



Metropolitan North Georgia Water Planning District

40 Courtland Street NE | Atlanta, Georgia 30303

Post-Construction Stormwater Technology Assessment Protocol Review Summary

Hydro International Up-Flo Filter w/ CPZ Mix™ Filter Media

May 30, 2017

Introduction

The Up-Flo Filter w/ CPZ Mix™ Filter Media by Hydro International submitted field and lab data for review. The Metro Water District's Post-Construction Stormwater Technology Assessment Protocol (PCSTAP) review committee reviewed all data and documentation submitted for adherence to the Metro Water District's protocol. This review is not an approval or detailed verification of the device, technology, or real world performance itself. Rather, this review provides concurrence to local jurisdictions and other as to the completeness of data and document submitted with regards to making local determinations. Local jurisdictions are free to allow or not any device, technology, performance claim, load reduction, etc. as needed to accommodate local geography, policy, or review of the manufacturer's claims.

Performance Claim

The manufacturer provided the following performance claim:

"The resulting performance claim for the Up-Flo® Filter for the consideration of the Metro Water District Stormwater Treatment Technology Review Committee is that it will remove ≥80% of the annual Total Suspended Solids load with a d100 = 273µm and a d50 of 29µm from stormwater runoff sized for a treatment flow rate of 25 gpm per Filter Module considering an average annual TSS influent concentration ≥81 mg/L."

Summary of Review

The PCSTAP reviewed data submitted for 1) field test and 2) laboratory tests.

- 1) Field Tests - Field tests were conducted by the University of Alabama in Tuscaloosa. Field tests were conducted over the course of a year and included appropriate rain fall analogous to the Atlanta Metro area. Field tests showed a minimum 80% reduction in TSS per manufacturer claims of d100 = 273µm and a d50 = 29µm. Both TSS and SSC (suspended sediment concentration) data were provided. For comparison of particle sizes, the Metro Water District requires a distribution of 20-60-20 which, would have a d50 of around 21µm based on research. Given the variability in local soils, a d50 range

of up to 30µm seems appropriate as this is still well within the range of Silt size particles. The University of Alabama conducted additional analysis to account only for a d100 = 273µm, where the PCSTAP max d100 = 500µm. This additional analysis reflected an average d50 of 29µm and provided an annual flow weighted removal efficiency of 81%. This more in depth analysis by University of Alabama was provided by the manufacturer and is available upon request.

- 2) Lab Tests – Laboratory tests are allowed under the PCSTAP provided the commercially available Silica mixture Sil-Co-Sil 106 (made by U.S. Silica) is used. For reference, Sil-Co-Sil 106 has a d100 of about 212 and a d50 of about 19µm. Hydro International conducted the lab tests internally using Sil-Co-Sil 106 per ASTM standard D 3977 and Standard Method 2540. Lab performance was assessed by the University of Alabama prior to field testing to determine baseline efficiencies with controlled tests supporting laboratory based claims. Laboratory tests using Sil-Co-Sil 106 showed a removal of 87% TSS. Using the lab data, the device appears to exceed manufacturer’s claims.

Conclusion

After reviewing all data and documentation submitted, the committee believes there is enough information per the PCSTAP for local jurisdictions to make determinations on allowing the Up-Flo Filter w/ CPZ Mix™ Filter Media by Hydro International for use in post-construction stormwater controls per the manufacturer claims. As stated above, jurisdictions may use the information in this summary for their determinations or the full submission will be made available upon request if a jurisdiction chooses to conduct their own review.