Center for Environmental Systems
Stevens Institute of Technology
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April 18, 2016

Titus Magnanao
NJDEP
Division of Water Quality
Bureau of Non-Point Pollution Control
401-02B
PO Box 420
Trenton, NJ 08625-0420

Dear Mr. Magnanao,

Based on my review, evaluation and assessment of the testing conducted on Suntree Technologies Inc.'s Nutrient Separating Baffle Box with Hydro-Variant Technology by Applied Environmental Technology (AET), the test protocol requirements contained in the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" (NJDEP HDS Protocol) were met or exceeded. Specifically:

Test Sediment Feed

The mean PSD of the AET test sediments comply with the PSD criteria established by the NJDEP HDS protocol. The AET removal efficiency test sediment PSD analysis was plotted against the NJDEP removal efficiency test PSD specification. The test sediment was shown to be slightly finer than the sediment blend specified by the protocol. The AET scour test sediment PSD analysis was plotted against the NJDEP removal efficiency test PSD specification and shown to be significantly finer than specified by the protocol.

Removal Efficiency Testing

In accordance with the NJDEP HDS Protocol, removal efficiency testing was executed on the NSBB-HVT 3-6 in order to establish the ability of the NSBB-HVT to remove the specified test sediment at 25%, 50%, 75%, 100% and 125% of the target MTFR. A target MTFR of 628 gpm (1.40 cfs) was chosen based on the ultimate goal of demonstrating greater than 50% annualized weighted solids removal as defined in the NJDEP HDS Protocol. The flow rates, feed rates and influent concentration all met the NJDEP HDS test protocol's coefficient of variance requirements and the background concentration for all five test runs never exceeded 20 mg/L.

Scour Testing

In order to demonstrate the ability of the NBSS-HVT 3-6 to be used as an online treatment device scour testing was conducted at greater than 200% of MTFR in accordance with the NJDEP HDS Protocol. The average flow rate during the online scour test was 5.84 cfs, which represents 417% of the MTFR (MTFR = 1.40 cfs). Background concentrations were less than 8.6 mg/L throughout the scour testing, which complies with the 20 mg/L maximum background concentration specified by the test protocol. Unadjusted effluent concentrations ranged from 5.4 mg/L to 9.0 mg/L with a mean of 7.0 mg/L. When adjusted for background concentrations, the effluent concentrations range from -1.5 to 4.1 mg/L with a mean of 1.1 mg/L. These results confirm that the NBSS-HVT 3-6 did not scour at 417% MTFR and meets the criteria for online use.

Maintenance Frequency

The predicted maintenance frequency for all models is >30 months.

Sincerely,

Richard S. Magee, Sc.D., P.E., BCEE