

# ATTACHMENT 1

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## Manufactured Treatment Device (MTD) Registration

**1. Manufactured Treatment Device Name:**

R-Tank Module Treatment/Maintenance Row

**2. Company Name:** ACF Environmental, Inc.

Mailing Address: 2831 Cardwell Rd

City: Richmond

State: VA Zip: 23234

**3. Contact Name (to whom questions should be addressed):** Corey Simonpietri

Mailing Address: 2831 Cardwell Road

City: Richmond

State: VA Zip: 23234

Phone number: 804-400-9490

Fax number: 804-743-7779

E-mail address: corey@acfenv.com

Web address: www.acfenvironmental.com

**4. Technology**

Specific size/capacity of MTD assessed (include units):

Each module has a hydraulic loading rate of 0.0535 cfs per module or 0.0174 cfs/SF (7.79 gpm/SF). Note: a module is 1.31 ft X 2.35 ft (WXL) and has a footprint area of 3.08 SF.

Range of drainage areas served by MTD (acres):

The treatment/maintenance row performance is dependent upon flow rate. Therefore, when sized appropriately there is no upper limit on the drainage area served. In other words, the water quality runoff rate from the drainage area is divided by the hydraulic loading rate of the system to determine the required number of modules.

Include sizing chart or describe sizing criteria:

See attached 3<sup>rd</sup> party test report (Attachment 2) for rating charts and tables.

Intended application: on-line or offline:

Can be designed for both on-line and off-line configurations.

Media used (if applicable):

The treatment/maintenance row is wrapped in geotextiles to retain pollutants and is fully accessible by jet-vac equipment to clean and remove captures pollutants.

**5. Warranty Information** (describe, or provide web address):

R-Tank has a 10-year warranty for manufacturing and defects (Attachment 3).

**6. Treatment Type**

- Hydrodynamic Structure
- Filtering Structure
- Manufactured Bioretention System
- Other (describe): Utilizes a combination of geotextile on all sides of the chamber to filter pollutants.

**7. Water Quality Treatment Mechanisms** (check all that apply)

- Sedimentation/settling
- Infiltration
- Filtration (specify filter media)
- Adsorption/cation exchange
- Chelating/precipitation
- Chemical treatment
- Biological uptake
- Other (describe): Filtration by passing water through a woven geotextile by ACF

**8. Performance Testing and Certification** (check all that apply):

Performance Claim (include removal efficiencies for treated pollutants, flow criteria, drainage area):

Greater than 80% TSS and 20% TP across all models.

Specific size/Capacity of MTD assessed:

Full size modules were tested – a series of 5 modules treating a flow rate of 120 gpm (0.27 cfs) were tested. This was a size that could be reasonably built in an indoor laboratory and is not considered limiting because it can be scaled to any drainage area and water quality flow rate.

Has the MTD been "approved" by an established granting agency, e.g. New Jersey Department of Environmental Protection (NJDEP) , Washington State Department of Ecology, etc.

**No**

**Yes;** For each approval, indicate (1) the granting agency, (2) use level if awarded (3) the protocol version under which performance testing occurred (if applicable), and (4) the date of award, and attach award letter.

Was an established testing protocol followed?

**No**

**Yes,** (1) Provide name of testing protocol followed, (2) list any protocol deviations:

ASTM C1746

Provide the information below and provide a performance report:

See Attachment 2.

For lab tests:

- i. Summarize the specific settings for each test run (flow rates, run times, loading rates) and performance for each run: Flow Rates –  
See Attachment 2.
- ii. If a synthetic sediment product was used, include information about the particle size distribution of the test material:  
See Attachment 2
- iii. If less than full-scale setup was tested, describe the ratio of that tested to the full-scale MTD:  
Not applicable (NA)

For field tests:

- i. Provide the address, average annual rainfall and characterized rainfall pattern, and the average annual number of storms for the field-test location: NA
- ii. Provide the total contributing drainage area for the test site, percent of impervious area in the drainage area, and percentages of land uses within the drainage area (acres): NA
- iii. Describe pretreatment, bypass conditions, or other special circumstances at the test site: NA
- iv. Provide the number of storms monitored and describe the monitored storm events (amount of precipitation, duration, etc.): NA
- v. Describe whether or not monitoring examined seasonal variation in MTD performance: NA
- vi. If particle size distribution was determined for monitored runoff and/or sediment collected by the MTD, provide this information: NA

**9. MTD History:**

How long has this specific model/design been on the market?

Three Years

List no more than three locations where the assessed model size(s) has/have been installed in Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

- 1) Hardywood Park, Richmond, VA

List no more than three locations where the assessed model size(s) has/have been installed outside of Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

- 1) Maine Medical Center Expansion, Portland, ME (MEDEP approved)
- 2) Ogunquit Main Beach Parking Lot, Ogunquit, ME (MEDEP approved)
- 3) World Cup Stadium, Doha, Qatar

**10. Maintenance:**

What is the generic inspection and maintenance plan/procedure? (attach necessary documents):

R-Tank treatment/maintenance row layout/details and an Operation and Maintenance Manual is included in Attachments 4 and 5.

Is there a maintenance track record/history that can be documented?

No, no track record.

Yes, track record exists; (provide maintenance track record, location, and sizing of three to five MTDs installed in Virginia [preferred] or elsewhere):

See Attachment 5.

Recognizing that maintenance is an integral function of the MTD, provide the following: amount of runoff treated, the water quality of the runoff, and what is the expected maintenance frequency for this MTD in Virginia, per year?

- The R-Tank treatment/maintenance row is sized to treat the WQV consistent with the VA Stormwater Management Handbook. The amount of water treated can be hydraulically modeled using and acceptable Hydrology & Hydraulic computer model like HydroCAD.
- Maintenance will vary by site and should be determined through routine inspection (e.g., once every 12 months). If material has accumulated more than 3” at the majority of inspection points, the system should be maintained.

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media:

50-years with proper installation and maintenance.

For media or amendments functioning based on cation exchange or adsorption, how long will the media last before breakthrough (indicator capacity is nearly reached) occurs?

NA

For media or amendments functioning based on cation exchange or adsorption, how has the longevity of the media or amendments been quantified prior to breakthrough (attach necessary performance data or documents)?

NA

Is the maintenance procedure and/or are materials/components proprietary?

- Yes, proprietary
- No, not proprietary

Maintenance complexity (check all that apply):

- Confined space training required for maintenance
- Liquid pumping and transportation

Specify method:

- Solids removal and disposal

Specify method: Jet-vac and vector truck

Other noteworthy maintenance parameter (describe):

## 11. Comments

Include any additional explanations or comments:

There are currently three (3) other filtration devices that utilize a fabric wrapped storage module to achieve water quality treatment approved by the Virginia Department of Environmental Quality. Two of the three devices submitted TSS removal data as the basis of assigning an event mean concentration percent TP removal efficiency. We have submitted performance data we believe is consistent with what the Department has approved.

## 12. Certification

Signed by the company president or responsible officer of the organization:

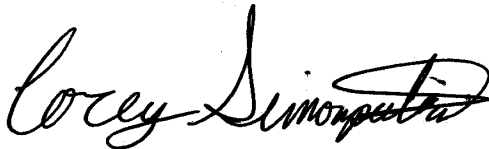
“I certify that all information submitted is to the best of my knowledge and belief true, accurate, and complete.”

Signature:

Name: Corey Simonpietri

Title: Director of Stormwater

Date: December 8, 2018

A handwritten signature in black ink that reads "Corey Simonpietri". The signature is written in a cursive style with a large, looping initial 'C'.

NOTE: All information submitted to the department will be made publicly accessible to all interested parties. This MTD registration form will be posted on the Virginia Stormwater BMP Clearinghouse website.