



***VII.
GOALS &
RECOMMENDED
ACTIONS***



VII. Watershed Conservation Plan Priorities: Goals and Recommended Actions

A. Watershed Conservation Plan Priorities: Watershed Goals

During the course of the planning process for this Plan, considerable effort has been directed toward the development and refinement of Watershed goals. These goals are intended to establish the priorities for Plan-related actions now and in the future. Goals have been drafted by the Watershed Study Committee with the help of the Plan consultants and the DCVA. These goals have been reviewed on multiple occasions, both at public meetings as well as in drafting and brainstorming sessions of the Study Committee. The revised goals appear in Table VII-1. These goals have emerged after a variety of public meetings where stakeholders were asked to identify both the Watershed's problems and opportunities (see Appendix A).



Figure VII-1 Existing Riparian Area along Darby Creek in the Upper Darby Area Greenway.



Table VII-1 Revised Goals for the River Conservation Plan

***GOALS FOR DARBY CREEK WATERSHED
RIVER CONSERVATION PLAN***

- A. Restore Stream and Tributary Corridors, Provide Riparian Buffers, and Protect and Restore Wetlands.**
- B. Restore Floodplain Where Feasible** – Remove fill and abandoned structures. Prevent future filling and encroachment.
- C. Improve Stormwater Management** – Manage Quantity and Quality for both new development and re-development.
- D. Improve Development Patterns, Including Re-Development Practices, to Protect and/or Restore Stream Corridors, Maintain Open Space, and Protect Ecological Resources.**
- E. Increase Open Space and Recreation Opportunities** – Restore access to the stream corridors. Protect existing open space and create new open space.
- F. Identify and Protect Historic, Cultural, and Ecological Resources.**
- G. Foster Intermunicipal Cooperation and Involvement** – Coordinate efforts to encourage municipal interaction and planning on a watershed basis. Coordinate with and support the on-going efforts of the Darby-Cobbs Watershed Partnership and its members. Encourage watershed-based planning.
- H. Educate** – Educate residents, municipal officials, teachers and others, and increase awareness of the stream, the watershed, and its resources and problems.
- I. Improve Management of Land Activities that Affect Water Quality** – Fertilizer and lawn maintenance, animal waste, and hazardous waste degrade water quality and create non-point source pollution.
- J. Identify both long-term and short-term projects and “action items” to meet these goals.**

Some of the goals in Table VII-1 are quite general. Others are extremely ambitious. They reflect the issues of significant concern in the Watershed, many of which stem from the cumulative adverse effect of historic and recent land development in the Darby Creek Watershed. Accomplishing these goals will require concerted effort over many years. An important aspect of this listing of goals is that a major focus of action in the future will be at the



municipal level. While additional actions, and sometimes direction and guidance, will be needed from federal, state and county agencies, as well as businesses, non-profit groups and civic associations, the municipalities will be key players in the future of the Watershed. This is true for a whole range of issues, from floodplains, riparian buffers and wetlands to stormwater management, development patterns, open space and recreation. Each municipality (all thirty-one in the Watershed) can play a vital role in pursuing the opportunities to address these issues and improve the Watershed as it runs through the municipality. Cumulatively, these efforts will have a significant, positive impact on the Watershed.

However, the preceding paragraph is not intended to place the burden on municipal officials to solve these problems. In order to achieve the goals of this Plan, individual citizens, businesses, DCVA and other watershed organizations, nonprofit public-interest groups, utilities and authorities, and schools all have a role in improving the quality of the Watershed. To achieve the maximum beneficial impact, a fair amount of coordination will be necessary. However, no stakeholder should wait on the others before taking positive steps. Individual citizens need to advocate and support the long list of actions needed on the municipal level. The goals of the Plan will not be accomplished unless strong citizen support emerges to encourage local officials to take the necessary actions. Municipal officials face a range of important issues and it is important to keep Watershed concerns on their radar screen. Support from the business community is also critical. Support from individual businesses, trade groups and chambers of commerce is important in order to emphasize the value of the Watershed to the overall economic vitality of the region. Businesses do not want to locate in areas known for polluted streams. In contrast, a strong system of recreational areas and parks is often viewed as a significant asset to businesses. Enhanced recreational facilities, improved water quality, restored stream systems—all of these goals have been demonstrated to have positive economic effects on the total community. Support from politicians on a variety of levels, from federal to local, will be essential in order to achieve the many goals of this Plan -- whether that support come in the form of small grants to help achieve a particular neighborhood's goals or major capital commitments in order to remediate historic problems with infrastructure in the Watershed (such as the remediation of leaking sewer lines).

“Work together” is easy to say but much harder to do. There are many differences among the varied communities throughout the Watershed. However, all will benefit from general improvements in the Watershed. The goals set forth at the end of this Plan include a list of activities, some of which require considerable inter-governmental cooperation. Others can be initiated by a single person meeting with their neighbors and deciding to undertake an improvement project in their neighborhood park along Darby Creek. We hope that this Plan will



Figure VII-2 Flooding in the Lower Watershed continues to be a serious problem.

serve as a valuable reference. However, more importantly, we hope it serves as a springboard for action -- by individuals and groups, as well as by municipal, county and state governmental officials.

B. Watershed Conservation Plan Priorities: A Goal-Based Action Plan

An action plan, derived from the goals developed for this Plan, is set forth below. As these goals are identified, specific program actions are identified. Each of these actions is a step in the right direction to achieving the Plan's goals for the Watershed. Despite the length of the list, we hope that additional programs and activities will be identified as people read this Plan and look for opportunities to put it into action to solve Watershed problems and develop new opportunities for the Watershed.

Some work has already started. Some progress is already being made. Specific actions and projects are listed at the end of each goal discussion. This listing includes projects that have occurred in the recent past, active Watershed projects, including both PADEP's Growing Greener program and PADCNR projects which have been funded, as well as projects of merit which have been identified (and in some cases submitted to either PADEP or PADCNR in the past) and may be pending.

Some of these projects exemplify the goals of this Plan. For example, Dr. John Furth, a DCVA Board member, and others have spearheaded an effort to develop an Upper Darby Area Greenway. This greenway is mostly in Upper Darby Township, but also extends into the Boroughs of Clifton Heights, Aldan, Lansdowne, Darby, and Yeadon. This Upper Darby Area Greenway (Figure VII-3, on the following page) project builds on a previous plan developed by the Delaware County Planning Department some years ago but never implemented (The Darby Creek Acquisition Project and the more formalized Darby Creek Stream Valley Park Master



Plan, 1987). A special feature of the 4.25-mile Upper Darby Greenway plan is the linking together of multiple municipal and County recreational facilities and land holdings (some publicly owned but “undeveloped” at the present time). The large 15-acre creekside Thompson

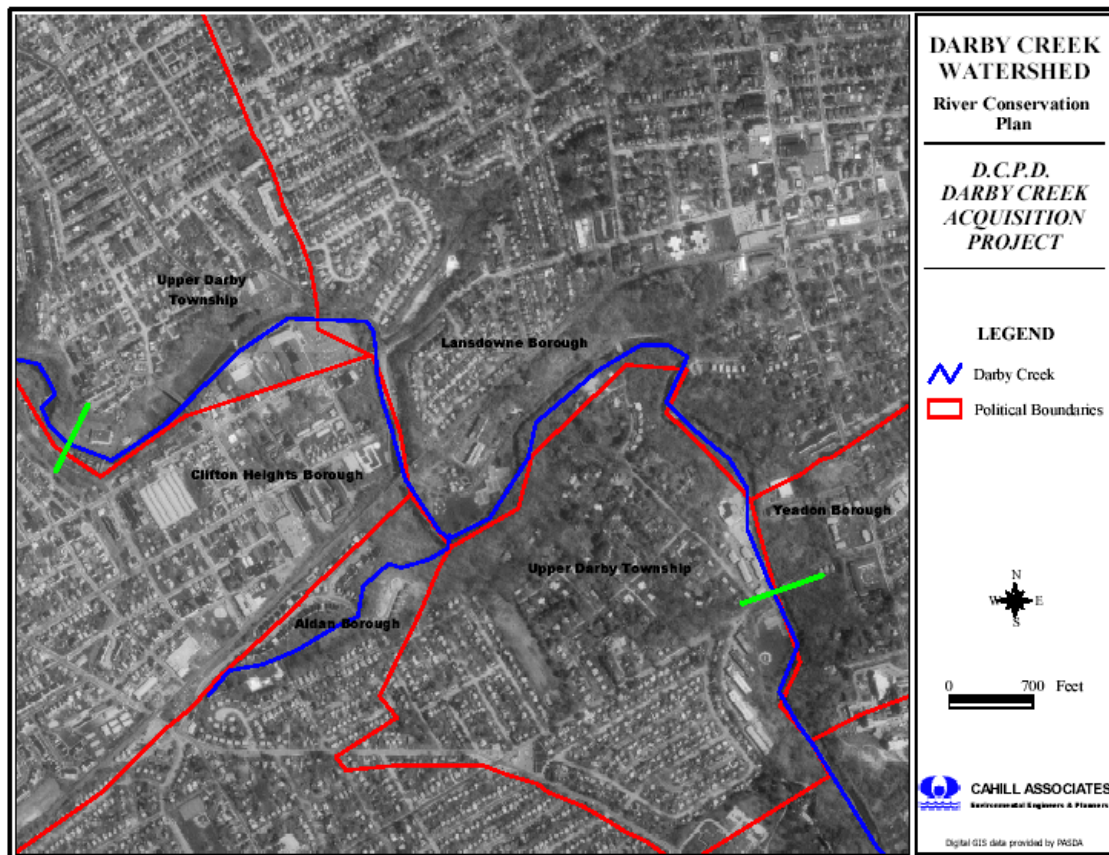


Figure VII-3 Upper Darby Creek Area Greenway (draft)

Tract (undeveloped but proposed for an assisted living facility; across Darby Creek from Lansdowne Borough’s Hoffman Park) could be connected. This greenway could also be connected to another riparian project in Darby Borough promoted by William Frasch, a DCVA Board member. The Upper Darby Greenway would connect important historical sites, such as the very significant Lower Swedish Cabin, in or adjacent to the Darby Creek valley as well. A hiking/nature trail would be an important feature of this Greenway. Some limited rights-of-way and/or acquisition of small parcels would help to make this Greenway a contiguous park. The project would enhance the productivity and level of use of existing recreational facilities being linked, which in turn would likely have a positive effect on the desirability and livability of the surrounding neighborhoods (and perhaps even their property values). The proposed passive recreational facilities would have immediate benefits to the many residents being served in this densely populated area and would not require driving for access, given the excellent public transportation facilities serving the area. Although the Upper Darby Area Greenway is listed



below under the Recreation/Open Space Goal E (more details are provided below), it is important to many of the other Watershed goals as well.

Another ambitious project with tremendous greenway potential is the Cobbs Creek area of the Watershed, extending from the Cobbs Creek Environmental Center in Philadelphia upstream to Haverford College several miles to the northwest (Figure VII-4, on the following page); these end points are not absolute; in fact, the Cobbs Creek Park extends farther downstream, connecting to the large Mount Moriah Cemetery complex. As discussed below, there is also a very interesting potential to connect the Cobbs Creek to the Darby Creek main-stem through the Merion Golf Club and Haverford State Hospital Site. This segment, the Upper Cobbs Creek Area Greenway, bisects an area of very high residential density and parallels the SEPTA Red Arrow Trolley Line from the City Line and West Overbrook Station to Pennfield, Beechwood-Brookline, Wynnewood Road, Ardmore Junction, Ardmore Avenue, and Haverford SEPTA Stations. City park (Fairmount Park) ownership extends from the Cobbs Creek Environmental Center to City Line (also adjacent to the large Philadelphia Electric County Club at Highland Park in Delaware County). Existing parkland extends upstream in Haverford Township on both sides of the Cobbs Creek, including several very significant historic properties, including the Grange Estate, Nitre Hall and the Lawrence Log Cabin. Though not dedicated parkland, Karakung Drive then parallels the Creek and the SEPTA rail facility, extending almost to Wynnewood Road and presenting very real greenway potential. Special accommodations would have to be made in the next half-mile portion of the corridor due to encroachment of residential development, but then the corridor opens into the Merion Golf Course on the west and then to Haverford College on the east. The College already offers a lengthy nature trail around the perimeter of its large campus with public access; this facility would provide a wonderful greenway anchor and overall destination for the Upper Cobbs Creek Area Greenway. Extending into the Philadelphia portion of the Greenway, the Cobbs Creek Master Plan (see description in Section VI) includes a variety of projects which would reinforce and build on this Greenway concept, linking to major existing facilities such as the Cobbs Creek Golf Course, the Karakung Golf Course, Morris Park, and many other adjacent uses and facilities.

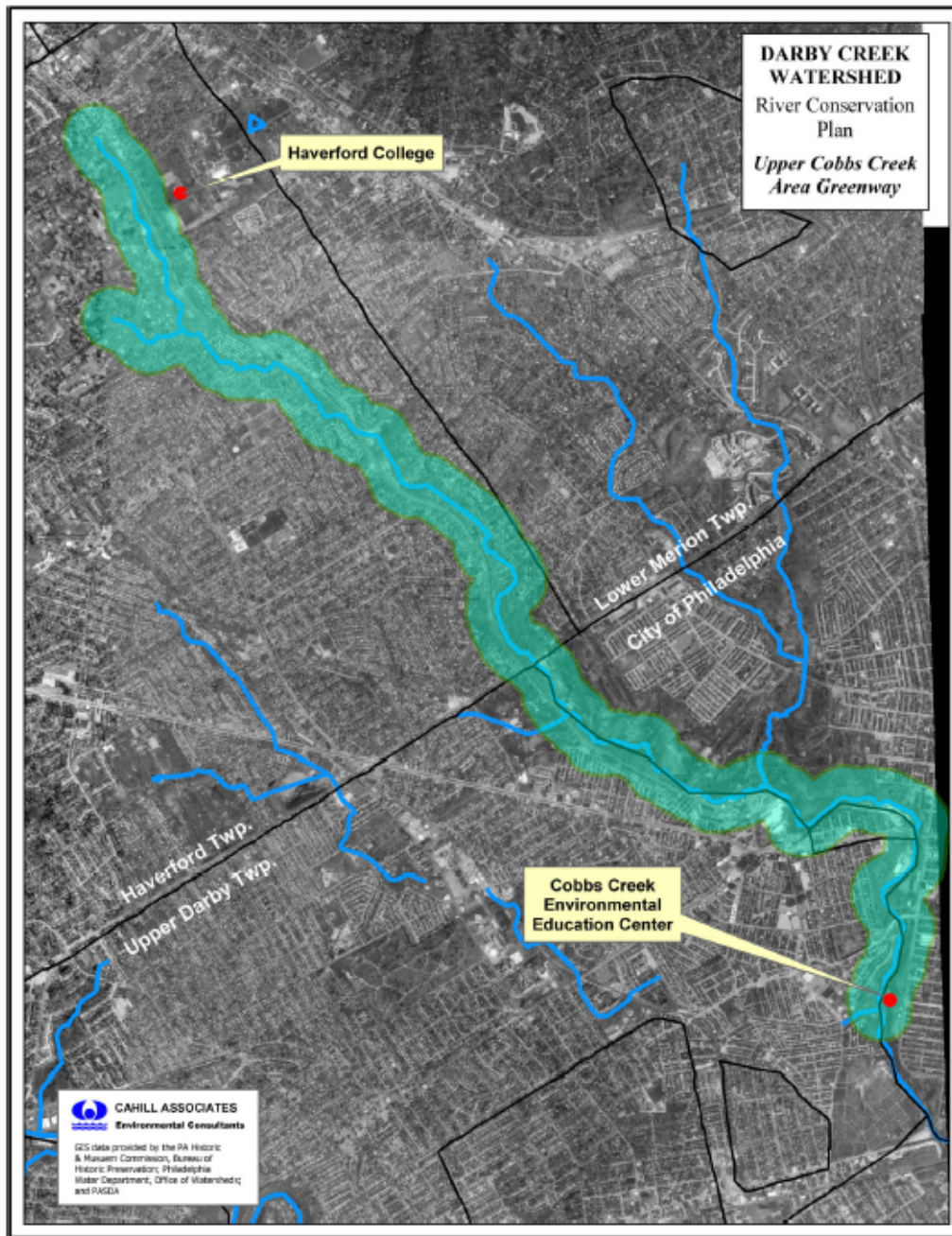


Figure VII-4 Upper Cobbs Creek Area Greenway



Another example of a zone of special greenway potential is located on the Muckinipattis Creek (the Muckinipattis/Glenolden Area Greenway; Figure VII-5, on the following page). If developed, this greenway would link two Glenolden municipal park complexes (Glenolden Municipal Park/Glenolden Park with park headquarters, tennis courts, and other facilities as well as an unnamed open space/park facility upstream bisected by Hibbs Avenue and the Creek) with adjacent institutional uses (the Community Bible Church and Glenolden Elementary School) and the historic Glenolden Library (an architecturally important 1939 structure which has undergone several renovations and is now part of the Delaware County Library System). In so doing, the recreational use and value of these existing facilities could be significantly increased, with relatively little additional work. Ultimately, these enhanced facilities, with revitalization of facilities such as the library, can reasonably be expected to translate into a community anchor, providing economic stimulation for the broader Glenolden community and positively affecting adjacent land values, both residential and commercial.

Other Darby Creek-related projects are being considered and proposed in other communities. In Radnor Township, for example, the Township's existing Open Space Plan already has identified Creek-related projects (also including important tributaries of the Darby Creek). A trail system is under consideration as well. Radnor Township has recently completed its Comprehensive Plan Update, which builds on the goals established in this Plan and the actions being recommended. In Springfield Township, a variety of initiatives are being taken to remedy existing stormwater problems, exacerbated by the total burial of several sections of the stream. In terms of land development, citizens united to argue for better, more environmentally sensitive land development concepts during the recent Coventry Woods development meetings. In Haverford Township, the re-use of the keystone Haverford State Hospital site (Figure VII-6, on the following page), certainly the largest development (or re-development) site in the Watershed epitomizes virtually every issue discussed in this Plan. This Plan argues strongly for conservation-oriented planning concepts at this remaining ecological "island" in the Watershed.

One step at a time, it is possible to imagine each community or even groupings of communities coming together and establishing localized greenway systems. In time, as these more focused projects emerge, DCVA's ultimate vision of a total Darby Creek Greenway, as discussed in the next section, will then come to fruition.

Of course, major program efforts such as the Act 167 Stormwater Management Plan will be continuing months (or years) after this Plan is completed. Elements of this effort will both directly and indirectly relate to Plan goals. In the case of Act 167, model stormwater management ordinances will be drafted and must be adopted by the respective municipalities. Other specific projects may also "spin off" from this Act 167 effort. Obviously, it is critical that the Act 167 Plan be compatible with the Plan's Goal-Based Action Plan.

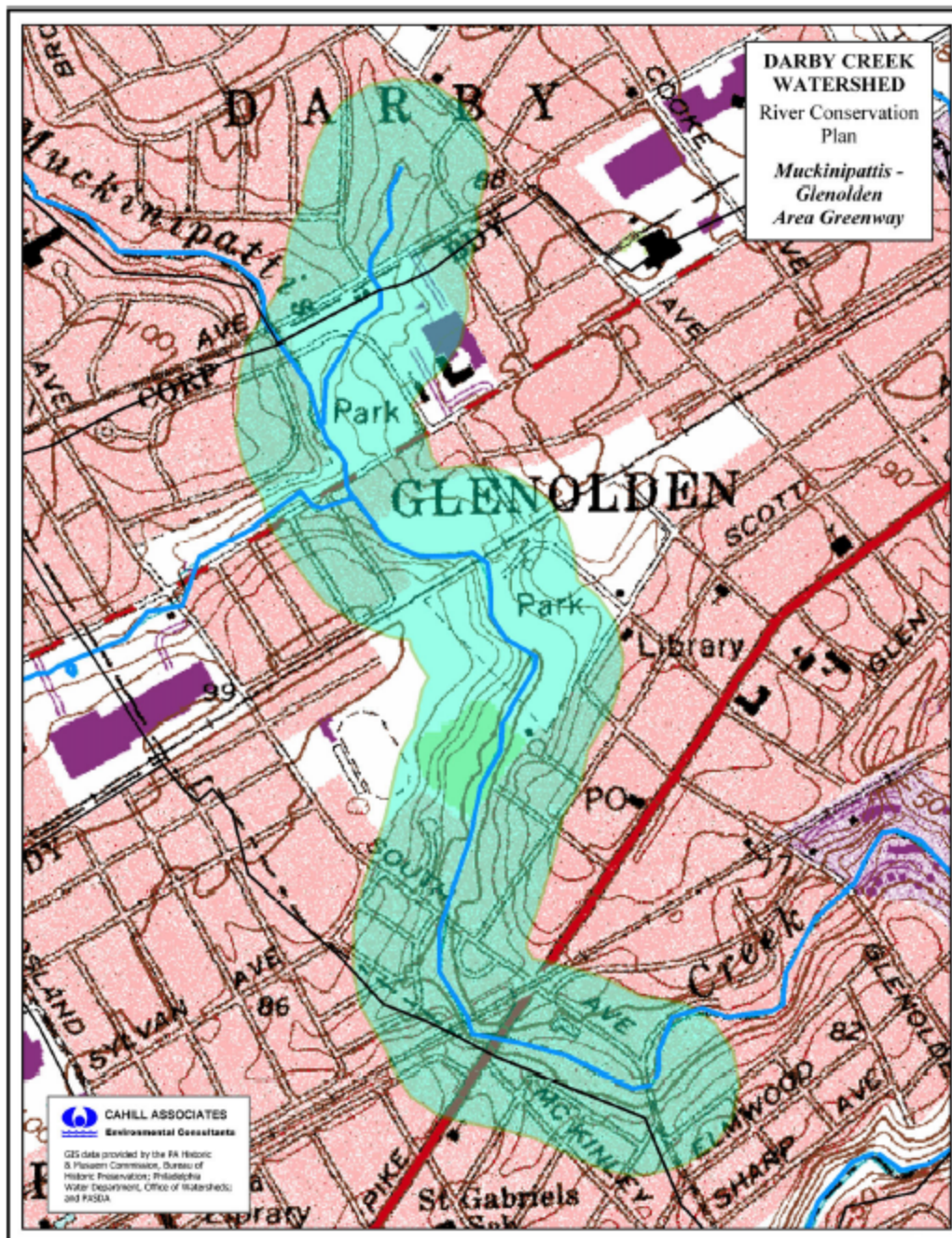


Figure VII-5 Muckinipattis / Glenolden Area Greenway



Figure VII-6 Haverford Hospital Master Plan (<http://www.pahouse.com/vitali/haverford/>)

At the same time, an important distinction between the Act 167 Stormwater Management Plan and implementation of model ordinances needs to be made in terms of this Plan. These Act 167 requirements address new land development projects, not remediation of existing stormwater management problems. Although the Conservation Plan is not permitted to legally encroach on Act 167 areas and new land development projects (“new” here should be understood to include all re-development projects which would be subject to municipal subdivision/land development regulations), on the other hand, remediation and restoration need to be addressed and have been included in the Program Actions in this section. Unfortunately, remediative and restorative projects tend to require considerable funding. They tend to be systemwide (i.e., reconstruction of a municipality’s storm sewer systems) and in a sense even more challenging than removal of specific structures in the floodplain.

Similarly, the Darby-Cobbs Partnership work program, including a host of actions being taken by the Philadelphia Water Department (such as a possible TMDL), will continue. An important element here is the watershed management plan effort, which again hopefully will further reinforce efforts to implement the Plan’s Goal-Based Action Plan.

We should also note that this Plan effort with its recommendations builds on a very important planning effort undertaken throughout Delaware County several years ago - the Delaware County Open Space Project. In fact, many of the specific goals, actions, and projects envisioned as part of this Darby Creek Plan are borne out of this effort. The Delaware County Open Space Project Recommended Strategy (1996), for example, identified Stream Corridor Acquisition, Protection, and Enhancement Grants and Natural Resource Protection Grants as of the highest



priority in their overall recommended \$100 million bond program. Unfortunately, this program was never approved.

C. The Darby Creek Greenway Vision

In the course of assembling information for this Plan, a variety of resource inventories have been developed. These have been presented and discussed in previous sections. These resource inventories are critical when taken and understood individually, constituting important independent resource elements in the Watershed. But their significance is even greater when these resources are linked and viewed together in a “ribbon of green.” The synergy of these various components is the core of the Darby Creek Greenway vision.

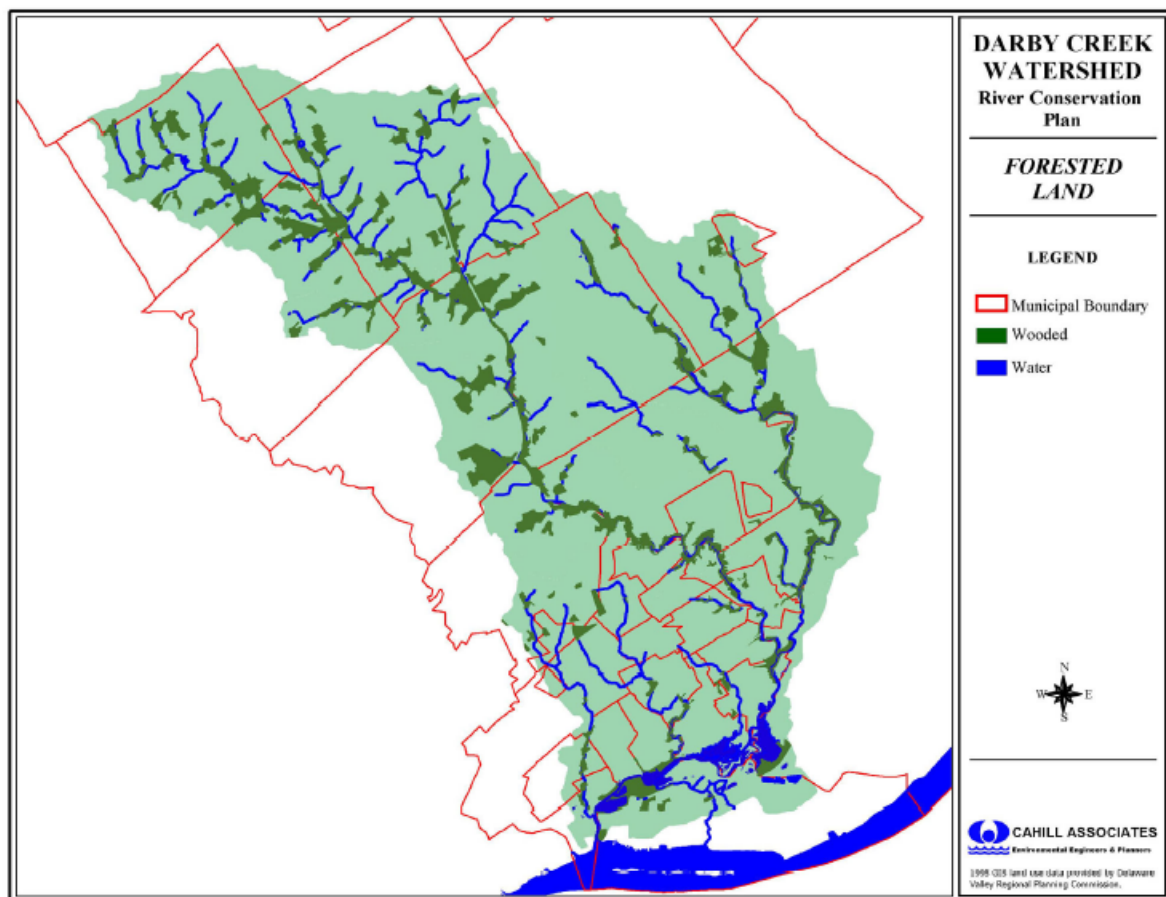


Figure VII-7 Wooded Areas in the Darby Creek Watershed, (DVRPC 1995)

For example, Figures VII-7 through VII-10 recap existing wooded areas in the Watershed, existing wetlands and floodplains in the Watershed, existing recreational facilities and major recreational focal areas in the Watershed, and the most prominent historical and cultural



resources in the Watershed (we have acknowledged that in virtually all cases, there are more resources existing than are shown on these maps, due to the limitations of our data sources).

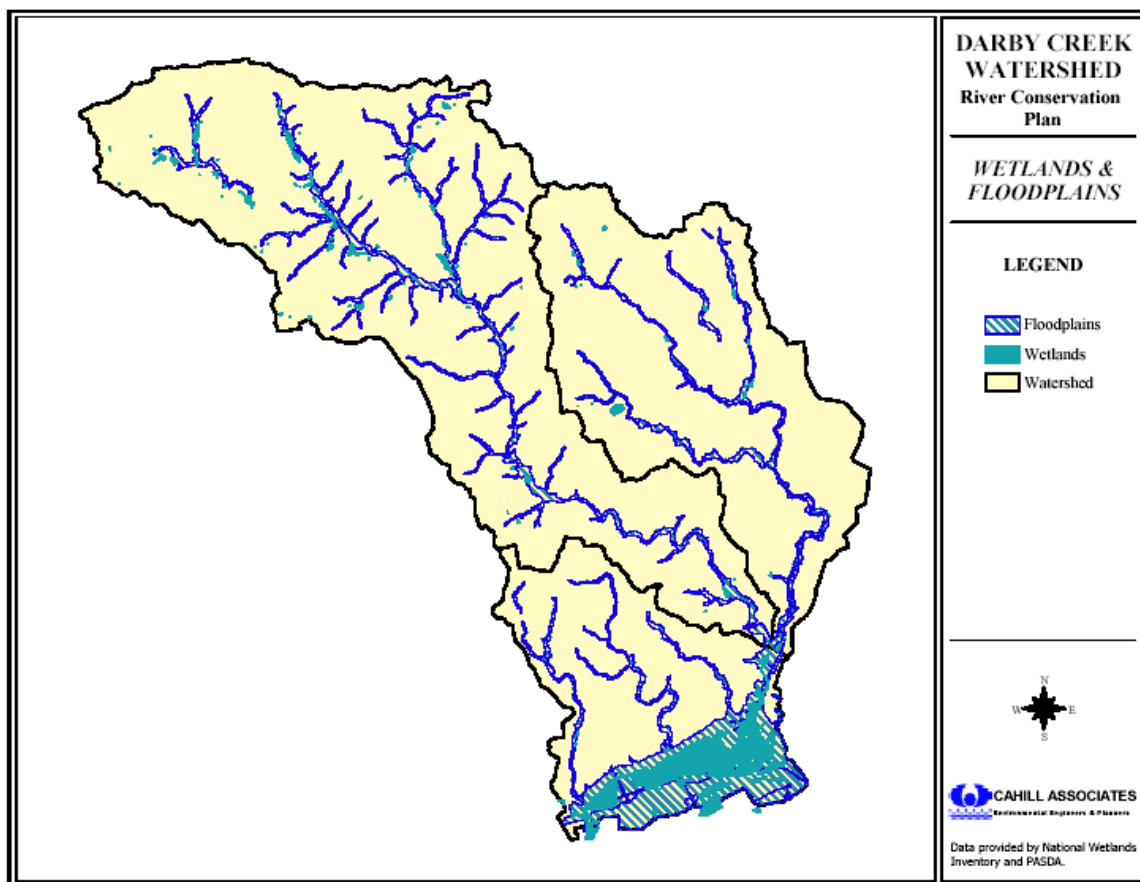
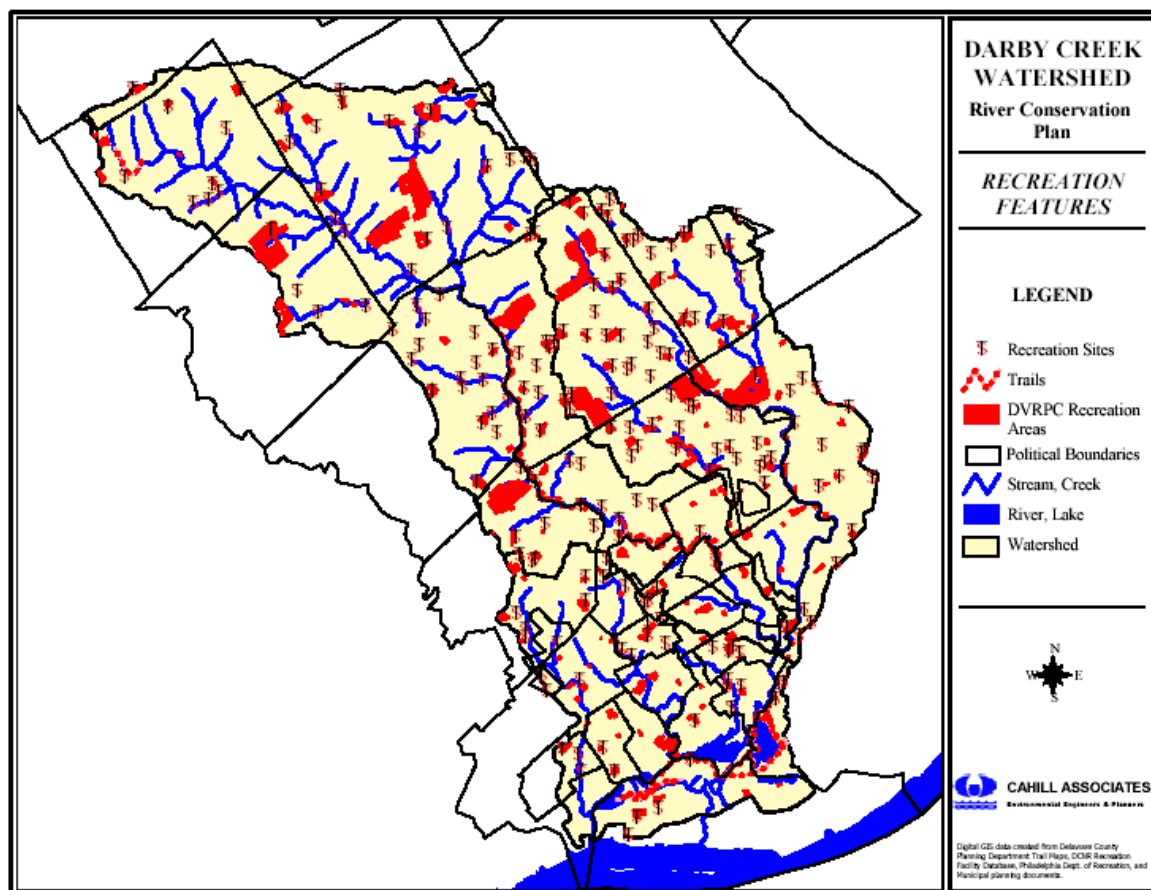


Figure VII-8 Wetlands & Floodplains in the Darby Creek Watershed (NWI, FEMA)

Additionally, Figure VII-11 represents a composite of projects, which have specific locations and therefore can be mapped, as taken from the ever expanding lists of Specific Projects at the end of this section, presented goal by goal. Some of these projects are completed, some of these projects are approved and funded and some of these projects are still very much in the future tense and are not committed but have been given serious thought and attention by a wide variety of project sponsors. In any case, these projects represent levels of interest and levels of commitment already existing by a number of different Watershed municipalities, conservation groups, and other interested stakeholders.



*Figure VII-9 Recreation Features in the Darby Creek Watershed
(DVRPC 1995, Municipal Documents, var.)*

Figure VII-12 (on the following page) represents a composite of these resources. A compelling “ribbon of green” pattern emerges in this Watershed, the vision for the Darby Creek Greenway. The resources together create a critical lineal system of those remaining cultural and ecological resources in this heavily developed-altered-impacted Watershed. The ultimate vision of the Greenway would come to be full implementation of the Goal-Based Action Plan, as set forth below, to the maximum degree, integrating conservation of critical ecological values with the remarkable historical and archaeological features present here, all linked through a complex of active and passive recreational elements. The potential user benefits of the Greenway, given the large Watershed populations involved here, would be enormous, especially when understood in the context of the many community needs characterizing so many of the existing municipalities.

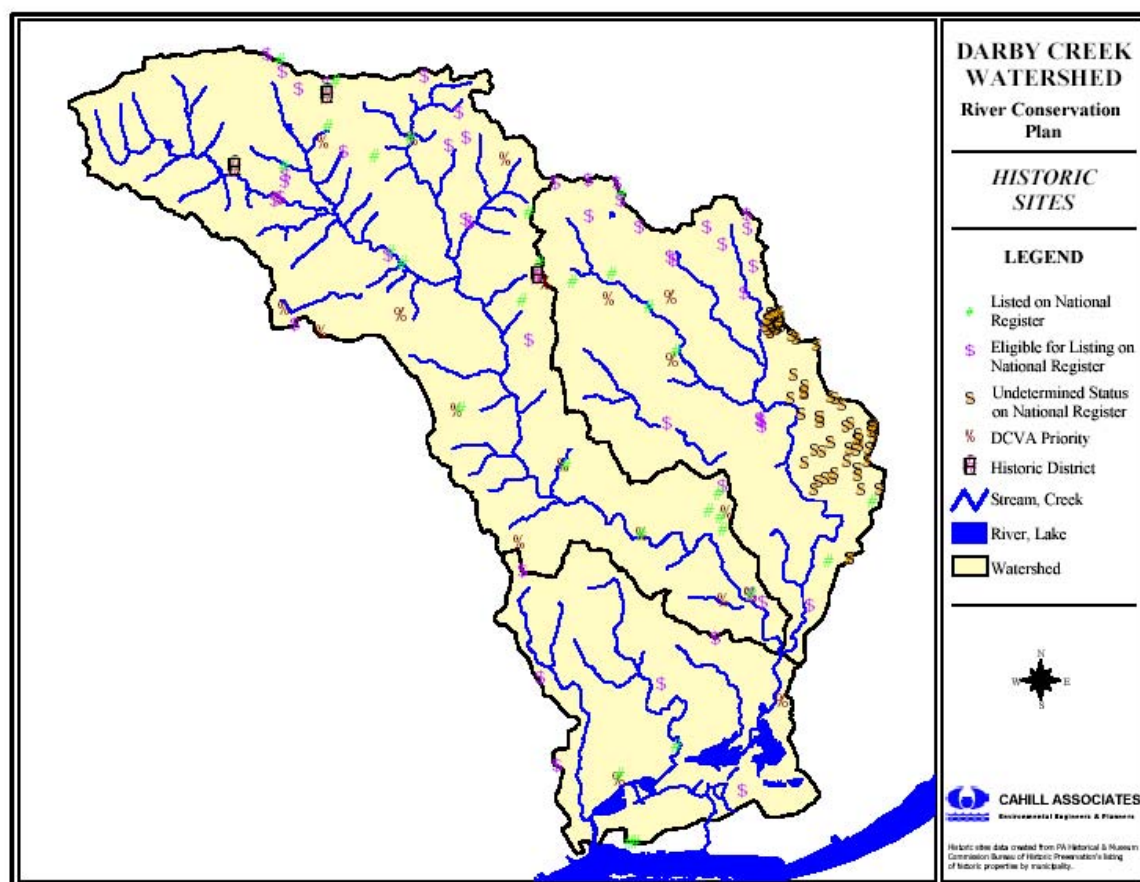


Figure VII-10 Historic Sites in the Darby Creek Watershed (PA H&MC, 2001)

The potential benefits could even reinforce economic revitalization efforts underway in the Watershed.

The greenway vision offers exciting potential for linkages even within the Watershed. For example, at one point in Haverford Township, the Cobbs Creek and Darby Creek main-stem are quite close. In fact their proximity is made the greater by the fact that two “green” and institutional or quasi institutional uses (the very large private Merion Golf Course East and West facilities that serendipitously extend in a largely east-west direction as well as the enormous Haverford State Hospital Site) happen to be strategically located between the Darby and the Cobbs in such a way that a potential link of some sort is likely to be feasible. Linkage would extend to the large Haverford College site as well. If greenway facilities can be developed along the Darby and along the Cobbs, this connection between the two would increase their importance tremendously.

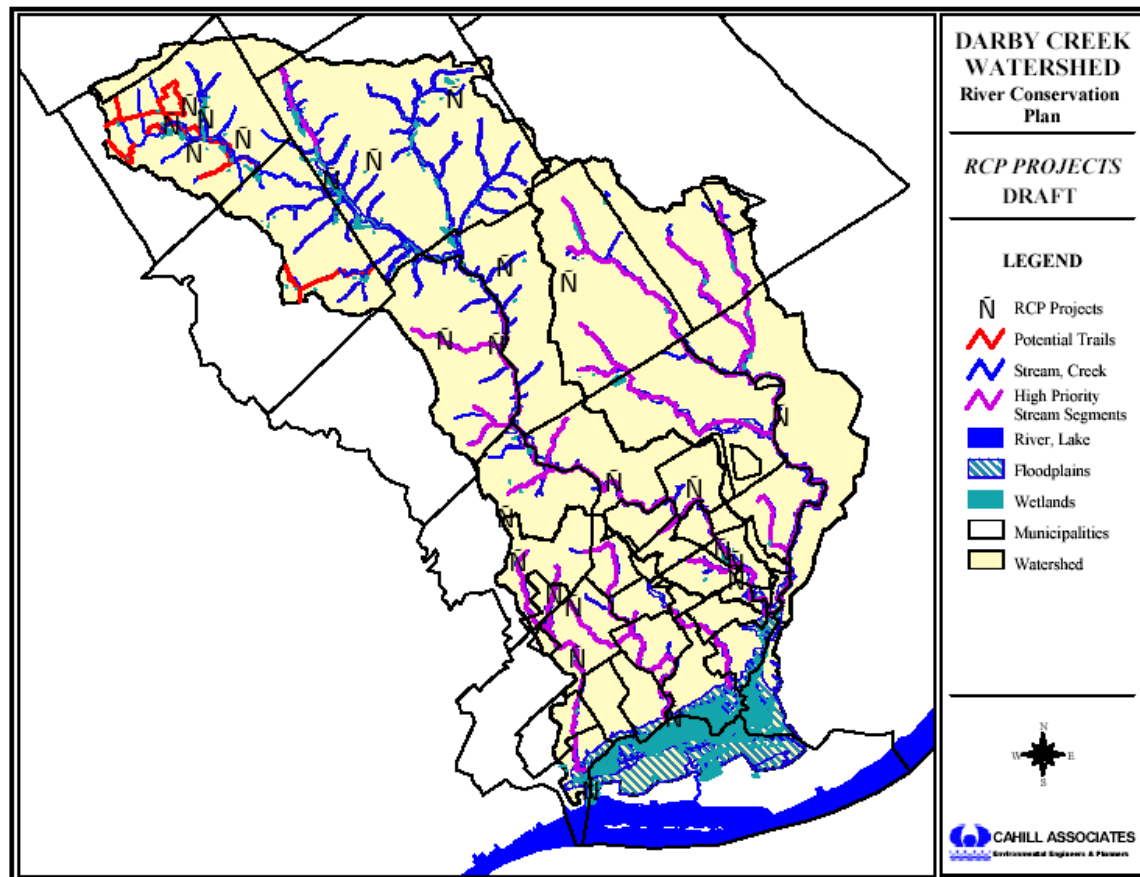
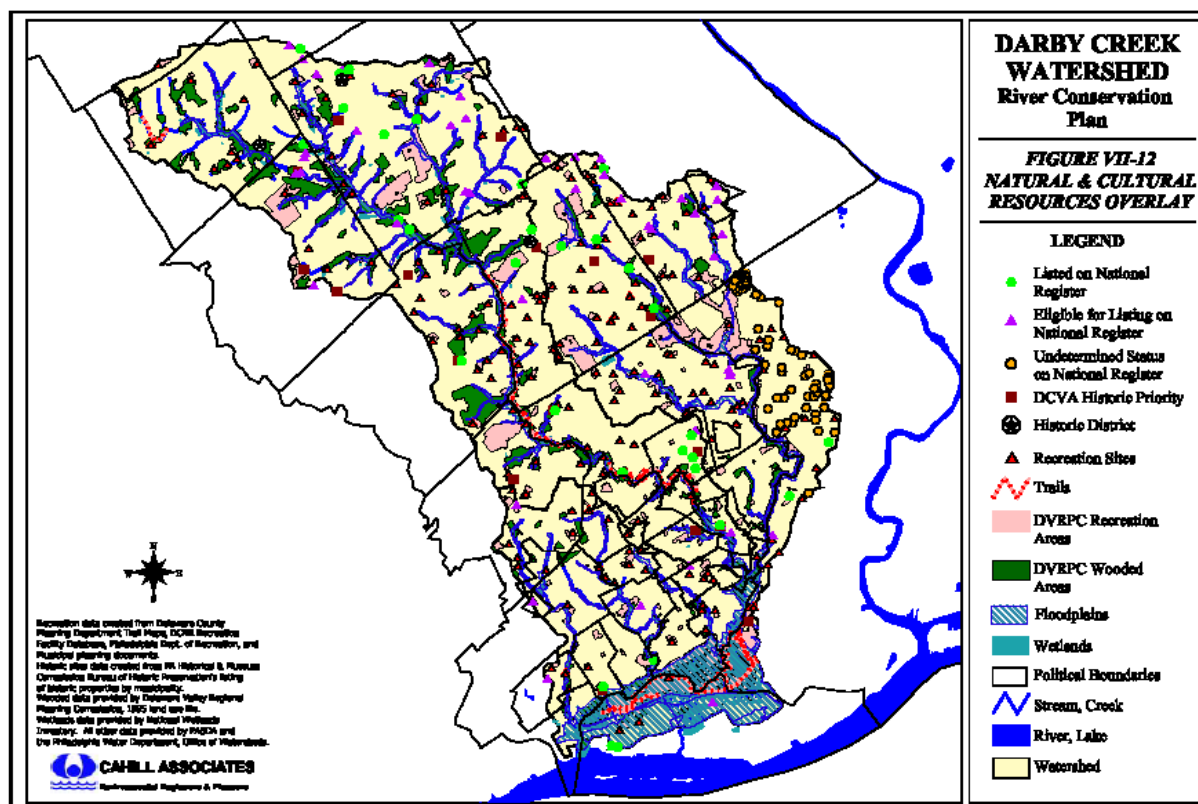


Figure VII-11 River Conservation Plan Project Recommendations (draft)

The greenway vision can even be extended to linkages with neighboring watersheds. For example, similar networks and nodes of potential greenway development exist in the adjacent Crum Creek Watershed, where potential linkages could be made over time. Ultimately, this kind of connection could serve to unite broader regional networks of greenways and provide enhanced recreational functions, as well as opportunities for habitat and other ecological values.



The Darby Creek Greenway Vision is just that—a vision—for the moment. Implementing the concept, some might argue, borders on the utopian and in any case can be expected to be extremely challenging. Nevertheless, this unifying concept can be extremely useful in the shorter term as a guide to step-by-step implementation, as Municipality A puts in place a mile of streambank and riparian zone restoration, as Municipality B develops a walking/biking trail, as Municipality C mounts preservation efforts for valuable historical mills and other floodplain structures and as authorities begin to plan for streamside interceptor sewer reconstruction. Ultimately, the puzzle will begin to fill in and take shape. And the Vision will become real.

D. The Goal-Based Action Plan

In the next section, the Goal-Based Action Plan is presented. Goals are most fixed, Program Actions somewhat less so, with Specific Project Actions most open-ended. Over time, as this Plan is put into action, Program Actions may be modified and added. Hopefully, Specific Project Actions will be substantially expanded as more Watershed stakeholders understand the importance of Plan implementation. Following the Action Plan is a presentation of funding opportunities which can help stakeholders in their project development process.

Some of the Specific Projects listed below are future tense; some are present tense (approved and/or ongoing); some are past tense (completed). Strong feeling by planning process



participants existed to include all of these projects. In some cases, the listings include special studies and work efforts which are not specific physical projects but which represent important actions which have been, are being, and will be taken by important actors and groups of actors in the Watershed, specially related to the Goals and Program Actions which have been set forth in this Conservation Plan. Implementation of the Conservation Plan involves much more than simply undertaking a long list of Specific Projects which are geographically located and physically defined, as important as these might be. Many of the “projects” obviously involve development of better codes and ordinances, preparation of more detailed studies, and so forth. Easttown Township’s new Comprehensive Plan, for example, includes multiple planning recommendations, both general and specific, which serve to implement the Goals and Program Actions set forth in this Darby Creek Watershed Conservation Plan.

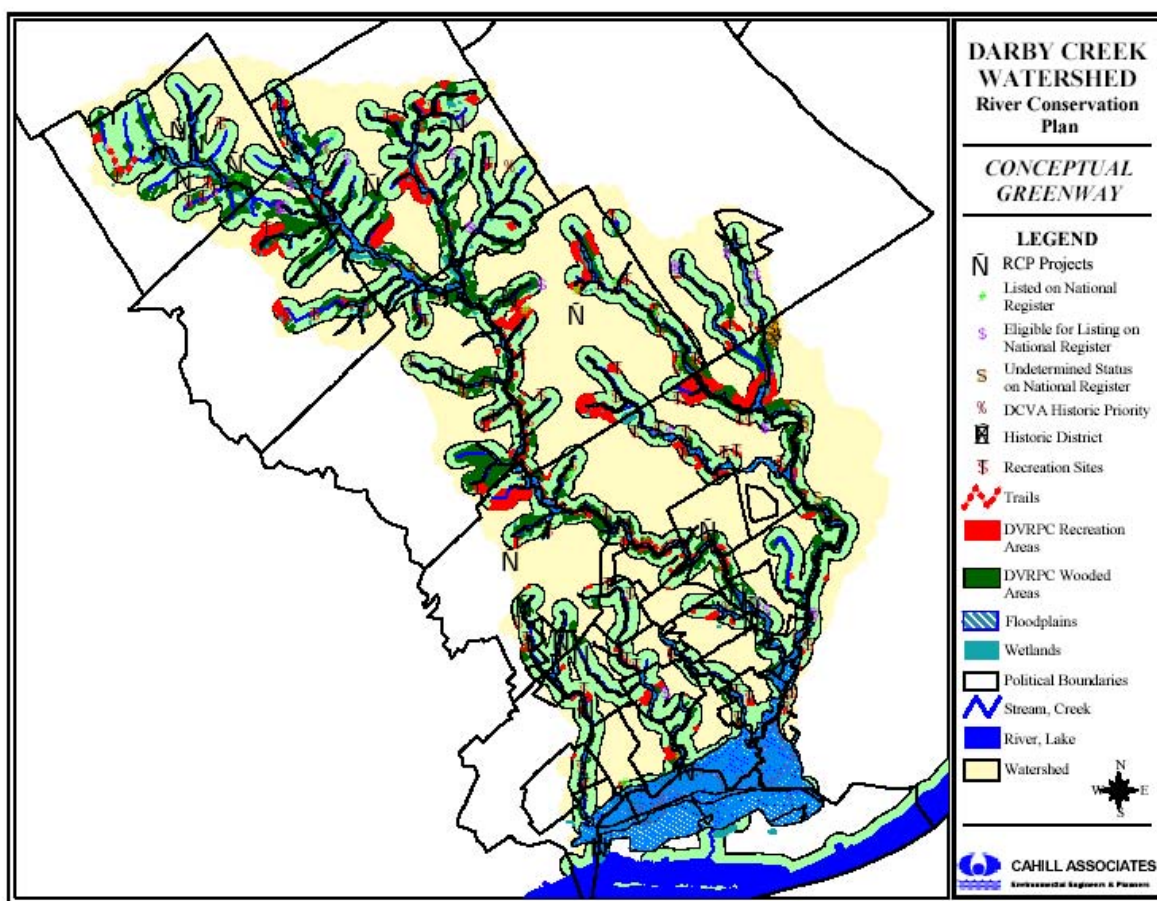


Figure VII-13 Darby Creek Watershed Greenway Analysis Results (see figure i-1 for more detail)

Finally, the entire body of Conservation Plan recommendations, including Goals and Program Actions and Specific Projects Actions, constitute an ambitious program of Watershed conservation. Although some recommendations are generalized, considerable effort has been made to assign responsibilities. For example, municipalities emerge as central in the Watershed



conservation campaign, in order to achieve many of the Goals identified. Specifying who needs to do what on the one hand runs the risk of overwhelming, possibly even alienating Watershed stakeholders. Incremental efforts will be important to move from short run project success to long run goal achievement. Nevertheless, the Conservation Plan strives to “put it all together,” balancing the need for a generalized vision together with the need to be as specific as possible.



GOAL-BASED ACTION PLAN FOR DARBY CREEK WATERSHED CONSERVATION PLAN

GOAL A. RESTORE STREAM AND TRIBUTARY CORRIDORS, PROVIDE RIPARIAN BUFFERS, AND PROTECT AND RESTORE WETLANDS

Program Actions

Stream Protection/Restoration

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Encourage adoption of improved and more rigorous floodplain, riparian, and wetlands regulations.
- Apply for grants and work to identify those most highly impacted stream segments where restoration is of greatest concern (issues include streambank stabilization and restoration, canopy restoration, removal of abandoned/dysfunctional bridges and other structures, re-vegetation, etc.).
- Apply for state and other grants to restore high priority stream segments.
- Canvass funding/grant sources such as Federal 319, USDA, NRCS, CRP Pennsylvania's Growing Greener, Stream Releaf, the North American Wetlands Conservation Council and other such programs for application for all projects under Goal A.
- Work to educate the public regarding the functional importance of stream corridors, floodplains, riparian buffer zones, and wetlands (all of the targeted elements of Goal A).
- Encourage integration of state-of-the-art floodplain, riparian buffer, and wetlands protection and restoration techniques into municipal programs and at all of their facilities (e.g., municipal maintenance crews, see Radnor Township below, could immediately start to refrain from mowing to streambanks, allowing wider and healthier riparian buffers to emerge).



Riparian Buffer Protection/Restoration

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Encourage adoption of riparian buffer ordinances in their respective zoning codes.
- Apply for grants to study in detail the riparian corridor extant throughout the Watershed and prioritize zones of riparian need, building on Heritage Conservancy work.
- Apply for grants to implement specific riparian buffer projects (i.e. re-vegetation) based on priorities established by the study described above.
- Educate site owners and encourage them to establish riparian buffers with proper re-vegetation where these buffers have been removed. This can be done with the assistance of state and other grants to cover direct/indirect costs (see above).



Figure VII-14 Springfield Township Stony Creek Restoration Study Site

Wetlands Protection/Restoration

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:



- Reinforce State and Federal regulation of wetlands.
- Initiate projects to replace lost wetlands and acquire existing wetlands with assistance of state and other grants to cover direct/indirect costs.
- Encourage municipal stormwater management programs to promote the recharge of groundwater and overall maintenance of the water table in order to protect the hydrologic connection so critical to wetlands formation.

Specific Projects

Radnor Township

- Consultant Steve Kosiak volunteered to work with Radnor Township's EAC and Shade Tree Commission to introduce streambank restoration to Radnor with a demonstration project that restored 40 ft. of streambank on Little Darby Creek at the Willows.
- Radnor Township's EAC applied for and was awarded a \$50,000.00 matching PADEP WRAP grant for streambank restoration. Consultant John Munro of Munro Ecological Services led Township staff and volunteers in restoring 200 ft. of stream bank on Little Darby Creek at the Willows.
- A "no mow zone" policy was established for creeks and streams as they pass through Township and School District properties to allow small natural riparian buffers to develop.
- Fish Habitat Restoration Project: Radnor Township's EAC applied for and received a \$2000.00 grant from the Pennsylvania Fish and Boat Commission with the assistance of PFBC Habitat Manager Karl Lutz for stones needed for the in-stream project. Consultant Steve Kosiak secured necessary logs and manpower and machinery. Under Lutz's supervision, fish habitat restoration devices using stones and logs were installed on Darby Creek as it runs the length of Saw Mill Park. Streambank restoration was a fundamental part of the project.
- Saw Mill Park, a linear park adjacent to Darby Creek, was developed into a natural filtration system with pervious pavement used for pedestrian pathways, a large wildflower garden area planted, existing wetland boundary defined and protected and neighbors volunteering on an ongoing basis to plant donated native trees, plants and shrubs.
- John Munro of Munro Ecological Services was hired by Radnor Township as a consultant to address environmental issues affecting Township parks. Radnor's Parks and Recreation Department under Director Tom Blumstrom with assistance from Radnor's EAC introduces annual series of invasives workshops at parks throughout the township where Munro



educates residents, township staff and other volunteers how to identify and remove invasives followed by replanting of native species of trees, shrubs and plants. These workshops include streambank restoration since they usually take near streams, creeks or ponds.

- Riparian Buffer Protection ordinance enacted.

Heritage Conservancy Riparian Project

The Heritage Conservancy of Delaware County is currently undertaking a detailed inventory of the riparian buffer in the Darby Creek Watershed to result in prioritized analysis of riparian buffer needs.

City of Philadelphia Fairmount Park Commission Cobbs Creek Park Master Plan 1999 see Section II)

This plan includes 68 high priority restoration projects within the Cobbs Creek systems of parks. Examples of projects include: Tributary 5 - restoration through improvement of stormwater outfall, repair of stream banks, removal of Woodland Avenue dam; Middle Park Area - new environmental education center and creation of a floodplain wetland near the new environmental center; Upper Park Area - removal of Millbourne Dam, protect/enhance scenic zone downstream of dam site and between Cobbs Creek and Karakung Golf Courses; riparian forest restoration and streambank stabilization near Hole 5 of Cobbs Creek Golf Course; trash removal/streambank stabilization/trail crossing improvement/exotic plant control on tributary upstream of Millbourne Dam; general restoration activities/wetlands enhancement in tributaries in Karakung Golf Course; scenic enhancement of waterfall on Indian Run; stream-side plantings of native vegetation along tributary in Cobbs Creek Golf Course. Also see project below. Hopefully, the Master Plan set forth by the City will be extended by both Delaware and Montgomery Counties in the future for their portions of the Cobbs Creek system.

City of Philadelphia Sustainable Approach to Stream Habitat in an Impaired Urban Stream and Wetlands Inventory

This \$140,000 Growing Greener grant assists in the implementation of a sustainable approach to stream habitat restoration, including mitigation of urban impacts and related hydrologic and hydraulic modifications. The project includes restoration of 1,000 feet of Cobbs Creek between Pine Street and Cedar Avenue, using natural techniques, beginning 2002. The City of Philadelphia Streambank Project currently underway will include completion of a restoration master plan for the Cobbs Creek system.

City of Philadelphia Wetlands Inventory

The City with USEPA grant assistance has inventoried Cobbs Creek corridor wetlands to serve as the basis of a protection and enhancement program. The Fairmount Park Commission also has undertaken wetlands construction and restoration projects.

Marple Township



- \$68,225 for Lawrence Road/Darby Creek bank stabilization from PADEP Year 2 Growing Greener grant.
- Applied for Growing Greener grant for stormwater management and streambank restoration on Langford Run from Davis Avenue to Route 476 (the Blue Route) where it runs into Darby Creek.

Darby Borough

Two \$25,000 WRAP grants from PADEP (1999 and 2000) for streambank stabilization and riparian plantings above MacDade Avenue Bridge (in PennDOT redesign/reconstruction); see William Frasch of DCVA.



Figure VII-15 WRAP grant project area in Darby Borough with homes removed

Easttown Township Comprehensive Plan

Specifically recommends that wetlands and riparian zone buffers be required/protected along all township streams, through new overlay district zoning provisions.

Munro Report Projects

See below.

Haverford Township Streambank Gabions



Several projects in recent years.

Morton Borough Stony Creek Tributary Streambank Restoration

Growing Greener grant application for area below Providence Road, including rip-rap, bio-logs, re-vegetation.

Ridley Township Stream Restoration

Stream restoration through the Pennsylvania Conservation Corps applying bio-engineering techniques (native plantings, coconut fiber logs, rip-rap, willow shoots) to a small section of Stoney Creek (between MacDade and 4th) and Shipley Run (terminus of 6th).

Springfield Township Stony Creek Restoration

Growing Greener grant applications for various restoration works.

Springfield Township West Rolling Hills Park

Restoration/preservation of floodplain and riparian buffer at FEMA mitigation site.

Tinicum Township's Longhook Creek Project and Related Projects

Remove obstacles/construct a connection between the Delaware River and Darby Creek and create adjacent wetlands along the Long Hook Creek Corridor. Objectives of the project are to reduce flooding in surrounding residential neighborhoods from existing sources and from new non-residential development in the area and to generally promote better stormwater management through provision of larger water storage areas.

Glenolden Borough

Streambank stabilization and riparian buffer restoration along 1,500 ft of the Muckinipattis Creek in Borough properties, at Glendale Heights at the intersection of MacDade Boulevard and South Avenue. Growing Greener grant not submitted due to lack of sponsor.

Delaware County Open Space Project

This project was not approved but intended to provide stream, riparian, and wetland protection through a variety of land acquisition efforts.



GOAL B. RESTORE FLOODPLAIN WHERE FEASIBLE – REMOVE FILL AND ABANDONED STRUCTURES. PREVENT FUTURE FILLING AND ENCROACHMENT.

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Encourage regulation of floodplain encroachment more thoroughly, prohibiting structural encroachment and even disturbance of the natural floodplain vegetation/soil mantle. These restrictions should go beyond the minimum FEMA requirements adopted by Watershed municipalities.
- Apply for grants to remove abandoned structures in the floodplain.
- Educate existing owners to seek alternative locations for their land uses, residential and other. Explore nonfinancial incentives, positive and negative, for discontinuation of existing uses in floodplains.
- Use special grant programs (e.g., FEMA's Hazard Mitigation Grants, Repetitive Loss Buyouts, subsidies available from the Pennsylvania Department of Community and Economic Development, etc.) to buy out existing uses and remove structures and fill-in areas of greatest need.

Specific Projects

Radnor Township Comprehensive Plan Update

Recommends directing development to areas of minimum sensitivity and prohibit development in areas such as wetlands, floodplains, riparian zones and steep slopes.

FEMA Residential Removal

Removal of 6 homes at West Rolling Hills Road Park site in Springfield Township. Removal of 38 homes in floodplain from MacDade Avenue Bridge to Bartram Park in Darby.

Munro Study 1997

This special study, *Floodplain Study and Conceptual Plan for Colwyn, Sharon Hill, and Darby Boroughs*, analyzes flooding and other Creek problems and identifies a variety of solutions for this lower portion of the Creek. Although the main focus of the study and study recommendations is the elimination of the flooding problems plaguing the area, water quality is



also addressed extensively. This excellent report includes recommendations as follows: multiple offstream storm basins, oversizing storm basins elsewhere in the Watershed, retrofitting parking lot stormwater storage, roof runoff into dry wells, low-head temporary storage in parks, porous pavement and other infiltration techniques, conversion of lawns to forest, sealing off sewers, and others. Recommendations are made for removal of abandoned and dysfunctional impoundment structures in the Creek in the Study Area.

City of Philadelphia Fairmount Park System's Cobbs Creek Park Master Plan

Includes projects which are designed to increase the integrity of the floodplain, including re-vegetation, removal of structures and impoundments such as the Millbourne Dam and Woodland Dam and others.

Ridley Township Flood Project

Township constructed a detention facility in this generally developed area in 1997 at Shipley Farm, a naturally low lying area along an unnamed tributary of the Muckinipattis upstream of the SEPTA Railroad (near Dale Road and Secane Road) using a Pennvest loan. Some wooded area was disturbed; trees were replanted.

Tinicum Township's Longhook Creek Project and Related Projects

Remove obstacles/construct a connection between the Delaware River and Darby Creek. Create adjacent wetlands all along the Long Hook Creek Corridor. Objectives of the project are to reduce flooding in surrounding residential neighborhoods from existing sources and from new non-residential development in the area and to generally promote better stormwater management through provision of larger water storage areas.

Colwyn Borough

Potential for removal of abandoned buildings with floodplain restoration.



GOAL C. IMPROVE STORMWATER MANAGEMENT – MANAGE STORMWATER QUANTITY AND QUALITY FOR BOTH NEW DEVELOPMENT AND RE-DEVELOPMENT.

Program Actions

- Encourage adoption of more rigorous municipal stormwater management regulations which regulate total quantity/volume as well as water quality. The Plan advocates that the model stormwater management being developed pursuant to the Act 167 Stormwater Management Plan for the Darby Creek comprehensively address peak rate reduction for both large and small storms, control of total stormwater volumes in order to promote infiltration and recharge for water table and stream baseflow maintenance, and the full range of water quality objectives, including temperature.
- Existing Development: For all those existing sites with either no stormwater management or partial/ineffective management (i.e., detention basins), the Plan advocates a program of education to make basin owners understand the need for corrective action. The Plan recommends that municipalities, watershed organizations such as DCVA, and other private entities use state/federal/other grants in the future to retrofit any existing basins for better quality/quantity functioning. Municipalities and/or groups of municipalities should consider undertaking special stormwater flooding mitigation projects with areawide benefit for the most serious problem areas. These projects might include specific structures as well as more nonstructural basin-wide actions. Although all available state and federal grant sources should be pursued, use of areawide multi-municipal stormwater utilities as is being done in other states should be investigated (possibly requiring modification of State laws) in order to equitably defray costs of such facilities.
- In those situations where no stormwater management exists, special studies and use of state/federal/other grants will be necessary for structural measures to mitigate existing stormwater/flooding problems, possibly to be accomplished through multi-municipal planning efforts.
- Municipalities should work together, assisted by county governments, in developing their respective permit programs under the new NPDES Phase II program. Given the large number of Watershed municipalities (31) involved in this program together with the extreme limitation of municipal resources and the ambitious technical and management goals of the NPDES permit program, municipalities can achieve significant benefit if they combine their efforts.

Specific Projects

Radnor Township



- Fenimore and Willows Ponds: John Munro of Munro Ecological Services developed plans and supervised installation of natural reed bed filtering systems adjacent to these ponds in Township parks. Pond water is continually run through the reed beds from the spring through the fall to help filter out pollutants to cleanse water and assist in controlling algae blooms. A riparian buffer of native trees, plants and shrubs are planted on perimeter of ponds to filter stormwater runoff and discourage use by geese.
- Stormwater Management Retrofits: Radnor Township has completed installation of two major stormwater filtration systems under the parking lots of the Strafford Office Building in Wayne and the Rosemont Business Campus in Rosemont at a cost of approximately \$500,000.00. Pervious pavement is used at the Strafford Office Building. Township studies are underway to solve other high priority stormwater problem areas in the Township. It is anticipated that a similar innovative stormwater management filtration system will be used on a portion of the 12.5-acre Radnor Middle School site in downtown Wayne.
- Radnor Township applied for and received a Growing Greener grant for design of a stormwater management filtration system (includes pervious paving) under Wayne Art Center parking lot as well as rainwater recharge system for rainwater coming from building rooftops. System to be installed as part of Wayne Art Center's building expansion project.
- Radnor Township Comprehensive Plan Update recommends development of a Backyard Rain Garden model concept for voluntary application of downspouts, walkways, patios and other impervious landscaping that can be adapted to provide important water quantity and quality functions.
- SEPTA "spillway" between Rosemont Business Campus and SEPTA Route 100 P & W underpass on north side of Conestoga Road needs innovative environmental stormwater management engineering and installation of native trees, shrubs and plants to control excessive stormwater entering Meadowbrook Run, improve vehicular and pedestrian safety by controlling flooding of Conestoga Road and adjacent sidewalk as they pass under the P & W underpass and aesthetically enhance this gateway into Radnor Township.

Villanova University

\$59,112 for Villanova stormwater bioretention traffic island, parking lot expansion, and other demonstration projects to promote water quantity and water quality objectives. Villanova University sponsors the Pennsylvania Stormwater Conference every two years and general support (if not financial support) for this event should continue by Watershed stakeholders.

Springfield Township

Special studies to remediate existing stormwater problems with Cahill Associates.



Munro Study 1997

This special study, *Floodplain Study and Conceptual Plan for Colwyn, Sharon Hill, and Darby Boroughs*, analyzes flooding and other Creek problems and identifies a variety of solutions for this lower portion of the Creek. Although the main focus of the study and study recommendations is the elimination of the flooding problems plaguing the area, water quality is also addressed extensively. This excellent report includes recommendations as follows: multiple offstream storm basins, oversizing storm basins elsewhere in the Watershed, retrofitting parking lot stormwater storage, roof runoff into dry wells, low-head temporary storage in parks, porous pavement and other infiltration techniques, conversion of lawns to forest, sealing off sewers, and others.

City of Philadelphia Combined Sewer Overflow Control Plan

The City is implementing numerous capital program projects to increase the capture and treatment of stormwater as part of its Combined Sewer Overflow control program. The City is also pursuing pilot projects for retrofitting stormwater BMP's in re-development projects.

Easttown Township Comprehensive Plan

Specifically recommends use of BMPs for inclusion in the SLDO, including wet ponds, infiltrations systems, various types of filters, vegetated swales, and so forth.



GOAL D. IMPROVE DEVELOPMENT PATTERNS, INCLUDING RE-DEVELOPMENT PRACTICES, TO PROTECT OR RESTORE STREAM CORRIDORS, MAINTAIN OPEN SPACE, AND PROTECT/PROMOTE ECOLOGICAL RESOURCES.

Program Actions

Municipalities, other government groups and/or environmental/watershed groups such as the DCVA should:

- Apply for state and other grants for open space acquisition and related projects, with focus on stream corridor greenway locations; all existing and future open space opportunities (e.g., the Haverford State Hospital site) should be given the highest priority for open space acquisition.
- Encourage revision of municipal codes to require/promote open space, including protection of existing open spaces and creation of new open spaces, in the land development and re-development process; open space standards will vary by Watershed context; incentives, such as density bonuses, can be added to promote open space protection/creation.
- Encourage revision of municipal codes to require/promote cluster development and open space design, low impact development which includes reduction in impervious areas through setback reduction, reduced parking requirements where appropriate (or sharing of parking and other techniques to “green” parking lots), reduction in street widths, reduction in unnecessary, costly, and environmentally unfriendly systems such as inlets and storm sewer systems when vegetated swales and other environmentally friendly systems are viable options, and all other techniques to concentrate development in the least Watershed area.
- Educate all Watershed stakeholders, including municipal officials, regarding the importance and overall cost-effectiveness of open space conservation. See below.
- Encourage use of daylighting techniques and strategies to restore buried and/or piped stream corridors to their natural ecological function.

Specific Projects

Re-Use of Haverford State Hospital Site

In process, this project constitutes a tremendous opportunity for Watershed goal achievement. Although this incredibly valuable site is desired by many different interest groups for many different uses, the site constitutes one of the last remaining, relatively undeveloped “islands of open space in the Watershed. As such, its open space functions and values, from water resources quantity and quality to biodiversity and habitat to air quality and aesthetics, are of tremendous importance and must be maximized. Obviously, from the Watershed’s perspective, open space



uses should be maximized. The future of the existing buildings and the precise shape of the development of this site remain uncertain).

Easttown Township Comprehensive Plan

Specifically recommends improvement of clustering requirements with better design criteria in zoning ordinance.

Springfield Township Citizens for Responsible Land Use and DCVA, Coventry

Woods Residential Development Project

These private conservation-minded groups took serious issue with a proposed land development plan on a tributary of the Darby Creek and hired consultants to critique and improve the proposed land development plan. The additional technical work helped the Township review the proposed plan more fully.



GOAL E. INCREASE OPEN SPACE AND RECREATION – RESTORE ACCESS TO THE STREAM CORRIDORS. PROTECT EXISTING OPEN SPACE AND CREATE NEW OPEN SPACE.

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Apply for state and other grants to study stream access needs and to prioritize access opportunities.
- Apply for state and other grants (PADCNr and others) for open space acquisition and related projects, with focus on stream corridor greenway locations. In all cases, careful distinction needs to be made between those areas where public access is an important element with conservation versus those areas where conservation alone should be promoted without access (this distinction is critical for all of these Program Actions).
- Encourage revision of municipal codes to require/promote open space, including protection of existing open spaces and creation of new open spaces, as well as recreational facilities and “fee in lieu” requirements.
- Intensify work with land trusts/conservation groups in order to maximize use of conservation easements and related land stewardship techniques.
- Work to promote the importance of trails and trail development along streams, using both paid and volunteer labor.
- Strive to acquire conservation easements, both donated and purchased, for trail development on privately held parcels along streams or which provide access to streams.
- Promote the work of land trusts and conservancies (i.e., conservation easements), such as the Brandywine Conservancy, Natural Lands Trust and Radnor Conservancy; indirect support can be provided by making sure that assessments reflect donated easements, removal of development rights, etc.
- Utilize the resource of Pennsylvania’s *Growing Smarter* program to improve comprehensive planning, plus the resources of the Governor’s Office of Local Government Services.
- Encourage Management Options such as:
 - Developing greenway plans for the mainstem (Darby Creek) and each of the tributaries throughout the Darby Creek Watershed.



-
- Conducting a watershed wide access study.
 - Including NLT's and DCNR's Conservation by Design Program as a way to promote conservation design techniques.

Specific Projects

Radnor Township

- Open Space Committee created by the Radnor Board of Commissioners to recommend open space purchases using monies from the 1994 Open Space Bond Fund and the Realty Transfer Tax.
- Radnor Conservancy is incorporated.

Upper Darby Area Greenway

The proposed Project, extending 4.25 miles for an overall width of 1500 feet, includes many steep slopes and floodplain zones. The area includes the Indian Head on a high cliff overlooking the Indian Basin, the Lower Swedish Cabin (possibly the oldest surviving log cabin structure in the nation), an historic mill complex, SEPTA trolley stops, the County's underutilized Kent Park, Lansdowne's major Hoffman Park, the historic Bonsall House built in the 1700s, and Bartram Park. Connector trails would also be included in this project: Bloomfield Avenue to Kent Park; Baltimore Pike through Hoffman Park; and Penn Pines Park to MacDade Boulevard. Off-road pedestrian and bicycle paths would be provided.



Figure VII-16 Waterfall Feature in Upper Darby Area Greenway



Figure VII-17 Historic Kent Mill Structure in Upper Darby Area Greenway

Lansdowne Borough's Reconstruction of Hoffman Park through FEMA/Keystone funding

Easttown Township Comprehensive Plan

Specifically recommends that the Township intensify efforts with land trusts/conservation groups to promote conservation easements on all remaining undeveloped tracts. The Plan also recommends that a “public greenway with hiking and/or riding trails” be established, that more community and neighborhood parks be established, that the SLDO be revised to increase dedication of open space, that a variety of specific zoning provisions be added to increase/improve trail and open space provisions, that the Township acquire through purchase or easement all unprotected lands along the Darby Creek.



Easttown Township Recreation, Open Space, and Environmental Resources Plan

Recommendations are generally consistent with the above Comprehensive Plan, although more detailed. For example, a specific recommendation is made to develop a walkway linking the YMCA to Leopard Lake through Sharps Woods and Waynesborough Woods (not quite 2 miles). Also develop a trail along Darby Creek for about 2 miles, linking several local recreation sites. Recommended bikeways typically follow roads, not streams.

Lower Merion Township

Master Plan for Penn Wynne Park, Master Plan for Wynnewood Valley Park, Master Plan for South Ardmore Park, Master Plan for Vernon Young Memorial Parks (all pending approval at PADCNR). Township Trail Feasibility Study.



GOAL F. IDENTIFY AND PROTECT HISTORIC, CULTURAL, AND ECOLOGICAL RESOURCES

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Encourage revision of municipal ordinances to require/promote inventorying and conservation of natural/ecological resources; in conjunction with this effort, municipalities should consider formation of Environmental Advisory Councils (EACs) to assist in this significant effort.
- Mount an intensified campaign to combat the proliferation of invasive species with their increased adverse ecological impacts, with particular focus on deer and Canadian geese as problem species. This issue should be an important element in overall educational programming; for example, instructive materials should be readily available for municipal officials and others explaining how to eliminate Canadian geese habitat so that populations are not further increased.
- Prepare an inventory of stream segments which are either buried or channelized and prioritize segments for remediation.
- Undertake to expand the inventory of cultural resources in the Watershed and work to prioritize these resources.
- Encourage revision of municipal ordinances to require/promote inventorying and conservation of cultural resources.
- Encourage Watershed educational institutions (e.g., the Delaware County Community College) to expand their programs involving local history and environmental issues.
- Directly support the DCVA Stream Clean Up Day and should consider expanding this program; other specific cleanup programs should be considered.
- Encourage management options such as:
 - A program of historical interpretive signage should be established in the watershed.
 - Historic Resources surveys should be undertaken in each municipality.
 - Each municipality should consider developing a historic resource ordinance.
 - Each municipality should consider developing a historic resource protection plan.



- Pursue grants for the acquisition, maintenance and improvement of the many significant historic resources located in the Watershed:

Specific Projects

Radnor Township

Radnor Township is in the process of working with a consultant to create a Historic Preservation Inventory and developing a Historic District Preservation ordinance

Easttown Township Comprehensive Plan

Specifically recommends that a Historic Preservation Plan be considered for development. The Plan recommends that historic resources be evaluated for inclusion in the National Register of Historic Places and develops very specific sub-plans for historic resource protection in Watershed portions of the Township. The new Easttown Plan also provides a good example of full treatment of natural resources.

Lower Merion Township Regulations for the Protection of Cultural Resources

See Lower Merion's Zoning and Subdivision/Land Development Regulations. This township has one of the most comprehensive regulatory programs for identifying and protecting historic resources, promoting re-use and minimizing demolition, etc.

Haverford Township

See existing Haverford Township cultural resources protection regulations.

Darby Township

Daylighting of a large section of the Muckinipattis Creek currently buried under a cemetery parallel to Oak Lane.

Brandywine Conservancy's Municipal Assistance Program and Environmental Management Handbook

This compendium of resources includes excellent guidance for municipalities, other governments, and Watershed stakeholders in general, setting forth steps essential for cultural resource management and protection. Contact the Conservancy at 610-388-2700; the Conservancy invites municipalities to become Subscribers in their Municipal Assistance Program for a relatively modest fee. Special emphasis is placed on legal aspects of state-of-the-art management techniques.



GOAL G. FOSTER INTER-MUNICIPAL COOPERATION AND INVOLVEMENT - COORDINATE EFFORTS TO ENCOURAGE MUNICIPAL INTERACTION AND PLANNING ON A WATERSHED BASIS.

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Coordinate with and support the on-going efforts of the Darby-Cobbs Watershed Partnership and its members, the DCVA, and other watershed-related groups and programs.
- Support and work with Chester, Montgomery, Delaware and Philadelphia Counties in the development of countywide greenway plans under the Pennsylvania Greenways initiative particularly as it relates to the Darby Creek Greenway Vision.
- Encourage continuing watershed-based planning by municipalities and groupings of municipalities through inter-municipal planning strategies, as facilitated by Acts 67 and 68 of 2000, amending the Municipalities Planning Code, and creating inter-municipal planning. This planning could be Watershed-wide or be sub-Watershed-wide; agencies such as the Delaware County Planning Department should work to promote the advantages of such planning for the benefit of potentially affected municipalities (i.e., the potential benefits of the joining together of the very small municipalities comprising the lower portions of the Watershed in Delaware County, in terms of environmental planning, municipal services planning, legal requirements for provision of all land use types, and so forth). DCPD and Delaware County Council are currently promoting joint planning and other forms of municipal cooperation throughout Delaware County. A variation on this theme would be the formation of joint inter-municipal Environmental Advisory Councils (see below).
- Prioritize comprehensive planning on a county-wide basis, with the Chester County award-winning *Landscapes* as a model, now reinforced by the new *Watersheds* plan and *Linking Landscapes* plan for open space planning. The emerging comprehensive plan for Delaware County is a top priority. This new Delaware County Draft Comprehensive Plan features many of the watershed principles set forth in this Plan and recommends the development of Conservation Plans for all of the County's watersheds (several have already been completed). Individual Watershed municipalities can and should use this new County Draft Plan for guidance in their respective planning programs.
- Create a Watershed Technology Center to coordinate technical and planning information on a watershed basis.



Specific Projects

Darby-Cobbs Watershed Partnership

\$35,000 for Darby-Cobbs Watershed Partnership education and outreach.



GOAL H. EDUCATION – EDUCATE RESIDENTS, MUNICIPAL OFFICIALS, TEACHERS AND OTHERS, AND INCREASE AWARENESS OF THE STREAM, THE WATERSHED, AND ITS RESOURCES AND PROBLEMS.

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Develop and implement a Watershed Education Campaign, including all elements below.
- Work to increase watershed curriculum in public/private schools.
- Work to increase Watershed resources available in public library system, in the Intermediate Unit, and other locations, including the electronic GIS database developed for this Plan.
- Work to increase Watershed awareness of municipal/other government officials.
- Develop program strategies for better use of EACs in the Education Campaign. In fact, formation of EAC's should be promoted throughout Watershed municipalities (only a handful currently have EAC's) in order to strengthen overall Watershed conservation advocacy and assist in the many different program recommendations being made herein (especially applicable for those recommendations focusing on municipal action). Special resources of organizations such as the Pennsylvania Environmental Council should be exploited to accomplish these EAC-related objectives.
- Consider short-term public relations strategies to promote all of the above, including a Darby Creek Week, intensifying Clean Up Day, and so forth.

Specific Projects

Radnor Township

- Delaware Riverkeeper Network: Director May Van Rossum has presented ongoing introductory environmental stormwater management workshops and, as needed, sends out Riverkeeper Action Alerts to Radnor residents in a continuing effort to protect sensitive environmental areas within the Township threatened by development.
- Middle School 7th grade Watershed program.

City of Philadelphia's Cobbs Creek Community Environmental Education Center:

Various education projects.



Friends' Central School

\$75,913 for Cobbs Creek watershed monitoring and restoration.

City of Philadelphia's Fairmount Park Natural Lands Restoration Environmental Education Project or NLREEP

Various reports.

DCVA

Increase media coverage of existing DCVA work program to improve overall educational value of activities.



GOAL I. MANAGE LAND DEVELOPMENT-RELATED ACTIVITIES THAT AFFECT WATER QUALITY TO REDUCE POLLUTANTS - MALFUNCTIONING WASTEWATER SYSTEMS, FERTILIZER AND LAWN MAINTENANCE, ANIMAL WASTE (INCLUDING GEESE), AND HAZARDOUS WASTE

Program Actions

Municipalities, other government groups and environmental/watershed groups such as the DCVA should:

- Support recommendations of Delaware County Sewage Facilities Plan Update (Eastern Plan of Study) and attach high priority to remediation of leaking sanitary sewers and any other untreated wastewater sources.
- Support the combined sewer overflow (CSO) abatement program of the Philadelphia Water Department.
- Support and closely follow planning processes for toxic/hazardous waste sites in the Watershed.
- Encourage revision of municipal ordinances to minimize creation of artificial landscape and promote naturalized areas, use of native species, and so forth.
- Promote use of minimum disturbance/minimum maintenance site development techniques, including reducing lawn area and promoting meadow and reforested zones with native species, especially to prevent/reduce creation of Canadian geese habitat.

Specific Projects

Delaware County Act 537 Sewage Facilities Plan Update

Completion and implementation of this wastewater treatment plan for the Delaware County portion of the Watershed; this ongoing effort is critical for future Watershed water quality.

E. Funding Options for Plan Implementation

Implementing the Darby Creek Watershed Plan many different recommendations will not be cheap. Whether the actions be undertaken by the public or private or any other sectors, funding is critical (though funding by itself is by no means the single Watershed solution). In the section



below, a variety of potential funding sources are listed and described. These programs are in a relative constant state of flux, especially given the rapidly changing landscape of public sector budgets. Some of this information may need to be updated. Nevertheless, these descriptions provide a good start.

Many of these programs are matching grant programs (the bad news). The good news is that it is possible to use one grant to match another grant in some, though not all cases. The matching requirement is often used by potential funding sources as a test of an applicant's determination and commitment. On the municipal level, matching funds can be raised in a variety of ways over and above the general fund through a dedicated income tax and municipal bonds. The point is that though grantsmanship is never easy and always takes time and energy, there is money out there. As has been pointed out several times by PADCNR spokespersons during the course of this Plan preparation, many other watersheds, many other areas are successfully garnering much larger shares of PADCNR monies for their projects (records indicate that municipalities in Delaware County have applied for and received significantly less in the way of PADCNR grants than neighbors in Chester, Bucks, and Montgomery Counties).

Federal Programs

TEA21: Stemming from the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), massive funding was made available for highway and mass transportation projects; funding also was available for bike and pedestrian trails. TEA 21, the 1998 renewal of the program, provides another \$198 billion to fund the program through 2003. Special program provisions include: The Transportation enhancements Program (TE), Congestions Mitigation and Air quality Improvement Program (CMAQ), and the Recreational Trails Program (administered by PADCNR). See www.fhwa.dot.gov/tea21 for more information.

Transportation Enhancements: Up to 10 percent of the total state grant to each state is authorized for TE projects. These projects include 12 different categories, two of which fund bicycle and pedestrian trails. Funding is provided for new facilities for bicycles and pedestrian use and for improvements to existing trails, though excludes sidewalks and required curb ramps; funding is also provided for the planning, acquisition, rehabilitation, and development of active and abandoned railway corridors for public uses including pedestrian and bicycle trails. Funding is provided up to a maximum of 80 percent of total project costs and provided as a reimbursement, not a grant, after project completion. See the National Transportation Enhancement Clearinghouse at 888-388-6832 or www.railtrails.org/ntec for additional information. The Pennsylvania Department of Transportation administers the TE program, collaboratively with the Delaware Valley Regional Planning Commission (along with the Pennsylvania Transportation enhancements Advisory Committee). Applicants may be any government or non-profit entity; applications usually are submitted in the fall and can be complex, requiring considerable time and assistance from PennDOT. Contact PennDOT's Engineering District 6 Transportation Enhancements Coordinator at 610-964-6534 for more information.



Congestion Mitigation and Air Quality Improvements: Grants here fund projects which reduce harmful emission related to transportation. Like the TE program, the program is a competitive reimbursement with a maximum of 80 percent share of a project's total cost funded. The PennDOT/DVRPC institutional structure is similar to that of the TE Program, although in this case the Federal Highway Administration is also involved. Sixteen different categories of projects are defined, including public education campaigns and construction of park and ride lots and development of bicycle and pedestrian trails (this category may include designation of bike lanes on roadways as well as construction/reconstruction of paths, tracks, or areas for pedestrian or other non-motorized transportation modes.). Eligibility is similar to that of the TE Program, although special emphasis is placed on coordination with the respective county and municipal governments in which the project is located. See the DVRPC's Transportation Planning Division Director at 215-238-2863 for more information.

State Programs

State programs include several different agencies. PADCNr programs are described first and include the grants known as Keystone Grants in the 1990's and renamed the Community conservation Partnership Program in 2000, using Growing Greener Funds provided by the Environmental Stewardship and Watershed Protection Act. The following funds and programs are included: Keystone Recreation, Park and Conservation Fund; Recreational Trails Program; Pennsylvania Heritage Parks Fund (limited to Schuylkill River Watershed); and the Environmental Stewardship and Watershed Protection Act (Growing Greener Fund). Contact www.dcnr.pa.state.us or 717-787-7672 for additional grant program information. One grant manual provides details for all of the PADCNr programs; go to www.dcnr.state.pa/grants.htm. Contact should be made with the SE Pennsylvania PADCNr Recreation and Park Advisor at 215-644-0609 to discuss grant programs, their details, specific project needs, and so forth.

PADCNr's Community Recreation Grants: This annual municipal agency (also councils-of-government) grant program (mid-Fall deadline), established under the Keystone Recreation, Park and Conservation Funds (PA Act 1993-50), provides 50 percent matching grants for planning and technical assistance (comprehensive recreation and park planning, conservation plans, county natural areas inventories, feasibility studies, greenways and trails, master site development planning, circuit rider and peer-to-peer technical assistance grants), acquisition of land for park and recreation purposes, and development (rehabilitation and development of park and recreation facilities and grants for small communities with populations of 5,000 or below); small communities, circuit rider, and peer grants are not governed by the 50 percent limit.

Rails-to-Trails: This annual municipal and non-profit agency grant program (mid-Fall deadline), established under the Keystone Recreation, Park and Conservation Funds (PA Act 1993-50), provides 50 percent matching grants for planning and technical assistance (feasibility studies, master site development plans, special purpose studies of abandoned railroad right-of-way for trails and adjacent lands necessary for access and support facilities for trails), acquisition



(acquisition of abandoned right-of-way for trails and adjacent land necessary for access and support facilities for trails), and renovation and development of abandoned railroad right-of-way for trails.

Land Trust Grants: Pre-qualified non-profit land trusts and conservancies may receive up to 50 percent of a project cost for use in acquisition and planning of open space and natural areas facing development; lands must have public use/access and get priority if they are habitat for threatened/endangered species.

River Conservation Grants: Up to 50 percent matching grants are provided to municipal agencies of all types and non-profit groups for planning and technical assistance (River Conservation Plans, special purpose projects such as preparing zoning and subdivision ordinances, river area access studies, water quality monitoring, other projects), for land acquisition, and for development of river conservation projects.

Recreational Trails Fund: TEA21 funds the Pennsylvania Recreation Trails Grant program, awarded each year (mid-Fall deadline) to municipal agencies and private entities. Grants up to 80 percent of total project cost (acquisition projects limited to 50 percent) are to be used for acquisition, development, and maintenance of motorized and non-motorized trails.

Other Programs

PADEP Grants: These Pennsylvania Department of Environmental Protection Growing Greener grants, funded under the Environmental Stewardship and Watershed Protection Act, include sewer and water infrastructure improvements, reclamation of abandoned mines and wells, and wetland and streambank restoration and protection. Applicants may include counties and municipalities, conservation districts, watershed organizations promoting watershed conservation efforts and recognized by PADEP, and other authorized organizations recognized by PADEP as promoting the protection, enhancement, conservation, preservation and/or enjoyment of Pennsylvania's environmental, conservation, recreation, and/or similar resources. Although a match is not required per se, applications, which have become much more competitive since recent funding cutbacks, are more likely to be funded if they include connection to other sources of funding or services and/or partnering in some manner with other agencies and programs. Contact www.dep.state.pa.us and the PADEP Grants Center at 717-705-5400 for more information, including grant manuals and updates on application deadlines. Locally contact the PADEP Southeastern Regional Office at 610-832-6259.

PADCED Grants: These programs, including the Shared Municipal service Program (funding regional recreation activities, public works operations, and municipal insurance pooling) and the Land Use Planning and Technical Assistance Program or LUPTAP (funding open space as part of a comprehensive plan with priority toward regional planning efforts), usually require a 50 percent match and are available throughout the year to counties, and municipalities (again with



priority given to multi-municipal applications). Contact www.dced.state.pa.us or the Governor's Center for Local Government Services locally at 610-530-8223 or 215-560-2374.

County Grants

The four counties have substantially different funding programs available to Watershed municipalities and other stakeholders, with Chester County programs being most extensive; contacts should be made with the respective County, starting in most cases with the county planning commission or department.

Other Grants

Some additional sources of funding for conservation, recreation, and open space are available, usually fairly small in size (i.e., mini-grants from \$2,000 to \$10,000). These include but are not limited to:

Pennsylvania Urban and Community Forestry Council Grants: Community Improvement Grants are given to plant and maintain trees; they are funded by the PA Bureau of Forestry, the PA Urban and Community Forestry Council, and the USDA Forest Service. Municipal Challenge Grants provide \$1,000 to \$5,000 for projects in public spaces and rights-of-way, as well as street tree projects. Community Improvement Grants provide \$500 to \$3,000 for projects in parks, greenbelts, schools, and community public spaces. Grants can be given to municipalities, authorities, schools, youth groups, church groups, local business, and other like organizations and are dispensed typically twice a year. Contact the Pennsylvania Urban Forestry Coordinator at 717-783-0385 or the Southeast Urban Forester at 610-489-4315.

American Forest Global Relief Grants: Projects here should include native tree planting on sites of 20 acres or more; the goal is planting diversity. Eligibility is broad, though projects must be located on land that is publicly owned or owned by a publicly assisted private entity. Applications are usually twice per year. Contact the American Forest website at www.amfor.org or 212-955-4500 for more information.

National Tree Trust Tree Planting Program: Created by the America the Beautiful Act of 1990 and endowed by a one-time grant from Congress, the National Tree Trust dispenses these grants to provide tree seedlings, tree planting materials, and a cash subsidy to cover cost of potting for projects that facilitate tree planting on public lands and along roadsides. Funds must be equally matched by the applicant with non-Federal funds. Volunteer organizations, school groups, municipal park and recreation departments, and other interested groups are eligible; the application process takes two years. Contact the National Tree Trust at 800-846-8733 or www.nationaltreetrust.org.

Kodak American Greenways Grants: Through a Kodak Corporation, Conservation Fund and National Geographic Society partnership, grants of up to \$2,500 (most under \$1,000) are awarded to develop and assist in the implementation of greenway projects. Grants may be used



to map resources and greenways, undertake ecological assessments, perform design activities, hire consultants, plan bike paths, and perform other greenway tasks. Most awards have gone to local community, regional, and statewide non-profit organizations, although public agencies also may apply (e.g., recent awards have gone to the Wildlands Conservancy in Emmaus to construct a footbridge on a heavily used trail in Lehigh County; also to Delaware Greenways in Wilmington DE). Contact the American Greenways Programs at www.conservationfund.org or 703-525-6300 for more information.