Southeast Monitoring Network Sentinel Site Protocol

1-29-2013

Site Monitoring Responsibility

Agency	# Sites	April Macroinvertebrate Collection and ID	April Diatom Collection	Diatom ID	April Habitat and Canopy	April/May Fish Collection	Continuous temp/depth measure	Spring WQ sample collection
Alabama	2	Alabama	Alabama	TBD	Alabama	TBD -EPA?	Alabama	Alabama
Georgia	3	Georgia	Georgia	Georgia	Georgia	Georgia	Georgia	Georgia
Kentucky	3	Kentucky	Kentucky	Kentucky	Kentucky	Kentucky	Kentucky	Kentucky
North Carolina	6	North Carolina	North Carolina	TBD	North Carolina	TVA – 2 TBD –EPA 4?	TBD-EPA?	North Carolina
South Carolina	4	South Carolina	South Carolina	TBD	South Carolina	TBD - EPA?	TBD-EPA?	South Carolina
Tennessee	11	Tennessee	Tennessee	Tennessee	Tennessee	TVA	Tennessee	Tennessee
TVA	8	TVA -6 TN -2	TVA – 6 TN - 2	Tennessee	Tennessee	TVA	TVA	TVA – 6 TN - 2

Start Time: April 2013

Frequency: Annual

Minimum Monitoring Activity at Each Site

1. Collect semiquantitative Riffle Kick for macroinvertebrates
2. Collect qualitative habitat samples for macroinvertebrates
3. Fish Survey (April –June)
4. Collect diatom sample (suggest also complete EPA Rapid Periphyton Survey Field Sheet)
5. Field documentation (EPA Rapid Bioassessment Habitat, canopy, photography, dominant vegetation.)
6. Continuous temperature/water depth measurements
7. Field measurements and water quality samples
8. Completion of Field Observation Sheet including any deviations from protocol.

Each agency may elect to do additional sampling and documentation following that agencies protocols at their discretion.

I. Macroinvertebrate Sampling:

The initial macroinvertebrate sample will be collected in April 2013. Subsequent samples will be collected annually within 2 weeks of the original collection. If flooding/high water prevents sample collection within the specified time period, samples will be taken as closely as reasonable to the target period.

500 micron mesh nets will be used for all sample collection.

The following samples will be collected within a 100 meter reach at each site:

A. Semi-quantitative Riffle Kick

Collect a minimum of one square meter using a minimum of two kicks. Collect 2 riffles or upper or lower end of a large riffle. Collect additional kicks if needed to achieve a minimum of 300 organisms.

Kicks will be composited and debris will be returned to laboratory for microscopic sub-sampling and species identification.

B. Qualitative Habitat Sampling

3 "jabs" will be collected from all available habitats. Samples will be picked in the field targeting all unique taxa (it is recommended that all taxa be collected due to difficulty in differentiating species in field). Taxa from each habitat will be kept in a separate container with separate species lists generated for each habitat.

The following are examples of habitats that should be collected if present, other productive habitats such as moss can also be collected:

Habitat	Definition of 3 jabs (approximate)
Rooted undercut banks/tree roots	3 net widths
Macrophytes	3 net widths
Leaf Packs	3 handfuls
Woody Debris/Snags	3 net widths or 3 handfuls of loose material
Fine sediment	3 net widths approx 4 cm deep
Pool Rock	6 cobble size (3 if approaching boulder)

II. Macroinvertebrate sample Analysis:

A. Semiquantitative Riffle Kick:

Subsample to 300 +/- 10% organisms following EPA 841-B-99-002 section 7.3 protocols.
Identify each organism in subsample to lowest possible taxon (usually species).
Taxa list should include count of each taxon in subsample.

B. Qualitative Habitat Sample

Identify organisms in each habitat to lowest possible taxon (usually species).
Maintain separate taxa lists for each habitat including field estimated abundance
Rare = 1-3
Common = 4-9
Abundant = 10-49
Dominant = > 50

C. Quality Assurance

Each agency will follow approved QAPP for sorting and taxonomy. A voucher collection of each unique taxon will be housed by each agency and will be made available for verification or comparison to other identifications if needed. One riffle sample per year collected will be randomly selected from the 40 reference sites to be identified by all participating agencies.

III. Fish

Fish population samples will be collected in April through June of each year starting in 2013. Avoid young of the year. Subsequent samples will be collected annually within 2 weeks of the original collection. If flooding/high water prevents sample collection within the specified time period, samples will be taken as closely as reasonable to the target period.

Each agency will follow their own protocols. TVA will help coordinate sampling in states that need assistance.

IV. Diatoms

The initial diatom sample will be collected in April 2013. Subsequent samples will be collected annually within 2 weeks of the original collection. If flooding/high water prevents sample collection within the specified time period, samples will be taken as closely as reasonable to the target period.

Sampling protocols will follow EPA SPNBR or equivalent.
Subsample will consist of 600 valve (300 cell).
Taxonomic level will be species (or lowest practical).

It is recommended that EPA rapid periphyton survey field sheet or equivalent information be completed.

V. Field documentation (minimum)

- EPA Rapid Habitat Assessment Field Data Sheet for High Gradient Streams (1-200 scale).
- Canopy measurement midstream along 5 transects facing upstream/downstream/left bank and right bank using spherical densiometer held 12 inches above water surface.
- Digital photo documentation facing upstream and downstream as well as location of depth/temperature logger and any indications of human disturbance.
- Document dominant riparian vegetation type.
- Complete Field Observation Sheet (may substitute in-house form as long as all requested information is included.)

VI. Temperature and Flow loggers

- One continuous temperature logger will be deployed at each site with measurements taken every 30 minutes.

- Two continuous water depth loggers will be deployed at each ungaged site (one in water and one in air) with measurements taken every 30 minutes. Instantaneous flow measurements should also be recorded along same transect during field visits for calibration.

VII. **Physical/chemical parameters**

- Instantaneous measurements of flow, temperature, DO, conductivity and pH at each site visit.
- Water quality samples minimally in April
    - Total Alkalinity
    - Ammonia Nitrogen
    - Arsenic
    - Cadmium
    - Chromium
    - Copper
    - Iron
    - Lead
    - Manganese
    - Nitrate+nitrite
    - Dissolved Residue
    - Suspended Residue
    - Selenium
    - Sulfates
    - Total Hardness
    - Total Kjeldahl Nitrogen
    - Total Organic Carbon
    - Total Phosphorus
    - Turbidity
    - Zinc

VIII. **DATA MANAGEMENT**

Each agency will house data in a shareable electronic format (i.e. database or excel spreadsheet) and will provide data to other network members on request. Each agency will upload data to shared database when one is established.

Southeast Monitoring Network Sentinel Site Field Observation Sheet
(Agency field sheet can be substituted if same information is included)

Station ID:	**Agency:** **Assessors:**
Stream Name:	**Date:** **Time:**
Location:	

Habitat	**# Jabs**	**Habitat**	**# Jabs**
Rooted Bank		**Fine Sediment**	
Macrophytes		**Pool Rock**	
Leaf Pack			
Woody Debris/Snags			

Loggers Deployed: Date: _____ Time: _____ Lat: _____ Long:_____

Field Measurements **Meter Used:**					
pH (su)		**Dissolved Oxygen (ppm)**			
Conductivity (Umhos)		**% Saturation**			
Temperature (oC)		**Flow (cfs)**			

% Canopy Cover

	Transect 1	**Transect 2**	**Transect 3**	**Transect 4**	**Transect 5**
Upstream					
Downstream					
LDB					
RDB					
Total					

Previous 48 hrs precipitation: Unknown None Slight Moderate Heavy Flooding

Flow Conditions: Dry Isolated Pools Low Moderate High Bankfull Flooding

Dominant streamside vegetation:

Dominant composition of leaf packs:

Describe any observed changes from last site visit:

Describe any Deviations from protocol: