



Rhode Island Department of Environmental Management
Office of Water Resources – Stormwater Technology Review Committee
235 Promenade St. Providence, RI 02908 Ph: 401-222-4700

Alternative Stormwater Technology Certification

Vendor Contact:

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Technology Name:

Downstream Defender®

Approval Type:

Pretreatment/Retrofits

Certification Dates:

Issued: January 16, 2025

Expires: January 16, 2030

CERTIFICATION:

The Rhode Island Stormwater Technology Review Committee which consists of members from the Department of Environmental Management (DEM), Department of Transportation (DOT) and the Coastal Resources Management Council (CRMC) have reviewed the **Downstream Defender®** application for certification of its Technology Approval and accepted use for Stormwater Treatment in the State of Rhode Island.

In accordance with Stormwater Rule 250-RICR-150-10-8.9B, **Hydro International** has petitioned the permitting agencies to certify the **Downstream Defender®** as an acceptable structural stormwater control described in Stormwater Rule 250-RICR-150-10-8.31. They have submitted monitoring results and supporting information developed in accordance with the provisions of the Technology Assessment Protocol (TAP) for Innovative and Emerging Technologies as described in Stormwater Rule 250-RICR-150-10 Sections 8.39 and 8.40.

The **Downstream Defender®** is granted reciprocity in Rhode Island as a proprietary stormwater treatment technology, given that it has been issued a General Use Level Designation (GULD) for Pretreatment from the Washington Department of Ecology's Technology Assessment Protocol – Ecology (TAPE) program effective January 2023. This Washington Department of Ecology GULD for pretreatment recognizes the **Downstream Defender®** as a stormwater treatment technology which provides 50% removal of total suspended solids when operating at the maximum treatment flow rate for each device specified in the attached **Table 1: Downstream Defender® Sizing Table for 50% TSS Removal**. As per Stormwater Rule 250-RICR-150-10-8.39, both TAPE and TARP approved devices are allowed reciprocity consideration in Rhode Island.

The **Downstream Defender®** is a pre-treatment or retrofit device that captures TSS from stormwater runoff as described in Stormwater Rule 250-RICR-150-10-8.31. It is a vertically oriented cylindrical structure manufactured from polyethylene. The device is installed in a pre-cast manhole and is designed to remove trash and sediment from stormwater. This product was developed by **Hydro International**. The **Downstream Defender®** is approved for online use.

The manufacturer has demonstrated that this product meets the minimum water quality standards for pretreatment as described in Stormwater Rule 250-RICR-150-10-8.31. The **Downstream Defender®** is approved for **50%** removal of total suspended solids (TSS) when designed using flow rates specified in the attached **Table 1: Downstream Defender® Sizing Table for 50% TSS Removal**. The **Downstream Defender®** is NOT recognized for removal of Pathogens, Total Phosphorus or Nitrogen. This device may be used as pretreatment or retrofit device provided that the design, installation, and maintenance are conducted in accordance with the following terms and conditions:

I. GENERAL CERTIFICATION REQUIREMENTS

1. The system's design and installation must adhere to the manufacturer's specification for the **Downstream Defender®**, which can be found at: https://hydro-int.com/sites/default/files/downstream_defender_writte_specification.pdf
2. The system must be installed in accordance with the manufacturer's installation manual for the **Downstream Defender®**, which can be found at: https://hydro-int.com/sites/default/files/handling_and_install_instructions.pdf
3. The **Downstream Defender®** is **certified as a pretreatment** device in accordance with Stormwater Rule 250-RICR-150-10-8.31, provided the device treats the flow of the first inch of runoff from the capture area, unless waived by the state permitting agency. The system's design must utilize flow rates, impervious catchment sizes, and maximum sediment capacities listed in the attached **Table 1: Downstream Defender® Sizing Table for 50% TSS Removal**.
4. The applicant must provide the RI specific manufacturers design sheet for Departmental review or provide the manufacturer's review approval. All units that capture greater than one acre of impervious cover must be reviewed by the manufacturer.
5. This device is **certified as a retrofit device** in accordance with Stormwater Rule 250-RICR-150-10-8.6A. Retrofits are allowed flexibility with regards to the eleven minimum standards described in Sections 8.6 through 8.17 of Stormwater Rule 250-RICR-150-10, but in general they are considered effective if they capture at least 50% of the catchment and meet the target water quality treatment of at least the first 0.5 inches of the water quality volume.
6. The approved devices shall be located such that they are accessible for maintenance and/or emergency removal of oil or chemical spills.
7. The device cannot be used in series with another Hydrodynamic separator to achieve enhanced removal rates for TSS.
8. The device must be constructed with a tangential inlet in order to induce a swirling flow pattern.

II. MAINTENANCE REQUIREMENTS

1. Standard permitting conditions for inclusion of this technology will, at a minimum include the following:
 - a. Each individual owner must ensure that any and all of their **Downstream Defender®** devices are maintained in accordance with the manufacturer's Operation & Maintenance Manual which can be found at: https://www.hydro-int.com/sites/default/files/dd_om_c_2204.pdf?_gl=1*r09qr5*_up*MQ..&gclid=CjwKCAjw3P-2BhAEEiwA3yPhwOS1PishN0jzHUjUtqcJWr9RUKX_lcWs_u28cQvKo8qi1KkdXN3ThoCvB8QAvD_BwE
 - b. Each individual owner must ensure that any and all of their proprietary stormwater pre-treatment devices are maintained in accordance with the requirements stated in Stormwater Rule 250-RICR-150-10-8.31-C, which requires the sump to be inspected a minimum of 2 times per year. Additionally, the device must be cleaned out when either pollutant removal capacity is reduced by 50% or more, or when 50% or more of the device's pollutant storage capacity is filled or displaced.

- c. All material removed from the unit must be properly disposed of and is the responsibility of the owner.
 - d. The applicant must include a copy of the **Downstream Defender® Operation and Maintenance Manual** in their project specific long term operation and maintenance plan.
2. The applicant must provide evidence of a maintenance contract which extends for a minimum of two years. The contracted maintenance provider must receive training by **Hydro International** on how to properly maintain **Downstream Defender®** devices. This requirement excludes maintenance providers recognized by the RIDEM to be qualified in maintenance of **Downstream Defender®** devices.

III. REPORTING REQUIREMENTS

1. Upon request from the owner of any **Downstream Defender®** system installed in the State of Rhode Island, the vendor shall provide the owner with a recommended maintenance schedule after the first year of the device's operation. If a recommended maintenance schedule is requested by the owner after the first year of the device's operation, then the owner is responsible for notifying the vendor of any additional pollutant loading sites where contributing drainage areas may be subject to further development (i.e., strip malls).
2. The Vendor shall provide a listing to the RIDEM Office of Water Resources of all systems installed within the State of Rhode Island on an annual basis.
3. The Vendor shall provide an annual listing to the RIDEM Office of Water Resources of all Rhode Island maintenance providers that they trained in **Downstream Defender®** maintenance.
4. The Vendor shall immediately notify the RIDEM Office of Water Resources if and when any changes are made to the model names or numbers of any **Downstream Defender®** device for all models applicable to this certification.
5. The Vendor shall immediately notify the RIDEM Office of Water Resources if and when any revisions are made to the design, installation operation and maintenance manuals for all models applicable to this certification. Revisions deemed by the RIDEM to be substantial, may require re-application to the Alternative Stormwater Technology Program.
6. The Vendor shall notify the RIDEM at least thirty (30) days following any proposed transfer of ownership of the Component technology. Notification shall include the name and address of the new owner and a written agreement between the existing and new owner specifying a date for transfer of ownership, responsibility, and liability for the Component. All provisions of this Certification shall be applicable to any new owners.

IV. RIGHTS OF THE RIDEM AND CRMC

1. The RIDEM may suspend, modify, or revoke this approval for cause, including but not limited to non-compliance with any of the conditions or provisions of this approval, misrepresentation, or failure to fully disclose all relevant data, or receipt of new information indicating that the use of the **Downstream Defender®** system is contrary to the public interest, public health, or the environment.
2. This approval does not represent an endorsement of the **Downstream Defender®** system by the RIDEM, RIDOT or CRMC. This letter of approval may be reproduced only in its entirety.

3. The **Downstream Defender® Specification** and **Downstream Defender® Operation and Maintenance Manual** referenced herein are approved upon the date of approval of this Certification.
4. The RIDEM reserves the right to suspend or revoke this Certification if updated design, installation, and O&M manuals are not provided to the RIDEM within thirty (30) days of RIDEM request or one hundred and eighty (180) days prior to the expiration date of this Certification. All revisions must be reviewed and approved by the RIDEM prior to re-certification.

Nicholas A. Pisani, P.E.
Environmental Engineer IV
Stormwater Engineering and 401 Permitting

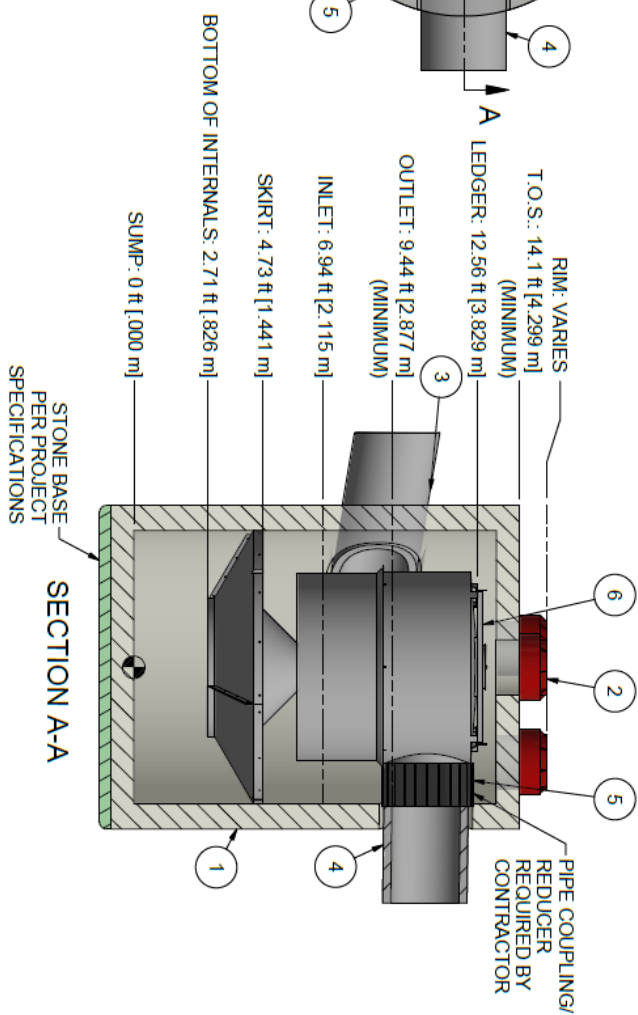
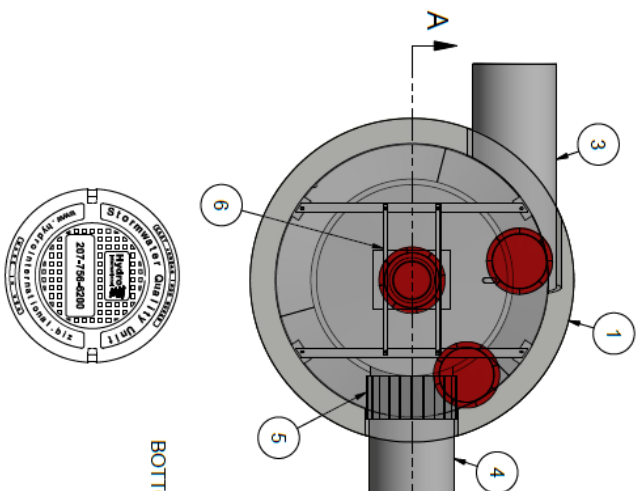
Date

ATTACHMENTS:

Table 1: DownStream Defender Concentrator Sizing Table for 50% TSS Removal

Model #	Structure Inside Diameter (ft)	Maximum Treatment Flow Rate (cfs)	Maximum Impervious Treatment Area (acres)	50% of Max Sediment Storage Volume (ft³)
4-ft	4	1.12	1.025	9.5
6-ft	6	2.52	2.306	28.4
8-ft	8	4.49	4.010	62.8
10-ft	10	7.00	6.391	117.5
12-ft	12	10.08	9.203	198.5

TYPICAL STANDARD DETAIL FOR DOWNSTREAM DEFENDER ON NEXT PAGE



PARTS LIST				
ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	120	3000	PRECAST MANHOLE (BY HYDRO VIA PRECASTER)
2	3	24	600	FRAME AND COVER (QTY 3)
3	1	30 (MAX)	750 (MAX)	INLET PIPE (BY OTHERS)
4	1	30 (MAX)	750 (MAX)	OUTLET PIPE (BY OTHERS)
5	1			PIPE COUPLING (BY OTHERS)
6	1			INTERNAL COMPONENTS (PRE-INSTALLED)

OUTLET STUB ID: 30" (750 mm)
OUTLET STUB OD: 36" (900 mm)

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING DOWNSTREAM DEFENDER MANHOLE.

PROJECTION

IF IN DOUBT ASK

Title 10ft-DIAMETER DOWNSTREAM DEFENDER

GENERAL ARRANGEMENT

Hydro
International
A CSM COMPANY
hydro-int.com
HYDRO INTERNATIONAL

WEIGHT:	MATERIAL:
N/A	

STOCK NUMBER:
NEXT ASSY

DRAWING NO.: DD GA-10		REV: A
SHEET SIZE: B	SHEET: 1 OF 1	

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