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:
Mr. Ed Duggan
Director of Research
HydroWorks, LLC
257 Cox Street
Roselle, NJ 07203
eduggan@hydroworks.com
www.hydroworks.com
Ph: 848-235-5950

Technology Name:
HydroDome

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 **HydroDome** 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, **HydroWorks, LLC.** has petitioned the permitting agencies to certify the **HydroDome** 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 in Stormwater Rule 250-RICR-150-10 Sections 8.39 and 8.40.

The **HydroDome** is granted reciprocity in Rhode Island as a proprietary stormwater treatment technology, given that it has been issued an MTD (manufactured treatment device) Lab Certification from the New Jersey Department of Environmental Protection (NJDEP) effective June 30, 2021, as a result of *NJCAT Technology Verification HydroDome (HD) Stormwater Separator* study from April 2021, performed at the Alden Research Laboratory, Inc. in Holden, Massachusetts. The study was conducted in accordance with the NJDEP "Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" from January 2013. This NJDEP MTD Lab Certification recognizes the **HydroDome** 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:* HydroDome *Sizing Table for 50% TSS Removal***. The State of New Jersey is a member of the Technology Acceptance Reciprocity Partnership (TARP). As per Stormwater Rule 250-RICR-150-10-8.39, both TAPE and TARP approved devices are allowed reciprocity consideration in Rhode Island.

The **HydroDome** 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 comprised of a plastic open-bottomed, rectangular box with a scour protection plate, an internal weir, debris screen and internal siphon. The device is installed into the outlet pipe of pre-cast concrete manholes and is designed to remove trash and sediment from stormwater. This product was developed by **HydroWorks, LLC.** The **HydroDome** is approved for online and off-line 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 **HydroDome** is approved for **50%** removal of total suspended solids (TSS) when designed using flow rates specified in the attached ***Table 1:* HydroDome *Sizing Table for 50% TSS Removal***. The **HydroDome** 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 must adhere to the manufacturer's specification for the **HydroDome**, which can be found on at: https://hydroworks.com/file/HDCad.pdf

2. The system must be installed in accordance with the manufacturer's installation manual for the **HydroDome**, which can be found at: https://hydroworks.com/hdinstall.pdf

3. The **HydroDome** 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:*** **HydroDome** ***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.

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 **HydroDome** devices are maintained in accordance with the manufacturer's Operation & Maintenance Manual, which can be found at: https://hydroworks.com/file/hdmaintenance.pdf

   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 **HydroDome** Operation & 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 **HydroWorks, LLC** on how to properly maintain **HydroDome** devices. This requirement excludes maintenance providers recognized by the RIDEM to be qualified in maintenance of **HydroDome** devices.

III. REPORTING REQUIREMENTS

1. Upon request from the owner of any **HydroDome** 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 **HydroDome** 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 **HydroDome** 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 **HydroDome** system is contrary to the public interest, public health, or the environment.

2. This approval does not represent an endorsement of the **HydroDome** system by the RIDEM, RIDOT or CRMC. This letter of approval may be reproduced only in its entirety.

3. The **HydroDome** General Specification and **HydroDome** Operation and Maintenance Guide 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 Digitally signed by Nicholas A. Pisani
Date: 2025.01.16 14:18:10 -05'00'

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

ATTACHMENTS:

Table 1: HydroDome Sizing Table for 50% TSS Removal

Model #	Structure Inside Diameter (ft)	Maximum Treatment Flow Rate (cfs)	Maximum Approximate Impervious Treatment Area (acres)	50% of Max Sediment Storage Volume (ft^3)
HD 3	3	0.85	0.7735	3.5
HD 4	4	1.51	1.38165	6.3
HD 5	5	2.36	2.1594	9.8
HD 6	6	3.40	3.1008	14.1
HD 7	7	4.63	4.22719	19.2
HD 8	8	6.03	5.50539	25.1
HD 10	10	9.44	8.61872	39.3
HD 12	12	13.60	12.4168	56.5

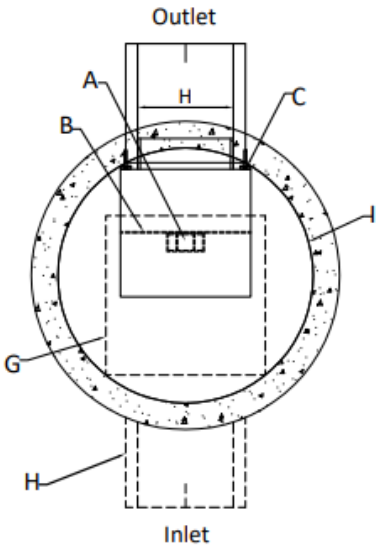
TYPICAL STANDARD DETAIL FOR HYDRODOME - ON NEXT PAGE

Specifications

1. The separator must be designed based on the following criteria:

Flow Criteria	
Water Quality FLow cfs (L/s)	
Peak Design Flow cfs (L/s)	

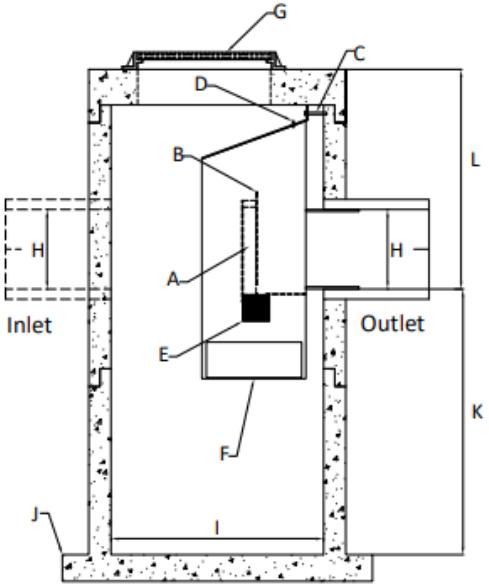
TSS Removal Criteria	
Annual TSS Removal (%)	
NJDEP/ETV Canada TSS	
OK110 Sand	
F95 Sand	
Other	



Plan

HydroDome Components

A. Siphon
B. Overflow Weir
C. Wall Anchor
D. Air Check Valve
E. Coarse Foam Debris Screen
F. Perforated Bottom
G. Grate or Cover
H. Inlet and Outlet Pipes
I. Structure Diameter
J. Base Extension
K. Sump Depth
L. Invert to Top of Structure



Profile

2. The separator must be independently tested and verified to the 2013 NJDEP separator protocol and 2014 ETV Canada Separator protocol

3. Vendor testing and/or field testing is not acceptable to determine an alternate equal due to the lack of repeatability.

Notes:

1. Sump depths shown are typical. Additional depth can be added as required.

2. Single or multiple inlet pipes allowed.

3. Drops allowed.

4. Inlet Grate Shown. HydroDome can be desiged with a closed cover if required.

5. Oil capacities given are spill capacities.

6. Sediment depths are maximum holding capacities and not recommended capacities for regular maintenance.

7. Capacities are rounded down to nearest 5 gal or ft3 (5L or 0.1 m3 for metric units)

8. Minimum rim to top of structure [L] required may vary for HydroDome. Please call Hydroworks for site-specific design questions.

9. Hydraulics vary with pipe size and model number. Please call Hydroworks for site-specific headloss calculations.

HydroDome by Hydroworks, LLC
U.S. Patent # 10,801,196
www.hydroworks.com
888-290-7900

HydroDome Dimensions / Capacities *

Model	Diameter ft (m) I	Sump Depth ft (m) K	Max. Pipe in (mm) H	Total Volume gal (L)	Oil Spill Volume gal (L)	Sediment Volume ft3 (m3)
HD 3	3 (0.9)	4 (1.2)	18 (450)	210 (800)	30 (120)	15 (0.5)
HD 4	4 (1.2)	4.5 (1.4)	21 (525)	420 (1600)	70 (265)	30 (0.9)
HD 5	5 (1.5)	5.5 (1.7)	27 (675)	805 (3055)	125 (480)	60 (1.7)
HD 6	6 (1.8)	6.5 (2.0)	33 (825)	1375 (5200)	210 (800)	100 (2.9)
HD 7	7 (2.1)	7.5 (2.3)	39 (975)	2155 (8170)	320 (1225)	160 (4.6)
HD 8	8 (2.4)	8.5 (2.6)	42 (1050)	3195 (12095)	490 (1860)	235 (6.8)
HD 10	10 (3.0)	10.5 (3.2)	54 (1350)	6165 (23350)	955 (3615)	455 (13.0)
HD 12	12 (3.6)	12.5 (3.8)	66 (1650)	10575 (40030)	1640 (6220)	780 (22.2)

* HD dimensions can be customized to provide custom oil or sediment volumes

Hydroworks HydroDome

PROJECT:

LOCATION:

REVISION DATE: 01/24/2022

Hydroworks