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One of the primary advantages of third party laboratory testing is that by controlling the pollutant concentrations, particle sizes, and flow rates, laboratory testing can serve as a bench mark for comparing different treatment technologies.

There are many potential flaws inherent with field testing that will commonly make field testing deceptive. For example, the influent pipe flowing into a monitored treatment system will have a sampling tube placed near or along the bottom of the influent pipe. As water flows toward the treatment system solids in the water column will stratify in the pipe and become highly concentrated along the bottom of the pipe. In other words, in field testing the influent sample concentration is not representative of the average concentration flowing through the pipe. In fact, I have seen sampling of this kind produce influent concentration numbers over ten times that of the average concentration. Meanwhile, sampling of the effluent is highly mixed without stratification after having just passed through a hydrodynamic separator. In addition, field monitoring is often performed without associating a removal efficiency to a particular flow rate. There are many other issues with field testing that is overcome and controlled with laboratory testing.

Fact is, laboratory testing is the only way to create data that can be used for comparison purposes, and NJCAT is the primary authority for verifying laboratory testing in the United States. Although the Nutrient Separating Baffle Box has verified NJCAT laboratory testing that measured 80% removal of 100 micron particles, more stringent than common larger 110 micron testing, to the best of my knowledge, the Vortech treatment system has never achieved NJCAT laboratory verification for 80% removal for any particle size. Without NJCAT laboratory verified testing the Vortech system cannot be compared to any treatment system that has NJCAT laboratory verified testing... the Vortech system is essentially untested for any comparison purpose.

The Nutrient Separating Baffle Box has been scour tested and verified by NJCAT twice. What makes our scour test so much better than any other hydrodynamic treatment system scour testing is that for our scour testing we used the same size particle that we used for removal efficiency. For example, the first time we passed the NJCAT scour test 63 micron particles were preloaded in the settling chambers, and then the scour test was performed. The second time we passed the NJCAT scour test 100 micron particles were preloaded in the settling chambers, and then the scour test was performed. In each scour test re-suspension was virtually undetectable.

To the best of my knowledge, the NJCAT scour verification achieved by other hydrodynamic treatment systems was based on preloading their settling chambers with particles that were over 200 microns in size. Other treatment systems do not conduct their re-suspension testing with the same size particle that they used for removal efficiency testing... only Suntree and the Nutrient Separating Baffle Box.

The screen system within the Nutrient Separating Baffle Box has evolved over the past 22 years with over 2000 treatment systems across the United States. As floatables enter into the body of the screen system they form a kind of natural filter in the screen system which enables the capture of even smaller particles. It is not just about capturing leaves and litter but particles much smaller than the openings in the screen as shown below.



Captured debris in screen system.



Close up of captured debris.

Another important feature of the screen system is the screened lid that spans the entire top of the screen system. The screened lids serve to prevent floatables from escaping during peak flow conditions. In other words, you will not lose captured floatables when the hydraulic grade line in the vault is above the screen system.

Head loss calculations for the specified Nutrient Separating Baffle Boxes have been provided. These calculations are based on fully obstructed screen surfaces. The screen system of the Nutrient Separating Baffle Box is recognized by the United States patent office as having unique hydraulic capabilities and has been awarded multiple patents covering the features which enable this capability. There is no such thing as no head loss for any treatment system. However, the head loss calculations that have been provided indicate minimal head loss which is always less than diverting water offline or by making it flow in the opposite direction, common to other treatment systems.

The Nutrient Separating Baffle Box is a hydrodynamic separator and is not dependent on simple settling and detention time. Just one of the internal features is the turbulence deflector system which acts to calm the water and manage flow. This hydraulic flow management system has been recognized by the United States patent office as uniquely capable and awarded Suntree a patent for the design.

Servicing the Nutrient Separating Baffle Box can be accomplished from finish grade... no need to enter the vault. Another unique feature of the Nutrient Separating Baffle Box is the patent pending HydroSlide service system which will reduce the servicing of the lower settling chambers in a fraction of the time. In addition, you don't have to service the entire vault to remove captured foliage and litter. This will enable a service truck to service multiple screen systems without having to empty its load, reducing the cost for servicing.

Nationally, there are probably 50 different types of hydrodynamic treatment systems, of which the Nutrient Separating Baffle Box is just one. However, all these different treatment systems operate differently, and have different capabilities. As I see it there are 2 very big obvious differences between the Nutrient Separating Baffle Box and the Vortech system. The Nutrient Separating Baffle Box can store foliage in a dry state between rain events and has NJCAT laboratory verified testing for 80% removal efficiency of 100 micron particles... Vortech cannot claim either.

Sincerely,

Tom Happel
President