



STP-4901(620) Crestwood, PIF Request - Downstream Defender

James K Schmidt to: CODEproprietary

01/14/2013 12:49 PM

History:

This message has been replied to.

MSD in St. Louis requires proprietary water cleaning devices.

The attached PIF includes the City's name (Crestwood)
The project number is STP-4901(620)

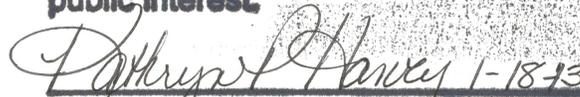
MSD requires exact dimensions on the plans in order for them to approve the plans.

We are requesting approval of this PIF, please let us know if you need additional information.

[2013-01-14 4901620 PIF request for Hydrodynamic Separator.pdf](#)

Jim Schmidt, P.E.
District Design Liaison
Local Program Administration
MoDOT St. Louis District
1590 Woodlake Dr.
Chesterfield, MO 63017
314-453-5082

I do hereby attest that in accordance with the requirements of 23 CFR 635.411(c), the use of this patented or proprietary item is in the public interest.


Kathryn P. Harvey, State Design Engineer

PUBLIC INTEREST FINDING

(DOWNSTREAM DEFENDER HYDRODYNAMIC SEPARATOR UNIT)

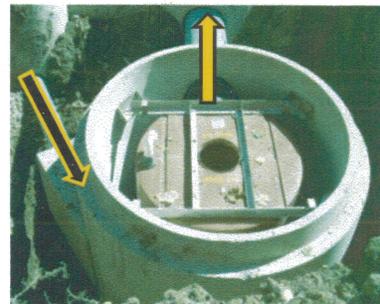
Feature: The Downstream Defender is a proprietary hydrodynamic separator approved for use as a standalone best management practice (BMP) within the Metropolitan St. Louis Sewer District's (MSD) jurisdiction. The unit is setup in a manhole measuring 4', 6', 8', or 10' inside-diameter depending on the water quality flow rate. Having undergone numerous independent and federal tests, the Downstream Defender is a proven engineered system capable of removing sediment, total suspended solids (TSS), and oil while preventing pollutants from washing out downstream. Of all the approved standalone BMP's available for use in MSD's jurisdiction the Downstream Defender treats the widest range of water quality flow rates and has the smallest footprint. These two factors make the Downstream Defender the most land-efficient and economical choice for treating the water quality flow necessary per the design requirements. The Downstream Defender conforms to St. Louis MSD standards and specifications and will be designed in an offline configuration per local requisites.

Location: Crestwood, MO

Application: Site constraints dictate the best management practice to treat the runoff from a subdivision of the project-at-hand is a buried proprietary treatment system. The Downstream Defender has been chosen in similar instances in neighboring St. Louis municipalities as the best possible solution to meet local and federal water quality standards. In this instance the treatment system will be called upon to capture all floatable trash and free oil, and remove 80% of total suspended solids for the OK-110 particle size distribution at the stipulated water quality flow rate.

Justification: Because of the intense review requirements of the Metropolitan St. Louis Sewer District, exact dimensions, footprint diameters, flowlines, pipe angles, and details of each must be shown. As a result, drainage easements were obtained meeting these requirements.

The Downstream Defender is the most efficient best management practice because of its footprint, effectiveness, and cost. The Downstream Defender has a smaller footprint than other water quality structures because of its unique setup between adjacent manholes. The inlet pipe is set tangentially to the interior wall of the unit which creates a smooth laminar flow while driving the separation of sediments & trash. The outlet pipe then runs from the center of the Downstream Defender to the center of the downstream manhole. Removal efficiency is not affected by the angle between the inlet and outlet pipes which allows the Downstream Defender to fit into very tight spaces while still maintaining excellent removal efficiency.



The Downstream Defender stormwater treatment unit is able to treat higher flows per size than any other comparable unit. This consequently leads to lower material and installation costs.

Maintenance on the unit typically takes place once every 12-18 months depending on site conditions and takes 20-30 minutes. A vacor truck can access the sump through the center shaft courtesy of a 30" manhole cover. Sediments are removed from the sump and a flexible vacor hose can be used to remove oil and trash from the outer annulus.