

Description of the Lower Susquehanna Subbasin

The Lower Susquehanna Subbasin is a diverse watershed that drains approximately 5,913 square miles of sandstone ridges, shale/limestone/dolomite valleys, urban areas, and rural landscape from Sunbury, Pennsylvania, to where the Susquehanna River empties into the Chesapeake Bay in Havre de Grace, Maryland. The counties that are located entirely or partially in this subbasin include Adams, Berks, Centre, Chester, Columbia, Cumberland, Dauphin, Franklin, Juniata, Lancaster, Lebanon, Mifflin, Northumberland, Perry, Schuylkill, Snyder, Union, and York in Pennsylvania and Baltimore, Carroll, Cecil, and Harford Counties in Maryland (Figure 2). Ecoregions that fall within the Lower Susquehanna Subbasin are (Figure 2):

- Northern Piedmont (Ecoregion 64);
- Blue Ridge (Ecoregion 66);
- Ridge and Valley (Ecoregion 67); and
- Central Appalachians (Ecoregion 69).

Ecoregion 64 is renowned for agriculture and consequently is dominated by this land use. The low hills, irregular plains, and open valleys are comprised of metamorphic, igneous, and sedimentary rocks. Only a small section of Ecoregion 66 occurs in the Lower Susquehanna Subbasin. This ecoregion has varying terrain comprised of ridges, hills, and mountains and is mostly forested with freestone streams on a mix of metamorphic, igneous, and sedimentary rock. Ecoregion 67 is characterized by nearly parallel ridges and valleys formed by folding and faulting events. The predominant geologic materials include sandstone, shale, limestone, dolomite, siltstone, chert, mudstone, and marble.

Springs and caves are common in this ecoregion. Ecoregion 69 is mainly a plateau formation that is predominantly sandstone, shale, conglomerate, and coal. The soils are not conducive to agriculture, so this ecoregion is mostly forested. Only a very small portion of the subbasin is in Ecoregion 69. Eleven different subecoregions are found in the Lower Susquehanna Subbasin (Figure 2):

- 64A - Triassic Lowlands;
- 64B - Trap Rock and Conglomerate Uplands;
- 64C - Piedmont Uplands;
- 64D - Piedmont Limestone/Dolomite Lowlands;
- 66B - Northern Sedimentary and Metasedimentary Ridges;
- 67A - Northern Limestone/Dolomite Valleys;
- 67B - Northern Shale Valleys;
- 67C - Northern Sandstone Ridges;
- 67D - Northern Dissected Ridges and Knobs;
- 67E - Anthracite Subregion; and
- 69A - Northern Igneous Ridges.

The mixed land use in the Lower Susquehanna Subbasin is connected to the geology of the region (Figure 2 and Figure 3). In Ecoregion 67 the ridges are mostly forested, and the limestone/dolomite and shale valleys are predominately agricultural. There is little urban development in this Ecoregion portion of the subbasin, probably due to the steep, folded nature of the ridges. In the Anthracite Subregion (67E), there are abandoned mine land sites and problem areas, depicted in black (Figure 3). The Northern Piedmont (Ecoregion 64) is dominated by cultivated and developed land. More natural vegetated areas are located in the upland and ridge areas, as in the subecoregions of 66B, 69A, and 64B. The largest urban centers in the Lower Susquehanna Subbasin are the Harrisburg, Lancaster, and York areas.

Many environmental organizations throughout the Lower Susquehanna Subbasin are working to restore and protect watersheds. Table 1 lists some of the watershed groups associated with the streams sampled in this survey. Many other local entities, such as county conservation districts and land conservation groups, protect and conserve land and water resources in the subbasin. There are also numerous Pennsylvania

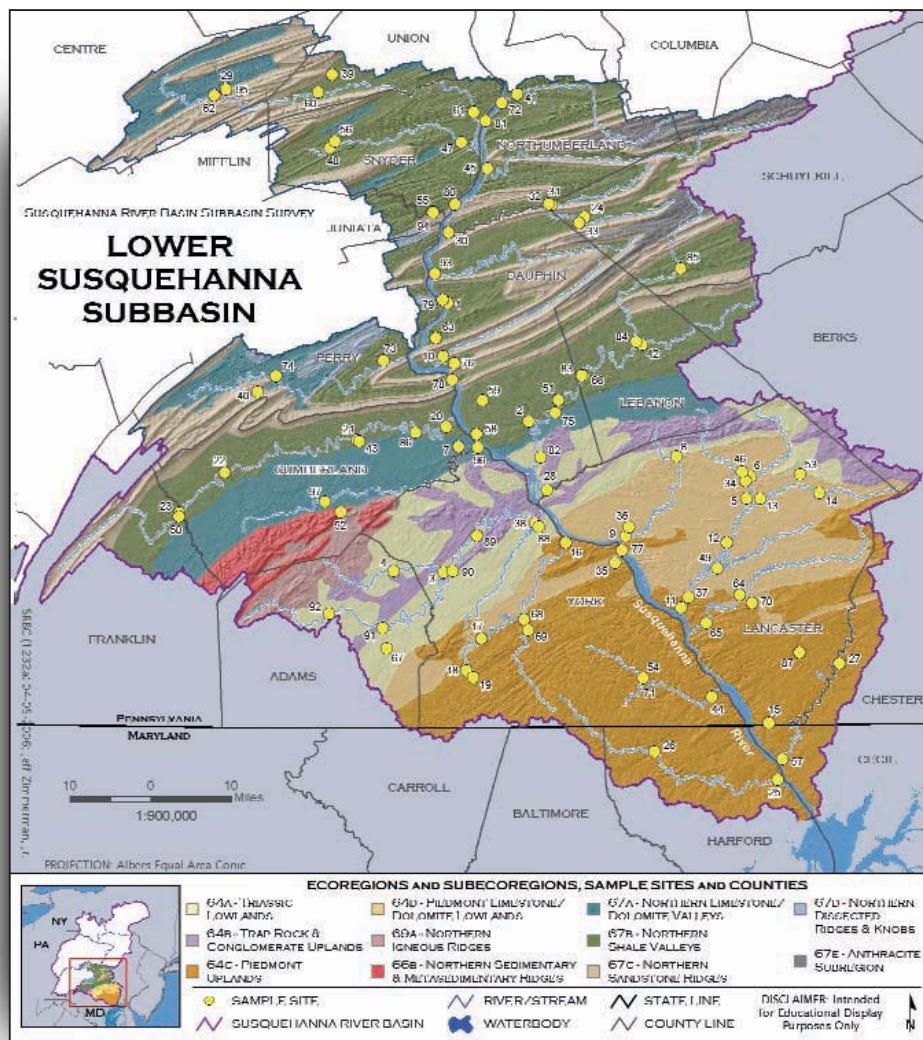


Figure 2. Ecoregions, Subecoregions, Sample Sites, and Counties in the Lower Susquehanna Subbasin

Senior Environment Corps (PaSEC) groups throughout the Lower Susquehanna Subbasin that include senior citizens who volunteer to protect and improve watersheds. The website for this organization is <http://www.easi.org/programs/program1.html>, which includes a list of the local PaSEC group locations.

Methods Used in the 2005 Subbasin Survey
DATA COLLECTION

During summer and fall of 2005, SRBC staff collected samples from 97 sites throughout the Lower Susquehanna Subbasin. The appendix contains a list with the sample site number, the station name (designated by approximate stream mile), the latitude and longitude, a description of the sampling location, the drainage size, and reference category. All sites also were sampled in 1996 except the two sites listed in green, CEDR 0.1 and CHIQ 20.0. The reference category designation was based on subcoregions and grouped according to similarities between subcoregions as described in Traver (1997). Macroinvertebrate samples were collected at all 97 sites except BERM 11.0, which lacked riffle habitat. Habitat was rated at the sites where a macroinvertebrate sample was collected, except for the river sites.

The sites were sampled once during this Year-1 sampling effort to provide a point-in-time picture of stream characteristics throughout the whole subbasin.

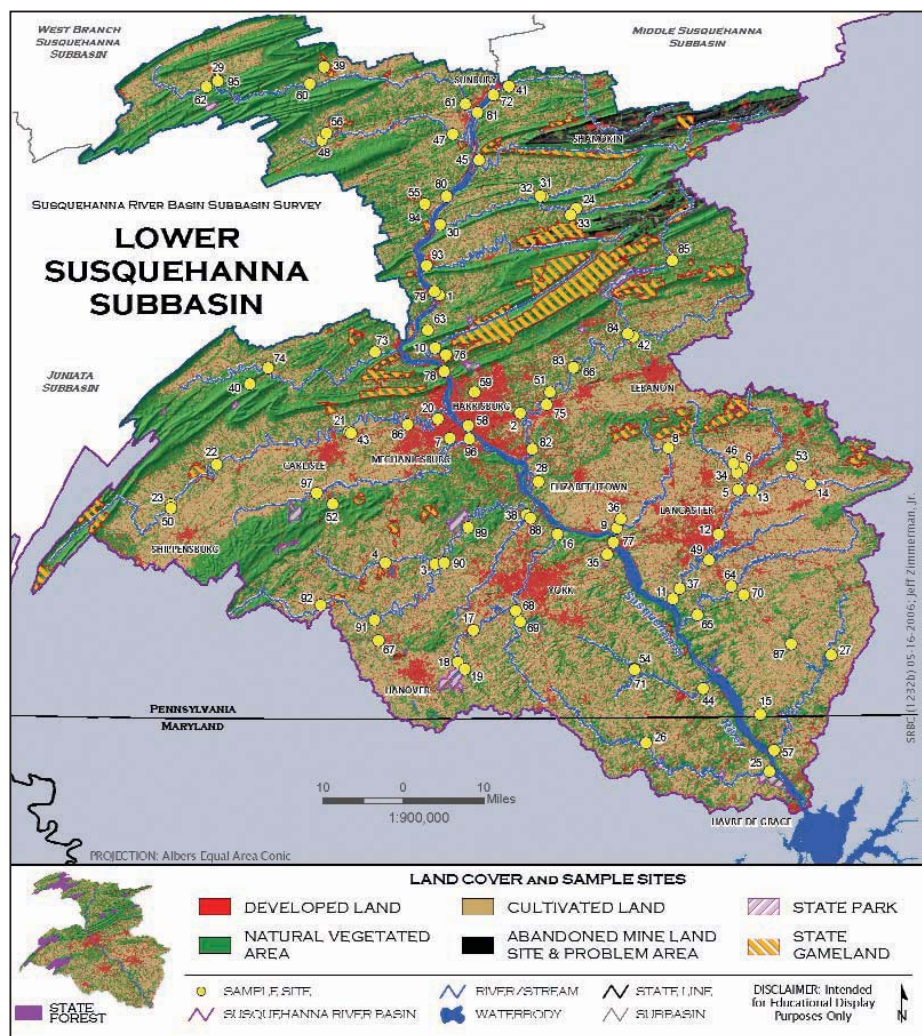


Figure 3. Land Cover and Sample Sites in the Lower Susquehanna Subbasin

Samples were collected using a slightly modified version of USEPA's Rapid

Bioassessment Protocols for Use in Streams and Wadeable Rivers (RBP III) (Barbour and others, 1999).

Table 1. Contact Information for Watershed Organizations of Streams Sampled in the Lower Susquehanna Subbasin

| Organization Name | County | Contact | Person Address | Phone | Email or Website |
|--|-----------------------------|----------------------|--|----------------|--------------------------------|
| Chiques Creek Watershed Alliance | Lancaster | Ms. Nancy Halliwell | 971 N. Colebrook Rd., Manheim, PA 17545 | (717) 665-3827 | nancy@raphotownship.com |
| Cocalico Creek Watershed Association | Lancaster | Mr. Mike Ashton | P.O. Box 121, Reinholds, PA 17569 | (717) 733-6931 | bbachman@ptd.net |
| Codorus Creek Improvement Partnership | York | Mr. Michael Helfrich | 11 W. Philadelphia Street, York, PA 17403 | (717) 848-1900 | |
| Codorus Creek Watershed Association | York | Mr. Gary Peacock | PO Box 288, York, PA 17401 | (717) 840-7430 | |
| Codorus Creek Watershed Project | York | Ms. Genevieve Ray | 101 Rathton Road, York, PA 17403 | (717) 848-3320 | creekstudy@aol.com |
| Codorus Monitoring Network, Inc. | York | Mr. John Klunk | 60 New York Rd., Dover, PA 17315 | (717) 308-0070 | |
| Conodoguinet Creek Watershed Association | Cumberland | Mr. Gil Freedman | 49 Sample Bridge Rd., Mechanicsburg, PA 17050 | (717) 697-2513 | gil49@comcast.net |
| Hammer Creek Watershed Association | Lancaster | Mr. Gary Trostle | 21 Buch Mill Rd., Lititz, PA 17543 | (717) 738-1597 | dgtrost@dejazzd.com |
| Letort Regional Authority | Cumberland | Ms. Brian Fischbach | 415 Franklin St., Carlisle, PA 17013 | (717) 245-0508 | executive_director@letort.org |
| Little Chiques Watershed Association | Lancaster | Mr. Bob Hernandez | Mt. Joy Borough, P.O. Box 25, 21 E. Main St., Mt. Joy, PA 17552 | (717) 653-5938 | |
| Little Conestoga Watershed Alliance | Lancaster | Ms. Michelle Spitko | P.O. Box 6355, Lancaster, PA 17607 | | littleconestoga@cs.com |
| Little Shamokin Creek Watershed Association | Northumberland | Mr. Bob Herman | c/o Jack Neidig, RR 1, Box 151 A, Sunbury, PA 17801 | (570) 286-7044 | rjherman@ptd.net |
| Lower Susquehanna Riverkeeper | York | Mr. Michael Helfrich | 11 West Philadelphia Street, York, PA 17403 | (717) 779-7915 | lowsusriver@hotmail.com |
| Mahanoy Creek Watershed Association | Northumberland | Ms. Roseann Weinrick | 936 Centre Street, Ashland, PA 17921 | (570) 875-3993 | rbwbionerd@yahoo.com |
| Middle Creek Watershed Association | Lancaster | Mr. Russ Gooding | Golden Witch Tech., Inc. P.O. Box 159, Hopeland, PA 17533 | (717) 738-4803 | gw@dejazzd.com |
| Northern Swatara Watershed Association | Schuylkill | Mr. Bob Evanchalk | 629 Mountain Rd., Pine Grove, PA 17963 | (570) 628-1229 | revanchalk@co.schuylkill.pa.us |
| Octoraro Watershed Association | Lancaster | Mr. Anders Alfelt | 389 Pine Grove Rd., Nottingham, PA 19362 | (717) 529-2132 | owa@desuper.net |
| Paxton Creek Watershed & Education Association | Dauphin | Mr. David Sheridan | P.O. Box 61674, Harrisburg, PA 17106 | (717) 731-5683 | wateradvise@aol.com |
| Penns Creek Watershed Association | Centre | Ms. Molly Buchanan | RR #1, Woodward, PA 16882 | (814) 349-5100 | |
| Penns Valley Conservation Association | Centre | Mr. Gary Gyeckis | 415 Lower Georges Valley Road, Spring Mills, PA 16875 | (814) 349-5100 | gyekis@uplink.net |
| Quittapahilla Watershed Association | Lebanon | Mr. David Lasky | 610 East Walnut St., Annville, PA 17003 | (717) 867-4837 | |
| Shamokin Creek Restoration Alliance | Northumberland | Mr. Jim Koharski | 828 W. Gowen Street, Coal Twp. 17866 | (570) 339-3846 | jkoharski@verizon.net |
| Shermans Creek Conservation Association | Perry | Ms. Linda Sieber | 385 Dark Hollow Rd., Shermansdale, PA 17090 | (717) 582-3376 | lsieber@pa.net |
| Stony Creek Watershed Association | Dauphin | Mr. Shane Taylor | Dauphin Borough, P.O. Box 487 or 200 Church St., Dauphin, PA 17018 | (717) 921-2633 | dauphinboro@juno.com |
| Swatara Creek Watershed Association | Lebanon | Ms. Jo Ellen Litz | 2501 Cumberland Street, Suite 2, Lebanon, PA 17042 | (717) 274-1175 | swatara@mbcomp.com |
| Tri-County Conewago Creek Association | Dauphin, Lancaster, Lebanon | Mr. Matt Royer | P.O. Box 107, Elizabethtown, PA 17022 | | conewagocreek@yahoo.com |
| Tri-Valley Watershed Association | Schuylkill | Mr. Jeffrey Stutzman | 743 Union St., Millersburg, PA 17061 | (717) 692-5066 | jstutzman@co.schuylkill.pa.us |
| Twin Valley Conservation | Dauphin | Ms. Rudi Erb | 4533 Back Road, Halifax, PA 17032 | (717) 362-4123 | frogwild@pa.net |
| Watershed Alliance of Adams County | Adams | Ms. Michelle Kirk | PO Box 4329, Gettysburg, PA 17325 | (717) 334-0636 | waterstartshere@yahoo.com |
| Watershed Alliance of York County | York | Mr. Gary Peacock | York County Conservation District, 118 Pleasant Acres Rd., York PA 17402 | (717) 840-7430 | Gpeacock@yorkccd.org |
| Wiconisco Creek Restoration Association | Schuylkill | Mr. Walt Finch | 1021 East Market St., Williamstown, PA 17098 | (717) 647-4043 | waltfinch@adelphia.net |
| Yellow Breeches Watershed Association | Cumberland | Mr. Rich Pugh | Gannett Fleming, Inc., 207 Senate Ave., Camp Hill, PA 17011 | (717) 763-7211 | rpugh@GFNET.com |