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Read the Following Information, Instructions and Warnings Before Inspecting, Cleaning or Performing Maintenance on this Stormwater Treatment Device.

This manual is intended to explain the specifics of the Suntree Technologies, Inc.® Nutrient Separating Baffle Box® and to review the aspects of existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand and comply with all applicable local, state and federal laws before attempting to inspect or service this unit.

All precautions and procedures in this manual are current at the time of printing but are subject to change based on the development of new processes and procedures. Suntree Technologies, Inc.® assumes no responsibility and is not accountable for any injuries, fines, penalties or losses that occur involving any procedure in this manual or other unaddressable actions taken.

The Nutrient Separating Baffle Box® performance is based on the procedures being followed in this manual. Non-Compliance with the outlined measures will be the responsibility of the owner.
**General Information**

The Nutrient Separating Baffle Box® (NSBB™) is a key component of your stormwater management program. To maintain proper operation, maintenance of these units is essential. The NSBB™ designed and manufactured by Suntree Technologies Inc.® contains patented and patent pending technologies to treat and manage stormwater.

The NSBB™ is highly effective in capturing Total Nitrogen (TN) Phosphorus (TP), Total Suspended Solids (TSS), organics, trash, oils and grease. Independent testing has shown the NSBB™ is capable of capturing up to 95% of trash, 90% of Total Suspended Solids, 20% of Nitrogen and 19% of phosphorus.

Local and State regulations may require inspections and cleanings every 90 days. Suntree Technologies, Inc.® recommends inspections be conducted four (4) times per year for optimal pollutant removal efficiency.

---

**During Storm Event**

- Runoff filters through the screen and skimmer leaving contaminants behind. Left over runoff evaporates over time.

- Turbulence deflectors prevent captured sediment from becoming resuspended.

- Hydrocarbons collect in front of the skimmer and are absorbed by the storm boom.

---

**After Storm Event**

- Nutrient pollutant load is not lost to static water and will not be flushed out during the next storm event.

- Separating organic matter from the static water prevents bacterial buildup.

---

Nutrient rich organics and litter are captured in the screen system.

Debris dries out between storm events while pollutants are stored above the static water. As a result, the system does not turn septic.
The SkimBoss™ Filtration System removes dissolved phosphorus and nitrogen from stormwater using Bold & Gold® Media. An NSBB™ with SkimBoss™ and Bold & Gold® can capture up to 79% of TP, 67% of TN and 81% of TSS. The use of Hydro-Variant™ Technology lets the SkimBoss™ Filtration System automatically adjusts to hydraulic grade line with a negligible head loss.

**High Flow Event**
- The SkimBoss™ floating skimmer adjusts the hydraulic grade line via Hydro-Variant™ Technology during high flows.
- The system enters a bypass mode to prevent flooding associated with head loss.
- The SkimBoss™ resumes media filtration upon low flow return.

**Medium Flow Event**
- The SkimBoss™ Filtration System with Bold and Gold® Media treats stormwater by deflecting it under the media vessels via the skimmer and passing through the media.
- Deflected water passes into the Bold and Gold® Media effectively reducing nitrogen and phosphorus levels.

**After Storm Event**
- Debris dry out between storms with pollutant stored in the screen.
- Hinged media vessels allow hatch access for vacuum truck as easy pouring of new filter media.

Hydro-Variant™ Technology adjusts hydraulic grade line.

The SkimBoss™ Filter treats water with Bold and Gold® Media.
Bold and Gold® Media Information

Bold and Gold® is a Biosorption Activated Media (BAM) for pollution control to reduce nitrogen and phosphorus in stormwater. When combined with the SkimBoss™ Filtration System, Bold and Gold® combines maximum volume pretreatment without flooding due to head loss. Further benefits of using Bold and Gold® Media include:

- Available in various sizes for particular applications
- Up to 448 gpm flow rate / square foot of surface area
- Economical and lower cost than other media
- Made from recycled materials
- Effectively removes up to 95% Total Phosphorus, 75% Total Nitrogen and 95% Total Suspended Solids
- Sustainable: Eco Friendly
- High Surface Area
- No biological toxic effects
- Physical filtration for the removal of solids
- Sorbent surface bonding for the capture of dissolved pollutants
- Biological activity including nutrient based consumption and denitrification

SkimBoss™ Filtration System with Bold and Gold® media filtering stormwater during a storm event.
**Inspection Information**

Suntree Technologies, Inc.® recommends the following inspection guidelines:

After installation and the site has stabilized, post construction inspections should be conducted after every runoff event. To insure the Nutrient Separating Baffle Box® obtains optimal pollutant removal efficiencies, subsequent sediment accumulation inspections should be conducted a minimum of four (4) times per year. In the event the sediment accumulation equals or exceeds 50% of the minimum sediment storage volume (Fig 1), then all accumulated sediment must be removed. All inspections must be documented. (See inspection checklist)

(Fig. 1) Approximate Specifications of Florida based NSBB® Models. Contact Suntree Technologies Inc.® for information regarding NSBB™ models built for your state.

<table>
<thead>
<tr>
<th>NSBB™ Model #</th>
<th>Inside Width (ft)</th>
<th>Inside Length (ft)</th>
<th>Baffle Height (in)</th>
<th>Baffle Thickness (in)</th>
<th>Volume Plan Area (ft²)</th>
<th>Maximum Treatment Flowrate (cfs)</th>
<th>Maximum Sediment Storage Vol. (ft³)</th>
<th>Sediment Storage Vol. 50% (ft³)</th>
<th>Distance Baffle to Sediment (in)</th>
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<tbody>
<tr>
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<td>04</td>
<td>24</td>
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<td>04-08-84</td>
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<td>08</td>
<td>36</td>
<td>03</td>
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<td>30.0</td>
<td>15.0</td>
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<tr>
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<td>06</td>
<td>276</td>
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<td>460</td>
<td>230.0</td>
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</tbody>
</table>
NSBB™ Inspection Checklist

Inspection Checklist and Maintenance Guidance:
Nutrient Separating Baffle Box®

Owner Name: __________________________
Location: ______________________________
Address: _______________________________
Phone: _________________________________
Date & Time: __________________________
Site Conditions: _______________________

<table>
<thead>
<tr>
<th>Inspection Items</th>
<th>Recommended Interval</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1  Access Openings</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>2  Screen System</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>3  Rear Skimmer</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>4  Storm Boom</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>5  Sediment Chambers</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>6  Vault Condition</td>
<td>Quarterly</td>
<td></td>
</tr>
</tbody>
</table>

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box®.
2. Inspect screen system for debris volume and broken parts.
3. Inspect sediment chambers for estimated quantity.
4. Inspect general condition of vault for any clogged areas.

<table>
<thead>
<tr>
<th>Maintenance Items</th>
<th>Volume Collected</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Screen System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2  Sediment Chambers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box®.
2. After cleaning screen system, open bottom doors and vacuum out sediment chambers. (Estimate Volume Collected)
NSBB™ Components

Component Descriptions

The Nutrient Separating Baffle Box® is a multi stage, self contained treatment system. Each subsequent component in the system protects prior stages from clogging. These stages include screening, separation and hydrocarbon absorption.

• Screening is provided by a rectangular basket system which is suspended above the static water level of the sedimentation chambers. The screening filter has a storage capacity of several cubic yards depending on the model. The primary function of the basket is to capture gross solids like trash and nutrient rich debris. The screening system contains debris and provides a dry storage state to prevent nutrient leaching and contamination of static water, causing a septic state.

• Sediment Separation is facilitated by three settling chambers each with a capacity of several cubic yards depending on the model. These chambers work to target smaller sediments and particulate metals.

• Absorption is facilitated by the hydrocarbon boom(s), that are either free floating or attached to the influent side of the skimmer. This device removes free floating and emulsified hydrocarbons from water.
Service Requirements and Parts

Minimum Equipment Requirements

The use of a vacuum truck is required for servicing of the Nutrient Separating Baffle Box®. Service crews are recommended to check all local, state and federal guidelines for servicing and disposal of any collected debris and sediments.

Structural Components

The structural components of the NSBB™ are designed to have a life span of several decades. Structural inspections are not required unless stipulated in guidelines set by the local municipality, state or federal agencies.

Replacement Parts

All interior components are designed and sized to be assembled and removed from the NSBB™ for servicing or for parts replacement. This can easily be accomplished via the access ports atop the structure.

For any replacement parts or further instructions please contact Suntree Technologies, Inc®:

Suntree Technologies Inc.®
798 Clearlake Road, Suite 2
Cocoa, Florida 32922

Phone: 321.637.7552
Fax: 321.637.7554
Web: www.suntreetech.com
Email: info@suntreetech.com
Servicing Summary Information

Service Information

Maintenance activities include the removal of captured sediments and debris. Maintenance can be performed from outside the NSBB™ through access points such as manhole covers or hatches installed in the vault surface above the sediment chambers. During maintenance, the screen system may have either SunGlide™ Sliding Doors or Hinged Doors.

These top doors open to gain access to the debris captured by the screen system. This system also has bottom doors that open to give access to the sediment collected in the settling chambers. A vacuum truck is required for debris and sediment removal. Although not every circumstance can be covered in this manual, a situation may arise where the structure needs to be entered. Servicing does not require specialized tools.

Service Procedure Summary

1. Open the access openings (Manhole, Hatch or Grate) on the top of the Baffle Box.

2. Vacuum the debris captured by the screen system to expose the sediment collection chambers.

3. Open the bottom doors to the basket system to expose the sediment collection chambers. These doors have eyebolts to attach the NSBB™ tool in order to open the bottom doors which hinge off to the side.

4. (Attach vacuum truck water hose to service system quick connector and engage if equipped with Hydro Slide™.) Vacuum each sediment chamber until they are empty.

5. After cleaning the sediment chambers close the bottom screen doors of the screen system. Lower or Slide the top doors and assure they lock correctly (if equipped with SunGlide™ Lids).

6. When all maintenance work is completed, be sure to close the access covers or hatches.

Caution!

Any Service Work done in Traffic Areas must meet all DOT Roadway Work guidelines and necessary Safety Procedures.

Warning!

All OSHA confined space requirements must be met while cleaning any of the Nutrient Separating Baffle Box® structures.

Note:

All vacuum servicing of NSBB™ components can be done with the use of any vacuum truck designed for catch basin cleaning.

When possible, maintenance should be performed from the surface level.
Screen System Maintenance

Screen Maintenance Procedure

The Nutrient Separating Baffle Box® Screen Basket is recommended to be inspected quarterly and cleaned every six (6) months.

1. Remove all manhole covers (or open hatches or grates) to gain access to the screening basket.

2. Remove all trash, litter, debris, organics and sediments captured by the screened basket either manually or with the use of a vacuum truck. The vacuum hose will not damage the screen.

3. Remove vacuum hose and replace manhole covers or hatch doors / grates.

4. Transport all debris, trash, litter, organics and sediments to an approved facility for disposal in accordance with local and state requirements.

Note:

The screened basket must be cleaned before vacuuming each separation chamber.

The bottom of the screened basket is designed with three hinged panels that are lifted vertically to access each separation chamber.

Nutrient Separating Baffle Box® with trash / debris collected inside the screening system basket.
SunGate™ Information

**SunGate™ Flow Control Gate**

The SunGate™ Flow Control Gate is an additional servicing option for your stormwater treatment system. The SunGate™ is adaptable to fit into the NSBB™ at the inflow pipe entrance. This gate isolates your system from water flows when necessary service is required.

- The SunGate™ is available in several varieties and pipe sizes including custom sizes.
- Easy to deploy and remove for maintenance, even under full hydraulic load.
- SunGate™ is highly durable, constructed of marine grade fiberglass and steel.

**Servicing with the SunGate™**

1. Slide SunGate™ Flow Control Gate into place at inflow pipe by hand or using included tools.
2. Using wrench or included tool; twist cam bolts to the right to lock in place and create a water tight seal.
3. Service NSBB™ vault, basket and sediment chambers via vacuum truck.
4. When servicing of NSBB™ is complete, open the SunGate™ hatch to equalize water pressure.
5. Using wrench or included tool; twist cam bolts to the left to release water tight seal.
6. Slide out SunGate™ with included tool or pull SunGate™ out if using wheeled version. (Wheeled SunGate™ can be used under full hydraulic load)
Separation Chamber Maintenance

Separation Chamber Maintenance Procedure

The Nutrient Separating Baffle Box® Hydrodynamic Separation Chambers are recommended to be inspected quarterly and cleaned every six (6) months.

1. Remove all manhole covers (or open hatches or grates) to gain access to the separation chambers.

2. Lower vacuum truck hose into the first separation chamber through the screening basket closest to the inflow pipe. Pressure washing may be needed to remove compacted sediments. (If not equipped with the HydroSlide™ system)

3. Repeat this process in each separation chamber.

4. Remove vacuum hose and lower hinged panels of screening basket back to a horizontal position.

Separation Chamber Service with HydroSlide™

1. Remove all manhole covers (or open hatches or grates) to gain access to the separation chambers.

2. Lower vacuum truck hose through the screening basket and into the first separation chamber, closest to the inflow pipe.

3. Attach the vacuum truck water supply hose onto the HydroSlide™ service system quick connector.

4. Start the HydroSlide™ service system using the vacuum truck hose while operating the vacuum line. Debris will be quickly and easily flushed toward the vacuum line and removed. Repeat for each chamber.

5. Remove vacuum line and disconnect truck water supply hose. Repeat steps 3 – 5 for each chamber.

6. Remove vacuum hose and close the bottom screen system doors. Lower / Slide (if equipped with SunGlide™ Lids) and lock top screen doors.
StormBooms™ Information

General Specification Information

StormBooms™ provide sufficient contact time, at rated flows, of passing contaminate water. The material composition will capture and retain all hydrocarbons that are absorbed into the physical structure. The composition material of the boom is made of proprietary polymer based beads that are contained within booms or pouches. Such pouches are made of 100% polyester netted fabric with sieve openings and an open area ratio of about 67%.

The boom and netting material are durable and have an expected life of 5 plus years. StormBooms™ have been proven to absorb up to 180% of its weight within a 300 second contact time. However, the physical increase in size of the boom beads is not more than 50%. Booms capture an array of hydrocarbons including oils, grease, gasoline, diesel and PAHs.

The Hydrocarbon Skimmer Panel is located below the rear top access opening in the Nutrient Separating Baffle Box®. The skimmer panel may be a reinforced fiberglass flat panel, a fiberglass molded panel or a SkimBoss™ floating skimmer. Hydrocarbon booms are designed to fit inside the panel which has an expanded metal screen face. There is an oval hole at the top of the panel for inserting or removing the hydrocarbon boom. Each boom is equipped with rope ends to secure the boom in place after it has been inserted into the skimmer panel.

Note:

StormBooms™ are single booms for vaults up to 6’ wide and double in length for vaults 8’ or larger.

SkimBoss™ floating skimmer with StormBoom™ attached with rope to SS Eye Strap ready for replacement.
StormBoom™ Installation Procedure
The Nutrient Separating Baffle Box® StormBoom™ is recommended to be inspected every six (6) months and cleaned every twelve (12) months.

1. Thread one rope end in one of the top panel holes.
2. Each end of the rope will be on opposite ends of the panel and will be brought up to the rear access opening in the top of the box.
3. Attach rope ends to SS Eye Straps which are fastened to the inside of the rear access hole in the concrete.
4. The bottom of the hydrocarbon boom should look slightly “U” shaped and rest 6” from the bottom of the skimmer panel.
5. Double knot the rope ends to eliminate any slack.

StormBoom™ Replacement Procedure
1. Remove manhole cover (or open hatch / grate) closest to the outflow to access the StormBoom™.
2. Inspect the boom in the skimmer system for oil accumulation. Booms should be replaced once discolored or are close to one (1) year of service.
3. The StormBoom™ has ropes attached to each end that are secured to eyelets adjacent to the access cover.
4. Attach a rope on the end of the new boom to a rope on the end of the old boom and pull to remove. As the old boom is removed, the new boom moves into position.
5. Gather enough excess slack to allow the boom to freely float on the surface of the water at the static level.
6. Attach the rope ends of the new boom to the eyelets adjacent to the access cover.
Post Servicing Protocol

After completing inspection or maintenance, the service operator should prepare a record of service. The record should include maintenance activities performed, amount and description of debris collected and system condition.

- The owner will retain the service / inspection record for a minimum of five (5) years from the date of maintenance, or in accordance to specified EPA / DEP requirements.
- All records should be made available to the governing municipalities for inspection upon request at any time.
- Transport all debris, trash, litter, organics and sediments to an approved facility for disposal in accordance with local and state requirements.

Nutrient Separating Baffle Box® with collected trash, organics and debris inside the screened basket system ready for disposal.
Warranty Information

Suntree Technologies, Inc.® products are engineered and manufactured with the intent of being a permanent part of the infrastructure. Suntree Technologies, Inc.® warranties its products to be free from manufacturing defects for a period of five (5) years from the date of purchase.

In the event a warranty claim is made and determined to be valid, Suntree Technologies will replace or repair the product at their own discretion. Warranty claims must be submitted, evaluated and approved by Suntree Technologies for the claim to be determined valid. All warranty work must be authorized by Suntree Technologies prior to work beginning not covered by this warranty. There are no warranties expressed or implied other than what is specified herein. Abusive treatment, neglect or improper use of the Nutrient Separating Baffle Box® will not be covered by this warranty.
Contact

General Inquires

For additional information concerning general usage, maintenance products, warranties or replacement parts please contact:

Suntree Technologies Inc.®
798 Clearlake Road, Suite 2
Cocoa, Florida 32922

Phone: 321.637.7552
Fax: 321.637.7554
Web: www.suntreetech.com
Email: info@suntreetech.com

Visit our website for in depth information on all of our products!