COLDWATER HERITAGE PARTNERSHIP PLAN

Saucon Creek Watershed

Prepared by Barry Isett and Associates
Funded by Coldwater Heritage Partnership Program,
Pennsylvania Council of Trout Unlimited

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INTRODUCTION

Purpose of Study

Saucon Creek is a 26.6 mile long stream and is considered a high quality coldwater fishery (HQ-CWF) by standards of the Commonwealth of Pennsylvania Fish and Boat Commission. This is an important standard because such classifications are not easily achieved and many counties in the state of Pennsylvania do not have any HQ-CWF streams. Local interest in the Saucon Creek, along with increased interest in stream preservation, has continued to grow over the past few years. This growing community awareness has resulted in the formation of a new Saucon Creek chapter of Trout Unlimited, an organization which fosters stream preservation and local programs for the community.

One such program, The Coldwater Heritage Partnership Program, administered by PA Trout, offers communities and regions an opportunity to be active in preservation and stream improvements. This partnership program has enabled Barry Isett & Associates, Inc. to study the Saucon Creek for needed critical analysis.

The overall purpose of this project, as stated in PA Trout award announcement, December 2002, is to "build awareness and study trout populations, water quality, and macro-invertebrate conditions within the headwaters of Saucon Creek". This initial purpose has been expanded to include an overview of the entire watershed with two sites of special interest. One emphasis is on the 1 ½ mile section in Hellertown, designated "selective harvest artificial lures only" by PA Fish and Boat Commission, while a second emphasis is on tributaries located in Lower Saucon Township.

The resulting conclusion is a conservation and protection strategy. Up to this date, study methods included: gathering data on existing conditions and identifying potential impacts, threats, problems, and opportunities. After all data has been collected, a plan of action will be formulated on protection strategies and increased conservation methods. It is anticipated that a structured plan of action will build community awareness for Saucon Creek and increase support for the conservation of other coldwater streams.

It should be noted that this study was designed specifically to look at trout and trout related issues and is not meant to be a substitute for a full watershed assessment or rivers conservation plan. A full watershed assessment study is strongly encouraged in the near future.

Historical Background

Settlement of the Saucon Creek valley dates back almost 300 years with the initial colony being widely spread and largely agrarian. With the continued growth of new settlers, the undeveloped land became more urban with small villages starting to form a community network. Agricultural areas flourished due to abundant resources, such as fertile soil and limestone formations. Saucon Creek also offered accessible fishing, and a way of transporting goods for the colonists.

This initial settlement period of heavy agriculture and subsistence fishing lasted for over 100 years relatively uninterrupted. At the end of the Civil War, however, manufacturing did start to enter the Saucon region in activities ranging from iron ore and limestone mining to textiles and flour mills, launching urban development.

By the end of World War II, metropolitan areas shared boundaries with remaining agricultural fields. With limited land available, a third wave of change began to overtake the area: population growth. Population growth occurred in three phases, roughly from 1945-1980, 1980-1995, and 1995-current. With each population boom, a new challenge to preserve adequate open space for future use by these citizens developed. In fact, the eventual result of the residential vs. open space issue will be the determining factor for the safety of the Saucon Creek Watershed within the next 5-10 years and beyond.

In addition to these peripheral influences, Saucon Creek has undergone a fundamental change on its own. In 1983-1984, the closure of a New Jersey Zinc operation temporarily drained the entire Saucon Creek. During this time, some professionals doubted the stream would ever return to its original state. However, within nine months of the company closing, Saucon Creek returned to its original state naturally and has developed over the past two decades into the coldwater stream used by anglers today.

WATERSHED CHARACTERISTICS

Location (See Map #1)

The Saucon Creek Watershed is located in southeastern Pennsylvania, traversing Lehigh and Northampton Counties, with a very small portion of the watershed entering into Bucks County. Saucon Creek is a direct tributary of the Lehigh River which then flows into the Delaware River.

Sub watersheds (See Map #2)

The Saucon Creek is its own sub-watershed of the Lehigh River. The watershed starts in Lower Milford Township and proceeds northeast to the City of Bethlehem. The entire watershed contains all or part of 10 different municipalities including:

Upper Milford Township
Lower Milford Township
Upper Saucon Township
Lower Saucon Township
Williams Township
Salisbury Township
Springfield Township (Bucks)
Borough of Hellertown
Coopersburg Borough
City of Bethlehem

Tributaries (See Map #3)

Silver Creek
Flowing west from the Wassergass area connecting into the Saucon Creek at Hellerhomestead in the Borough of Hellertown, Silver Creek was a primary flooding source that afflicted the region's communities on September 18, 2004. The creek was also the source of some flooding during two heavy rain storms in 2005, which caused severe economic hardship to the Borough and other communities within the region.

Laubach Creek
The south branch of Saucon Creek starting from Swabia Hills, known as the Saucon Creek & Little Lehigh River divide, heads eastward to reach the main stem at Shimerville.

Tumble Brook
The brook begins in Springfield Township, between Passer and State Roads in Bucks County, and winds through the bulk of Upper Saucon Township, including bordering its park before flowing into the Saucon Creek within Saucon Valley Country Club.

Black River
A stream that parallels the Lehigh University campus and reaches the Saucon Creek in the Borough of Hellertown approximately ½ mile north of the Silver Creek and Saucon Creek junction.

Polk Valley Run
A stream that flows from Lower Saucon Township, past a proposed park/school trail complex, reaching the Saucon Creek north of the Borough of Hellertown. This stream is also known by its historical name of Snipe Valley Creek.

Source to Black River

Black River to State Route 412 Bridge

State Route 412 Bridge to Mouth

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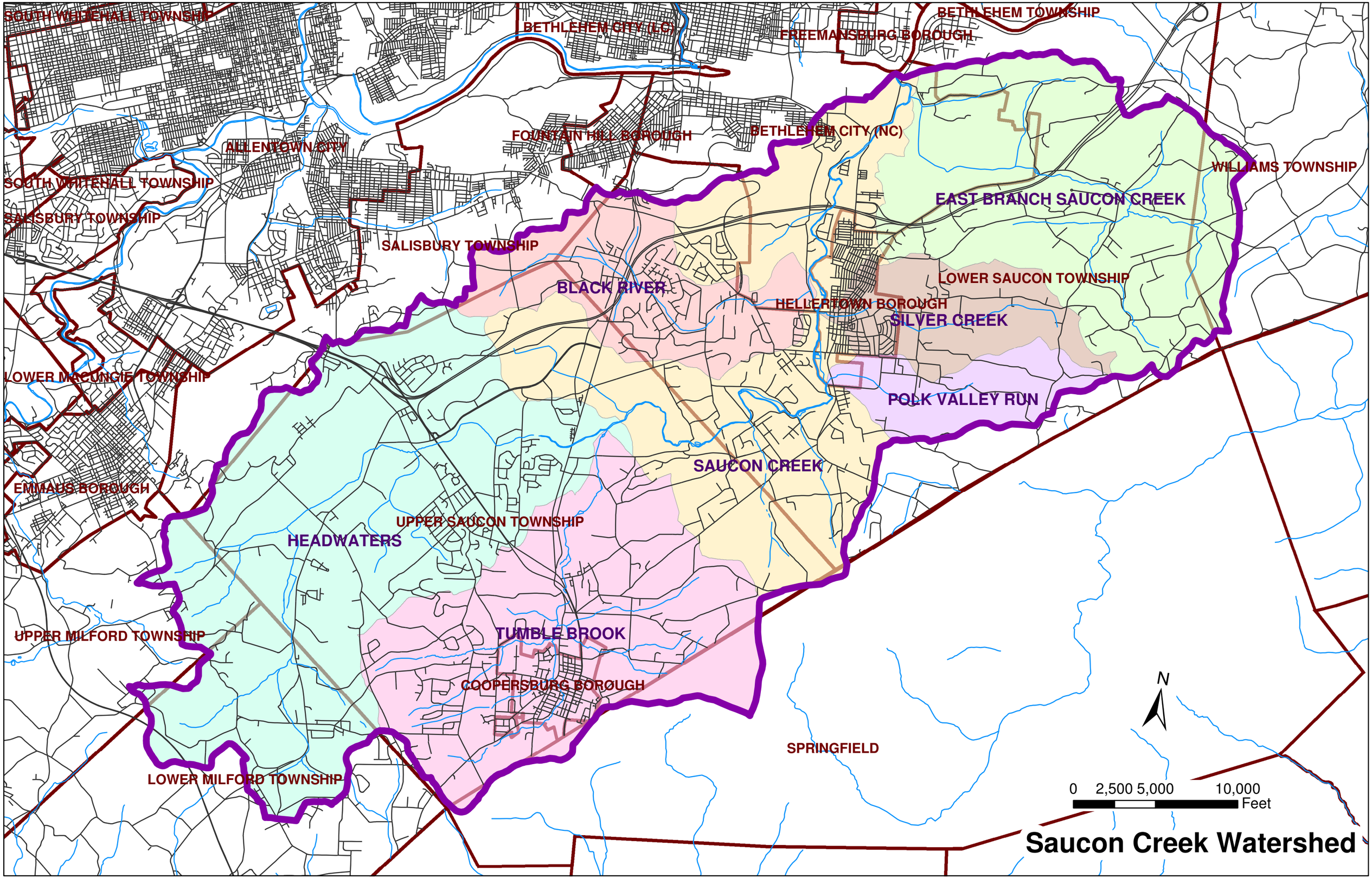
5,000 2,500 0 5,000 Feet

Saucon Creek Watershed


SOUTH WHITEHALL TOWNSHIP
BETHLEHEM CITY (LC)
FREEMANSBURG BOROUGH
BETHLEHEM TOWNSHIP
FOUNTAIN HILL BOROUGH
BETHLEHEM CITY (NC)
ALLENTOWN CITY
WILLIAMS TOWNSHIP
SOUTH WHITEHALL TOWNSHIP
EAST BRANCH SAUCON CREEK
SALISBURY TOWNSHIP
SALISBURY TOWNSHIP
LOWER SAUCON TOWNSHIP
BLACK RIVER
HELLERTOWN BOROUGH
SILVER CREEK
LOWER MACUNGIE TOWNSHIP
POLK VALLEY RUN
SAUCON CREEK
EMMAUS BOROUGH
UPPER SAUCON TOWNSHIP
HEADWATERS
TUMBLE BROOK
UPPER MILFORD TOWNSHIP
COOPERSBURG BOROUGH
SPRINGFIELD
LOWER MILFORD TOWNSHIP
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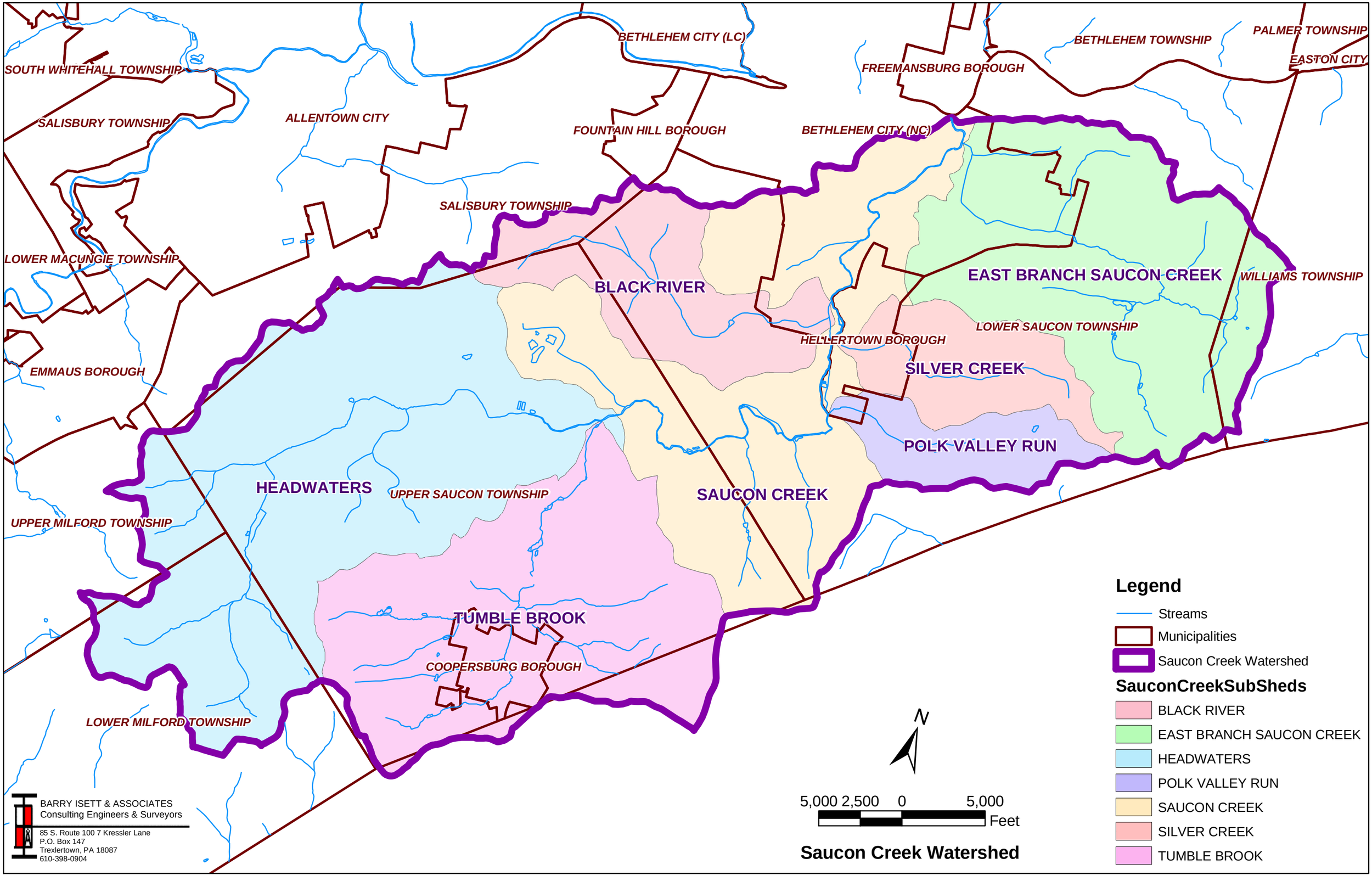

BARRY ISETT & ASSOCIATES
Consulting Engineers & Surveyors
85 S. Route 100 7 Kressler Lane
P.O. Box 147
Trexlertown, PA 18087
610-398-0904

A Trip Through the Watershed

Saucon Creek has many outsets. One of these points is east of Mountain Drive and north of Brunner Road (which becomes Vera Cruz Road) in Upper Milford Township. This section is closest to the divide with the Little Lehigh Creek. Another branch begins south of Brunner Road and east of Limeport Road.

A third section will start in Lower Milford Township; just east of the Pennsylvania Turnpike near Church View Road. Still a fourth is near the Perkiomen Creek divide (Hosensack Creek) in the area near Limeport Pike and the Pine Tree Road/Chestnut Hill section of that Township. The fifth begins in the northern part of Lower Milford Township near Limeport Park on Blue Church Road. All unite in Upper Saucon Township southwest of Wedgewood Golf Course.

Two tributaries that begin north and south of Spring Drive in Upper Saucon Township are next to meet the Saucon Creek at the eastern edge of Wedgewood Country Club.

Saucon Creek is really a country club stream at this point; passing through Wedgewood, Center Valley, Saucon Valley Country Club and Weyhill Golf Course in consecutive order.

In Saucon Valley Country Club, Saucon Creek receives the mini-watershed from Tumble Brook. That stream begins in Bucks County and winds through the Tumblebrook Golf Course and Living Memorial Park. It picks up a minimum of six separate unnamed tributaries along the way; including one with meanders through Locust Valley Country Club. Many of the others pass through the Borough of Coopersburg (Mill Road, Gun Club Road, Young Avenue, and Linden Street to name a few). Two other tributaries pick up along Passer Road near the County line.

Tumble Brook continues through Upper Saucon Township Community Park on the east side of PA 378 to its rendezvous with the Saucon.

Once the Saucon Creek enters Lower Saucon Township, it picks up two tributaries from Camp Helena and makes an easterly turn on the south side of Old Mill Road. It then turns northward and parallels PA 412 on its west side throughout the Borough of Hellertown and beyond.

Polk Valley Run enters the Saucon Creek at the southern tip of Hellertown.

Black River comes off the Saucon Fields campus of Lehigh University and reaches the Saucon near Water Street. The Saucon Creek then enters Saucon Park in the City of Bethlehem, a major regional park and recreation facility. Another unnamed tributary from the Lehigh campus reaches the Saucon Creek very close to Interstate 78.

The Saucon Creek then enters lands of the former Bethlehem Steel Corporation heading toward the City sewage treatment plant (a prime economic development area). At this point waters from the east branch of the Saucon Creek enter the main stem.

Saucon Creek's east branch begins in two tributaries, one in the southeastern corner of Lower Saucon Township near Wassergass Road; the other in Williams Township near Woodland Road. The unified stream follows the south side of Easton Road in Lower Saucon Township; picking up additional tributaries that pass such features as Saucon Pond, Campbell Pond and Martin Lake near the volunteer fire company. One western tributary parallels the south side of Apple Street.

Finally, past the main treatment plant, the Saucon Creek crosses the path of the Norfolk Southern Railroad and enters the Lehigh River on the opposite side of Freemansburg's Canal Road.

PAST RESEARCH

Federal

The United States Geological Survey (USGS) has extensive historical background data regarding the Saucon Creek watershed. While budget cuts in recent years have forced a dramatic scaling back of gauges and other USGS stream research, the historical data and trends collected still offer useful information about past conditions. For example, it is important to remember that the closing of the New Jersey Zinc mine and the subsequent draining of Saucon Creek requires separating pre and post 1984 information with differing levels of emphasis. The Saucon Creek information available from USGS includes water quality tests, peak stream flows and a particular water quality sampling study on the Saucon Creek in Bethlehem dating back to 1949. All this information is available from USGS upon request.

State

The Pennsylvania Fish and Boat Commission surveyed Saucon Creek in 1999. By their own quote in an August 1999 stream report, "the biologists were extremely pleased with the results. In fact, the catches and estimated biomass of wild brown trout at both sites were the highest recorded thus far." Two monitoring sites were located within a 2.1 mile "zone of protection" that went from High Street in Hellertown to Saucon Park in Bethlehem. This area is called the zone of protection because no one is allowed to fish for wild Brown Trout in this location, designated by the Pennsylvania Fish and Boat Commission (PFBC). The "zone" is used to stabilize and maintain Trout population as they head down river. Over 1,000 trout were caught on just the first pass of the two monitor sites, breaking all previous catch records.

Another significant detail was that even though a handful of stocked rainbow trout made it all the way from Bingen to High Street and Saucon Park, over 80% of caught trout in the pass were wild brown trout. Of these, 70 were over a foot long and some of those over 18 inches. It should be noted that these numbers were obtained in a drought emergency, when trout populations experienced undesirable conditions: low water levels and increased water temperatures.

Even with record high catches from 1999, Pennsylvania's water availability has fluctuated in the past fifteen years, influencing water quality and watershed conditions. In 1991, 1999 and again in 2001, there were major drought emergencies. These drought emergencies were solved by a single torrential rainfall. By contrast, 2003, 2004, 2005 and the start of 2006 have been very wet consecutive years.

Regional

Students from the Earth Observatory at Lehigh University are currently studying the effects of increased urbanization on stream characteristics over a substantial period of time. Since this study is in progress, no final conclusions can be drawn; however, it is worth noting that preliminary findings show that overall tendencies of a stream are to become wider and more sinuous with increased development. These Lehigh University early conclusions appear to reproduce the case of Saucon Creek. Additional students completed discharge and water quality reports on streams throughout the last several years. Many of the conclusions substantiated previous studies regarding Saucon Creek recharge. Students studied the percentages of groundwater recharge against surface runoff for Saucon Creek, while other student groups analyzed the lengths of time that the stream took to process overflow amounts from a heavy rainstorm incident from March 2003.

In addition to university studies, the Saucon Valley Country Club has completed sampling its portion of Saucon Creek over a three year period as a part of its Audubon certification program. Club members sampled stream areas for the evidence and/or absence of various compounds. Study results identified: dissolved oxygen, pH, nitrate, ammonia, and phosphorus. These results are intriguing since they show evidence that improvements can be made in how golf courses affect the surrounding

streams waterways. This conclusion is significant since there are at least six such golf courses within the Saucon Creek watershed, and at least one tributaries running through a golf course.

Local (Macro-invertebrates)

Lance Leonhardt, a Saucon Valley High School educator, has undertaken comprehensive biological studies of the Saucon Creek watershed for many years. Results from his macro-invertebrate samplings in June 2002 and June 2003 show a stream requiring intervention in order to improve its macro-invertebrate population and diversity.

Beginning with the June 2002 samples, it was evident that "obvious impairment of biological conditions" existed both above and below the Saucon Valley Country Club. On this 45-point scale, stream sample sites garnered scores of 17 and 19, quantifying them as "poor", whereas a score of 21 would upgrade the streams to a "fair" rating, and 33 representing a "good" rating. In fact, on the upstream of Saucon Creek, just 19 intolerant macro-invertebrate species out of over 500 were discovered while the downstream saw only 123 out of over 1,300 individuals identified.

Biological studies also included Electrofishing, known as 'fish shocking', to help investigate and research fish diversity in the streams. Electrofishing revealed the following fish species:

Brown Trout
Brook Trout
White Sucker
American Eel
Blacknose Dace
Longnose Dace
Common Shiner
Golden Shiner
Tessellated Darter
Banded Killifish
Bluegill Sunfish
Pumpkinseed Sunfish
Rock Bass
Redbreasted Sunfish
Margined Madtom
Creek Chub
Largemouth Bass
Common Carp

These diversity results were still considered a poor index of Saucon Creek's biological matrix. So a 60-point Shannon-Weaver Diversity Scale, measuring biological diversity and quantities, was applied. Where 39 points are needed for a site to register merely as fair, all sample sites scored in the 20s or lower. In 2003 samples, results were again poor, scoring even slightly lower than previous years. The full results were given to the Township by Saucon Valley High School under a separate cover. Mr. Leonhardt has accomplished important research on Saucon Creek through the years, and is commended for the careful work he and his students have achieved in assessing watershed conditions.

I. LAND ACQUISITION/CONSERVATION EASEMENT

Critical areas for land acquisition have been identified in three locations. One is in Upper Saucon Township and represents a 13 acre parcel that is ideal for the creation of a wildlife sanctuary and a buffer near a housing complex which is scheduled for construction in 2005-2007. This area needs to be protected.

The second parcel is located in Springfield Township in Bucks County and represents a land area of significance near the dividing line between the Saucon and Cooks Creek watersheds. This would eliminate a potential for development that has been mentioned for that area, although no direct applications have yet been made.

The third parcel is located in the City of Bethlehem's economic development zone and would extend Saucon Park though not in an immediately contiguous way. The City feels any suitable negotiations should ensue after their work with the potential private acquirer is complete. Consultation is needed with Bethlehem City planning prior to direct contact with the private party.

The best potentials for conservation easements are in Lower Saucon Township, followed by Upper Saucon Township, Lower Milford Township and somewhat less in Upper Milford Township. Usually such easements are handled in one of two ways; agriculturally through either the Lehigh or Northampton County Conservation District or environmentally through either Wildlands Conservancy or Heritage Conservancy.

Specific locations will not be published in this report out of respect to property owners who need to be contacted individually. These areas are of enough importance that conservation districts, municipality representatives, and conservancy personnel need to plan a conservation strategy. It would not be surprising if a dozen or more quality easements could be developed in these areas.

Communities should look to Growing Greener II, including any County allocations, as well as the statewide competitive programs. Communities should consider the development of a Farmland Foundation to supplement the normal conservation district areas. Conservancy programs have been a beneficial tool and should be utilized; however these programs tend to have financial limitations.

II. STORMWATER MANAGEMENT

On September 18 and 19, 2004, the most damaging floods in a half century scored a direct hit on the Saucon Creek watershed. For some communities within our study area, such as Hellertown, it will take many years to recover from the power and subsequent damage sustained from Hurricane Ivan, and the millions of dollars it required for rebuilding. Communities were exacerbated by two other major storms in 2005, one of which produced over ten inches of rain in a single 24-hour period.

The primary tributary involved with the flooding was Silver Creek, yet, the exact cause will be deliberated for years to come. Certainly unforeseen circumstances, such as trapped debris at dams, forced water into unusual patterns. However, the pace of development over the last 50 years has turned many of the four headwater communities from largely agricultural to suburban/rural in land use. This pace has increased impervious surfaces while limiting available land for runoff infiltration, placing strain on the current stormwater system. It is necessary for all communities to revisit their Stormwater management commitments, both within and outside of Act 167, to determine ways that a future event of even greater magnitude can be prevented.

It is vital that the Consortium for Scientific Assistance to Watersheds (C-SAW) initiative proposed for Hellertown in 2006 not only provide specific Silver Creek solutions but also act as a catalyst to enable other communities to undertake innovative stormwater management solutions. Communities should

also review all Stormwater detention basins or other physical improvements that already exist within their borders as many need maintenance promptly and some are already failing or failed.

III. IN-STREAM HABITAT AND BANK EROSION

There are several locations, particularly closer to the center of the Saucon Creek watershed, where a series of in-stream habitat improvements will improve fishing opportunities and provide better living conditions for native brown trout populations.

Foremost among these is rock deflectors, which will counteract the effects of erosion while providing cooler water in a narrower stream bed, thus mitigating some of the development effects already found by the Lehigh University students and in such evidence elsewhere in Pennsylvania.

Several areas could use biologs, coconut fiber 10' segments which replace the normal rip-rap that is used to stabilize stream banks. The benefit of biologs is two-fold. First, it will degrade over time, eventually leaving a natural, unaffected stream bank in its wake. Second, when combined with an aggressive riparian buffer program the resulting stream bank will be forested as well as natural; cooling and shading trout populations within the stream.

In western and southern areas of the watershed, especially near mountainous areas, the deer population is accelerating. Placement of deer ladders at selected common crossing points often results in deer "learning" and using them more exclusively, thus reducing the erosion of stream banks in more sensitive areas.

Areas in greatest need for Saucon Creek habitat restoration are:

Silver Creek - Hellertown
Polk Valley Run - Lower Saucon Township
Black River - where it has been impacted by the Lehigh University campus and the immediate area of Coopersburg

IV. RIPARIAN BUFFERS

If a single initiative could arise from this report that would achieve the most positive benefit to the Saucon Creek watershed, it would be the wholesale addition of riparian buffers along not only Saucon Creek but many of its tributaries. These buffers would result in a substantially improved fishing experience by protecting and enhancing the stocked rainbow trout, south and west of Bingen, and the native brown trout, found almost everywhere else.

Virtually every community can use this recommendation. Lower Saucon Township is the furthest in implementing buffer initiatives. The Township is more successful due to its existing ordinances, their commitment to enforcement, available grant allocations for applicants and a clearly defined need to restoring Saucon Creek's main stem, as well as Polk Valley Run and the East Branch.

By community, here are the prime areas of riparian buffer need:

Upper Milford Township	near the Meadow Road intersection
Lower Milford Township	near Chestnut Hill Road and near Limeport Park
Upper Saucon Township	near Main Street adjacent to community park along Saucon Valley Road near Stabler Business Park
Springfield Township	between two ponds near its headwaters

Lower Saucon Township	sties along Saucon Creek sites along Polk Valley Run sites along the East Branch
Coopersburg	borough-wide initiative (many sites)
Salisbury Township	one site north of Black River Road one site south of Black River Road
Williams Township	site near Church Road site near Raubsville Road
Borough of Hellertown	start of 2.1 mile zone of PFBC protection Saucon Park area site near housing on Front Street North of Water Street Silver Creek through C-SAW project
City of Bethlehem	Saucon Park area re-development area near Norfolk southern railroad site near Bethlehem pre-treatment plant

V. CLEANUP EFFORTS

One of the first sites observed when the process began 18 months ago was an area littered by political signs thrown over a bridge to the stream bank below. By the names on the signs and the date the littering was observed, it was obvious that the littering had occurred overnight, after election results and before our initial observations. This made, of course, for an interesting and effective poster to galvanize citizen participation at the start of this process. As clear as this degradation was, it did not tell the whole watershed story.

The Saucon Creek watershed, in many places, is a dumping ground. Tires, refrigerators, signs, trash, and various other types of debris litter many areas of this watershed. While there are isolated cases of nuisance trash problems in recreation areas, including golf courses, significantly more destructive dumping occurs in the remote areas. These areas are typically at the edge of agricultural properties and in wooded areas easily accessible by a back road or bridge. During one of Barry Isett and Associates final field observations for this study, evidence was found that extensive amounts of debris had traveled a considerable distance from its original "drop-off point" due to the September 2004 flooding. Apart from an issue of beautification, this pollution represents a problem not just for trout and other aquatic species, but also affects family pets and animal habitats. A comprehensive approach is needed to address this destructive problem.

Community activism can make a significant difference in combating the litter problem. A minimum of three community days should be scheduled for cleanup in spring, summer and fall of each year. Communities and schools can also coordinate two programs with The Pennsylvania Trout Club: Pennsylvania Great Cleanup Day and a linkage with the International Coastal Cleanup Day.

The strongest pledge would be the development of a full "Cleanways" program in both Lehigh and Northampton counties. With the combined support, involvement, and direction of both conservation districts, a strong message of increased commitment to this serious problem will be adopted. Approval of this joint program should also involve local legal officials, attorneys and magistrates to make certain they all appreciate the nature of this environmental threat and pledge to be more stringent in enforcement of applicable laws and regulations.

VI. GOLF COURSES

Sometimes the most concrete and visible improvements to a stream and watershed can be accomplished at just a handful of places. A strong influence to the current condition of Saucon Creek is from its neighboring golf courses. Almost 1,000 acres of golf courses directly impact the Saucon Creek at a minimum of six locations, including:

Wedgewood Golf Course and Country Club
Center Valley Country Club
Saucon Valley Country Club
Weyhill Golf Course
Tumblebrook Golf Course
Locust Valley Country Club

This report does not suggest that these golf courses are purposely harming the Saucon Creek or its watershed. However, course maintenance practices indicate that extensive amounts of insecticides, herbicides, fungicides, and other pesticides are commonly used. These applied compounds can leach into the neighboring watershed. Multiple applications are needed to keep the unnatural, non-native grasses growing throughout the greens. Some anecdotal evidence from the Saucon Valley Country Club studies clearly indicates water quality and macro-invertebrate problems upstream and downstream at sample sites. Implementing improvements at the above mentioned locations along Saucon Creek can present an opportunity for substantial watershed upgrading. One similar case study is the Moselem Creek watershed in Reading, Pennsylvania. Three 18 hole golf courses and one 9 hole course consume a span of approximately five miles. What is unusual about both the Upper Saucon and Moselem Creek watersheds are the number of golf course locations, thus the number of amending opportunities within one watershed. If this initiative is truly undertaken in a spirit of cooperation, assuming that all parties want to be advantageous, substantial results can occur in just a year or two.

Improvements need not be expensive either. Throughout Pennsylvania, many golf courses are introducing certain maintenance changes which can save money for the golf courses as well as improve the quality of the golfing experience for patrons. These alternative solutions are highly unique and individualized for each golf course. Strategies are developed on a case by case basis and therefore should not be fitted to any kind of cookie-cutter approach. For more information on this topic, Wildlands and Heritage Conservancies could hold a joint “Golf Course Summit” during which many of the current golf course improvement strategies could be discussed and preliminary commitments made.

During each summit season, a specific chemical could be made the focus with a prize given to the golf course that makes the most progress in relieving that difficulty over a 12-month period, starting with phosphate in the first year. In addition to golf course attendance, extend invitations to service clubs, such as Elks, Lions and Kiwanis, to adopt this initiative and help with volunteer work. Awarding prizes, such as rounds of golf, lessons, or discounts on equipment, could be awarded for their active participation in the improvement events.

VII. GEESE

The Canada goose has been a bane of park superintendents, golf course owners and other public officials for at least 30 years now. Previously, geese could actually be captured and transported south in trucks during their molting season to southern climates, temporarily alleviating municipalities in our area. But that southern transport line kept moving further south, ultimately reaching Alabama and Mississippi. Geese problems today are due to millions of resident, non-migratory Canada geese having claimed the limited open space remaining.

No strategy exists to eliminate the nuisance of Canada geese. Many inventions have been tried, from using decoy swans and producing loud explosive noises to putting poor-tasting treatments on grasses, much to the detriment of recreational users. Out of frustration, new hunting seasons and procedures

have been recently devised. However, there is one non-lethal solution with reasonable effects: the replacement and addition of riparian buffers. Geese need a glide path to safely land and take off. They desire an open body of water and wide vistas so that they can sense dangers and quickly escape if needed. Developing riparian buffers can eliminate those two essentials and reduce the geese impacts.

Over the two-year period of this study, significantly more geese were observed in 2005 than in either 2004 or 2003. If current trends continue, outdoor recreation along Saucon Creek will quickly decline, negatively impact the fishing experience, and crowd out native vegetation from geese spreading non-natives. An extended period of overpopulated geese colonies will eventually cause environmental damage to the limited land areas remaining. Each community, and landowner, needs to participate in restricting Canada geese land consumption for the future health of a stream and watershed.

VIII. INVASIVE (NON-NATIVE) VEGETATION

Southeastern Pennsylvania suffers from an "overwhelming abundance on non-native plants" according to many environmental organizations. While the Saucon Creek watershed is partially fortunate in that its invasive plant problem is not yet beyond repair, it is nonetheless important to note that the problem exists. From observations, the most common invasive species in the Saucon Creek watershed are:

Multiflora Rose, in the southern and western sections
Purple Loosestrife, in the eastern areas
Japanese Honeysuckle, scattered throughout the area
Garlic Mustard, in scattered patches
Japanese Knotweed, in selected areas

It is also important to keep a diligent watch for the possibility of Lesser Celandine, Kudzu and Porcelainberry. Many communities are reporting the aggressive spread of these species, although that was not noted in our field observations.

What should be done? This would be an ideal task for a watershed association to sponsor. The group could develop a hotline where individuals could report "sightings" of invasives. Areas where spread is most likely to occur could be targeted by monthly cleanup sessions, such as one Saturday morning a month.

IX. FUTURE EVENTS

As of February 2006, a Saucon Creek Watershed Association is in the beginning stages. It could effectively allow all governments, non-profits and other concerned individuals to unite for the common cause of Saucon Creek improvement. However, this organization has been criticized for its opposition for plans regarding the former Thomas Iron Works site, which over time can weaken public support. With proper focus and dedication, the Saucon Creek Watershed Association has the opportunity to extend their enthusiasm and energy into other projects to better the community.

It has also been decided that the watershed forum will be held on October 6-7-8, 2006. The ideal site for this symposium is Lehigh University. The involvement of both conservation districts bodes well for the success, and the future longevity of this symposium.

Beginning in fall 2006, the partnership between two school districts affected by both Saucon and Cooks Creek, is expected to resume in earnest. Teachers from both Saucon Valley and Palisades Schools have expressed support to continue water quality monitoring, macro-invertebrate sampling, and other measurements. This allegiance represents an invaluable resource for the future health of Saucon and Cooks Creek.

MUNICIPALITIES FOR SAUCON CREEK CHP

Upper Milford Township
P. O. Box 210
Old Zionsville, PA 18068
(610) 966-3223

Lower Milford Township
7607 Chestnut Hill Church Road
Coopersburg, PA 18036
(610) 967-4949

Upper Saucon Township
5500 Camp Meeting Road
Center Valley PA 18034
(610) 282-1171

Lower Saucon Township
3700 Old Philadelphia Pike
Bethlehem, PA 18015
(610) 865-3291

Coopersburg Borough
5 N. Main Street
Coopersburg, PA 18036
(610) 282-3307

Springfield Township (Bucks)
2320 Township Road
Coopersburg, PA 18036
(610) 346-6700

Hellertown Borough
685 Main Street
Hellertown, PA 18055
(610) 838-7041

Williams Township
655 Cider Press Road
Easton, PA 18042
(610) 258-6788

Bethlehem Township
4225 Easton Avenue
Bethlehem PA 18018
(610) 814-6400

City of Bethlehem
10 East Church Street
Bethlehem, PA 18018
(610) 865-7088

Salisbury Township
2900 South Pike Avenue
Allentown, PA 18103
(610) 797-4000