

PATHWAYS & TRAILS PLAN

for

Township of Franklin

Connecting Franklin's Communities



Prepared by the Trails Advisory Committee

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I. Executive Summary

The Franklin Township Pathway and Trails Plan (PTP) identifies existing trails in the Township and offers a design for an interconnected, township-wide trail system, connecting neighborhoods to local parks, schools, historic sites, cultural centers, shopping areas, and regional trail systems. It also provides an alternative transportation network for bicyclists and pedestrians.

Franklin Township is a community of over 55,000 people in a town of over 47 square miles. It is steeped in history, rich in beautiful natural areas, and fortunate to have the permanent preservation of over 33% of its land base.¹

As a natural outgrowth of this successful open space preservation program, the Township has declared its intent to connect and open these preserved lands for its residents through a system of trails and pathways.² This network of trails is envisioned for non-motorized use and this PTP is meant to guide the Township and other levels of government in the development of safe, comprehensive, and enjoyable trails for residents both within and outside of Franklin Township.

An important factor driving the development of the PTP was the attempt to connect the various geographic zones of the township--north to be connected to south and east to be connected to west. Other important factors were connecting the residential areas of the township with its commerce and educational centers; connecting population centers with recreational destinations; and connecting many of the existing Township trail systems to each other.

A. Development of the PTP.

The TAC had its first meeting on September 8, 2005 and generally has met on a monthly basis since that time. Initially, the committee began by becoming familiar with the existing trails and pathways already located throughout the Township. A field trip was conducted to review existing pathways and subcommittees were formed to identify needed trails and pathways in different areas of the Township. These subcommittees made recommendations to the full committee and many of these recommendations are incorporated in this report.

The committee's consultant, John Loos, advised the committee at its first meeting that he had been contracted by the Township, under the auspices of an eco-tourism grant,

¹ In 1998 Franklin Township residents overwhelmingly supported the passage of a referendum to establish a local Open Space Trust Fund to be used to purchase land for conservation and recreation in the Township. The Township Council thereafter established this dedicated Open Space Trust Fund which is now funded at a rate of \$0.05 per \$100 of assessed property value.

² The Township of Franklin adopted an ordinance in 2005 that established a Trails Advisory Committee (TAC). The Preamble to that ordinance states, *WHEREAS, the Township of Franklin desires to develop trails throughout the Township and the region, for both recreation and travel purposes.*

to map all existing trails in the Township, utilizing the global positioning system (GPS). This mapping was completed in April 2006 and created baseline information that was quite valuable to the committee's deliberations³.

The committee also reviewed the Franklin Township Bikeway Master Plan that is part of the Township's Master Plan. Portions of this bikeway plan have already been constructed and the committee has noted that these already constructed bike paths appear to be utilized by pedestrians as much as by cyclists.

On June 13, 2007, the TAC held a public hearing on a draft of the PTP. The purpose of the hearing was to solicit public input on the draft PTP in order that the TAC could consider such input and make any changes to the PTP that they deemed appropriate. This final PTP reflects several changes that resulted from that public input. Public input was also received from residents and interested parties during several site visits to the Millstone-New Brunswick Railroad bed conducted during the summer of 2007.

Beginning in late 2007 and continuing through the early part of 2008, the TAC presented a draft version of the PTP to the following Township Boards, Commissions or Committees for their review and input: Agricultural Advisory Committee, Environmental Commission, Historic Preservation Commission, Open Space Advisory Committee, Planning Board and the Shade Tree Commission. Input and feedback from these meetings was evaluated and, when deemed appropriate by the TAC, resulted in this plan being revised.

B. The Six Mile Run Reservoir Site.

In July 2007, Township Manager, Kenneth Daly and the Township's Land Preservation Consultant, John Loos met with then NJ State Parks and Forestry Director, Jose Fernandez, and advised him that the TAC was preparing a comprehensive trails plan that involved construction of additional trails through the Six Mile Run Reservoir Site.⁴ There currently exists, in the *NJ Trails Plan*⁵, a recommendation that all field edges in the Six Mile Run Reservoir Site include a 20-foot wide corridor adjacent to lands currently or recently under agricultural tillage. This would result, the *NJ Trails Plan* states, in over 37 miles of trails on the Site. The TAC thinks that this is excessive and would remove too much land from agricultural production and, accordingly, recommends a much more modest trail system to be located with the boundaries of the Six Mile Run Reservoir Site.

The proposed routes for paths through the Six Mile Run Reservoir Site, as shown on maps that accompany this report, are meant to be illustrative of the general location of a proposed trail or path. *It is very important that the actual path or trail should be located so as to cause little or no disruption to existing agricultural operations and also to be*

³ The existing pathways are identified in Appendix 5.

⁴ Following that meeting, Director Fernandez emailed Daly and Loos the following: Franklin Township's Trail plan. There is a need for specific planning between the Twp and the state park service to explore what resources can be brought to bear to implement the plan and how to present it for P&F Land Management review.

⁵ The section of the NJ Trails Plan that addresses the Six Mile Run Reservoir Site is included herewith in Appendix 9.

extremely sensitive to ecological issues. Thus, the actual location of the trails through the Six Mile Run Reservoir Site, if approved for construction, would have to be determined, in the field, by qualified engineering study.

C. The Millstone-New Brunswick Railroad right-of-way.

The committee gave considerable time to plans to extend a trail along the Township-owned open space that used to be the Millstone-New Brunswick Railroad right-of-way. This nearly 1.2-mile long linear area is composed of two segments: One segment from South Middlebush Road to Amwell Road and the other segment from Amwell Road to Elizabeth Avenue. Each segment was given separate consideration by the TAC. After considerable public input, site visits by most TAC members, local residents and other interested parties, the TAC has greatly modified its initial recommendations. A full discussion of the process the TAC went through and the final recommendations for this area is included in Appendix 5.

D. Mapping.

The mapping in Appendix 1 is done in GIS format that is compatible with the Township's mapping software.

E. Funding the construction of paths and trails.

It is hoped that this PTP will guide the Township in seeking funding for the development of the proposed trails. In implementing many trails plans, the most expensive step would be obtaining the land on which the trails/pathways would be located; in Franklin that will not be the case since this plan works with land that is already owned in the public sector so the cost of purchasing the land has already been expended.

The majority of the cost of implementing this plan will be the specific costs of laying out the trails (surveys), the cost of buffering or fencing locations where a proposed trail comes close to a neighbor's property and the cost of paving the bike paths. Because the committee was very aware of these costs, it has included in Appendix 8 possible funding sources for grants to construct trails and pathways.

The TAC is aware that the costs of construction (even if paid for partly by grants) must be planned for over multiple years, in annual capital budgets. The TAC does think that, spread out over multiple years, constructing multi-use paved paths for passive recreation, in accordance with the plan's recommendations, is an appropriate use of the Open Space, Recreation, Farmland and Historic Preservation Trust Fund and that the Open Space Advisory Committee and the Council should give serious consideration to such budgeting.

F. Next Steps.

The PTP provides a blueprint of proposed trails and it is anticipated that this PTP be incorporated as an element of the Township's Master Plan. It would then act as a guide for incorporation and construction of these proposed trails. It will also enable Township

planners and engineers to study potential development applications and recommend recreational designs for inclusion of this trail system into the development proposal.

II. The Franklin Township Pathway and Trail Plan (PTP)

A. Why have a PTP?

When asked what recreational opportunities are most wanted and/or most utilized, respondents to many surveys state “places to walk” as their #1 response.⁶ With this as a backdrop, the Township of Franklin adopted an ordinance in 2005 that established a Trails Advisory Committee (TAC). The Preamble to that ordinance indicates that trail development is an important goal for the township and an objective of the TAC. Specifically, the ordinance states:

WHEREAS, the Township of Franklin desires to develop trails throughout the Township and the region, for both recreation and travel purposes;

It is not insignificant that in an era when global warming and the effects of pollution from automobiles and trucks are increasingly known for their harmful effects, that the Township would establish a trails committee to look at ways to increase routes for alternative transportation methods like walking and biking. The TAC, in developing this Pathway and Trails Plan (PTP) aimed, throughout its deliberations, to keep these dual purposes of *recreation* and *transportation* in mind. Finally, it should be noted that governments increasingly are promoting fitness programs. Franklin Township’s comprehensive pathways and trails network (both existing and proposed) provides its citizens many opportunities for outdoor fitness activities.

The Ordinance that established the TAC states that the purpose, mission and duties of the TAC are:

Purpose. A Township of Franklin Trails Advisory Committee is hereby established to involve trail users and Township residents in advising Township departments, the Manager and the Council on issues related to trail acquisition, design, maintenance and use.

Mission and Duties. The Township of Franklin Trails Advisory Committee is advisory to the Mayor, the Manager and Township Council and makes recommendations to promote, protect and assist in development of enjoyable, safe, convenient trail opportunities for pedestrians, bicyclists, and equestrians throughout the Township of Franklin planning area. Duties of the Trails Advisory Committee include:

- 1. identifying current and future trails interests and needs of the community;*
- 2. identifying trail opportunities and options during development review, and analyzing alternatives for maximum potential benefit;*

⁶ For example, Loos Consulting conducted a survey as part of developing an eco-heritage tourism plan for Franklin Township. During the period November 25, 2005 through January 31, 2006, 192 people responded to the survey. In that survey, the top three recreational resources utilized by respondents were the D&R Canal State Park, the Colonial Park Gardens and hiking paths; all of these involve walking. Of the total respondents from Franklin Township, 91% said they had utilized the D&R Canal State Park in the last two years; 90% had used the Colonial Park Gardens and 67% had used hiking trails.

3. *making recommendations to the Township Council on trail policies and design issues;*
4. *making recommendations on acquisition and development of trail facilities, and trail use;*
5. *conducting trail surveys for maintenance and safety recommendations;*
6. *reviewing and commenting on public and private development actions to promote trails interests; and*
7. *other related duties.*

B. General recommendations and proposed new trails and pathways

Any future development in the Township should be planned with pedestrian and bicycle movement in the forefront. To this end, the TAC has produced a map, shown in Appendix 1, and entitled the Franklin Township Pathway and Trail Plan Map.⁷ The PTP Map proposes a township-wide pathways system that, if implemented, would make Franklin Township one of the more biker-hiker-walker-equestrian-cross-country skiing friendly townships in New Jersey. The map in Appendix 1 summarizes and shows all the locations that the TAC is recommending that there be additional trails or paths. Appendix 2 describes, in text, the proposed new trails/pathways.

In addition to recommending the proposed paths/trails contained in the above-described Appendices, the TAC is recommending the following:

1. *PTP to be an addition to the Master Plan.* The PTP and the accompanying map should be adopted as an element of the Township's Master Plan and the Township should begin, immediately thereafter, to implement the PTP. It should be noted that the PTP was developed with the intention of connecting the various geographic zones of the township (north to be connected to south and east to be connected to west); connecting the residential areas of the town with its commerce and educational centers; connecting population centers with recreational destinations; and connecting many of the existing Township trail systems to each other.
2. *Bike path/multi-use trails to be constructed through the Six Mile Run Reservoir Site.* The map contains several proposed trails or pathways through the Six Mile Run Reservoir Site. *The routes that are shown on the map are meant to be illustrative of the general location of a proposed trail or path. It is very important that the actual path or trail should be located so as to cause little or no disruption to existing agricultural operations and also to be extremely sensitive to ecological issues.* Grant funding should be sought to implement the PTP,⁸ but special emphasis should be focused on seeking funding to implement the PTP's recommendation to construct a multi-use pathway, roughly paralleling and to the west of South Middlebush Road, connecting the northern and southern portions of the Township.
3. *Adoption of a "Trails fund."* The Township should research the legality of adopting an ordinance that would establish a Township Trails Fund into which it

⁷ The PTP Map is attached hereto as Appendix 1.

⁸ Appendix 7 lists grant funding opportunities.

can receive contributions from developers towards the cost of constructing trails and bike paths throughout the Township. Specifically, the ordinance should require that:

- Any new construction in a residential zone should, whenever legally permissible, have constructed sidewalks along the side of the roads--in front of the housing or, where indicated in the PTP, the PTP-recommended pathways and/or trails. In those instances when a developer seeks a variance from this requirement, or whenever it is not legally required, a contribution towards the Township Trails Fund should be sought so that compensatory trails can be built elsewhere in the Township as mitigation for the lack of sidewalks in the new residential area.
 - Any new construction in a non-residential zone should have sidewalks constructed along the side of the road, in front of the non-residential building, whenever legally permissible or, where indicated in the PTP, the PTP-recommended pathways and/or trails. In those instances when a developer seeks a variance from this requirement, or whenever sidewalks are not required, a contribution towards the proposed Township Trails Fund should be sought so that compensatory trails can be built elsewhere in the Township as mitigation for the lack of sidewalks in the new building area.
4. *The Open Space Trust Fund as a possible source of funds for trail construction.* The Open Space Trust Fund should be considered as a possible revenue source for implementing the trails plan in the Township.⁹
5. *Sidewalks along Rt. 27.* Grant funding should be sought to construct sidewalks along Route 27, from the New Brunswick border all the way to South Middlebush Road in Franklin Park. (The committee generally agreed that sidewalks the entire length of Rt. 27 would be desirable from a safety perspective. However, in the short run, the northern portion of Rt. 27 should be first addressed, due to the population density in that area.)
- In this regard, Franklin Township should seek to partner with New Brunswick, North Brunswick, and South Brunswick to get state & federal grant money for improving Rt. 27 pedestrian/cycling access. It is noted that the State has plans to change the traffic patterns along Rt. 27 from Veronica Avenue to the northern border of Franklin Township and the City of New Brunswick and this PTP recommends that bicycle lanes and sidewalks/bike paths be constructed along this section and throughout the entire portion of Rt. 27 that will be reconstructed over the Six Mile Run bridge. Additionally, this PTP recommends continuing the bicycle lane from Veronica to Bennetts Lane.
 - Sidewalks should be constructed whenever there is any construction along Rt. 27.
 - There should be an effort to connect Franklin Township's pathways and trails to public transportation. In this regard, there are bus and train stations located near the New Brunswick/Franklin Township border and any effort to re-engineer Rt. 27 should take into account the need of

⁹ Development of pathways and trails are a permitted use for "recreation" under the provisions of the ordinance that established the Open Space Trust Fund.

pedestrians and bicyclists to get from these public transportation centers to Franklin Township's many pathways. The Township should look to partner with New Brunswick, Rutgers University and the State to improve/provide access from the N.J. Transit stations to the proposed trail system in the eastern portion of the Township.

6. *Colonial Park.* The Township should support the newly developed Colonial Park Development Plan which recommends expansion of trails into the Howe Natural Area.¹⁰ The Development Plan also recommends a bridge (pedestrian, equestrian and bike) to connect Colonial Park to the D&R Canal State Park. Finally, in the area of Colonial Park, this PTP recommends extending the existing bike path that runs through the park. The extension should continue the path to the newly proposed bridge and also down to the area of the Mettler's recreation area and to the Franklin Inn—a historic site. Finally, the bike path should be extended north to meet up with the bike path system that was recently constructed as part of the Canal Walk subdivision and which currently ends at the intersection of Weston Road and Mettlers Lane.
7. *An Adopt-a-Trail program should be implemented by the Township.* This program would involve getting citizen volunteers and or volunteer organizations (scout troops, civic organizations, etc.) to adopt a specific trail and to thereby agree to periodically walk and inspect the trail and conduct litter clean-up, debris removal, minor pruning of bushes and to report any need for additional work, such as fallen tree removal, that may have to be performed by the Township's Public Works staff. Implementing this program could be done by utilizing the existing resources that are devoted to open space—the Township's Open Space Consultant, NJ Audubon Society and the Township's Public Works Department.
8. *Canal Road.* Canal road is heavily utilized by bicyclist and given its narrow size, two suggestions are made:
 - o The Township should conduct a public hearing to solicit input on a pilot project for limited temporary closure, of Canal Road to all except local resident traffic for the purpose of enhancing biking along this scenic corridor. Temporary blockades would be placed at strategic locations and the speed limit marked as 10 miles per hour during the limited closure period. The TAC is recommending a four month trial period, during which Canal Road would be closed for three hours on Sunday mornings. At the end of the four-month trial period, the closure-plan should be evaluated.
 - o The Township should investigate and implement traffic-calming measures along Canal Road. This road is heavily utilized by on-road cyclists and the posted speed limit is often ignored by those driving cars. Suggested measures to investigate include speed humps, better signage, lower speed limits and speed limit enforcement.
9. *Enforcement.* The Township needs to be prepared to respond to complaints about, and to enforce violations of the Township's Ordinance that states that parks and open space are closed dusk to dawn. The Township should also consider hiring park rangers to scout the trails and enforce regulations.

¹⁰ Appendix 11 reproduces the section of the Colonial Park Development Plan that recommends additional trails in the Park.

10. *Dogs on trails.* The Township’s trails should permit dogs that are on leashes unless there are clearly identified environmental reasons that clearly make such activity detrimental to the environment or to wildlife in the area.
11. *Utility Right-of-Ways.* Franklin Township has a complex network of utility right-of-ways (gas, cable, high tension), and these may provide additional opportunities for trail connections or even for completely new trails/pathways. The township should be investigating further use of these. Of particular noteworthiness, there is a high-tension power line right-of-way that extends from South Middlebush Road to the west—beginning near Bennetts Lane. This may be an alternative to portions of the east-west connector, discussed in Appendix 2, Recommendations for new trails or enhancements to existing trails.

C. Issues to be considered in implementing this PTP

In implementing this Pathways and Trails Plan or any trail plans on public lands near residential areas, TAC is aware that some local residents proximate to these trails (and open spaces) may not want trails to be developed (or open space to be utilized) on lands near their properties. In this regard, the TAC has found that people are supportive of trails and pathways, *in general*, but that they often *do not want trails and pathways adjacent to their property*. As a result, very often the people who will be most vocal in their opposition are these people. If elected and appointed officials weighed local parochial opposition over the broad public interest for trails and open space, very few trails would be created because of the density of residential development in Franklin Township. For this reason the TAC recommends that the Township’s elected and appointed officials balance the interests of individual adjacent landowners, with the broad public interest in trails and open space creation, which has been repeatedly demonstrated in township-wide surveys. Specifically, the TAC recommends the following in an attempt to balance the general public’s interests with those of adjacent or nearby landowners:

1. *Property rights should be respected.* Accordingly, no “taking” of property should be utilized to implement this plan.
2. *Existing road right-of-ways.* Existing road right-of-ways should be utilized, whenever possible, to expand trails and pathways.
3. *Buffering of trails that run adjacent to nearby property owners’ land.* Where a proposed trail or pathway would be constructed near a private owner’s property, the Township should work with that owner to construct any appropriate buffering to address legitimate concerns. In this regard, the Township should consider berms, fencing, planting of trees and/or shrubs and signing (private-property-beyond-this-point), as may be appropriate.
4. *Sensitive Design of Trails Adjacent to Residential Areas.* To the maximum extent practicable, trails should be located in areas that cause the least disruption to adjacent land owners through such activities as increasing the distance from residential areas and dialogue with the affected land owner(s).
5. *Trails nearby agricultural lands.* The NJ Trails Plan proposes an extensive trail system in the Six Mile Run Reservoir Site.¹¹ Where a proposed trail or pathway

¹¹ NJ Trails Plan can be accessed at http://www.njtrailsplan.org/pdfs/05_PotentialRoutes.pdf. The section on Six Mile Run is found on page 13 of that Plan and is reproduced herein as Appendix 9.

is proposed to be constructed on the state-owned Six Mile Run Reservoir Site on land that is currently leased to a private farmer, the Township should work with the State and the lessee to come up with a route that will not negatively impact the lessee's farm operation. Also, the Township should consider fencing, planting of trees and/or shrubs and signing, as may be appropriate.

6. *Coordination with other levels of government.* Some recommendations in this PTP require considerable coordination with other levels of government. As discussed below, the Six Mile Run Reservoir Site includes over 3,000 acres in the central portion of the Township. Expanding and maintaining trails and constructing pedestrian bridges across streams may be beyond the resources of the State of New Jersey's Division of Parks and Forestry. If the Township is serious about pursuing these expansions, it may have to enter into a Memorandum of Understanding (MOU) with the State such that the Township agrees to take over some of this responsibility. Specifically, the TAC is recommending:
 - a. that the Township consider adopting several proposed trails and agree to maintain them—primarily through the TAC soliciting and creating volunteer groups that would be interested in trail creation and maintenance.
 - b. where a proposed trail goes through a field on the SMRRS and the primary maintenance of the trail would be to mow it several times each year, the Township's Public Works staff could do the mowing.
 - c. the Township should consider overseeing permit application and then Eagle Scout projects to construct pedestrian bridges across the Six Mile Run stream or boardwalks through wetlands. .
7. *ATVs.* The illegal use of off-road vehicles (also known as ATVs, quads or snowmobiles) on both public and private lands is a continuing problem in the Township. Whenever possible, trails should be kept narrow and barriers should be erected at entrances to prohibit and discourage this illegal, use on trails. Additionally, signs at trail heads that state that motorized vehicles are prohibited, that states the amount of the fine and give a phone number to call to report illegal activity, should be utilized. The Township should consider greatly increasing the fines for such illegal use.

D. Coordination with other Township Plans

This Plan should be read in conjunction with several other plans that the Township has had prepared for it.

The Franklin Township Bikeway Master Plan has many recommendations that complement this plan. Whereas the Bikeway Master Plan includes many recommendations that have since been implemented, this Plan is meant to assist the Township to focus on *priority projects* that would provide critical linkages throughout the Township and make the Township more friendly to movement without utilizing the existing roadway system.

The Meadows Foundation. The Meadows Foundation is the Township's Historic Preservation Foundation. Though it is not officially part of the Township government, it is the organization that leases many Township-owned historic structures and works to preserve and interpret them. An important part of this PTP

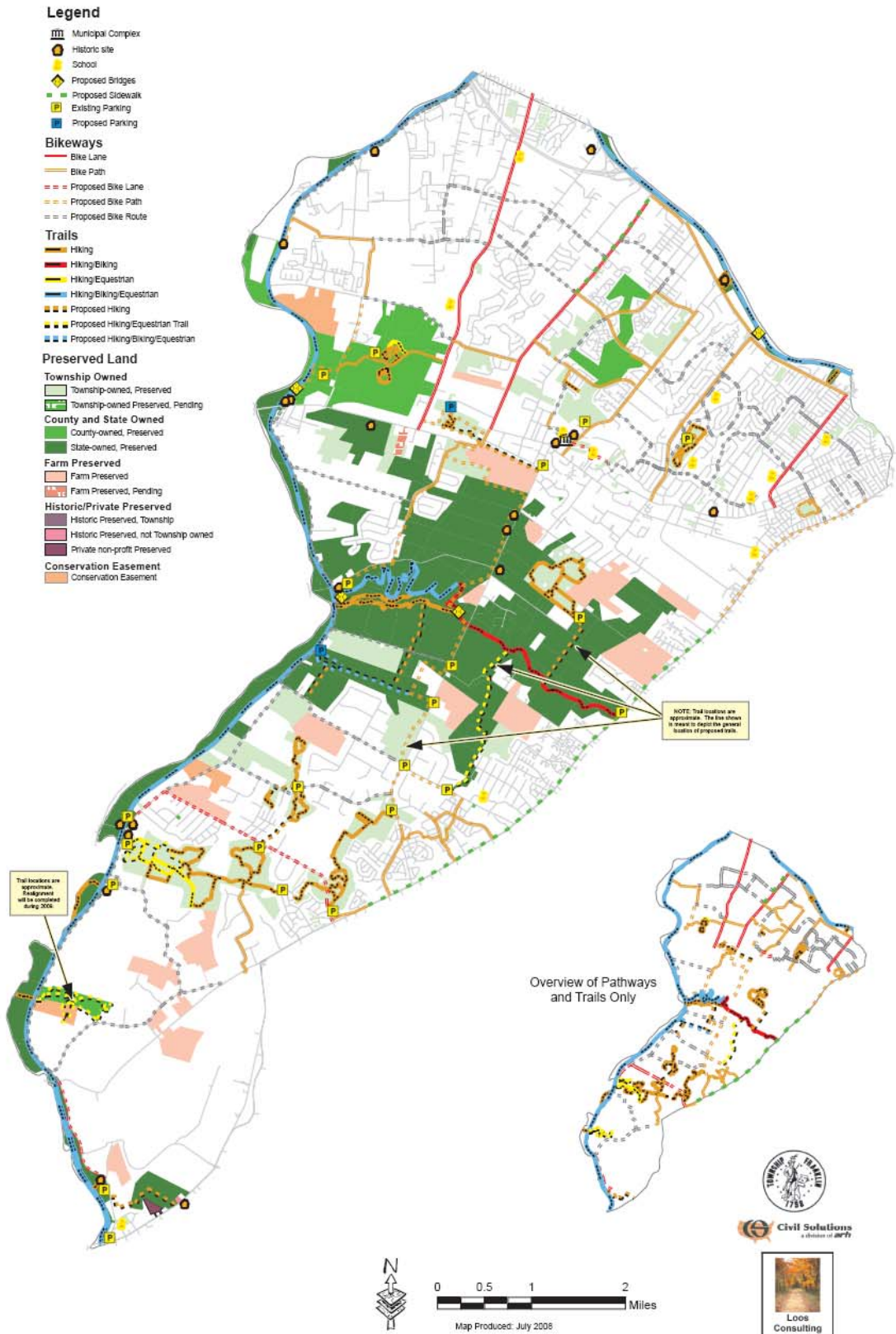
is the construction of a bike path that would roughly parallel South Middlebush Road, extending from the Middlebush section of the Township, south to the Franklin Park section of the Township. This pathway, if constructed, would link the three historic houses¹² that are managed by the Meadows Foundation, and that are located along South Middlebush Road. This proposed pathway could become an important transportation route for bicyclists and pedestrians to visit these three historic resources in the Township.

The Franklin Township Eco-Heritage Tourism Plan (EHTP) can also be read as complementing this PTP. The PTP is meant to assist the Township to focus on implementing many of the recommendations in the Eco-Heritage Tourism Plan. In this regard, this PTP is specifically endorsing the following EHTP recommendations that will expand trail and pathway access in the Township:

1. Make an Elizabeth Avenue bike lane. (The Township recently received a grant to do this and it is expected that this will be completed in 2007.)
2. Hunting promotion. (More trails make easier access to the more remote areas of the Township.)
3. Fishing expansion. (More trails make easier access to the more remote areas of the Township.)
4. Expand 'official' hiking trails on the Six Mile Run Reservoir Site (SMR-RS). (There are several trails on the SMR-RS that are already utilized but are not recognized by the State. This PTP proposes having these recognized, signed and maintained. The EHTP also recommends this when it states: "Ideas that merit further consideration include establishing a non-profit "Friends of Franklin Open Space" or similar conservation foundation which could . . . become a partner with the State, County or Township in trail construction and maintenance and in advocating for the expansion of trails on Six Mile Run Reservoir Site)
5. Linking Negri-Nepote Site with the Six Mile Run Reservoir (SMR) Site.
6. Improve Inman Park with better signage for the trails, a kiosk with a trail map at the parking lot and a "Wetland" interpretive sign. (An Eagle Scout may be constructing the kiosk.)
7. Promoting the waterways. (Though this PTP does not address the many waterways in the Township, it should be noted that waterways have historically been utilized as transportation routes. Many of Franklin Township's streams, rivers and the canal are routes that can be accessed for fishing, adjacent hiking and in some cases boating.)
8. Develop a "Franklin Township Birding Trail Guide."
9. Develop new, unpaved, trails in the natural areas of the Township.
10. Enhance Canal Road biking by closing a portion of Canal Road for short periods to all but local motorized vehicle traffic for a portion of Sunday mornings.
11. Market, in conjunction with others, connections to the Crossroads of the Revolution and the East Coast Greenway trail.
12. Expand, improve and maintain the bike paths in the Township.

¹² The Hageman House and Barns, the Wykoff-Garretson House and the Van Lieu-Suydam House.

Appendix 1: Franklin Pathways and Trails Plan



Appendix 2 Recommendations for new trails or enhancements to existing trails

Municipal

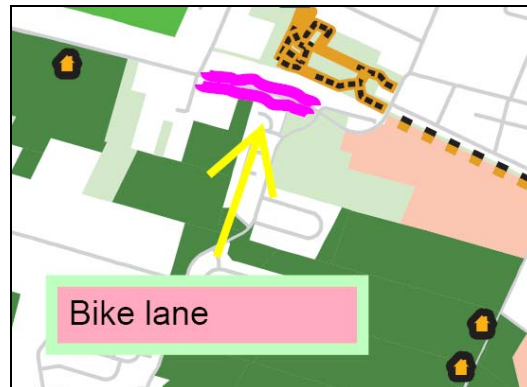
Amwell Road

Proposed improvement: Bike path and trail markers paralleling south side of Amwell Road from Van Cleef Road intersection to the former Galdi railroad right-of-way, (now Township open space); To be constructed only if the alternative East-West connector is not constructed through Six Mile Run Reservoir Site and through the Scott property.
Surface Type - suitable for road bikes



Amwell Road

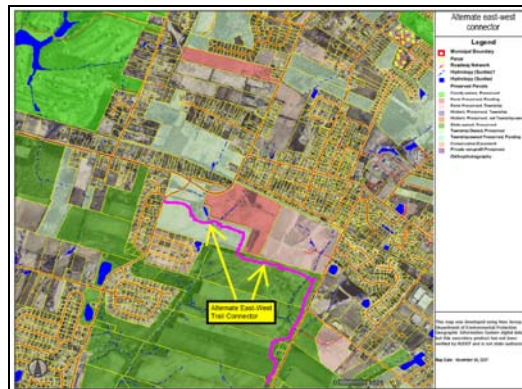
Proposed improvement: Bike lane and lane signs in the existing wide shoulder on both the north and south sides of Amwell Road from the intersection at Van Cleef Road to the intersection with Elizabeth Avenue).
Surface Type - suitable for road bikes



East –West connector: Amwell Road to South Middlebush Road

Proposed improvement: Either an east-west bike path connector and trail markers through Block 61, Lot 10 of the Six Mile Run Reservoir Site and then through the Scott property (Township open space) or a bike path and trail markers along the former Galdi railroad right-of-way (now Township open space). See full discussion in the report that recommends the path through the Six Mile Run Site as the preferable route;

Surface Type – Suitable for road bikes bike path with a natural surface trail adjacent to it.



Dunn & Gunther open space

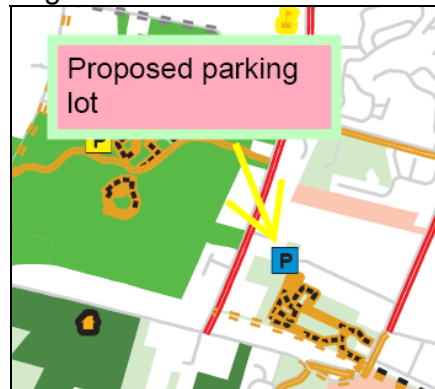
Proposed improvement: Bike path and trail markers more or less paralleling South Middlebush Road from southern edge of the Six Mile Run Reservoir Site to the intersection of Suydam Road (This trail is then proposed to continue north, through the Six Mile Run Reservoir site and through the Polavarappu subdivision—ultimately connecting to an east-west connector trail that will link to the bike path on Van Cleef Road);
Surface Type - suitable for road bikes



Elizabeth Avenue

Proposed improvements: converting the existing wide shoulder to a marked and signed bike lane. Note that the Township had previously obtained a grant to implement the conversion of this shoulder to a bike lane. However, the Township did not implement it. Accordingly, the Township should re-apply for this grant in order to implement this recommendation;

Franklin Township Memorial Forest – Amwell Road, Somerset
Proposed improvements: parking lot



Franklin Township Memorial Forest – Amwell Road, Somerset
Proposed improvements: New hiking path from Amwell Road to Elizabeth Avenue along field edges and along a portion of the old railroad right-of-way. See discussion in main body of report and in Appendix X.
Surface Type – natural



Franklin Township Memorial Forest – Amwell Road, Somerset
Proposed improvements: New bike path from Amwell Road to Elizabeth Avenue along edge of existing driveway, past the forest, then turning west and running along the two northernmost field edges and then along a portion of the old railroad right-of-way. See discussion in main body of report and in Appendix 5.
Surface Type - suitable for road bikes

Franklin Township Memorial Forest – Amwell Road, Somerset
Proposed improvements: Equestrian and dogs-on-leash should be permitted on all trails.

Franklin Township DeMott lane connector to Easton Avenue
Proposed improvement: Bike path paralleling DeMott Lane from northern terminus of the existing bike path to the intersection of Easton Avenue
Surface Type - suitable for road bikes

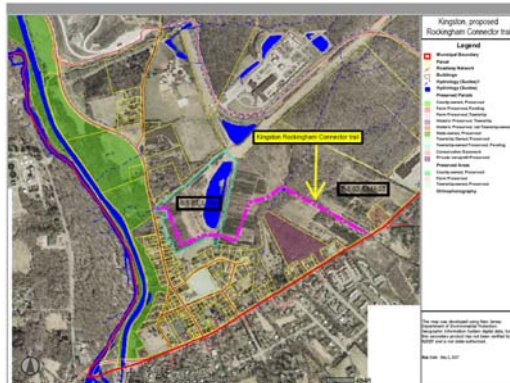
Inman Park– Leupp Lane, off of JFK Boulevard, Somerset
 Proposed improvements: kiosk, trail markers, signage to interpret wetlands



Kingston Rockingham Connector, Rt. 27 to Laurel Avenue, Kingston
 Proposed improvement: Hiking path and markers through DOT and Trap Rock property that would connect Rockingham and Rt. 27.

Surface Type - pervious, natural

Needed: Acquisition of trail easement through Trap rock property, (Block 5.02, Lot 164) and through DOT property, (Block 5.02, Lot 119.03)

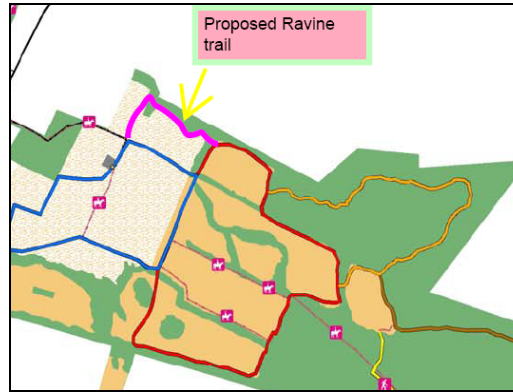


Negri-Nepote Native Grassland Preserve – Skillman Lane, Somerset
 Proposed improvements: 1/3 mile handicapped trail from parking lot to wetlands (completed in 2008); a handicapped access ramp to the wildlife viewing blind near reconstructed wetlands (completed in 2008).

Ten Mile Run Greenway, Griggstown Native Grassland Preserve – Canal Road, Griggstown

Proposed improvements: Ravine trail along the northern border along Simenson Brook.

Proposed improvements: All the double-track trails located along field edges should permit equestrian use and have signage that clearly indicates where equestrians are permitted and where they are prohibited.



Treptow Road/Martino Drive path connection

Proposed improvement: Construct a bike path to connect the existing bike path on Treptow Road with the existing bike path on Martino Drive.

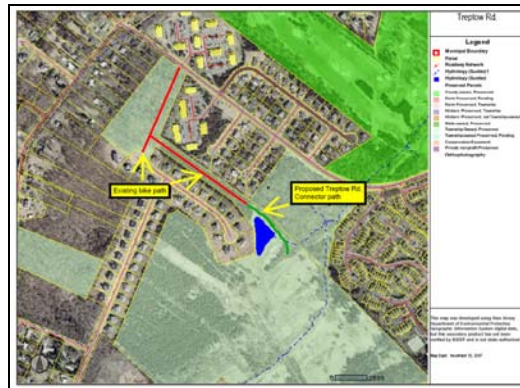
Surface type: suitable for road bikes



Gauguin Way pathway extension into Middlebush Park

Proposed improvement: Construct a bike path to connect the existing bike path on Gauguin Way to Middlebush Park's proposed trails.

Surface type: suitable for road bikes



Weston Road

To the extent feasible, add bike paths to missing sections.

Weston Road

Proposed improvements: bike path from the existing bike path along most of Weston Road to the intersection of Weston Road and Elizabeth Avenue

Weston Canal Road – Along Weston Canal Road from Manville Causeway to Schoolhouse Lane

Proposed improvements: bike path to link D&R canal towpath to existing bike path along Schoolhouse Lane;

Surface type – suitable for road bikes

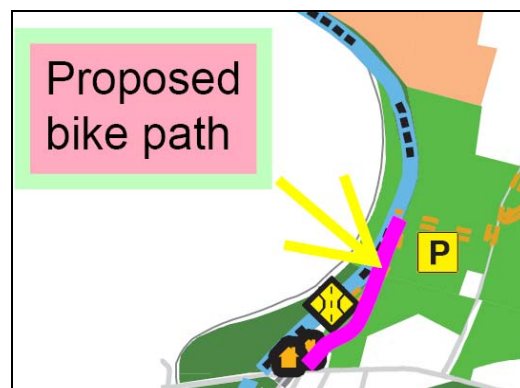
Needed: Construction in road right-of-way or land to be acquired from Pillar of Fire

County Parks

Colonial Park – Mettlers Lane and Elizabeth Avenue

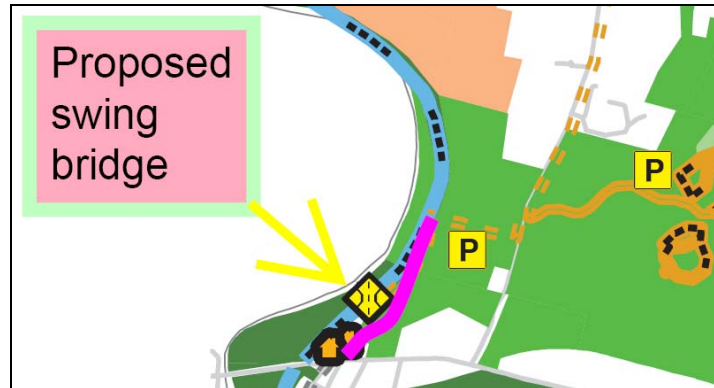
Proposed improvements: bike path to link Rose Garden to Franklin Inn;

Surface type – suitable for road bikes



Colonial Park – Mettlers Lane and Elizabeth Avenue

Proposed improvement: pedestrian swing bridge from behind Rose Garden to D&R Canal towpath;



Colonial Park – Mettlers Lane and Elizabeth Avenue

Proposed improvement: bike path or lane along Mettlers Lane from Weston Canal Road to meet up with existing bike path in Colonial Park;

Surface Type - suitable for road bikes

Needed: Construction in road right-of-way or acquire land from Exxon



Spieden & Hoebel Farms, Little Valley Natural Area – Canal Road, Griggstown

Proposed improvement: Trail realignment to avoid wetter areas and decrease erosion, along with trail markers;

Surface Type - pervious, natural

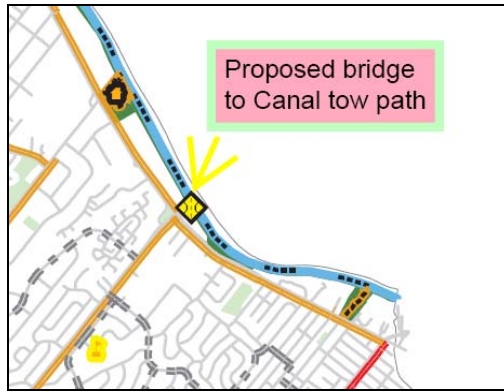
State Parks

D&R Canal State Park, Easton Avenue and JFK Boulevard

Proposed improvement: Pedestrian swing bridge from land adjacent to Somerset Diner to the D&R Canal towpath

Surface: impervious, wooden

Needed: Purchase of land adjacent to Somerset Diner and then funds for construction of a pedestrian bridge to link the land to the Canal towpath.



Six Mile Run Reservoir Site

General recommendation: have several loop trails that are shorter in length. Possible locations include trails off of Cortelyous lane and off of Claremont Road.

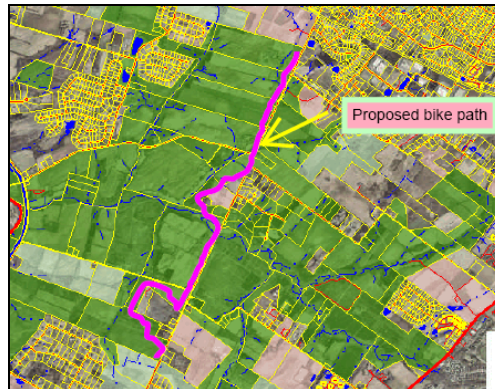
Six Mile Run Reservoir Site

Proposed improvement: Bike path and trail markers more or less paralleling South Middlebush Road from edge of Galdi farm to the Dunn/Gunther Township open space property;

Surface Type – Suitable for road bikes bike path with a natural surface trail adjacent to it.

Needed: Construction in road right-of-way or along edge of fields.

Issues: Land along field edges may be leased to farmers and several stream crossings

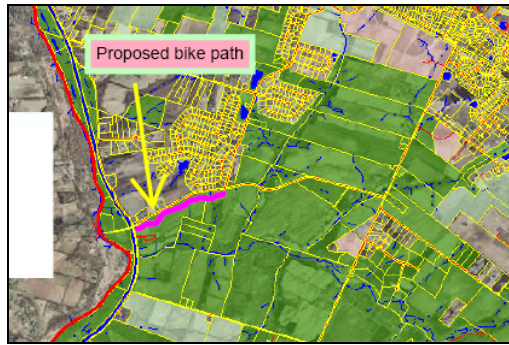


Six Mile Run Reservoir Site

Proposed improvement: Bike path and trail markers more or less paralleling Blackwells Mills Road from Canal Road parking area to the intersection with Van Cleef Road; Surface Type - suitable for road bikes

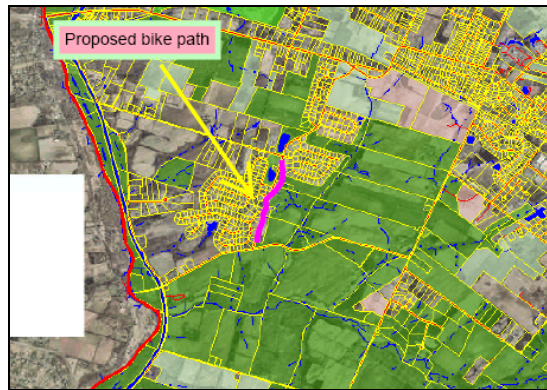
Issues: Land along field edges

Surface Type – Suitable for road bikes bike path with a natural surface trail adjacent to it. may be leased to farmers and the difficulty of going through or around wetlands, across streams and up and down slopes/bluffs.



Six Mile Run Reservoir Site

Proposed improvement: Bike path and trail markers Van Cleef Road to intersection with Blackwells Mills Road;
 Surface Type - suitable for road bikes
 Issues: Land along field edges may be leased to farmers



Six Mile Run Reservoir Site

Proposed improvement: Trail and trail markers more or less paralleling the east and western sides of the Nine Mile Run stream beginning from Claremont Road to Cortelyous Lane; Surface Type - pervious, natural
 Issues: Land along some field edges may be leased to farmers



Six Mile Run Reservoir Site

Proposed improvement: Trail and trail markers from South Middlebush Road to Sommer property along Canal Road beginning at parking lot on So. Middlebush Road;
 Surface Type - pervious, natural



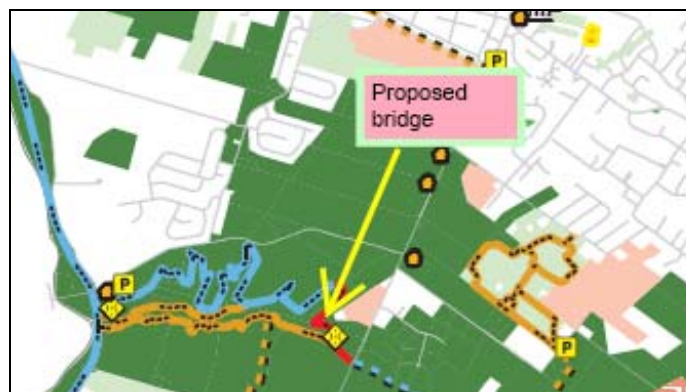
Six Mile Run Reservoir Site

Proposed improvement: Trail and trail markers from Jacques Lane to meet up with the existing Red trail;
 Surface Type - pervious, natural



Six Mile Run Reservoir Site

Proposed improvement: Pedestrian bridge over the Six Mile Run Stream to connect the existing red trail and yellow trails at he "oxbow" of the stream near So. Middlebush Rd
 Surface Type - impervious, bridge



Six Mile Run Reservoir Site

Proposed improvement: Pedestrian walkway and guardrails to be constructed along the eastern side of the existing Canal Road bridge that goes over the Six Mile Run Stream. This would be constructed to connect the existing red trail with the yellow trail near Canal Road, utilizing the stanchion of the existing bridge.

Surface Type - impervious, wooden with guardrail.



Appendix 3
Colonial Park Development Plan—Natural Preserve Area
(Reprinted from Somerset County' Colonial park Development Plan)

DPA 11: Natural Preserve Area

The recommendation for the forested portion of Colonial Park's northwestern corner is for this area to remain a Natural Preservation Area within Colonial Park. This area's physical conditions including varying topography and extensive wetlands make it difficult to develop for active recreation but are ideal for preservation and passive uses. A network of multi use trails and boardwalks should be developed that would function in creating a strong connection between the various areas of Colonial Park. Boardwalks through wetland areas are permitted uses by NJDEP. The trails should link Weston Road, the Howe Farmstead and Elizabeth Avenue. They should also link Weston Road to the family-use core of the park and Colonial Drive. The multi- use trails should include trails for equestrians as well as pedestrian uses. These trails should also have a direct connection to the existing Lois Howe Nature Trail. The vegetation in this area should be examined in more detail and a forest management plan should be developed to support existing native vegetation and the removal of invasive vegetation.

The acquisition of the Howe Farmstead has given Somerset County residents the opportunity to preserve a farmstead and open space. The Howe Farmstead is located near the eastern entry to Colonial Park and near Colonial Drive. The majority of the farmstead is recommended to be maintained as a Natural Resource area. These areas have environmentally sensitive wetland areas throughout the area. These act as a buffer for the water courses in the park. There are three fields that have attributes positive for development as athletic fields. The only one that is possibly feasible to develop as athletic field is the one that fronts on Elizabeth Avenue, with the remaining area of the farmstead land managed with the existing use. Currently NJDEP data identifies the field as wetlands. A LOI should be submitted to verify the extent of wetlands. If this area can be developed, the redevelopment of a farm field as an athletic field can maintain the vistas. The agricultural use can also be honored in the geometry and themes used in the area.

Maintaining the historic use as a farmstead is not the only way to honor the cultural heritage of Somerset County and New Jersey. Based on the results of a historic building report of the farmhouse, opportunities may exist for the adaptive reuse of the structures as an environmental center and information center. It could house information on trails within Colonial Park, the D & R Canal and Somerset County and New Jersey as a whole. Information could also be provided to the public about the differing environments found in Colonial Park and New Jersey. Exhibits can also be created that describe the history of Colonial Park, Somerset County and New Jersey. An environmental or historic commission could use the farmhouse as their headquarters.

In conclusion, the Howe Farmstead is a valuable addition to Colonial Park and Somerset County residents. Recommendations for the farmstead are to develop adaptive reuses that honor the historic use while providing supportive information and activities for the uses at Colonial Park.

Appendix 4

Six Mile Run Reservoir Site Trail System

(The following is reproduced from the *NJ Trails Plan*, the full report of which can be accessed at http://www.njtrailsplan.org/pdfs/05_PotentialRoutes.pdf. This section on Six Mile Run is found on p. 13.)

The Six Mile Run Trail System is a potential trail network located on approximately 3,000 acres adjacent to Delaware and Raritan Canal State Park, and west of Route 27 in Franklin Township, Somerset County. The area is within the Six Mile Run Reservoir site, administered by the Division of Parks and Forestry and assigned to D & R Canal State Park. Six Mile Run is a tributary of the Millstone River. Extensive vistas of rolling agricultural land interspersed with woodland make up the landscape, although residential development is planned for much of the surrounding area. With many farmsteads remaining from the early 1800s, much of the Six Mile Run area is on the State and National Register of Historic Places.

A proposed trail system would exist within a 20-foot wide corridor adjacent to lands currently or recently under agricultural tillage. A mowed grass surface trail system is anticipated to be over 37 miles long with numerous loops of varying lengths. With a 20-foot wide corridor, the trail would be multiple use and available for horseback riders, hikers, cyclists and cross-country skiers. A trail system at Six Mile Run should help relieve overcrowding at D & R Canal State Park and Somerset County facilities.

The site was originally purchased by the State of New Jersey in the 1960s and 1970s for the construction of a water supply reservoir and associated recreation. Until the Water Supply Authority decides if there is a need for a reservoir in this area, the Six Mile Run Reservoir site has been assigned to D & R Canal State Park for administration. The trail system would be excluded from leased agricultural lands, and any trail planning efforts would include farmers leasing those lands. A non-profit organization,

Friends of Six Mile Run, is leading the way in support of developing a trail system.

Appendix 5

The Millstone-New Brunswick Railroad right-of-way

There are two possible segments to this trail: a South Middlebush Road to Amwell segment and an Amwell to Elizabeth Avenue segment. In order to fully understand the proposed pathways in this area, these segments need to be understood in a larger context. This plan proposes a north-south bike path that will run roughly parallel to South Middlebush Road and will connect the northern portion of the Township with the southern portion. An earlier draft of this PTP was to have a bike path that would connect to this north-south bikeway and run east-west to provide a way for pathway users to head toward Colonial Park and the western portion of the Township. It was originally thought that the entire length of the abandoned Millstone-New Brunswick Railroad right-of-way would make the best east-west connection.

An earlier draft of this PTP called for the segment that runs from South Middlebush Road to Amwell Road (behind Smith Road), to exit onto a to-be-constructed bike path that would run along the southern side of Amwell Road down to the intersection with Van Cleef Road, where pathway users could cross Amwell at a signalized intersection and then pick up the existing bike path that runs along Old Amwell Road and then onto Amwell Road. From there, the pathway could enter the Memorial Forest site and continue through that site, eventually connecting to a portion of the abandoned Millstone-New Brunswick Railroad right-of-way on that site and concluding at Elizabeth Avenue, which has been designed with wide shoulders and these should be marked as bike lanes.

When the TAC originally proposed this route, it did not have access to the segment that runs from South Middlebush Road to Amwell Road because it was overgrown with multiflora rose and poison ivy. At the June 13, 2007 Public Hearing, many (not all) residents who live adjacent to the railroad right-of-way expressed dissatisfaction with the initial proposal. During the summer of 2007, an access-way was opened along this segment of the railroad right-of-way, which had been overgrown with multiflora rose, poison ivy and other invasive plants. TAC members, residents and other interested parties conducted several walks of this newly-cleared, which resulted in a revision of the initial proposal (see map).

Accordingly, after the input from the public hearing, after several site visits and discussions with adjacent landowners and after hearing from other residents who were in favor of public access on this open space segment, is of the opinion that any use of this segment needs to properly balance the following concerns:

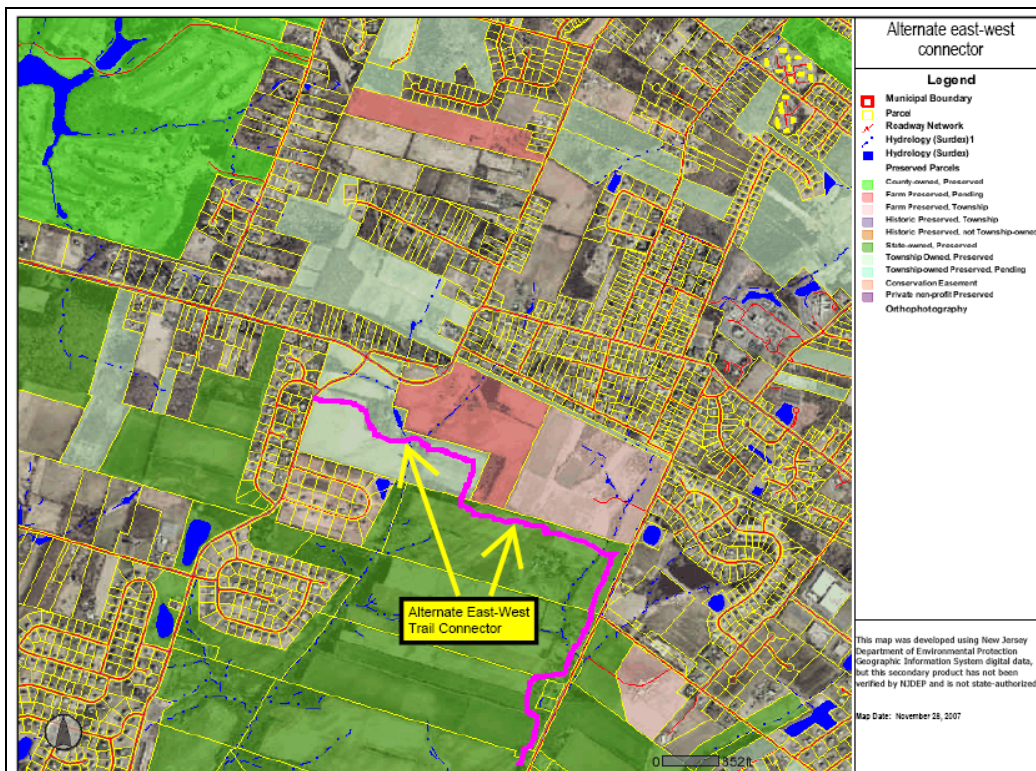
1. All open space is owned by the citizens of Franklin Township and as such should have public access on it.
2. The segment that runs from South Middlebush Road to Amwell Road has in some locations, private intrusions onto it from adjacent property owners which need to be eliminated.
3. The adjacent property owners have expressed concern that the Township open space, in its present condition, compromises the privacy that they feel they have a right to in their backyards.

With these concerns, the TAC is proposing the following:

The South Middlebush Road to Amwell Road segment.

1. That the Township contact the Department of Environmental Protection (DEP) to inquire about whether or not the DEP will permit the construction of the north-south pathway through the Six Mile Run Reservoir Site. If for some reason this is not permitted, the east-west connector to this becomes less important as it would be a stand-alone pathway, rather than an important connector to a Township-wide trails plan.
2. In the event that the DEP is open to the construction of the north-south pathway through the Six Mile Run Reservoir Site, the Township also should seek approval to continue that pathway east-west along the edge of Block 74.01, Lot 10. If the DEP will approve of this east-west connector trail, this is a far superior location for the east-west connector for several reasons:
 - a. It avoids running a paved bike path along township property that is relatively close to adjacent neighbor's rear yards.
 - b. It connects to the Township's open space property known as the Scott property,
 - c. After running through the Scott property, the bike path can connect to the existing bike path that runs along the eastern side of Van Cleef Road and continues to the signalized intersection of Amwell Road.

This alternative pathway through the Six Mile Run Reservoir Site and through the Scott property would look something like the following:



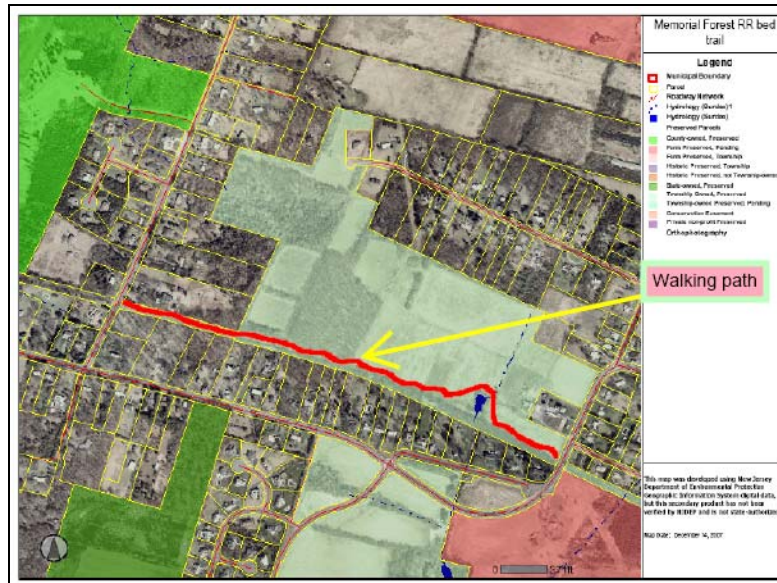
3. While the Township is pursuing with the DEP the north-south and alternative east-west bike path, the Township should identify precisely the boundaries of the railroad corridor through a survey along both the northern and southern portion of the abandoned Millstone-New Brunswick Railroad right-of-way that runs between South Middlebush Road and Amwell Road. Additionally, any wetlands should be identified and a Letter of Interpretation (LOI) and a recreational trail wetlands permit should be obtained before implementing any of the below recommendations. After establishing the boundaries of the railroad corridor, the Township should clearly delineate the boundary of the Township-owned land and work to establish a dense vegetative buffer along the northern edge of its property. This buffer should be done after consulting with each adjacent neighbor and getting input from them as to whether the adjacent neighbor would like, in addition to a vegetative buffer, any additional buffering, such as a berm, a fence, trees, etc. After fully investigating this, the OSAC and/or the TAC should compile the anticipated expense of such buffering and make a recommendation to the Township Council to fund that which they are recommending.
4. In the event that the Council approves buffering, the buffering plan should be implemented.
5. In the event that the DEP approves the alternative east-west bikeway, the concept of a paved bike path along this section of the abandoned Millstone-New Brunswick Railroad right-of-way should not be pursued. However, the township received a grant toward the purchase of this property from the Somerset County Municipal Partnership Program and a condition of that grant was maintaining public access. The County will be consulted as to the township's obligations for access under the terms of this grant obligation.
6. In the event that the DEP does not approve of the alternate east-west pathway, and after a buffering plan is implemented, the Township should hold another public hearing on the issue of the east-west bike path being constructed along the abandoned Millstone-New Brunswick Railroad right-of-way, and only after this second public hearing, should a decision be made regarding any further change to the planned use of the segment of the abandoned Millstone-New Brunswick Railroad right-of-way. However, if the DEP does not approve of the east-west connector, after a well-established buffering plan is implemented, a small, single-track, walking path should be maintained along the abandoned Millstone-New Brunswick Railroad right-of-way. However, no development of this single-track trail should begin until the boundaries of the Township open space are clearly identified and the buffering established. This single-track trail should always be located as far to the south, and as far away from the Smith Road neighbors as is feasible. Whenever possible, this walking trail will be below the railroad embankment to improve the privacy of the Smith Road back yards.
7. The above recommendations may need to be modified based upon future needs that may become identified and also based upon the effectiveness of the buffering plan.

The Amwell Road to Elizabeth Avenue segment.

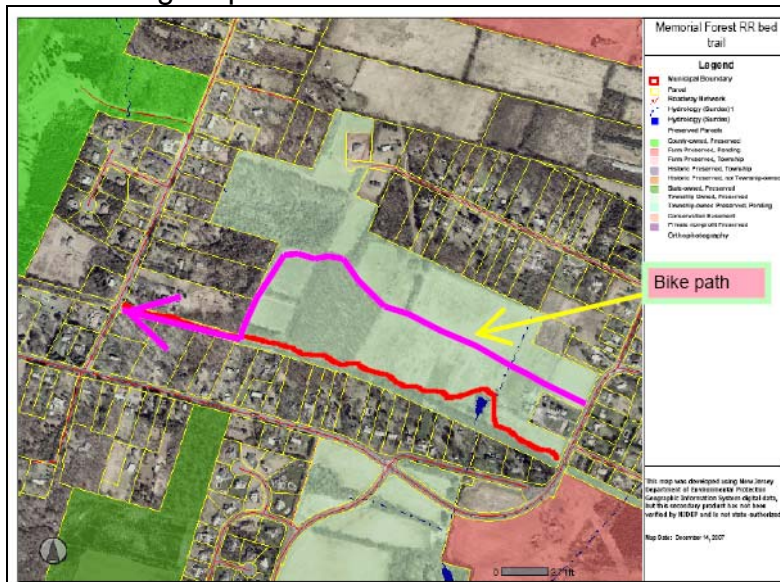
Similar concerns that were outlined above (open space is owned by the citizens of Franklin Township and as such should have public access on it; the adjacent property

owners have expressed concern that the Township open space, in its present condition, compromises the privacy that they feel they have a right to in their backyards), should guide planning for this segment of any proposed pathway. In this regard, the TAC is recommending the following:

1. That there be a walking path on this approximately in the location shown on the following map:



2. That there be a bike path, constructed on the site approximately in the location shown on the following map:



3. The property boundaries should be identified through a comprehensive survey. Additionally, any wetlands should be identified and a Letter of Interpretation (LOI) and a recreational trail wetlands permit should be obtained before implementing any of the below recommendations. The Township has begun this process.

4. Several adjacent property owners' property is currently missing any vegetative buffering along this segment and the Township should clearly delineate its boundary and work to establish a dense vegetative buffer along the edge of its property. This buffer should be done after consulting the adjacent neighbors and getting input from them as to whether the adjacent neighbors would like, in addition to a vegetative buffer, any additional buffering, such as a berm, a fence, trees, etc. After fully investigating this, the OSAC and/or the TAC should compile the anticipated expense of such buffering and make a recommendation to the Township Council to fund that which they are recommending.
5. These trail segments should permit equestrian use and leashed-dogs.

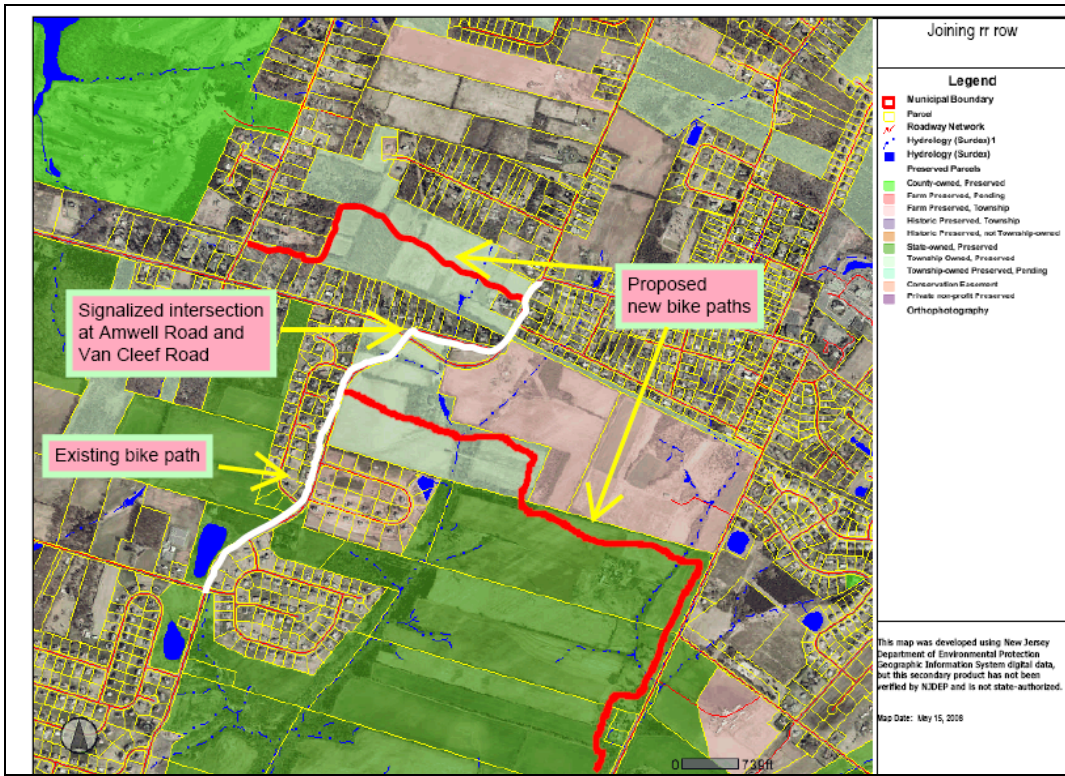
The importance of this trail segment can best be understood if one sees that the Memorial Forest path is a critical link in a proposed continuous bikeway (and potential commuter corridor) that begins in Franklin Park and ultimately links to Colonial Park, the Township's High School and the more industrialized northwestern section of the Township. This continuous bikeway is composed of the following segments:

- An existing bike path along So. Middlebush Road in Franklin Park; then joining a
- Proposed bike-path from Franklin Park continuing northward roughly paralleling South Middlebush Road; then joining a
- Proposed bike-path from South Middlebush Road running west across the Six Mile Run Reservoir Site and then continuing west across the Township's Scott open space property; then joining an
- Existing bike path that runs along Van Cleef Road and leading to a signalized intersection of Van Cleef and Amwell Roads; then joining an
- Existing bike path that runs along Old Amwell Road and then along Amwell Road; then joining a
- Proposed bike path through the Memorial Forest; and then joining a
- Proposed bike lane that would be made in the existing shoulder of Elizabeth Avenue; then joining an
- Existing bike path located in Colonial park; then joining a
- Proposed pedestrian bridge from Colonial park to the Canal towpath.

If the above bike route is implemented, a critical pedestrian-controlled signalized crossing might need to be constructed where Colonial Drive and Elizabeth Avenue intersect. The Township should seek funding to construct this signalized intersection at the same time it seeks funds to convert the Elizabeth Avenue shoulders into bike lanes.

Connecting the two segments and safely crossing Amwell Road.

The two segments join together in the Amwell Road area, near the intersection of Amwell Road and Van Cleef Road. Because Amwell Road is well traveled, crossing this road needs to occur at a signalized intersection. To best understand how the two segments connect, the following map is illustrative:



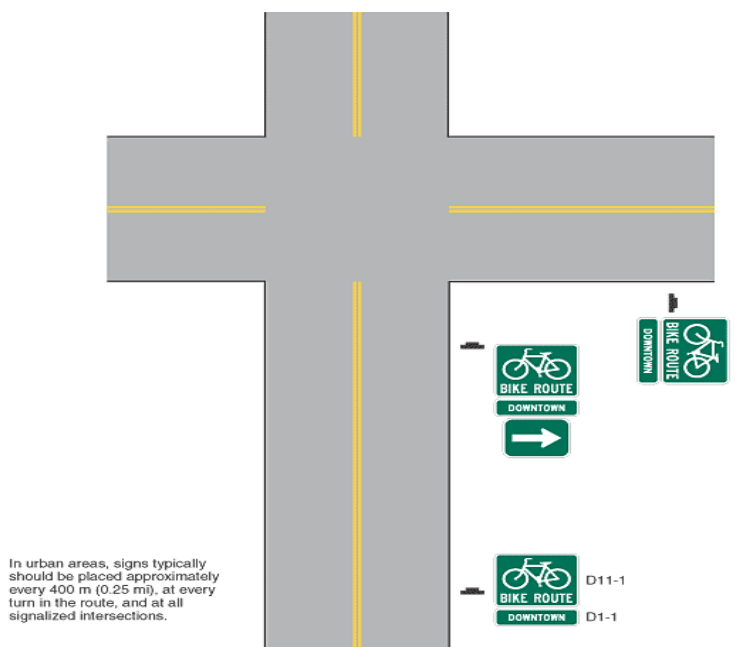
Appendix 6

Types of trails

This report, and the accompanying maps, describe several types of trails:

1. Existing and proposed bike paths. These paths, also known as multi-use trails, are constructed separate from any roadway. Generally the NJDOT recommends that these paths should be at least 8' wide and should be separated from any adjacent roadway by at least 5'.¹³ Bike paths can be paved or can be made from crushed stone.
2. Existing and proposed bike lanes. A bike lane is a portion of the roadway that is designated for bicycle travel only. Striping, signage and pavement markings indicate bike lanes, which are usually located to the right of travel lanes in each direction.¹⁴
3. Existing and proposed hiking paths. These paths are not paved and thus have a natural earth surface. Hiking paths can have several types of uses:
 - a. Hiking, snow-shoeing and cross-country skiing only;
 - b. Hiking and biking;
 - c. Hiking, biking and equestrian; and
 - d. Hiking and equestrian.
4. Bike Routes. These are recommended bicycle routes where there is no bike path or bike lane. These routes can be part of a much larger transportation system and link different part of the township to each other via a bicycle route system. Generally they should be signed similar to the following:¹⁵

Figure 9B-6. Example of Signing for an On-Roadway Bicycle Route



¹³ Franklin Township Bikeway Master Plan, March 2001, page 2

¹⁴ Franklin Township Bikeway Master Plan, March 2001, page 2.

¹⁵ Manual on Uniform Traffic Control Devices

Appendix 7

Trail Design, Construction and Management

The groundwork of trail construction begins once the use, surface type and purpose is decided and the location is identified on a map. These factors will influence how and where a trail is built therefore it is important that they are realistic and will serve the intended users. Although trails do not always have to accommodate everyone, all trails will be greatly enhanced by signage, which provides objective information about trail conditions. This section provides an introduction to trail design, construction and management and addresses critical issues such as water management, security, handicap access and permits.

Trail Scouting

The main objectives of scouting a trail are to:

1. Verify control points (places of entry and exit) to determine if the mapped route is feasible.
2. Find the best alignment that fits all objectives
3. Identify natural features to enhance the user's experience
4. Validate that the route is reasonable to construct and maintain

The trail locator must scout a property to find the best route to investigate the presence of the following features:

1. Gaps or passes
2. Stream crossings
3. Rock outcrops
4. Known areas to avoid (threatened and endangered species, poor soils)
5. Known features to include (scenic overlook, historic site).

Scouting a trail is best done with two people. One person can walk ahead of the other and look out for obstacles and the best possible route while the other records all data collected using various tools. This individual can also “flag” the trail route.

Trail Development Expenses

The following list details potential costs for materials and permits, which may be required

for trail development:

- Trail design
- Trail signs and markers
- Trail surface materials
- Roadway improvements for bicycles such as bike lane striping, asphalt bicycle stickers and storm drain covers compatible with bicycle tires.
- Wooden gates or bollards at trail entrances to prevent ATV access when trails begin along and cross roadways
- Privacy fences when trails are located close to homes
- Construction tools and equipment
- Surface materials and professional labor as needed
- Expenses associated with a New Jersey Department of Environmental Protection Freshwater Wetlands General Permit (*See: Permit section below*)

Designing Trails

- Should blend into natural surroundings by maintaining continuity and regularity

in the way it traverses the land.

- Cultural and historic features add dimensions to a trail design.
- Trail design is a balance between beauty and function.
- Best time of year to conduct a trail layout is during the spring and fall, when the leaves are off the trees and the ground is clear of ice and snow. It is also beneficial to check a trail location throughout the year, to see if it possesses any drainage problems.
- Parking facilities should be carefully planned along with trails.
- Use vegetation in trail design: to channel and contain hiker traffic, to retard trail erosion, to protect from the weather, to buffer and insulate hiking activities, to provide building material, to use as indications of soil characteristics.

Formats for Trail Design

- Loop- popular for day-use trails because it enables easy access and parking.
- Line- simplest and most common. Connects two points: trailhead and destination.
- Horseshoe- valuable especially in areas with public transportation.

Multi-use Path Width (on developed land where users include walkers, bicyclists and handicapped)

- The width of the multi-use trail affects pedestrian usability and the types of users who can use the path.
- The tread of the path should be at least eight feet wide.
- This type of path will need to be paved to accommodate all potential users

Trail Surface Type

- Surface types are gauged by their firmness, stability and slip resistance
 1. Firmness: the degree to which the surface resists deformation by indentation when someone walks or wheels across it.
 2. Stability: the degree to which a surface remains unchanged by contaminants by or applies force.
 3. Slip resistance: based on the frictional force necessary to allow someone to travel across the surface without slipping.

All trails should be firm and stable. Examples of trail surfaces with their corresponding firmness, stability and slip resistance include:

- o Asphalt: firm, stable, slip resistant
- o Concrete: firm, stable, slip resistant
- o Boardwalk: firm, stable, slip resistant
- o Stone cylinders for crossing watered areas: firm, stable, slip resistant
- o Soil with stabilizer (soil cement): firm, stable, slip resistant
- o Packed soil without stabilizer: firm, stable, not slip resistant
- o Soil with high organic content: soft, stable, slip resistant
- o Crushed rock with stabilizer: firm, stable, slip resistant
- o Pea gravel: soft, unstable, not slip resistant
- o Sand: soft, unstable, not slip resistant

The tool used for determining firmness and stability is known as a rotational penetrometer. It measures surface firmness by pressing an indenter into the surface with a specified amount of force and records the amount of displacement. Stability is measured by rotating the indenter back and forth while the force is applied and then records the amount of displacement.

Trail Intersection with Roadway

- Trail should intersect the street at a 90-degree angle to increase visibility of pedestrians for motorists.
- Increase trail width at the intersection to reduce user conflicts.
- Provide signage for both motorists and pedestrians to ensure awareness of the intersection and a reduction in speed.
- Provide a visible crosswalk across the intersection to increase trail user and motorist awareness and safety.
- Use curb ramps where needed and curb ramps should be as wide as the average width of the trail. They should also have a number of other characteristics:
 - o A level maneuvering area or landing at the top of the curb ramp
 - o Clearly identify the boundary between the bottom of the curb ramp and the street with a detectable warning.
 - o Provide adequate drainage to prevent the accumulation of water or debris on or at the bottom of the ramp.

Environmental Considerations in Trail Design

- Soil Characteristics- trails needs to be located on soils that are capable of withstanding the amount of anticipated use without eroding or becoming wet and muddy. *Compaction* is a problem and occurs when the surface horizons of the soil compact into a cement-like hardness due to plant mortality caused by hikers. The compacted surface loses its pore space and its ability to absorb surface water. *Surface Erosion* is another problem, which leaves loose stones, gravel and tree roots after the stabilizing sand and silt particles have been removed by water. This then causes poor footing for the hiker causing the hiker to walk along the edge of the trail, further killing plants and compacting the soil. In determining the best location for a trail, one should consider:
 1. Soil wetness: areas with very poorly drained soils should be avoided.
 2. Soil Texture: loam soils with a mixture of sand, clay, and silt will resist erosion and compaction most successfully and absorb a high level of rainfall.
 3. Soil Structure: Hardpans are hard, compacted soil horizons that are generally impervious to the downward movement of water and make trails wet and susceptible to damage.
 4. Soil Depth: Shallow soils are heavy and saturated with water, which leads to erosion when walked upon.

Trail Design to minimize erosion

Minimize amount of ground area that is disturbed, especially in areas over a 5% grade. Trails on steep slopes should be narrow. When designing the trail, plot the trail course on grades equal or less than 5%. Natural drainage patterns should not be altered. A number of techniques can be used to manage water run-off on a trail including:

- Planting native plants to absorb water is very useful in large areas where the soil has been disturbed.
- Sediment barriers: bales of hay, silt fencing, retaining walls and filter strips. These tools trap sediment and prevent an area down slope from becoming over-silted which negatively impacts plant as well as wetlands and water bodies.
- Proper drainage will carry the water either over the trail, under the trail,

or will intercept the water before it crosses the trail.

- Surface runoff intercepted by erosion-control measures must be collected by drainage-ways and discharged in stabilized areas or sediment basins.
- Cross-drainage techniques such as swales, culverts, water bars and deflectors should be utilized to divert water off of the trail as soon as possible.
- *Swale*: a depression constructed across a slope above and in conjunction with an earthen berm. A swale is appropriate where runoff might create erosion problems running across a trail. On slopes which have a trail grade less than 10%.
- *Culvert*: a metal, plastic, cement or wood pipe placed under a trail to permit crossing an intermittent or active stream.
- *Water bar*: a rock, earthen or log barrier angled to divert water off a trail. In general, the greater the slope and the higher the velocity or volume of water, the greater the need for waterbars as opposed to other drainage techniques.
- *Deflectors*: rubber belting fastened to treated timbers which are placed in the ground to deflect water off a trail. Areas appropriate for this tool are where low water volume is expected and heavily traveled trails where mountain bikes are expected

Observe the trail during a rainstorm to more accurately determine the need for these tools. When crossing shallow pools or areas that are consistently wet, steppingstones are appropriate and should be utilized, rather than bridges in order to obviate getting DEP permits. Trails should be designed to shed water rather than allowing water to accumulate in puddles--especially necessary in areas where hikers steps widen the path as they move to avoid wet areas.

When crossing deep water, bridges are necessary or raised boardwalks to cross extended areas of water or wetlands.

Trail Maintenance

- *Adopt-a-Trail Program* this program will work to connect local volunteers to specific trails for stewardship purposes. These volunteers will accomplish all necessary maintenance work that does not require heavy equipment, on a regular basis to ensure the trails remain usable and safe. Prior to opening a trail the Trails Committee will work to identify a steward for that trail.
- *Regular clearing* is one of the most important jobs for maintaining established trails.
- *Standardizing* is a technique of clearing brush next to a trail to put it into standard condition (adequate height and width)
 - o Standard width varies with vegetation and terrain but a 4 to 6 foot clearance is standard in most cases. Standard height is normally 8 feet or as high as one can reach.

Trail Signs

- *Paint blazing* – most common, durable, and inexpensive. Blazes are simply marks on a tree made with a distinct color of paint. Typically they are 6 inches by 3 inches

and occur at intervals of 100 yards or more frequently if the trail features many turns and is subject to vegetative overgrowth.

- Signs – essential component, many different types of signs. Trailheads should be posted with signs that provide a map and other trail connections with trail name, distance, color of blazes used to mark trail along its course and potential danger. Nearby roads and landmarks are also useful to help orient and prevent the individual from becoming lost.
- Multi-use trails signs at trailheads should indicate which uses are permitted.
- Cairns and Posts – treeless areas sometimes require cairns (constructed rock piles). In the absence of rocks, posts can be used.
- Signs need to be standardized and easily accepted and recognized by all users of the trails.

Handicap Accessibility and Trail Design

The Americans with Disabilities Act (ADA) requires that trails are accessible however it does not provide guidelines for construction. The Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas conducted a national forum that began on June 1997 and concluded on July 1999 with a report¹, which includes ADA Accessibility Guidelines for trails, outdoor recreational access routes, beach access routes, and picnic and camping facilities. The Committee's guidelines are undergoing a regulatory assessment by The Access Board, an independent federal agency responsible for developing minimum accessibility guidelines under the ADA. Once The Access Board completes its assessment, which is expected in 2005, the federal Office of Management and Budget will conduct a review. Finally, the proposed guidelines will be published in the Federal Register with an invitation for public comment over a 90-day period.

The proposed ADA accessibility guidelines apply to those trails, which are designed and constructed for pedestrian use. These guidelines are not applicable to trails primarily designed and constructed for recreational use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may occasionally use the same trails. However, a multi-use trail specifically designed and designated for hiking and bicycling would be considered a pedestrian trail. The proposed guidelines apply only to areas of newly designed or newly constructed and altered portions of existing trails.

Under the proposed ADA guidelines, an accessible recreation pedestrian trail would meet the following minimum technical provisions:

- Clear tread width: 36 inch minimum
- Tread Obstacles: two inch high maximum (up to three inches high where running and cross slopes are 5% or less)
- Cross Slope: 5% maximum
- Running slope (trail grade) meets one or more of the following:
 - o 5% or less for any distance.
 - o up to 8.33% for 200 feet maximum; Resting intervals no more than 200 feet apart.
 - o up to 10% for 30 feet maximum; Resting intervals 30 feet.
 - o up to 12.5% for 10 feet maximum; Resting intervals 10 feet.
- No more than 30% of the total trail length may exceed a running slope of 8.33%.
- Passing Space: provided at least every 1000 feet where trail width is less than 60 inches

- Signs: shall be provided indicating the length of the accessible trail segment. Departures from specific accessibility guidelines are permitted for any portion of the trail where compliance would:
 - Cause substantial harm to cultural, historic, religious, or significant natural features or characteristics;
 - Substantially alter the nature of the setting or the purpose;
 - Require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes;
 - Not be feasible due to terrain or the prevailing construction practices

Permits

In order to construct trails throughout the Township there will be a need in some cases to obtain state permits. The need for a construction permit depends on the location and surface type of the trail. For example a trail with an impervious surface will require a municipal permit. NJDEP requires a permit for trails in wetland areas. Two of these permits will incur fees and need to be considered as part of the total construction cost of a trail. The following two permits issued by the New Jersey Department of Environmental Protection can be found on the provided websites.

- Freshwater Wetlands General Permit Authorization

General permit 17 is specific to trails and boardwalks

This permit costs \$500 and the review process typically last 90 days.

<http://www.state.nj.us/dep/landuse/forms/index.html#fww>

The D&R Canal Commission also requires permits in certain instances. They can be obtained at dandrcanal.com/drcc/regulatory/html

Security

The need for trail security and policing typically stems from the use of off-road vehicles (ORV), such as ATVs and dirt bikes, on public hiking trails. Trail networks also require policing in case of emergencies such as when a user becomes lost or injured. A partnership between the Trails Committee and local police and emergency response teams will work to mitigate security related issues as they develop.

For example, the community of Randolph Township in Morris County maintains 16-miles of trails across 2,000 acres of open space. The Randolph Township Police Department utilizes both a multi-use motorcycle and a Ford Ranger pick-up truck to patrol the trails network.

The pick-up truck allows the patrolmen to cross trail-bridges and remove hikers who have become incapacitated. The Township also utilizes a trail marking system that incorporates a colored marker with a number. Therefore if an individual requires assistance their location on the trail network can be pinpointed more accurately and the responding rescue team can enter the trail network at the best possible location.

ORVs pose a serious threat to the safety of trail users and cause substantial environmental degradation. ORV use on trails leads to erosion, which facilitates the destruction of a trail. The following list identifies various methods for addressing illegal ORV use on public lands:

- Conduct an education outreach to inform residents that ORV use is prohibited on municipal property. Provide locations in the region where they permitted.
- Establish a municipal ordinance that prohibits the use of ORVs on municipal property and levies severe fines against those who are apprehended.
- Require ORV owners to register their vehicles with the Township and implement a vehicle identification system.
- Urge trail users to call the police when they observe ORV use on municipal property. This is accomplished by posting advisories that cite the municipal ordinance and provides police and emergency medical team phone numbers.
- Provide resources to report incidents to the Township police and Trails Committee. For example, provide forms at trailheads and on the Township website that provides space to record the location, date, time of the incident.
- Access barriers: in some cases the placement of boulders, gates, bollards-and-chairs or metal posts will prevent ORVs from accessing trails.
- Placement of motion activated cameras

Trail users at times become disoriented or injured, which may result in the need of an emergency response team. In order to reduce the potential of users becoming lost the Trails Committee can develop and distribute trail maps that identify trails, their names and the location relative to significant landmarks in the Township. These maps can be posted and distributed at trailheads. The Township police department and local emergency response team should also be made aware of the trail network as well as points of risk to trail users. In order to facilitate their response time in emergencies points of entry for their vehicles and equipment can identified as well as environmental features that pose a risk to their work.

Appendix 8

FUNDING SOURCES FOR TRAILS¹⁶

Once a public agency has decided on developing a new trail, the need then rises for funding the planning of the route, acquisition of land for the trail, development of the path and its facilities and landscaping, maintenance to assure a high quality of trail surface and user safety, and patrolling to protect trail users and prevent illegal uses and abuse of surrounding properties. Maintenance of existing trails has become a major problem throughout the state for all public trails, due to increased use of trails by the public, and simultaneously, decreased numbers of staff to perform the maintenance required. In the past, funding came largely from state or local appropriations for parks, and trails were just one segment of the park. As appropriations continue to dwindle, other sources must be sought out and creative new sources explored. Various funding sources can be combined to enhance the trail opportunities. In some cases this is required when matching funds are obtained from grant programs. Some federal and state programs may not offer funding directly, but may provide a justification for funding from another agency. For example, designation of a trail as a national recreation trail can be used as a justification for receiving federal funding from the Land and Water Conservation Fund.

Federal Government Sources

The primary federal source of trails funding used by states has been, in the past, the Land and Water Conservation Fund. This fund is administered at the federal level by the National Park Service with a yearly appropriation determined by Congress. The program is administered at the state level by the Green Acres Administration. A requirement for receiving Land and Water Funding is the preparation of a State Comprehensive Outdoor Recreation Plan. To qualify for funding a project must meet the state's overall plan. New Jersey has used these funds to acquire land for the Appalachian Trail in Sussex County, Hunterdon County used funds for acquiring land for its South Branch Linear Park, and Morris County used these funds to acquire land for Patriots' Path. However, the amount of this funding source has been decreased recently by Congress and the President.

¹⁶ NJ Trails Plan at <http://www.njtrailsplan.org/1996plan.html>, pages 109-111.

In December 1991, Congress passed and the President signed into law the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). This act set precedents in providing transportation funding for trails that did not necessarily have to be part of a transportation network. Provisions for bicycle and pedestrian planning, and enhancement funding have the most impact on trails. Transportation enhancements include bicycle and pedestrian facilities and the protection of abandoned railroad rights-of-way as trails. It has funded trail projects that have identifiable starting and ending points, which have a transportation and not strictly recreational use. This could be a major source of funding for the acquisition and development of lines in New Jersey. Funds are available on an 80% basis, with states to provide the other 20%. ISTEA is administered by the Federal Highway Administration, through the New Jersey Department of Transportation.

The Symms National Recreation Trails Trust Fund established funding for both motorized and non-motorized trails from the gas tax on off-road motor vehicles. This is the first federal act to establish a funding source exclusively for trails and that is available for acquisition, development and maintenance. To qualify for funding, states must, within three years of the date of enactment, establish an advisory committee and initiate a separate trust fund from state taxes on gasoline for off-road vehicles. Funding was only awarded to states for the 1993 fiscal year, the only year out of the five years the act was in effect. With only \$7.5 million appropriated nationwide, New Jersey's share was approximately \$124,000. Projects were recommended by the New Jersey Trails Council, the advisory committee to the DEP on trails. Other parts of the act address trail issues as well.

The National Park Service provides technical assistance for planning and management of trails through its Rivers and Trails Conservation Assistance Program. Staff or funds can be used by state agencies, local agencies, and private groups to develop plans for a trail route, its development and management, public workshops, and public information such as brochures and maps. Application is made to the regional office, which for New Jersey is located in Boston, Massachusetts.

Other federal programs can be used to provide funds for trail planning, acquisition, or development; however, they too are subject to annual appropriations. They include:

- Community Development Block Grants, Entitlement Program - U.S. Department of Housing and Urban Development;

- Economic Development, Grants for Public Works and Development - U.S. Department of Commerce, Economic Development Administration; and
- Urban Park and Recreation Recovery (UPARR) Program - U.S. Department of Interior, National Park Service.

For local governments, federal funding for trails can come from Community Development Block Grants, administered by the Department of Housing and Urban Development. Proceeds from block grants may be used to establish parks and neighborhood centers, of which trails are eligible funding items. Special legislation approved by Congress has been used for the Pinelands National Reserve to acquire lands for a wide variety of uses, from natural resource protection to passive recreation. Section 502 of the National Parks and Recreation Act of 1978 authorized over \$20 million for land acquisition in the Pinelands National Reserve. Most of the land acquired with these funds does not have marked trails, such as in Wharton State Forest; however, hiking and other trail uses are permitted.

State Government Sources

New Jersey's Green Acres Program has been a mainstay in funding open space preservation since 1961. Through several bond funds, approved by voter referendums, the Green Acres Program has funded a wide variety of outdoor recreational projects, including trails. Funds have been used at the state, county and municipal level for acquisition and development. Green Acres funds are being used to acquire connector parcels for the Batona Trail in Burlington County. These acquisitions will put the entire trail on public land. Green Acres funding along with federal funding was used to acquire the Bel Del Railroad Right-of-Way next to the Delaware and Raritan Canal State Park in Hunterdon and Mercer counties.

General revenue funds approved by the state legislature have been the primary source of funding for trail and trail facility planning, development and maintenance on state lands. The funding to pay the cost of supplies for building bridges, parking lots, information boards, equipment used throughout a park to construct facilities, and labor costs for the State Park Service has come directly from appropriations approved in annual budgets. Because these funds are approved annually, the amount of funding available changes from year to year. In recent years, there have been no capital monies available for trail maintenance or other park improvements. At the same time, maintenance staffs have decreased. Consequently,

much funding for parks has been used to repair or upgrade other facilities, particularly those involving health and sanitation, and trail development and maintenance have not been performed as often as needed. Therefore, this source of funding can only be relied upon for emergencies or for the purchase of supplies and equipment. The New Jersey Youth Corps, administered by the New Jersey Department of Education, provides work crews at a reduced cost for community service projects. Corps members work in crews of five to ten members on trail-related projects such as landscaping, trail construction, and public park beautification. Another limited source of state funding for trails on private property is the Open Lands Management Program. This program provides funding for passive recreational facilities, including hiking, horseback riding, picnicking, nature observation and primitive camping, among others. Funding can be used to link a trail on private property with a larger network of trails on public land. The program is administered by the Division of Parks and Forestry and is funded by an annual appropriation.

Local Funding Sources

Although fees can be used to offset the costs of facility development and trail maintenance, this is not recommended for Franklin Township

Private donations of land, equipment and labor have always occurred, but solicitations to the general public and corporations have increased with less public funding available. Volunteers of clubs, organizations and businesses have been major contributors as volunteers for cleanups along trails and rivers, and for trail maintenance and construction. The most active group working on trails within New Jersey have been the New York-New Jersey Trail Conference, which develops, monitors and maintains trails in northern New Jersey.

Cooperative efforts with nonprofit organizations can be used where nonprofits can match public funding with foundation grants that are not available to public agencies.

Although no formal "Adopt-a-Trail" currently exists within the state parks, programs have recently been initiated in Monmouth and Morris Counties. Trails can benefit from an adopt-a-trail program with clubs, organizations and businesses providing maintenance, development, interpretation of the resources found along a pathway, and in some cases emergency response for injured trail users. The State Park Service can expand its Volunteer in Parks (VIP) Program to trails as well. Through this program, individuals apply to the State Park Service to conduct various tasks. Functions can include interpretation,

public information, maintenance, gardening, crafts, and camp host program. For trails, interpretation of natural and cultural features, developing public information, and maintenance of a trail surface can be applied under the program. With proper supervision, community service workers can sometimes be used for trail development. Some states have also used the National Guard to do construction projects.