METRO NORTH GEORGIA PCSTAP CHECKLIST

Company: ______________________________
Device: ______________________________
Model: ______________________________
Date: ______________________________

In the "Location" column, indicate where in the document this particular information can be found. This will help expedite the review by indicating where our reviewers should look for that information. Use the "Comments" column to provide any additional information for our reviewers.

5.0 TECHNOLOGY ENGINEERING REPORT REQUIREMENTS		
5.1 Technology / Product Specifications		
	Location	**Comments**
1. General description of the technology, incl. all components and processes		
2. Underlying scientific and engineering principles for the technology: Describe how the technology functions in treating stormwater runoff including the following information as applicable: Physical, chemical, and biological treatment processes such as filtration, adsorption/absorption, settling, or inertial separation		
3. Describe the minimum siting and design specifications to achieve stated performance, including but not limited to:		
a. Pollutants that should and could be addressed		
b. Minimum and maximum influent concentrations		

c. Pollutants that will not be addressed or that may be increased		
4. Description of the advantages of the advantages of the technology when compared to conventional stormwater systems providing comparable stormwater control		
5. Standard drawings, including a schematic of the technology and a process flow diagram		
6. Description of technology hydraulics and system sizing to meet performance standards and goals, (e.g. to handle the following):		
a. Water quality volume		
b. Rate of runoff		
c. Type of storm		
d. Recharge requirements		
7. Description of the sizing process, including appropriate flow rates if applicable		
8. Description of the full range of operating conditions for the technology, including minimal, maximal, and optimal conditions to achieve performance goals and standards, and for the reliability of the technology		
9. Maintenance requirements to sustain performance and safe operation		
10. Description of technology limitations, such as performance limits for control of certain water quality parameters, and predicted impacts from construction, operation, and maintenance of the technology		
11. Identified secondary impacts		

12. Discussion of the generation, handling, removal, and disposal of discharges, emissions, and waste byproducts in terms of mass balance, maintenance requirements, and cost		
13. Description of pretreatment and preconditioning of stormwater, if applicable, to achieve stated performance		
14. Identification of any special licensing or hauling requirements, safety issues, and access requirements associated with the operation or maintenance of the technology		
15. Capital and projected annual costs, incl. O&M costs		
16. Executive summary		
5.2 Specific Performance Claims		
Performance claim identifies the technology's intended use and predicts the technology's capabilities to remove contaminants and/or control the quantity of stormwater runoff. Performance claims should be objective, quantifiable, replicable, and defensible. Example: *"The Model T system can capture and treat the WQ volume for up to 1-acre runoff area that is up to 100% impervious. Under these conditions, a total suspended solid (TSS) removal X% ± Y% (at a 95% confidence level) can be achieved with inflow TSS concentrations greater than 100 mg/l for flow rates of Z cfs."*		

6.0 PERFORMANCE TESTING REPORTING		
6.1 Reporting Requirements, must include the following:		
1. General description of the technology, incl. all components and processes		
2. Performance testing project plan includes the following:		
a. Describe and provide a scaled plan view of the demonstration site, indicating all buildings, land uses, storm drain inlets, and other control devices		
b. Include a description of the following:		
i. Site drainage		
ii. Percent impervious area		
iii. Percent area directly connected to the test facility		
iv. Description of the path of stormwater flow to the test facility		
v. Type of activities conducted		
vi. Pollutant sources		
vii. Soil type		
viii. Geological and hydrological conditions		
ix. Existing control structures		

x. Site drainage plan		
c. Estimate the impervious area within the drainage area and show sample inflow and outflow points		
d. Describe how the treatment technology was selected, designed, and appropriately sized for the specific test site		
e. Specify the location of flow devices and samplers in relationship to the inlets and outlets of the stormwater technology		
f. Demonstrate that flow devices and samplers are installed and positioned properly to ensure that samples are representative of influent runoff and effluent runoff		
3. Standardized test methods and procedures used		
4. QA/QC objectives and procedures		
5. Date and time when samples were collected		
6. Rainfall data including the following:		
a. Antecedent dry period		
b. Total rainfall during the sampling event		
c. Rainfall intensity		
d. Rainfall duration		
7. Comparison of rainfall data to rainfall criteria		

8. Comparison of collected aliquots to sampling criteria		
9. Comparison of influent to effluent pollutant concentrations		
10. Particle size distribution (PSD) analysis		
11. Demonstration of scour prevention (if applicable)		
12. An estimation of annual average total suspended solids (TSS) removal		
13. Statistical data evaluation		
14. Discussion of whether QA/QC objectives were met		
15. Discussion on deviations from any sampling points		
16. Data quality assurance summary (field and laboratory QA/QC results)		
17. Maintenance performed during the study period, including activities and frequency		
18. Total amount (estimated dry weight) of sediment and floatables removed and sediment		
19. Media replacement and/or cleaning, if applicable		
20. Evaluation of results		
21. Executive summary		

6.2 Use of Other Testing Data

Field testing and the resulting data and verifiable technology claims which will and/or have occurred outside the state of Georgia may be accepted for performance claim verification by the TRC with the following conditions:

1. Adherence to the protocol's performance testing reporting requirements under 6.1 (above)		
2. Hydrological differences between the actual field test location(s) versus a representative location within Georgia must be accounted for with proper engineering design using rainfall data analyses and appropriate water quality volume treatment criteria. Only field test data from other regions within North America which have a Type II rainfall pattern will be considered.		
3. Appropriate particle size distribution that is applicable to the soil conditions for a representative location within Georgia (for consideration of potential applications where the site conditions are less than 90% impervious cover)		
7.0 SAMPLING DESIGN CRITERIA		
7.1 Test Site Selection Considerations		
1. Select field test sites that are consistent with the technology's intended applications (land uses) and geographical location in Georgia (e.g. Piedmont region, coastal areas, etc.)		
2. Field test site drainage area, tributary impervious cover and land uses (roadway, commercial, high use site, residential, industrial, etc.)		
3. Potential pollutant sources in the drainage area (e.g. parking lots, roofs, landscaped areas, sediment sources, exterior storage or process areas)		

4. Availability of baseline stormwater quality information to characterize conditions at the site. For sites that have already been developed, it is recommended that baseline data be collected to provide a sizing basis for the device, and to determine whether the site conditions and runoff are conducive to performance testing		
5. Drainage area flow rates (i.e., water quality design flow, 2 year, 10 year, and 100 year peak flow rates) at 15 minute and 1 hour time steps as provided by an approved continuous runoff model		
6. Bypass requirements with flow rates and/or flow splitter designs necessary to accommodate the treatment technology		
7. Site adequacy for sampling, flow measurement access, and telephone/AC power, if needed		
8. Any potential adverse site conditions such as climate, tidal influence, high ground water, rainfall pattern, erosion, high spill potential, illicit connections,		
7.1.1 Sampling Locations		
1. Influent flows should be sampled as close as possible to the treatment device inlet.		
2. Influent flows should represent the total runoff from the drainage area and should not include debris and large particles.		

3. Design the test site so influent samples can be collected from a pipe that conveys the total influent to the unit		
4. Sample the influent at a location unaffected by accumulated or stored pollutants in, or adjacent to, the treatment device to avoid skewing the influent pollutant concentrations		
7.2 Storm Event Criteria for Sampling		
1. A minimum of 15 storm or discrete flow rate sampling events are required per site		
2. The storms should represent the entire annual hydrologic range of storm events and constitute at least 20% of the annual rainfall		
3. It is recommended that sampling events be evenly distributed over the testing period to capture seasonal influences on storm conditions and system performance		
4. Each storm event for sampling must meet the following criteria:		
a. At least 0.15 inch of total rainfall		
b. A minimum inter-event period of 6 hours, where cessation of flow from the system begins the inter-event period		
c. A minimum storm duration of one hour		
d. Flow weighted composite samples covering a minimum of 70% of the total storm flow, incl. as much of the first 20% as possible		

e. A minimum of 10 water quality samples per storm event (10 influent + 10 effluent samples) per storm event. For composite samples, a minimum of 5 subsamples is acceptable (i.e., 2 composites with 5 subsamples = 10 water quality sample minimum or 1 composite sample with 10 subsamples = water quality sample minimum). If a storm is too small for 10 samples, an average of 10 samples per storm may be substituted.		
f. Flow measurements must be taken to predict or calculate pollutant loads. The mass of pollutants in the discharge should be based on flow rates and pollutant concentrations or another reasonable approach		
g. At least two storm events should be greater than 75% of the design storm used to size the test facility		
7.3 Stormwater Sampling Methods		
1. Programmable automatic flow samplers with continuous flow measurements should be used		
2. Alternate methods that are superior to programmable automatic flow samplers may be used when automatic sampling is not feasible		
3. Grab samples should only be used for the following constituents unless alternate methods are demonstrated superior:		
a. pH		
b. Temperature		
c. Cyanide		

d. Total phenols		
e. Residual chlorine		
f. Oil and Grease		
g. Total petroleum hydrocarbons (TPH)		
h. Escherichia coli		
i. Total coliform		
j. Fecal coliform		
k. Fecal streptococci		
l. Enterococci		
7.4 Sampling for Total Suspended Solids (TSS)		
7.4.1 Sampling Considerations		
Samples must represent the vertical cross section (be a homogeneous or well mixed sample) at the influent and effluent points of the device		
7.4.2 Particle Size Distribution (PSD)		
1. Treatment technologies must remove TSS across the size fraction range typically found in urban runoff		
2. Analysis of the inflow particle size distribution (PSD) is required		

3. All TSS analysis should include particles that are smaller than 500 microns		
4. Particles greater than 250 microns must be removed with a sieve prior to PSD analysis		
5. Laser diffraction methods may be used for particles smaller than 250 microns		
6. For sites in the Piedmont region of Georgia with less than 90% impervious cover, the assumed PSD is 20-60-20 or a lab surrogate Sil-Co-Sil 106		
7.4.3 Accumulated Sediment Sampling Procedures		
1. The following sediment constituents should be analyzed:		
a. Percent total solids		
b. Total volatile solids		
c. Particle size distribution (PSD)		
2. Sediment sample should be a composite from at least four grab samples collected from various locations within the system		
8.0 DATA QUALITY ASSURANCE AND QUALITY CONTROL		
8.1 Equipment Decontamination		
Description of how sampling equipment will be decontaminated between sampling events		

8.2 Quality Control Samples		
1. Equipment rinsate blanks should be collected to verify that equipment is not a source of contamination		
a. Two separate rinsate blanks should be collected during initial equipment setup and testing		
b. Describe the rinsate blank collection procedure including the following		
i. Location & number of samples		
ii. Sample collection & processing procedures		
iii. Sample documentation (e.g., length of time sampler was in place prior to collecting the blank, how much stormwater passes through the sample prior to collecting the blank)		
c. At a minimum, rinsate blanks should be collected after at least one storm event has been sampled and equipment has been decontaminated		
d. Rinsate blank at a "not detected" level		
2. Describe techniques to collect duplicate samples and include the following:		
a. Specify collection frequency		
b. Collect a minimum of 10 field duplicate samples		
8.3 Sample Preservation and Handling		

1. Preserve samples IAW EPA approved methods (EPA 1983) or Standard Methods (APHA, AWWA, WEF 1999)		
2. Describe how cooling the automatic samplers will be conducted		
3. Provide a table in the QA/QC plan that lists the sample container material, sample preservation, and holding time limits for analyzed pollutants		
4. Describe procedures to label and track samples from collection to lab delivery		
5. Provide sample chain of custody form		
6. For manually composited samples, describe compositing procedures to prevent cross-contamination		
7. Describe how grab samples will be collected and at what intervals they will be collected in a storm event		
8.4 Equipment Calibration		
Describe the field equipment calibration schedule and methods, including automatic samplers, flow monitors, and rainfall monitors		
8.5 Recordkeeping		
1. Maintain a field logbook and include the following information:		
a. Date & time		

b. Field staff names		
c. Weather conditions		
d. Number of samples collected		
e. Sample description and label information		
f. Field measurements		
g. Field QC sample identification		
h. Sampling equipment condition		
i. Measurements tracking sediment accumulation		
j. Include notes about activities or issues that could affect the sample quality such as sample integrity, test site alterations, maintenance activities, improperly functioning equipment, conditions in the tributary basin such as construction activities, reported spills, other pollutant sources		
8.6 Health and Safety Plan		
Provide a health & safety plan including the following:		
a. Installation, operation, and maintenance of the technology		
b. Hazard identification and mitigation		
c. Engineered controls and procedures		
d. Personal protective equipment/training		

e. The collection of stormwater sample in confined spaces		
f. The collection of high flow stormwater samples from culverts, drainage channels, and sedimentation basins during storms		
g. Chemical, biological, and physical hazards associated with the technology		
9.0 STATISTICAL TESTING OF DATA AND DATA REDUCTION		
1. Coefficient of variation (CV) should be within ±10% for efficiency data (A larger range of CV may be allowed when justified)		
2. Demonstrate the date set is normally distributed before using normal parametric statistical analysis		
3. For data sets that are not normally distributed, use nonparametric statistical analysis. Further analysis and review may be required.		