

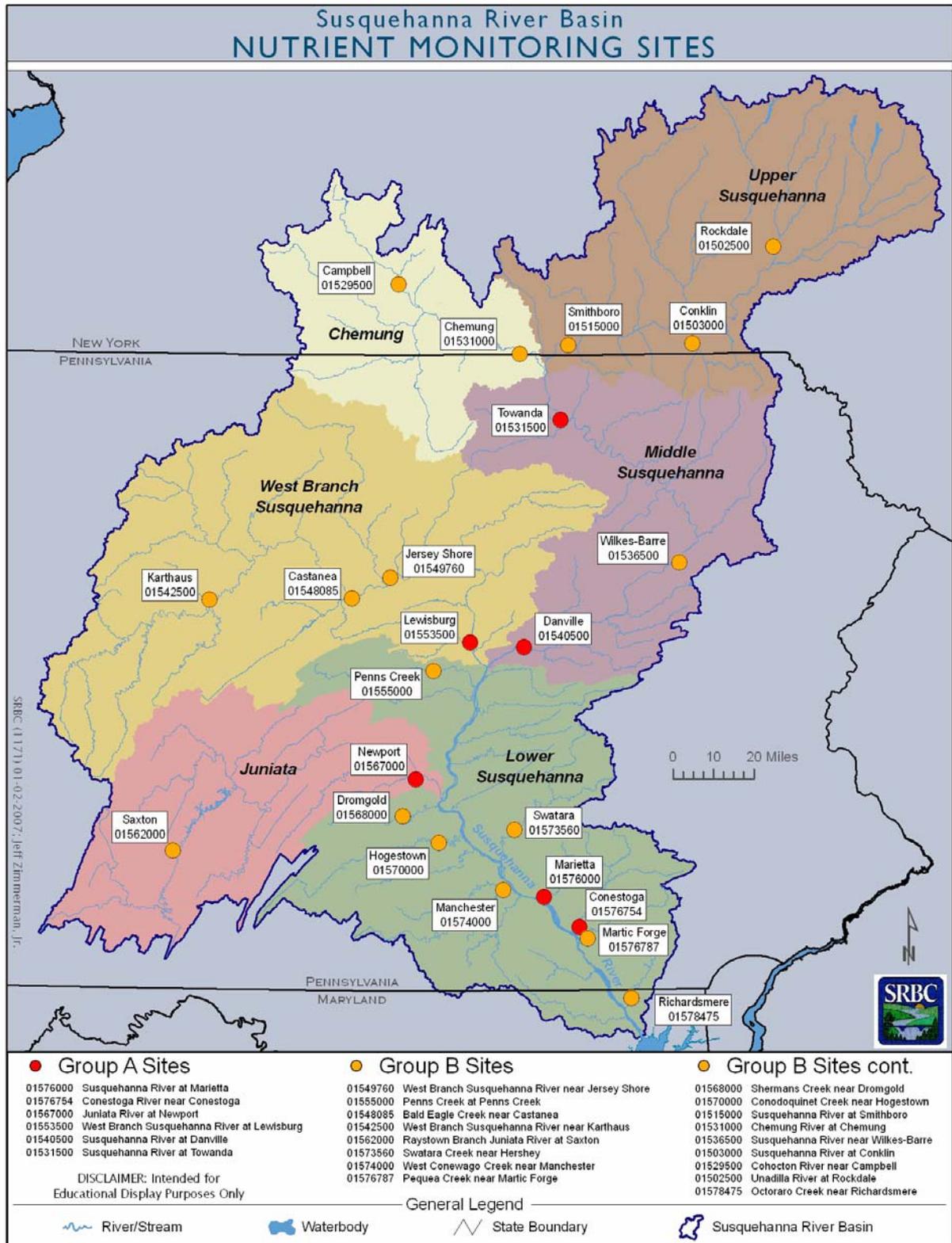
**Table 2. Data Collection Sites and Their Drainage Areas**

<b>USGS ID Number</b>	<b>Original Sites (Group A)</b>	<b>Subbasin</b>	<b>Short Name</b>	<b>Drainage Area (Sq Mi)</b>
01531500	Susquehanna River at Towanda, Pa.	Middle Susquehanna	Towanda	7,797
01540500	Susquehanna River at Danville, Pa.	Middle Susquehanna	Danville	11,220
01553500	West Branch Susquehanna River at Lewisburg, Pa.	W Branch Susquehanna	Lewisburg	6,847
01567000	Juniata River at Newport, Pa.	Juniata	Newport	3,354
01576000	Susquehanna River at Marietta, Pa.	Lower Susquehanna	Marietta	25,990
01576754	Conestoga River at Conestoga, Pa.	Lower Susquehanna	Conestoga	470
	<b>Enhanced Sites (Group B)</b>			
01502500	Unadilla River at Rockdale, NY	Upper Susquehanna	Rockdale	520
01503000	Susquehanna River at Conklin, NY	Upper Susquehanna	Conklin	2,232
01515000	Susquehanna River at Smithboro, NY	Upper Susquehanna	Smithboro	4,631
01529500	Cohocton River at Campbell, NY	Chemung	Campbell	470
01531000	Chemung River at Chemung, NY	Chemung	Chemung	2,506
01536500	Susquehanna River near Wilkes-Barre, Pa.	Middle Susquehanna	Wilkes-Barre	9,960
01542500	West Branch Susquehanna River near Karthaus, Pa.	W Branch Susquehanna	Karthaus	1,462
01548085	Bald Eagle Creek near Castanea, Pa.	W Branch Susquehanna	Castanea	420
01549760	West Branch Susquehanna River at Jersey Shore, Pa.	W Branch Susquehanna	Jersey Shore	5,225
01555000	Penns Creek at Penns Creek, Pa.	Lower Susquehanna	Penns Creek	301
01562000	Raystown Branch Juniata River at Saxton, Pa.	Juniata	Saxton	756
01568000	Shermans Creek near Dromgold, Pa.	Lower Susquehanna	Dromgold	200
01570000	Conodoguinet Creek near Hogestown, Pa.	Lower Susquehanna	Hogestown	470
01573560	Swatara Creek near Hershey, Pa.	Lower Susquehanna	Hershey	483
01574000	West Conewago Creek near Manchester, Pa.	Lower Susquehanna	Manchester	510
01576787	Pequea Creek near Martic Forge, Pa.	Lower Susquehanna	Martic Forge	155
01578475	Octoraro Creek at Richardsmere, Md.	Lower Susquehanna	Richardsmere	177

## **SAMPLE COLLECTION AND ANALYSIS**

Samples were collected to measure nutrient and SS concentrations during various flows in 2005. For Group A sites, two samples were collected per month: one near the twelfth of the month 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 near pre-storm levels. All samples

were collected by hand with USGS depth integrating samplers. At each site between 3 and 10 depth integrated verticals were collected across the water column and then composited to obtain a representative sample of the entire waterbody. For Group B sites, fixed date monthly samples also were collected near the twelfth of each month during 2005, except for Rockdale, Campbell, Conklin, and Richardsmere, where samples were collected only during the last three months of 2005. Additionally, four storms were sampled (one storm/season and two samples/storm) at all enhanced sites except for those beginning in October, which had two storm samples collected during that season. Samples were collected using the same protocols as at Group A sites.



**Figure 2. Locations of Sampling Sites Within the Susquehanna River Basin**

Whole water samples were collected to be analyzed for TN species, TP species, TOC, TSS, and SS. For Group B sites, SS samples were collected only during storm events, and half of the samples were further analyzed for sand and fine fractions. Additionally, filtered samples were collected to be analyzed for dissolved nitrogen (DN) and dissolved phosphorus (DP) species. All Pennsylvania samples were delivered to the PADEP Laboratory in

Harrisburg, Pa., to be analyzed the following workday. New York samples were sent to Columbia Analytical Services in Rochester, N.Y., for analysis the following workday. SS concentrations for Group A sites were analyzed by SRBC, and SS concentrations for Group B sites were analyzed by the USGS sediment laboratory in Kentucky. 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 <sub>4</sub> )	PADEP	Colorimetry	0.020	USEPA 350.1
	CAS*		0.050	USEPA 350.1
Dissolved Ammonia (DNH <sub>4</sub> )	PADEP	Block Digest, Colorimetry	0.020	USEPA 350.1
	CAS*		0.050	USEPA 350.1
Total Nitrogen (TN)	PADEP	Persulfate Digestion for TN	0.040	Standard Methods #4500-N <sub>org</sub> -D
Dissolved Nitrogen (DN)	PADEP	Persulfate Digestion	0.040	Standard Methods #4500-N <sub>org</sub> -D
Total Kjeldahl Nitrogen (TKN)	CAS*	Block Digest, Flow Injection	0.050	USEPA 351.2
Dissolved Kjeldahl Nitrogen (DKN)	CAS*	Block Digest, Flow Injection	0.050	USEPA 351.2
Total Nitrite plus Nitrate (TNO <sub>x</sub> )	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
	CAS*	Colorimetric by LACHAT	0.002	USEPA 353.2
Dissolved Nitrite plus Nitrate (DNO <sub>x</sub> )	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
	CAS*	Colorimetric by LACHAT	0.002	USEPA 353.2
Dissolved Orthophosphate (DOP)	PADEP	Colorimetry	0.002	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Dissolved Phosphorus (DP)	PADEP	Block Digest, Colorimetry	0.010	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Total Phosphorus (TP)	PADEP	Persulfate Digest, Colorimetry	0.010	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Total Organic Carbon (TOC)	PADEP	Combustion/Oxidation	0.50	SM 5310D
	CAS*	Chemical Oxidation	0.05	GEN 415.1/9060
Suspended Sediment (Fine)	USGS	**		
Suspended Sediment (Sand)	USGS	**		
Suspended Sediment (Total)	SRBC	**		
	USGS	**		

\* Columbia Analytical Services, Rochester, NY (New York sites only)

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