December 23, 2003

Total Suspended Solids Laboratory Testing Procedure

1. Particle size distribution
2. Full scale laboratory testing requirements
3. Measuring treatment efficiency

1. Particle size distribution

The following particle size distribution will be utilized to evaluate a manufactured treatment system. A natural/commercial soil representing U.S.D.A. definition of a sandy loam material. This hypothetical distribution was selected as it represents the various particles that would be associated with typical stormwater runoff from a post construction site.

Specifically, the following distribution can be utilized:

Particle Size (microns)	Sandy loam (percent by mass)
500-1000 (coarse sand)	5.0
250-500 (medium sand)	5.0
100-250 (fine sand)	30.0
50-100 (very fine sand)	15.0
2-50 (silt)	(8-50 um, 25%) (2-8 um, 15%)*
1-2 (clay)	5.0

Notes:

1. Recommended density of particles ≤2.65 g/cm3

*The 8 um diameter is the boundary between very fine silt and fine silt according to the definition of American Geophysical Union. The reference for this division/classification is: Lane, E. W., et al. (1947). "Report of the Subcommittee on Sediment Terminology," Transactions of the American Geophysical Union, Vol. 28, No. 6, pp. 936-938.

2. Full Scale lab test requirements
   A. At a minimum, complete a total of 15 test runs. 3 tests each at a constant flow rate of 25, 50, 75, 100, and 125 percent of the treatment flow rate. These tests should be operated with initial sediment loading of 50% of the unit's capture capacity.
   B. The 3 tests for each treatment flow rate will be conducted for influent concentrations of 100, 200, and 300 mg/l.
   C. For an online system, complete 2 tests at the maximum hydraulic operating rate. Utilizing clean water, the tests will be operated with initial sediment

loading at 50% and 100% of the unit's capture capacity. These tests will be utilized to check the potential for TSS resuspension and washout.

D. The test runs should be conducted at a temperature between 73-79 degrees Fahrenheit or colder.

3. Measuring treatment efficiency
   A. Calculate the individual removal efficiency for the 15 test runs.
   B. Average the three test runs for each operating rate.
   C. The average percent removal efficiency will then be multiplied by a specified weight factor (see table below) for that particular operating rate.
   D. The results of the 5 numbers will then be summed to obtain the theoretical annual TSS load removal efficiency of the system.

Treatment operating rate	Weight factor	
25%	.25	
50%	.30	
75%	.20	
100%	.15	
125%	.10	

Notes:

Weight factors were based upon the average annual distribution of runoff volumes in New Jersey and the assumed similarity with the distribution of runoff peaks. This runoff volume distribution was based upon accepted computation methods for small storm hydrology and a statistical analysis of 52 years of daily rainfall data at 92 rainfall gages.

A vendor shall submit for review and approval a quality assurance project plan supporting the above TSS Lab Test Procedure to the NJDEP and NJCAT prior to commencement of the full-scale lab tests. The plan shall provide procedures and methods to be followed in conducting the lab test (i.e. sampling design and methods, laboratory procedures, analytical methods, quality control, schematic of testing apparatus).