

SAMPLE COLLECTION AND ANALYSIS

Samples were collected to measure nutrient and SS concentrations during various flows in 2006. For Group A sites, two samples were collected per month: one near the twelfth of the month (fixed date sample) and one during monthly base flow conditions. Additionally, at least four high flow events were sampled, targeting one per season. When possible, a second high flow event was sampled after spring planting in the basin. During high flow sampling events, samples were collected daily during the rise and fall of the hydrograph. The goal was to gather a minimum of three samples on the rise and three samples on the fall, with one sample as close to peak flow as possible. Sampling continued until flows returned to pre-storm levels.

For Group B sites, fixed date monthly samples were collected during the middle of each month during 2006. Additionally, two storm samples were collected per quarter at each site. All samples were collected by hand with

USGS depth integrating samplers. At each site between three and 10 depth integrated verticals were collected across the water column and then composited to obtain a representative sample of the entire waterbody.

Whole water samples were collected to be analyzed for TN species, TP species, TOC, TSS, and SS. For Group B sites, SS samples were only collected during storm events. Additionally, filtered samples were collected to analyze for dissolved nitrogen (DN) and dissolved phosphorus (DP) species. All Pennsylvania samples were delivered to the PADEP Laboratory in Harrisburg to be analyzed the following workday. SS concentrations for Group A sites were completed at SRBC, while concentrations for Group B sites were analyzed at the USGS sediment laboratory in Louisville, Kentucky. Additionally, one of each of the two storm samples per storm was submitted to the USGS sediment laboratory for analysis of sand/fine content. The parameters and laboratory methods used are listed in Table 3.

Table 3. Water Quality Parameters, Laboratory Methods, and Detection Limits

Parameter	Laboratory	Methodology	Detection Limit (mg/l)	References
Total Ammonia (TNH ₃)	PADEP	Colorimetry	0.020	USEPA 350.1
Dissolved Ammonia (DNH ₃)	PADEP	Block Digest, Colorimetry	0.020	USEPA 350.1
Total Nitrogen (TN)	PADEP	Persulfate Digestion for TN	0.040	Standard Methods #4500-N _{org} -D
Dissolved Nitrogen (DN)	PADEP	Persulfate Digestion	0.040	Standard Methods #4500-N _{org} -D
Total Kjeldahl Nitrogen (TKN)	PADEP	Block Digest, Flow Injection	0.050	USEPA 351.2
Dissolved Kjeldahl Nitrogen (DKN)	PADEP	Block Digest, Flow Injection	0.050	USEPA 351.2
Total Nitrite plus Nitrate (TNO _x)	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
Dissolved Nitrite plus Nitrate (DNO _x)	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
Dissolved Orthophosphate (DOP)	PADEP	Colorimetry	0.002	USEPA 365.1
Dissolved Phosphorus (DP)	PADEP	Block Digest, Colorimetry	0.010	USEPA 365.1
Total Phosphorus (TP)	PADEP	Persulfate Digest, Colorimetry	0.010	USEPA 365.1
Total Organic Carbon (TOC)	PADEP	Combustion/Oxidation	0.50	SM 5310D
Suspended Sediment (Fines)	USGS	**		
Suspended Sediment (Sand)	USGS	**		
Suspended Sediment (Total)	SRBC	**		
	USGS	**		

** TWRI Book 3, Chapter C2 and Book 5, Chapter C1, Laboratory Theory and Methods for Sediment Analysis (Guy and others, 1969)