

II. Recommendations

A. Trail Characteristics and Alignment

The proposed trail alignment was submitted the Trail Advisory Committee for their review and comment. The Trail Advisory Committee represents citizens and major stakeholders within the trail corridor. The proposed trail alignment, which has been updated several times over the course of preparing this study, represents the consensus of the Committee with no major exceptions.

Please see the five attached Trail Alignment Maps, at a scale of 1" = 2000' in Appendix G.

1. Segment by Segment Breakdown of Schuylkill River Trail (North to South)

a. Trail characteristics and alignment: Hamburg to Cross Keys.

The trail connects at its northern end to the Bartram Trail. A connection across the Schuylkill River is provided by an existing trail bridge. The connection between East State Street and the bridge is now being improved to accommodate the more intensive use that is anticipated, along with the development of a parking lot. Two alternative routes are proposed south of State Street. One alternate makes use of existing commercial streets and sidewalks permitting trail users to enjoy the charms and services of Hamburg's town center. An alternative off-road route is proposed on the alignment of the former Schuylkill Navigation, and on property owned by the Reading and Northern Railroad Company. The Reading Company Historical and Technical Society plans to develop a museum facility fronting on Maple Street. The trail system will provide a connection to this facility. South of Maple Street, acquisition of an easement from the Reading and Northern Railroad is required to provide a grade separated crossing under Route 61.

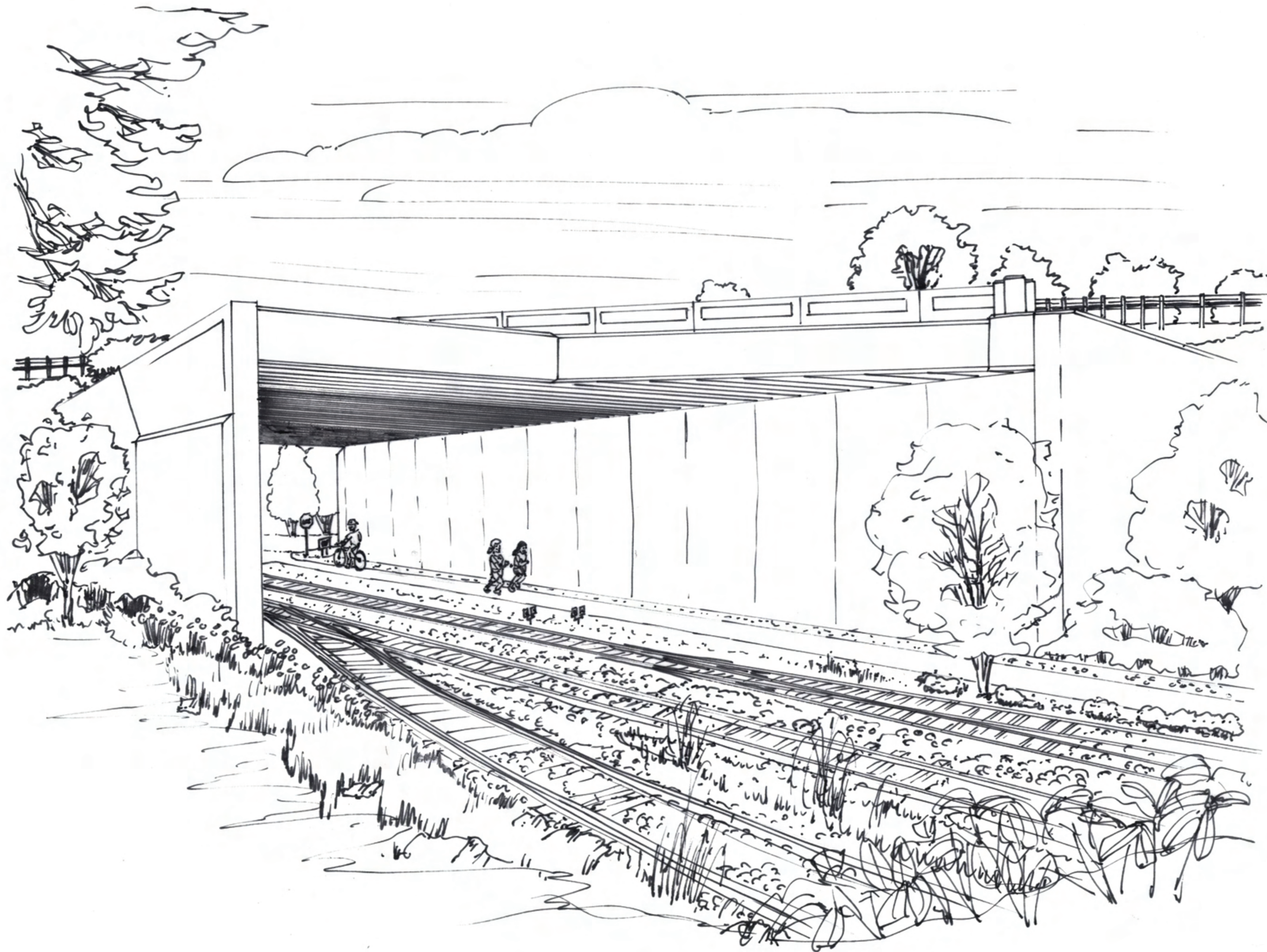


Farm Road North of Shoemakersville

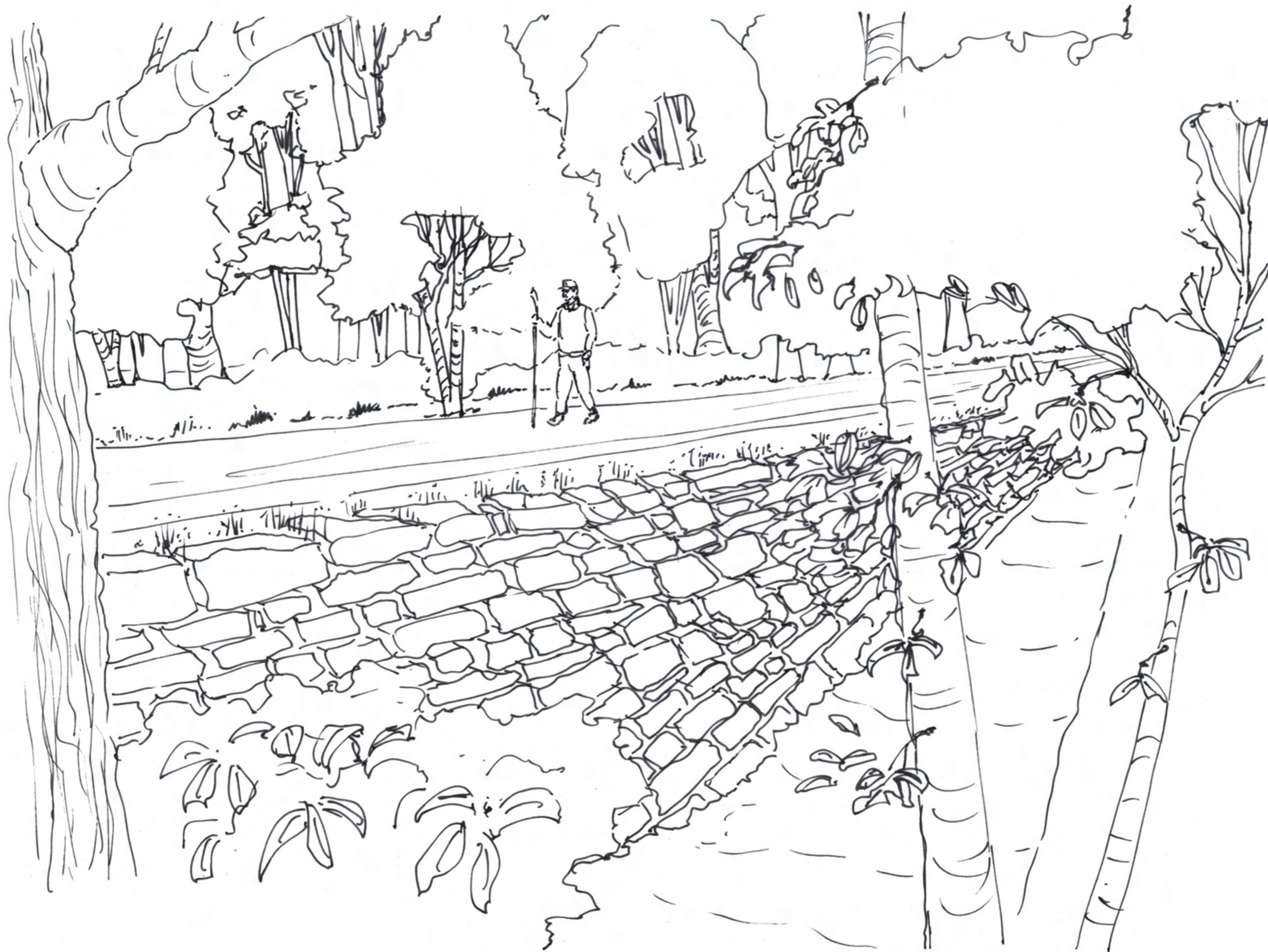
The trail will follow the restored canal towpath south of Hamburg. Much of the former towpath between Hamburg and the Berne Station Bridge is owned by the Reading and Northern Railroad Company. There are Pennsylvania Fish and Game Commission lands around the Berne Station Bridge. The towpath trail crosses over to the south side of Water Street between Five Locks and Shoemakersville. The towpath is privately held in this area.

Water Street currently provides a pleasant low volume traffic route between Hamburg and Shoemakersville, which is quite conducive to the 'share the road' scenario.

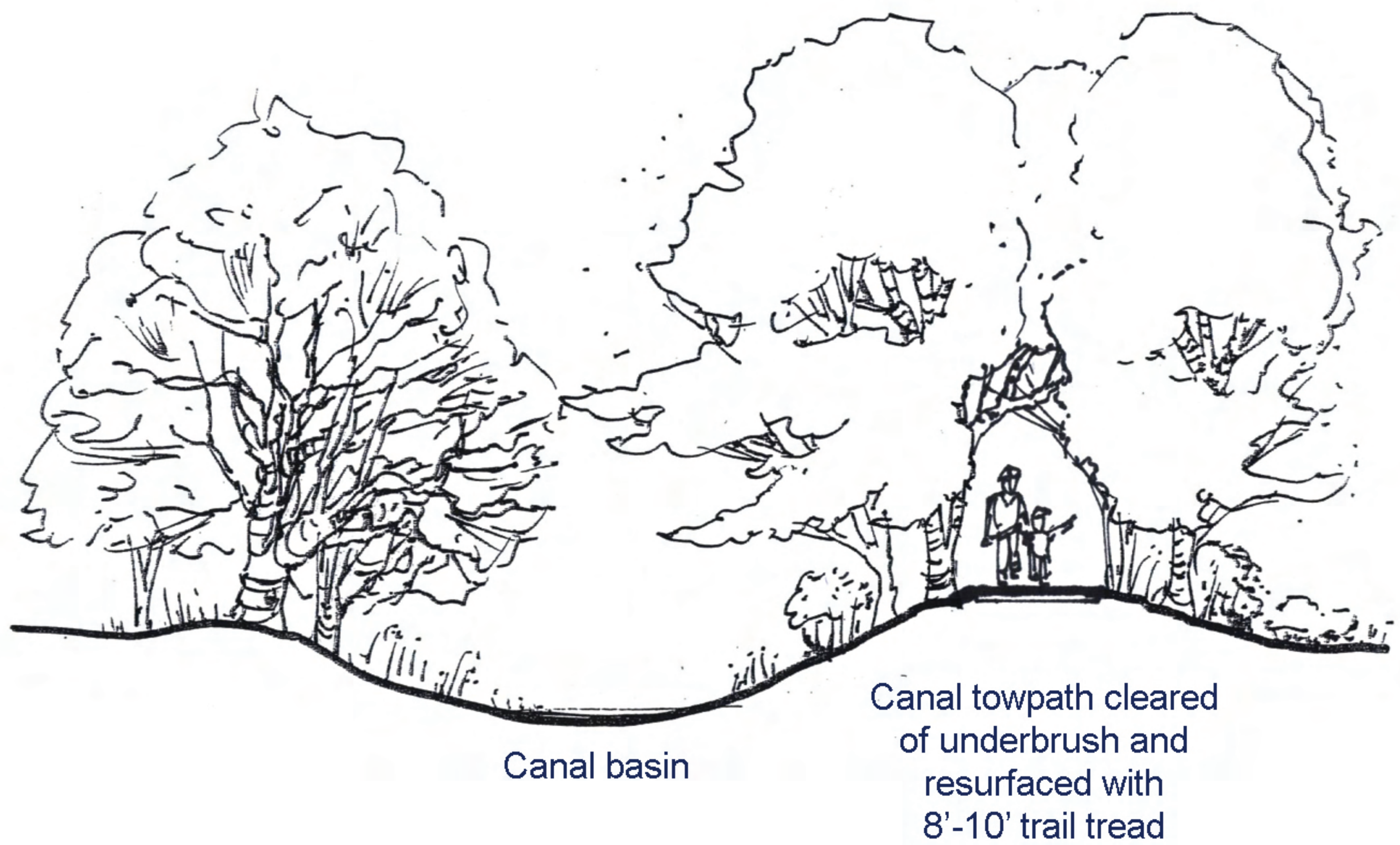
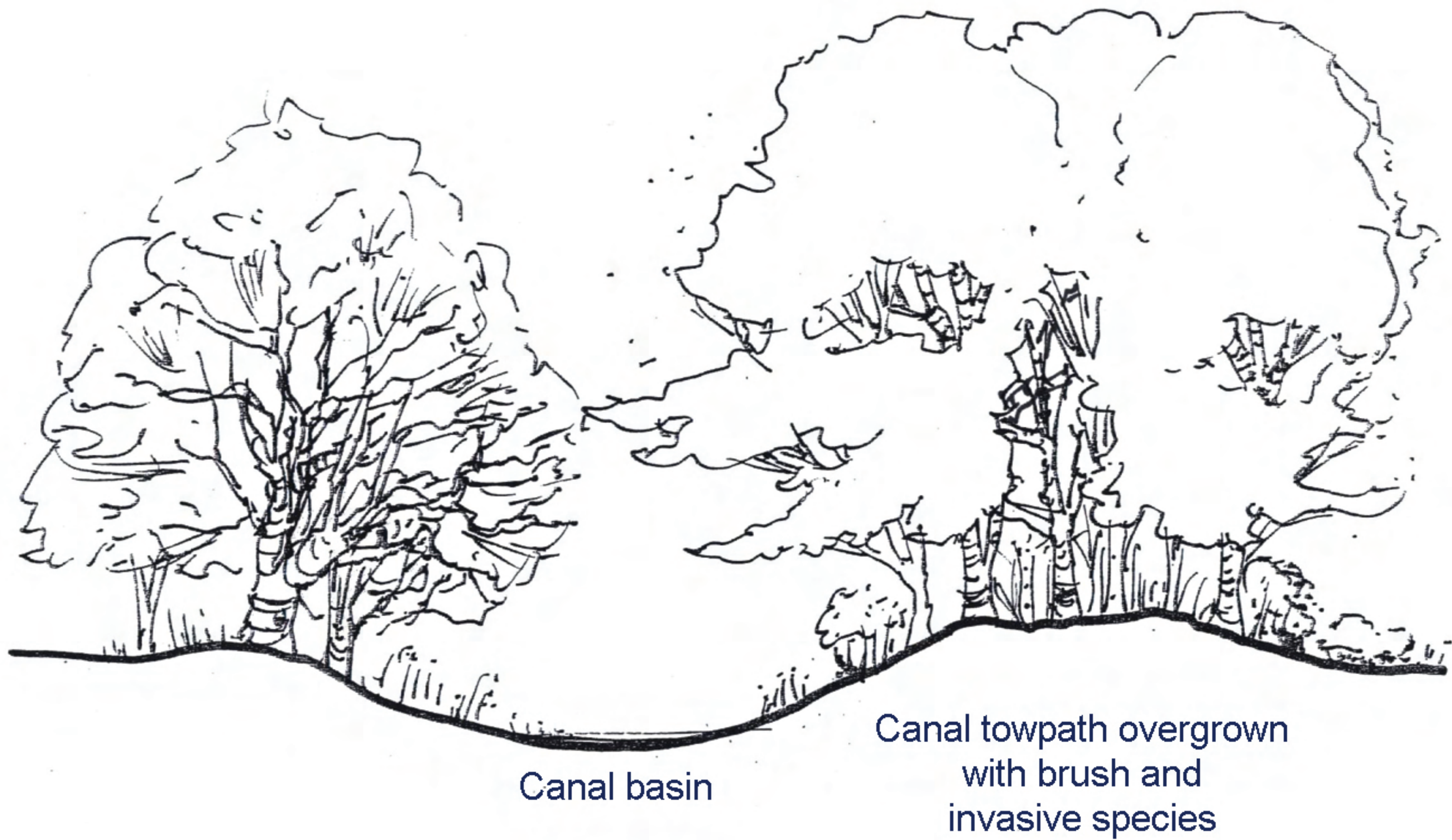
The original canal towpath is obstructed within Shoemakersville, however, the existing borough streets and sidewalks provide a pleasant and interesting pathway capable of conveying the trail.



SKETCH - TRAIL PARALLEL TO RAILROAD UNDERPASS
READING TO HAMBURG AND FREEDOM TRAILS
BERKS COUNTY, PENNSYLVANIA



SECTION - TRAIL ALONG HISTORIC CANAL WALL
READING TO HAMBURG AND FREEDOM TRAILS
BERKS COUNTY, PENNSYLVANIA



SECTION - CANAL TOWPATH
 READING TO HAMBURG AND FREEDOM TRAILS
 BERKS COUNTY, PENNSYLVANIA



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SECTION - OFF-ROAD TRAIL ALONG TREELINE
READING TO HAMBURG AND FREEDOM TRAILS
BERKS COUNTY, PENNSYLVANIA

Between Shoemakersville and Leesport, the trail will follow an alignment along much of the former towpath between Old Pottsville Pike and the Reading and Northern Railroad line. Acquisition of easements from private owners is required. A temporary on-road route following Mohrsville Road is possible.

Within the borough of Leesport the trail follows Canal Street and then Wall Street, passing the historic Locktender's House. Then the trail crosses from the east to the west bank of the Schuylkill. On the west side of the Schuylkill River, the trail follows Washington Avenue and then connects to an existing segment of the canal trail system. Plans are under way for a large residential development in Leesport, and the work of trail development should include a trail alignment within the development. Additional acquisition of easements from private property owners is required to link the existing trail segment to the Cross Keys Bridge via the former towpath of the Schuylkill Navigation.



Approaching Leesport

b. Trail characteristics and alignment: Cross Keys to Stoudt's Ferry Bridge

The Schuylkill River Trail and the Freedom Trail share a common alignment between the Cross Keys Bridge and the Stoudt's Ferry Bridge. The proposed Freedom Trail will be designed to a standard that supports horse and carriage users. From the Cross Keys Bridge south to Reading River Place a potential horse and carriage standard has been recommended.

The existing Cross Keys Bridge provides a connection for the Freedom Trail to Maiden Creek and Lake Ontelaunee.

After crossing Cross Keys Road, the Schuylkill River trail passes through lands owned by the Water and Resources Power Board and privately held farmlands to reach the access road to the Stoudt's Ferry Bridge. The SRGA owns a parcel of land on the west side of the crossing, which will be helpful in completing this connection.



Existing Dwelling On Bridge Abutment

A new bridge at the approximate location of the former Stoudt's Ferry Bridge would provide a critical link between Bern and Muhlenberg Townships. There is an existing dwelling constructed on the abutment of the former bridge on the eastern bank; therefore a new abutment location must be selected. An alternative approach that has been discussed is purchasing the house and property, removing the dwelling and restoring the bridge to resemble its historic character.

c. Trail characteristics and alignment: Schuylkill River Trail: Stoudt's Ferry Br. to Reading

Construction of this segment of the trail to a standard suitable for horse and carriage use is proposed. Adequate width and height (horizontal and vertical clearance) will be provided in addition to slopes and surfacing appropriate for horses.

After crossing the Schuylkill on a newly reconstructed Stoudt's Ferry Bridge, a short connection across existing residential properties must be acquired to reach Stoudt's Ferry Bridge Road, a low volume residential street. One residential property must be crossed between the end of Stoudt's Ferry Bridge Road and Dietrich Park. An off-road trail following the alignment of the park access road and Stoudt's Ferry Bridge Road crosses the township park lands. At the end of the Riverview Drive cul-de-sac the trail crosses a residential property to reach the Route 222 right-of-way via a utility access drive. A grade separated crossing underneath the Route 222 Bridge is possible at this location, utilizing an informal existing path now enjoyed by local residents.



Stoudt's Ferry Bridge Abutment at West Bank

The trail crosses Township lands south of the Route 222 Bridge and then follows the south side of River Road. Many private dwellings front on the north side of River Road, which extends across to the south side of the River Road right-of-way. Easements will need to be acquired from many private owners along River Road to achieve an off-road trail between the road and the river. The trail links several riverfront parks including two River Road Park sites, the Felix Dam site and the Township recreation building.

A spur path connecting to the west bank of the Schuylkill at the location of the former Leisch's Bridge would be desirable. This spur path would provide access to the technology center being developed around the Reading Airport. The path could conceivably be constructed with economic development grants as part of the technology center project. The reconstructed Leisch's Bridge could also provide emergency vehicle access across the river.



River Road Approaching Reading

The River Road right-of-way appears to widen within the Reading City limits where a boulevard was once planned. Adequate right-of-way appears to exist to build a side path on the north side of River Road, although some encroachments will need to be addressed on the graded, but unused portion of the right-of-way.

A grade separated crossing appears feasible under Route 12. It is recommended that a trail bridge be built adjacent to the Route 12 Bridge to bring the trail over to the west bank of the Schuylkill. Crossing to the west side of the Schuylkill, an easement is needed to build the trail across Carpenter Technology's property. The trail would be located in a flood plain area avoiding impacts to the industrial operations. During a meeting with representatives of Carpenter in the summer of 2005, the SRHA received a positive reaction, but any ultimate approval for this route will require a thorough engineering review.

The trail passes under the Schuylkill Avenue Bridge and follows Blair Avenue to Confluence Point where it joins with the Union Canal Trail. An off-road trail between the businesses on Blair Avenue and the river is the preferred alternative at this location. The Reading River Place Master Plan proposes a pedestrian bridge to connect Confluence Point to central Reading. Until this bridge is built, the trail will use the Schuylkill Avenue Bridge to cross back to the east side of the Schuylkill. The trail will connect following Clinton Street to an existing riverside trail at Baer Park. In the interest of providing solutions to potential conflicts with truck traffic on Clinton Street, and to allow horses and wagons to reach downtown Reading, this alignment should eventually be replaced by a crossing at Confluence Point.



Industries at north end of Reading

A trailhead facility with equestrian services is proposed for Reading River Place. Representatives of the Riverplace project have provided detailed coordination to ensure that these important connections are made.

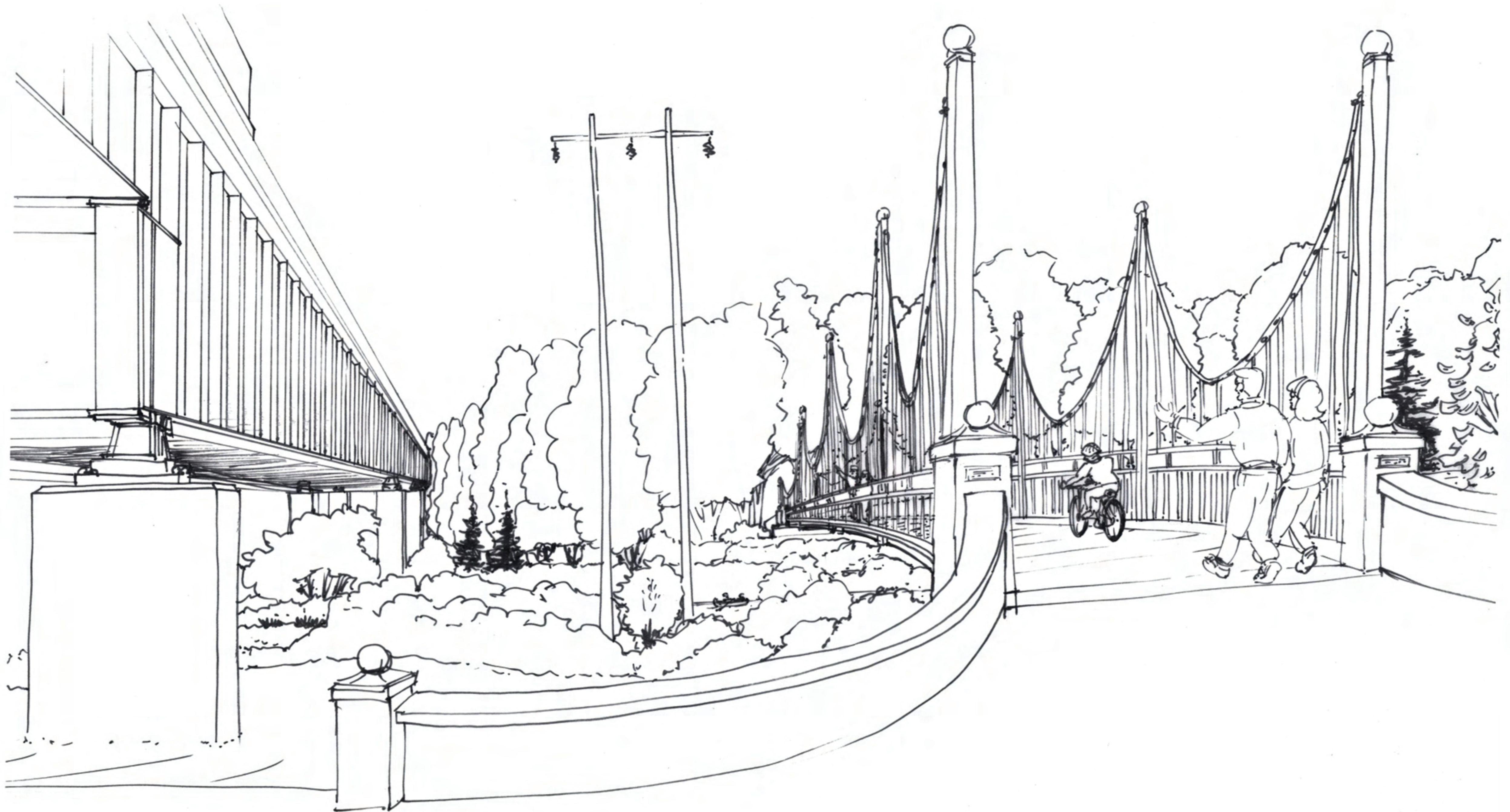
2. Segment by Segment Breakdown of Freedom Trail (West to East)

a. Trail characteristics and alignment: Blue Marsh Lake to Cross Keys

The Freedom Trail, designed to a horse and carriage standard, is intended to fill a unique recreational tourism niche. Linking to the Schuylkill River Trail at Cross Keys, the trail will provide horse and carriage access to central Reading and to Lake Ontelaunee to the east.

The western connection of the proposed Freedom Trail is at the Blue Marsh Lake Stilling Basin. At this location the trail connects to the Union Canal Towpath, and the soon-to-be constructed extension of the Union Canal Towpath from Rebers Bridge to the stilling basin. Blue Marsh Lake is a U.S. Army Corps of Engineers facility, which serves multiple recreation needs including swimming, jogging, fishing, hiking, horseback riding, and hunting. The facility includes an extensive recreational trail system around the reservoir. The Stilling Basin is proposed as the western limit of horse and carriage access for the Freedom Trail.

Surface improvements to the existing Stilling Basin access road are proposed to accommodate multiple users of the regional trail system.



SECTION - TRAIL BRIDGE OVER THE SCHUYLKILL RIVER
READING TO HAMBURG AND FREEDOM TRAILS
BERKS COUNTY, PENNSYLVANIA

From the Stilling Basin access road the trail makes a grade crossing of Palisades Road and then following an off-road course crossing lands owned by Berks County. A trailhead is proposed at the Berks County Fairgrounds, which could provide a location for unloading and storage of the trailers used to transport horses and carriages. Bern Township's regulations for use of the fairgrounds would have to be changed to permit this use. Crossing Hilltop Road, the trail becomes a side path adjacent to County Road. The trail continues as a side path along Reebers Bridge Road. Acquisition of easements from private owners fronting on County Road and Reebers Bridge Road will be required.



The Dam at Blue Marsh Lake

A grade crossing of Route 183 would be very hazardous due to high traffic volumes and speeds. For this reason, a trail bridge to horse and carriage standard is proposed to cross Route 183. Additional right-of-way acquisition may be necessary to accommodate this structure. This structure would provide a safe pedestrian link across Route 183 for the diverse residential and commercial uses in the vicinity.

The trail continues as a side path along Ulrich Lane and Leisch's Bridge Road. The trail crosses West Leesport Road and Old Bernville Road at grade. The trail continues as a side path on the north side of Old Bernville Road. The trail takes an off-road course departing Old Bernville Road and crossing private farmlands to reach Rick Road. Turning east on Rick Road, the trail turns off-road to the north, crossing private woodlands to attain Highview and then McCoy Lane. An on-road trail is proposed on McCoy Lane and Seidel's Run Road. These are low volume, low speed country roads. The proposed trail departs Seidel's Run Road following



County Road, Bern Township

an existing farm road across the private farm and orchard lands of Ontelaunee Orchards. Acquisition of easements or rights-of-way will be required.

The proposed trail rejoins West Leesport Road and runs as a side path across private lands. The trail runs as a side path on private lands fronting Rickenbach Road. Acquisition of easements or rights-of-way will be required. Rickenbach Road brings the trail to the Stoudt's Ferry Bridge access road. From this point, the trail shares its alignment with the Schuylkill River Trail to Cross Keys.

b. Trail characteristics and alignment: Cross Keys to Lake Ontelaunee

The Freedom Trail departs the Schuylkill River Trail at the Cross Keys Bridge. The trail makes use of this existing low volume, low speed bridge to cross to the east side of the Schuylkill River. The proposed trail is a side path on the west side of Route 61 for a short distance. The trail then becomes an on-road trail following South Riverside Drive, a low volume, and low speed (public) residential street. The trail crosses private lands adjacent to the water filtration plant where acquisition of easements or rights-of-way, and a grade crossing of the Reading and Northern Railroad will be required. The trail is on-road following Berkley Road, another low volume, low speed road. Berkley Road brings the trail to Reading Area Water Authority lands adjacent to Maiden Creek. An off-road trail is proposed through Water Authority lands at which point a grade separated crossing under Route 61 is proposed. The trail will follow the bed of an existing dirt road. The off-road trail connects to Bowers Road, a low volume, and low speed public road. An on-road trail on Bowers Road is proposed. Surface improvements to Bowers Road are proposed to support the more intensive recreational use that is anticipated, but the gravel portions are to remain such. This on-road trail connects to the existing loop trail system at Lake Ontelaunee, a Reading Area Water Authority property.

B. Trail and Trailhead Facilities

1. Parking and Access

Strategically located destination and arrival points along the trail corridor are often referred to as 'trailheads'. These points are generally best placed with approximately similar distances between each to provide users with points of access, information and accommodation. (See trail alignment maps for location of proposed trailheads). The preferred distance between trailhead locations varies based primarily upon the number (density) of users. Trailheads can be located in appropriate locations to accommodate users, limit access to the site, and concentrate amenities in a relatively compact area. More often than not, multiple smaller scale trailheads serve major corridors best by distributing users throughout the corridor rather than one or two central complex parking areas.

Site access should be designed to safely convey all users from the arrival point with adequate room to maneuver without incurring conflicts with trail users who may be unloading equipment, pets or equestrian teams. Owing to the fact that the Freedom Trail and parts of the Schuylkill River Trail will be designed for equestrian and carriage use, care will be taken to design for appropriately sized turning radii, parking spaces, staging areas, access to stables, pasture, potable water and septic disposal points for full RV and camping rigs.

2. Comfort Accommodations

Often subconsciously, trail users gauge the usability of a trail by the level of basic physical accommodations that were available during the experience. The key to providing accommodations is not volume or frequency as much as communication of the location of the amenities. As long as users know that they can expect to find a detailed orientation map, restroom, source of potable water or rest areas, they will have confidence in venturing out on their ride or trek.

Aside from parking, seating, picnic and rest areas, information kiosks and orientation signs and restrooms are the basic elements that provide an attractive and well used trailhead. Rest facilities can range from port-a-john type portable units to highly sophisticated permanent restroom

facilities that tie into local sanitary sewer system. Very remote areas can now be provided with long-life expectancy (extremely durable) composting toilet units with fans that run on solar powered roof panels. Such technology, as can be seen at the nearby Hawk Mountain Preserve, is reducing the requirements of locating near existing infrastructure.

The Freedom Trail will reportedly be the first of its kind and the largest formal equestrian/carriage trail system east of the Mississippi River. Equestrian teams are very self-sufficient crews (often families, private businesses or clubs) who can transport most of their required resources in trucks or trailers. Potable water, fenced stables and parking areas are among the most significant accommodations that make two to three day outings possible. Most equestrians seek areas of contiguous trails that can host a multi-day outing utilizing a single base camp. Areas for campfires, corrals and septic disposal will provide for an array of different users with varying size and scale teams and rigs.

3. Signage and Orientation

First and last impressions of any facility are often based upon the level of ease in which one can comprehend, visualize and orient with a facility. Properly placed, durable and graphically attractive orientation signs can quickly direct and orient a first time visitor to appropriate areas of the trailhead and the trail or equestrian facility and the overall regional trail system. The first map that a visitor experiences should provide a clear sense of 'you are here' and where you can or should maneuver. More detailed information can be provided in the form of written brochures including written policy and more detailed maps. These maps and text can convey details such as facility regulations, local resources (stores), eateries and attractions. For example, bicyclists want to know where they can find a local bike repair shop, hikers want to know where natural areas are located and equestrians need to know where they can purchase oats, hay, straw or possible additional tack supplies.

4. Emergency Contact

As important as proper orientation, emergency contact is critical to all users. With the increasing number of cell phone users today, chances are good that trail users are never far from a source of emergency contact. In extreme cases of emergency, such as a severe trail accident, users need to know where the closest hospital, doctor, emergency room or veterinarian can be located. Much of the Berks County region which encompasses this trail system is within the 911 service area. An Emergency Locator Numbering System, where every sign will have it's own number, has been developed by the Schuylkill River Heritage Area as part of the Master Signs Guidelines.

5. Location of Trailhead Facilities

Equestrian trailhead facilities will require more land area and will need to be located at strategic points within the corridor. These points need to have direct access to the trail system and will need to provide the basic access, parking, stable and corral facilities as discussed previously. Equestrian trailheads will range from more rustic accommodations in more remote areas such as Shoemakersville to possibly a very highly sophisticated, more complex facility at Riverplace in downtown Reading. Equestrian trailheads are anticipated at locations at the Berks County Fairgrounds, Muhlenberg Township Park(s), Riverplace, and possibly at Lake Ontelaunee. Other possible and logical trailhead locations for walkers and bicyclists could include locating enhanced facilities at connections to the Bartram Trail, Union Canal parking lot and at strategically coordinated locations within the current planning efforts for Riverplace.

C. Proposed Easements and Property Acquisition

This study examines the viability of the old towpath of the Schuylkill River Canal for a continuous trail corridor along the river linking Hamburg to the Stoudt's Ferry Bridge, and other trails to Reading. Route 61 and the Reading and Northern Railroad also follow the river corridor. These features occlude the towpath at some locations. Much of the old canal right-of-way has reverted to private ownership.

The proposed trail alignments connect existing publicly held lands where possible to minimize the need for acquisition of easements and rights-of-ways from private owners.

The Freedom Trail connects public lands surrounding reservoirs at both ends. Berks County owned lands in Bern Township are also crossed. Between these publicly owned lands at the two ends of the trail much of the land to be crossed is privately owned.

Approval for grade crossings of the Reading and Northern Railroad must be obtained from the Public Utility Commission.

A map showing existing ownership patterns along the proposed trail corridor is provided in Appendix B.

D. Operation and Maintenance

1. Proposed Agency Responsibilities

The proposed trails pass through the City of Reading and several townships and boroughs. More populous townships may be able to expand their parks maintenance programs to include the new trails. Some less populous jurisdictions and the City of Reading are less able to assume maintenance responsibilities. In the case of these jurisdictions, having trail maintenance for the Schuylkill River Trail performed by Berks County may be the best alternative. A critical next step in the trail implementation process is to clarify and formalize maintenance responsibilities for each trail segment.

Trail facilities can sometimes be neglected, when municipal recreation departments must set priorities among many different facilities. For this reason it is recommended that the SRGA take on a role as an independent trail advocacy group. Through a coordinating agency, trails such as the Schuylkill River Trail as well as others within the expanding Berks County trails network can help find volunteers and assist in regular trail maintenance, communication, and outreach functions. Acting across the limits of the land management organizations already mentioned, this type of independent trail organization would assure that the different agencies coordinate their efforts and would provide a representative group amongst trail users.

The Schuylkill River Council is doing work to unify the entire Schuylkill River Trail through a William Penn Foundation grant by enhancing volunteer trail-keeper programs and bringing volunteer groups together along the entire corridor. The Rails to Trails Conservancy is doing a maintenance/management study for the entire length of the Schuylkill River Trail and expect to be making their recommendation in the summer of 2007.

2. Overview and Description

Successful operation will rely on a continued and regular program of maintenance of the trail and support facilities. A Maintenance and Management Program will not only ensure a quality recreational or travel experience for the trail user but is also an essential ingredient of a risk management plan for the trail operator. Sufficient manpower and resources must be devoted to a regular maintenance schedule in order to meet these goals.

Among the factors determining maintenance requirements are existing landscape character and the nature and quality of capital improvements.

Another key element of the maintenance and management system of the trail would revolve around communication and information that would allow trail users to provide feedback and report on issues concerning trail maintenance and safety issues. This component of maintenance would be facilitated through the establishment of a trail users' organization as mentioned as well as through effective signage throughout the trail providing users with information on who to contact regarding such matters. A web site is currently underdevelopment, funded by a William Penn Foundation grant.

The maintenance guidelines that follow are necessarily somewhat generalized, and will need to be re-evaluated at such a time when a detailed capital improvement program has been defined. The maintenance implications of trail improvements should be reviewed carefully when considering capital improvements. One particular area of concern, given the existing landscape conditions, is the problem of drainage and flooding that can quickly undermine pavement structures. Money saved during the trail development process may be spent many times over if inadequate design and development creates a greater than normal maintenance burden. Trail maintenance is a major program that is related to trail safety, attractiveness, and image. The trail operator risks liability for accidents, if maintenance is ignored or negligently executed.

It is anticipated that the operating agencies will develop management systems for their respective segments of the trail. It is recommended that consulting agreements for trail design services include a requirement that a detailed trail maintenance manual and schedule be provided.

The elements of this system should include:

- Inventory of the trail and its related facilities.
- Setting of maintenance goals and standards for the quality of maintenance, hours of operation, etc.
- Developing the tasks necessary to achieve maintenance quality levels.
- Assigning the maintenance tasks to designated groups or individuals.
- Monitoring the quality and frequency of the work.
- Implementing a control system for tracking accomplishments and relevant costs.
- Evaluating the maintenance management program.

3. Table of Maintenance Tasks and Operations

Important maintenance tasks that management agencies must consider are indicated in the following Major Maintenance Tasks table as follows:

TABLE OF MAINTENANCE TASKS AND OPERATIONS

ACTIVITY	DESCRIPTION	FREQUENCY	COMMENTS
Mowing	4-foot min. wide each side of trail (where applicable)	3-4 times annually	Flail type mower best - less debris on trail
Pruning	Prune woody vegetation 4-feet back from sides of trail –14-feet vertical clearance – remove invasive vines	Annually	Vegetation Management Program may reduce this task long term
Removal of Trees/ Limbs	Evaluation/ removal of unhealthy or dead trees and limbs	Annual	Fallen trees may remain as access control and to minimize disturbance
Signage	Maintain directional and informational signs	Permanent signs - periodically as required	
Access Control	Replace damaged access control devices	Periodically as required	Estimated frequency: 10% annually due to vandalism
Trail Surface (on local roads)	Resurface	Periodically as required	Based on municipal schedule
Trail Surface (gravel road)	Repair surface damage from vehicles, erosion, etc.	Periodically as required	Based on municipal schedule
Trail Surface (boardwalk)	Replace damaged areas	Periodically as required	Spur trails only
Drainage Structures	Clean inlets, keep swales clear of debris	Minimum - Annually	Complete rehabilitation during construction would dramatically reduce necessity for this type of maintenance after storms
Litter Pick Up	Trailside-litter pickup Access area litter pickup	Weekly or as required Weekly	Encourage continued user 'carry-in, carry-out' policy
Trash Collection	Removal of trash from receptacles at access areas	Weekly	Problems with non-user trash. Some agencies do not have trash containers at access points for this reason
Bridges	Inspection by Prof Engr (P.E.) every 2 years Maintenance of bridge to ensure structural integrity	Annually by PennDOT, Municipal or County Engineer	Bridges associated with public roads are already on a regular inspection schedule.
Graffiti Control	Repaint bridges/abutments as required	Annual/spot basis	

4. Law Enforcement and Safety

Trail managers should take necessary steps to provide both a safe trail for the users and to protect themselves from liability claims. Where possible, hazardous conditions and attractive nuisances should be identified and removed during the original construction of the trail. Those that cannot be removed should have warning signs posted.

If trail segments are opened in phases, as is recommended in this study, clear mention should be made at all trail entrances and in any printed/electronic material (especially trail signage, maps, guidebooks and pamphlets) that portions of the trail are still not yet fully developed nor open to the public and that users must exercise the necessary care when using the trail.

An effective maintenance program is critical for trail safety. The maintenance program should provide for regular safety inspections. Proper tree work and vegetation management are an important part of the safety program. This includes trimming of vegetation to maintain adequate sight distance for traffic safety and crime prevention purposes.

Several individuals at public meetings expressed concern that conflicts might arise between trail usage and hunting. A program to encourage awareness by both hunters and trail users of the need for responsible usage is critical.

In addition to reducing trail hazards, documentation of trail maintenance activities is essential in combating possible liability claims. Through written records of good maintenance practices, the managing agencies will be able to protect themselves from liability claims. In terms of property ownership and liability, it should be noted that Pennsylvania recreational use laws largely protect landowners from liability related to recreational use of their properties as long as no fee is charged and the landowners uses due diligence to maintain the property and/or warn recreational users of any safety hazards.

With the ever-increasing use of cell phones by the general public, including trail users, aspects of security have changed in recent years. Users are very well prepared to report and locate questionable activity on or within trail corridors. User surveillance tends to deter potential criminal activity.

5. Trail Facilities and Orientation Systems/Marking

A trail marking and orientation system benefits both users and trail managers. Signs should be erected at all cross street and highways, even expressways, identifying the name of the cross street. Similarly, town names should be posted where the trail enters a town. This system helps trail managers to coordinate maintenance activities. The trail marking system could also help save lives in the event that emergency services might be required.

6. Vegetation Management

Effective vegetation management is a critical dimension of the maintenance program. Effective vegetation management is necessary to preserve and enhance the natural and scenic interest of the trail. Effective vegetation management is an important component of trail safety. Adequate sight distance along the trail should be maintained for crime prevention purposes. Hazardous tree limbs and other obstructions should be promptly removed.

The following system-wide standards for vegetation management are proposed:

1. *Mowing* - Herbaceous material should be mown three to four times a year a minimum of 4-feet from the trail edge (where the trail adjoins meadows, roadways or grain fields. A flail type mower is recommended as rotary types blow the screenings, gravel and mulch (surfacing) off the trail.
2. *Removal of Vegetation from Trail surfaces* – In order to maintain the integrity of trail surfaces, invasive vegetation should be eradicated through very limited and selective application of herbicides.
3. *Woody vegetation control* - Trees and shrubs should be controlled by an annual mowing along the edges of the trail (where trail is adjacent to fields, meadows and managed grass areas). Removal of woody vegetation in this width should minimize the need for frequent mechanical or hand pruning to maintain adequate horizontal and vertical clearances. Selective removal or “limbing up” of trees should also be scheduled to maintain or create desirable views from trail. Trees should also be kept clear of all drainage structures, bridges and walls that may be subject to mechanical damage by tree roots.
4. *Invasive Plant Species and Vegetation Control*: Vegetation control should discourage poison ivy along trail and the removal of invasive plant species such as Mile a Minute weed.

E. Opinion of Probable Costs

1. Acquisition

Trail development will require acquisition of easements or rights-of-way from a number of existing property owners. Some owners of other trail corridors have donated easements, often taking a tax deduction for such an easement. If easements or right-of-way are to be purchased, the use of an appraiser is recommended for help in determining a reasonable price.

A grade crossing easement must be obtained from The Reading and Northern Railroad, and an order obtained from the Pennsylvania Public Utilities Commission for every location where the Trail will cross or run adjacent to the tracks. The PUC office in Harrisburg is most helpful in guiding the trail developer through this process.

Right of way and easement acquisition costs are not included in the estimate of probable construction costs.

2. Construction

In the opinion of Campbell Thomas & Company, the probable construction cost for the entire 30 miles of trail reviewed for this study will be approximately \$16 million, including bridges and the development of sections of the trail to a carriage standard. Additional costs can be anticipated for testing and clean-up of hazardous materials, and for the removal of debris observed along the trail rights-of-way. A more detailed environmental investigation would be required to support an estimate of these probable costs. This figure does not include design fees, which can be anticipated to be 15 percent of construction costs. The analysis supporting this estimate of probable construction costs follows. Costs are calculated using July 2005 figures.

The budgetary opinion of probable construction costs presented in this report is based on analysis of trail characteristics across each reach of trail. Linear foot costs for each trail type are derived from CTC's experience with trails of similar characteristics within southeastern Pennsylvania. The typical linear foot cost for each rail type is adjusted by a factor reflecting special construction characteristics within the reach. An assumption has been made that trail

widths and surfacing will reflect an initial lower volume of trail use, and, in many places, a rural environment. Over time, upgrades and widening of the trail will need to be considered. Other special elements such as trailhead improvements and orientation signage are identified and a price derived from recent experience on similar projects is applied. Estimates reflect July, 2005 construction costs. The Segment by Segment Breakdown of Probable Costs table follows. A detailed analysis of construction costs is provided in Appendix C.

SEGMENT BY SEGMENT BREAKDOWN OF PROBABLE COSTS

SEGMENT	DESCRIPTION	SUB-TOTAL	Totals
Segment 1	Schuylkill River Trail: Hamburg to Cross Keys	\$3,372,538	
Segment 2	Schuylkill River Trail: Cross Keys to Stoudt's Ferry Bridge	\$1,939,773	
Segment 3	Schuylkill River Trail: Stoudt's Ferry Bridge to Reading	\$3,603,598	
	Sub Total, Schuylkill River Trail		\$8,915,909
Segment 4	Freedom Trail: Blue Marsh Lake to Stoudt's Ferry Bridge	\$3,562,311	
Segment 5	Freedom Trail: Cross Keys to Lake Ontelaunee	\$434,167	
Berks-Penn State Spur	Leisch's Bridge to Grigg's Mill	\$3,075,758	
	Sub Total, Freedom Trail and Penn St. Spur		\$7,072,235
	GRAND TOTAL		\$15,988,144

3. Maintenance Costs

Maintenance costs generally range from \$5,000 to \$7,000/per mile/per year for similar trails. We recommend that the responsible agencies use a figure of \$7,000 per mile to estimate maintenance costs during the first year after development. This figure can be evaluated at the end of the first year. This cost can be used for fundraising purposes as well as to solicit volunteer help for maintenance.

Many trail operators have been able to supplement their maintenance program by creating partnership agreements with local businesses, clubs and organizations. Formal cooperative agreements can be made with these partners that clearly define the roles and responsibilities of each party. Developing an effective maintenance management system is an on-going process.

F. Implementation and Priorities, Action Plan

In reviewing this section, the reader is asked to refer to the Trail Phase Development Maps in Appendix H.

In developing the following recommended action plan for trail development, the study team took into account such factors as:

- the ability of each phase of construction to “stand on its own,” i.e., that each such phase will receive significant usage, even if the entire trail remains to be constructed
- new sections of trail that serve, where possible, as extension of existing sections of trail
- topography
- public ownership
- ease of acquiring easements or right-of-way
- ease and expense of construction
- building up to each side of major obstacles such as bridges, thus leading to support for the ultimate expenditure for major capital projects

Please note that the inclusion of the trail sections and improvements, such as the Schuylkill River Bridges in the final phase of development, represent does not indicate that work on these elements should be delayed, but rather that their implementation will require a longer timetable. We recommend that financing and design work on these sections begin at once with the understanding that they will take longer to implement.

1. First Phase of Development (see Phase I Development Map in Appendix H)

The long time required to fund, design and build the required bridges across the Schuylkill River is the driving force behind the study’s recommendation for Phase I. In general, for the Schuylkill River Trail near Reading, Phase I will take advantage of trails along Tulpehocken Creek and the Freedom Trail in Bern Township. Most importantly, users will be taken off busy sections of Route 61. The sections of trail recommended are as follows, from South to North:

- The Schuylkill River Trail will use the existing trails coming from downtown Reading up to Route 183, crossing the Schuylkill River, and then following the existing Union Canal Towpath to Rebers Bridge
- From Rebers Bridge to the Stilling Basin, the trail will follow the soon to be constructed extension of the Union Canal Towpath. Alternatively, the SRT could follow the existing service road through County lands past Camp Joy to reach the Freedom Trail.
- From the Stilling Basin, the temporarily on-road Freedom Trail would be designated to Leinbachs at Route 183, and would serve temporarily as the SRT until the bridges over the Schuylkill River can be built.
- The SRT will be constructed between Five Locks and Hamburg, linking with the Bartram Trail, and in turn with the Appalachian Trail.

- The FT will be opened between Lake Ontelaunee and Berkeley Road, owing to the beauty and relative ease of developing this section. Moreover, this will provide a link of open space extended from Route 61 to all the lands surrounding the Lake.
- The SRT and FT will utilize temporary on-road segments as shown on the Phase I Development Map, to create a continuous trailway. Many of these roads are suitable for only for experienced bicyclists, and not for others. However, the signage of such a temporary route worked very successfully during the development of the Schuylkill River Trail in parts of Montgomery County to the south by building awareness of the trail, allowing experienced bicyclists to enjoy the entire trail, and by building support for making the entire trail “off-road.”

2. Second Phase of Development (see Phase II Development Map in Appendix H)

Phase 2 continues improvements to alignment established in Phase 1, by getting more of the trail off-road as follows:

- The Schuylkill River Trail will be developed from Shoemakersville to Five Locks using a scenic farm road (see the photo on this report cover), and improvements to the existing towpath segment now in use as a footpath.
- The Freedom Trail, serving as the temporary Schuylkill River Trail, will be developed off-road from the Stilling Basin to Leinbachs through the County lands and the Fairgrounds.
- The Ontelaunee branch of the Freedom Trail will be improved along Berkley Road.

3. Third Phase of Development (see Phase III Development Map in Appendix H)

Phase 3 development assumes efforts to obtain funding and approval for the Schuylkill River crossings will still be in progress. This phase of development will create a completely off-road, if somewhat circuitous, Schuylkill River Trail, and will complete much of the Freedom Trail.

The sections of trail recommended are as follows, from South to North:

- The Freedom Trail, serving as the temporary Schuylkill River Trail, will be constructed from Leinbachs at Route 183 to where it joins the SRT at the west side of the Schuylkill River near the proposed reconstruction of the Stoudt’s Ferry Bridge.
- The SRT will be developed, largely along the former canal alignment all the way to Leesport, where it will connect with the short existing section of SRT, which will be upgraded for multi-use travel.
- The SRT will be developed, largely along the former canal alignment all the way to Shoemakersville, where it will connect with the trail as developed in Phase II. Also, a section of the SRT along the former canal alignment will be constructed in Hamburg.
- The SRT will be developed in Muhlenberg Township between Jim Dietrich Park and the Muhlenberg Township Recreation Building along River Road. Although this section of trail will not be connected to other parts of the SRT, it will link a network of township parks along the River, and will provide a sidepath along beautiful River Road.
- The FT will be developed the short distance from the SRT at Cross Keys to Berkeley Road.
- Temporary on-road signage of the SRT as developed in Phase I will be removed.

4. Fourth Phase of Development (see Phase IV Development Map in Appendix H)

Phase 4 development will complete the Schuylkill River Trail, and in so doing, link the Freedom Trail to downtown Reading via a route suitable for horses and carriages.

The sections of trail recommended are as follows, from South to North:

- Construction of a new bridge at the confluence of Tulpehocken Creek and the Schuylkill River, providing direct access to the Union Canal Towpath, and equestrian access to the SRT.
- Upgrading and Construction of the SRT from the Confluence Bridge to a new bridge crossing the Schuylkill River at Route 12, and thence to the SRT in Muhlenberg Township
- Construction of a new bridge at or near the site of the former Stoudt's Ferry Bridge.
- As an important branch of the SRT, construction of a new bridge at or near the site of the former Leisch's Bridge, with a link to the Penn State Berks Campus, will provide a very attractive commuting and travel route from Muhlenberg Township to the Airport, future research facilities, and the Union Canal. This trail segment will also give communities on the west side of the Schuylkill River safe access to the SRT. Also, should the proposed route through Carpenter Technology, which has been discussed positively with Carpenter, but not approved, not be possible, this spur would provide an alternate route for the SRT.

G. Potential Funding Sources

Funding sources will vary according to the type of work being performed: studies, acquisition, design or construction. A list of potential sources is provided in Appendix D.

III. Methodology

A. Existing Plans and Field Survey

This feasibility study builds upon previous studies, planning efforts, current field surveys, interviews and workshops. The findings in this report are the products of information found in existing planning studies, synthesized with field observations, and input from the public participation process.

Information on existing conditions was obtained from aerial photographs obtained from the Berks County Regional Planning Commission. This information was supplemented and updated by field observation. Information on ownership was obtained from Berks County GIS and land records. An environmental reconnaissance was performed.

Planning documents incorporated into this study are summarized below.

Management Action Plan: The Schuylkill Heritage Corridor, Schuylkill River Greenway Association (1995)

http://www.schuylkillriver.org/management/draft_documents.asp

The Schuylkill River Greenway Association, in partnership with the five Pennsylvania counties included in the Schuylkill River Heritage Corridor (Schuylkill, Berks, Chester, Montgomery, and Philadelphia), completed this study as a requirement for State Heritage Park designation. The

Management Action Plan includes a comprehensive assessment of the Schuylkill River corridor's natural, cultural and recreational attractions in these counties.

Berks County Comprehensive Plan:

<http://www.co.berks.pa.us/planning/site/default.asp?planningNav=|26469|>

Berks County Bicycle and Pedestrian Transportation Plan

<http://www.co.berks.pa.us/planning/cwp/view.asp?a=1124&Q=442529&planningNav=|26451|>
This study adopted in 2002, and sponsored by the Federal government and PennDOT, is currently being updated.

Greenway, Park & Recreation Plan Update

<http://www.co.berks.pa.us/planning/cwp/view.asp?a=1635&Q=464110&planningNav=|>
Berks County is currently updating its Greenway, Park and Recreation Plan. This plan will prioritize opportunities that will further the goals of a countywide network of interconnected greenways, trails, and parks. The plan studies three main elements: recreation; green infrastructure/ecology; and heritage resources.

North Berks Land Utilization & Reconnections Planning Study

http://www.schuylkillriver.org/studies_reports/

This 2001 study sponsored by the Schuylkill River Greenway Association included examination of an alignment for the Schuylkill River Trail between Hamburg and Shoemakersville.

Reading Riverplace Master Plan

<http://riverplacepa.com/>

Connection between the Reading Riverplace development and the proposed Schuylkill River Trail has been coordinated through meetings and discussions with Riverplace's planning consultant.

Schuylkill River Heritage Area Signage Manual

The Schuylkill River Greenway Association has also developed signage standards. These standards will be incorporated in the design phase.

Schuylkill River Outdoor Recreation Business Study

http://www.schuylkillrivergreenway.org/pdf/intro_letter.pdf

This June 2004 study sponsored by the Schuylkill River Greenway Association considers some potential economic development

Articles published about the Heritage Area and the Trail were reviewed as well. Samples are attached in Appendix M.

B. Other Related Plans

Borough and Township Recreation Plans

The study team attended meetings with municipal officials, and public meetings at several of the municipalities to review the proposed trail, and to assure its compliance with local plans.