findings, the Stormceptor® System Model STC 900 was verified by NJCAT to achieve a Total Suspended Solids (TSS) removal efficiency of 75% for laboratory simulated stormwater runoff, in compliance with all of NJCAT's testing protocols, including pre-loading the tank with sediment. In addition, the STC 900 demonstrated no scouring when tested up to 125% of the unit's operating rate with the unit loaded to 100% sediment capacity. Based on this demonstrated laboratory performance, NJDEP has a high degree of confidence that the Stormceptor® System Model STC 900 has the capability of exceeding in field applications, a TSS removal efficiency of 50%. Therefore, NJDEP certifies that the Stormceptor® System Model STC 900 is capable of achieving a minimum TSS removal efficiency of 50% from stormwater runoff, and shall be permitted accordingly. In addition, the following conditions will apply to the conditional interim certification:

1. The Stormceptor® System Model STC 900 should be the first component, if used as part of a treatment train (i.e. utilized in front of best management practices methods such as

detention, retention, and infiltration basins, as defined in the NJ Stormwater Best Management Practices Manual).

2. The Stormceptor® System Model STC 900 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, in accordance with 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 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 additional NJDEP field test requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. The various models listed in Table 1 of the "Conditional Interim Certification Findings" can be used for applications associated with other flow rates.

Please note that this approval letter shall expire on June 30, 2007, unless extended by NJDEP. For final certification of the Stormceptor® System Model STC 900, verified data must be generated from a full scale field demonstration utilizing the TARP Tier II Protocol and additional NJDEP field test requirements. If you have any questions about this conditional interim certification, please contact Ravi Patraju of my staff at (609) 292-0125.

Respectfully,

Martin Rosen
Chief - Bureau of Sustainable Communities and Innovative Technologies

Enclosure

c: Sam Wolfe, Assistant Commissioner, Environmental Regulation
Lisa Jackson, Assistant Commissioner, Land Use Management
Larry Baier, Director, Watershed Management Program
Eileen Murphy, Director, Division of Science, Research, and Technology
Narinder Ahuja, Director, Division of Water Quality
Mark Mauriello, Director, Land Use Regulations
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:

The Storm*ceptor*® System Model STC 900

Applicant Information:

Storm*ceptor*® Group of Companies
12 Madison Avenue
Toronto, ON M5R 2S1
(800) 565-4801
www.stormceptor.com

Technology Description:

According to the verification report from the New Jersey Corporation of Advanced Technology (NJCAT), the Storm*ceptor*® Group of Companies has developed a technology for separating and retaining floating and sinking pollutants, including sediment, hydrocarbons and debris, under rapid flow conditions using a hydrodynamic separator. The Storm*ceptor*® System is a vertically oriented cylindrical structure made of concrete and fiber reinforced plastic, designed to separate oil and sediment from stormwater. Between maintenance events, pollutants accumulate within the system and are therefore removed from the natural environment. These pollutants may otherwise become a human health hazard, an aesthetic issue, or may be cycled within the food chain or water table. Maintenance is performed from above by a vacuum truck and without interference from internal components.

NJCAT's Verified Claim:

The Storm*ceptor*® System Model STC 900 provides 75% "Bulk Total Suspended Solids (TSS)" removal efficiency (as per the NJDEP treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 295 mg/L and an average d_{50} particle size of 97 microns. TSS removal testing was conducted with sediment pre-loaded in the lower chamber to 50% sediment capacity for the STC 900.

Technology Limitations/Concerns:

- 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.

NJDEP Conditional Interim Certification:

According to the NJCAT's verification report, and as indicated in the attached Conditional Interim Certification Findings, the Storm*ceptor*® System Model STC 900 was verified by NJCAT to achieve a Total Suspended Solids (TSS) removal efficiency of 75% for laboratory simulated stormwater runoff, in compliance with all of NJCAT's testing protocols, including pre-loading the tank with sediment. In addition, the STC 900 demonstrated no scouring when tested up to 125% of the unit's operating rate with the unit loaded to 100% sediment capacity. Based on this demonstrated laboratory performance, NJDEP has a high degree of confidence that the Storm*ceptor*® System Model STC 900 has the capability of exceeding in field applications, a TSS removal efficiency of 50%. Therefore, NJDEP certifies that the Storm*ceptor*® System Model STC 900 operating at a design capacity of **285 gpm (0.636 cfs)**, is capable of achieving a minimum TSS removal efficiency of 50% from stormwater runoff, and shall be permitted accordingly. In addition, the following conditions shall apply to the conditional interim certification:

1. The Storm*ceptor*® System Model STC 900 should be the first component, if used as part of a treatment train (i.e. utilized in front of best management practices methods such as detention, retention, and infiltration basins, as defined in the NJ Stormwater Best Management Practices Manual).
2. The Storm*ceptor*® System Model STC 900 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, in accordance with 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 NJCAT within six (6) months from the date of the Conditional Interim Certification letter.
4. Field evaluation data that are consistent with the Tier II Protocol and additional NJDEP field test requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. The various models listed in Table 1 can be used for applications associated with other flow rates.

Table 1. Stormceptor® System Standard Sizes

Stormceptor® Models					
Model	Water Quality Flow Capacity[a] (cfs)	Sediment Capacity[b] (ft^3)	Oil Capacity (US Gal.)	Total Holding Capacity (US Gal.)	Orifice Diameter (inches)
450	0.283	9	86	470	4
900	0.636	19	251	952	6
1200	0.636	25	251	1234	6
1800	0.636	37	251	1833	6
2400	1.059	49	840	2462	8
3600	1.059	75	840	3715	8
4800	1.766	101	909	5059	10
6000	1.766	123	909	6136	10
7200	2.472	149	1059	7420	12
11000s	3.531	224**	2797	11194	10
13000s	3.531	268**	2797	13348	10
16000s	4.944	319**	3055	15918	12

Notes:
a –Water quality treatment is the intent of the Stormceptor® design, therefore the use of this design capacity for single event design storm sizing (e.g. Rational Method) is not appropriate. The Stormceptor® Corporation recommends using the Stormceptor® Sizing Program version 4.0.0 to properly select a Stormceptor® unit.
b – Sediment capacity prior to recommended maintenance.
s – These are series units which consist of two structures installed in series that are designed to operate in parallel. The sediment, oil and total holding capacity are based on both structures combined.