ATTACHMENT 3

November 11, 2014

Mr. Robert Adair
President
Convergent Water Technologies
1930 Aldine Western Road
Houston, TX 77038

Dear Mr. Adair:

 Subject: Summary Letter - FocalPoint Biofiltration System Performance (Virginia
 Mixture) Testing for Total Suspended Solids and Nutrient Removal Efficiencies
 CEC Project 142-508

On July 23, 2014, Convergent Water Technologies of Houston, Texas authorized Civil & Environmental Consultants, Inc. (CEC) to perform a series of laboratory-scale column tests to assess the performance of the FocalPoint Biofiltration System, incorporating media sourced from their blending facility in Virginia, in attenuating suspended solids and nutrients within the water column of simulated stormwater solutions.

The FocalPoint High Performance Modular Biofiltration System (HPMBS) is a site-built system utilizing open source components for the treatment of stormwater runoff. The FocalPoint system was developed by Convergent Water Technologies based in Houston, Texas. Like all biofiltration/bioretention systems, FocalPoint utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The modular treatment system, containing biologically active biofiltration media, is used as a complete, integrated system designed for installation in square foot increments to treat contaminated runoff.

FocalPoint is a scalable biofiltration system which combines the efficiency of high flow rate media with the durability and modularity of a highly pervious, open cell underdrain/storage/infiltration system, allowing the system to manage both water quality and volume. The typical implementation employs a cross-section that includes a 3-inch uppermost layer of mulch, 18-inch biofiltration media, and 6 inches of washed bridging stone. The stone layer is underlain by an open-mesh micro-grid followed by the modular underdrain storage system [1].

Laboratory testing of the FocalPoint Biofiltration System (Virginia mixture) followed the CEC-developed protocol designed to effectively assess the product as a water quality treatment best management practice (BMP) and analyze the efficiency removals of suspended solids and nutrients for a given set of flow conditions and a limited range of influent concentrations that are within the range of typical concentrations for permanent, urban stormwater runoff.

The experimental setup consisted of multiple individual column test apparatuses using 6 inch diameter PVC-pipe sections containing each given layer of the FocalPoint Biofiltration System. The system layers consisting of 3 inches of shredded mulch, 18 inches of high-flow biofiltration filter media, and 6 inches of washed, bridging stone were layered within each PVC column section. The modular underdrain was excluded. The installation of the layers included minimal compaction effort. All testing was performed on unvegetated columns. Column sections were fastened together using flexible couplings tightened around the outside of the column section using stainless steel bands. The open-flow mesh was fastened to the ends of the columns using stainless steel bands.

After pre-flushing the column with deionized water, several replicate passes of simulated stormwater solutions using Sil-Co-Sil 106 silica were poured into the tops of the columns at an average suspended solids influent concentration of 450 mg/L. For nutrient runs, estimates of particulate-bound nutrient removals were calculated for the nutrient solution simulations based on the mean TSS removals for the Virginia mixture. The prepared solutions for the influent TN runs were in the range of 3.8 to 5.8 mg/L. The prepared solutions for the influent TP runs were in the range of 3.9 to 5.6 mg/L. For the calculated removal estimates for TN, an assumed mixture of 50% dissolved TN and 50% particulate-bound TN was utilized. For estimated TP removals, an assumed mixture of 30% dissolved and 70% particulate-bound TP was evaluated. Effluent from the columns was collected and composite samples were taken from the given effluent collected from each pass through the column. Both influent volumes and collected effluent volumes per replicate were measured and solids and nutrient removal efficiencies for each replicate were calculated. The removal efficiency statistics for TSS for the Virginia mixture of the FocalPoint Biofiltration System are shown in Table 1. The removal efficiency statistics for nutrients for the Virginia mixture of the FocalPoint Biofiltration System are shown in Table 2.

Table 1. Removal Efficiency Results for Suspended Solids

Mean Removal Efficiency	**91.2%**
Std. Deviation	1.1%
*RPD	1.2 %

Table 2. Removal Efficiency Results for Nutrients

Statistics	Total N	Total P
Mean Removal Efficiency	48.5%	66.0%
Std. Deviation	1.5%	1.0%
*RPD	3.1%	1.5%

*RPD-Relative Percent Deviation computed as (std. deviation/mean)*100

We appreciate the opportunity to provide performance testing services to Convergent Water Technologies. If you have any questions or desire additional information beyond this summary letter, please feel free to call me at (615) 333-7797.

Thank you!

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Kevin B. Wolfe, PhD, PE, D.WRE
Vice-President

[1] Convergent Water Technologies.
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