Conceptual Plan

August 16, 2007

Prepared for:

Ocean County Board of Chosen Freeholders

Ocean County Department of Planning and Solid Waste

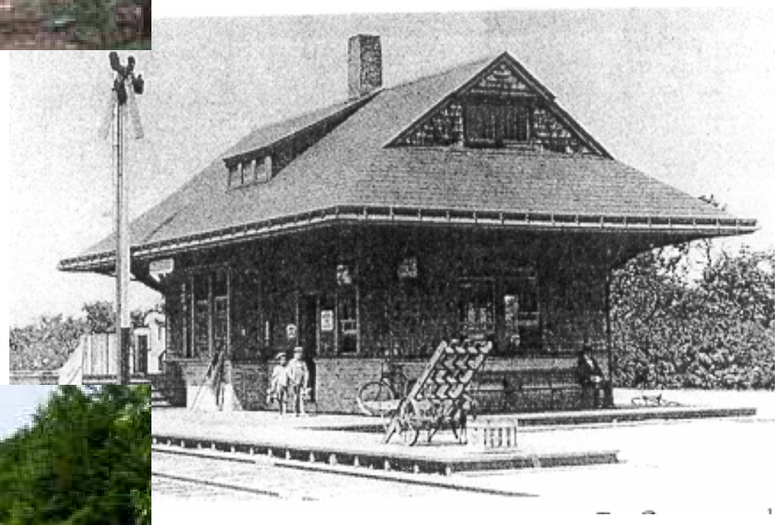
Prepared By:

Strauss and Associates / Planners

200 West State Street, Trenton, New Jersey 08608

Melillo + Bauer Associates / Landscape Architects

Ramshorn Executive Center, 2399 Highway 34, Building D-3, Manasquan, New Jersey 08736



THE BOARD OF CHOSEN FREEHOLDERS

OCEAN COUNTY
TOMS RIVER, NEW JERSEY 08754-2191

James F. Lacey
Freeholder

(732) 929-2004
Fax (732) 505-1918

August 2007

Steeped in rail history and highlighting Ocean County's rich landscape and diversity, it is with great pleasure that I submit this Conceptual Master Plan for the Barnegat Branch Trail. This document is the product of extensive planning and research on behalf of a regional multi-use public recreational trail along the historic right-of-way of the Central Railroad of New Jersey's "Barnegat Branch Division."

In October 2002, Ocean County purchased 8.8 miles of the old railroad in three municipalities: Berkeley Township, Ocean Township and a portion of Barnegat Township. This acquisition was supplemented in 2004 when the Township of Lacey granted to Ocean County an easement over its 4.8 mile trail segment. It is the County's intention to construct a 13.6 mile recreational trail between Bay Avenue in Barnegat and the Beachwood-Berkeley Township boundary. Coupled with the existing bike path in Beachwood and the incorporation of a dedicated bike lane along Flint Road in South Toms River Borough, the completed trail will span a 15.6 mile non-motorized alternative transportation corridor linking Barnegat to downtown Toms River.

The historical rail aspect of the Barnegat Branch Trail will not be forgotten; trail facilities, parking areas, rest stops and signage will serve as a reminder of the railroad's economic, social and cultural role in Ocean County.

The design of the Barnegat Branch Trail will be sensitive to the changing landscape of central Ocean County. Trail visitors will experience wooded areas in Barnegat and Waretown's southern reach before transitioning into an active-use corridor that parallels Route 9 north of Waretown. Residential and commercial neighbors border much of the trail through Lacey Township, before the trail returns to forest and then sand mining in Berkeley Township. There are various stream segments to be crossed and the Plan recommends pedestrian bridge replacements and improvements. Careful consideration is given to areas where the trail crosses streets, emphasizing public safety for trail users and motorists alike. Finally, the Conceptual Master Plan evaluates connections to local parks and recreational areas as well as future trail extensions to the north and south.

All told, the Barnegat Branch Trail will be a tremendous asset to Ocean County, providing residents and visitors with the opportunity to enjoy the County's history, communities and culture.

Sincerely,

James F. Lacey
Freeholder Deputy Director

P.O. BOX 2191 ★ ADMINISTRATION BUILDING ★ TOMS RIVER, NEW JERSEY 08754-2191

Table of Contents

The following *Conceptual Plan for the Barnegat Branch Trail* presents a comprehensive vision for the future of this 15.6-mile linear park, a "rail-to-trail" project that extends from Barnegat to Toms River. Issuance of this plan originates from Ocean County's authority to guide the physical development, growth and general welfare of its citizenry. If approved and adopted by the Board of Chosen Freeholders, the plan will become the County's policy for guiding the design and management for a new type of park facility. The publication of this plan and its submission to the Freeholder Board constitutes the first step of a process that will incorporate public review.

The concept of a developing a public trail along the abandoned Barnegat Branch Railroad was first proposed in the Master Plan adopted in 1988 by the Freeholders. The goal of expanding the County's recreational resources to include a rail-to-trail park was furthered in 2000 when the Freeholder Board approved resolutions authorizing the acquisition of land and commencement of conceptual planning. Over the last several years the County worked to resolve unique legal, title and survey questions arising from the earliest use of the property by the Toms River & Waretown Railroad (TR&W) and its successor, the Central Railroad of New Jersey (CNJ). The CNJ managed 20th century freight and passenger service between Toms River and Barnegat, and was formally terminated in 1977 by Conrail as successor to the region's bankrupt railroads.

In 2003 the Ocean County Department of Planning and Solid Waste successfully completed the acquisition of abandoned railroad right-of-way from Barnegat north to the Beachwood Borough line, a distance of 13.6-miles. Exempted from the County's acquisition, however, is a four-mile section within Lacey Township, foreclosed upon more than a decade ago by the municipality. Three other segments are needed to complete the trail's connection to downtown Toms River, these include use of the 1.3 mile section of existing trail within Beachwood Borough; proposed bikeway lanes and trail signs along Flint Road in South Toms River Borough (0.5-miles); and the acquisition of a 0.2-mile section of abandoned rail corridor in Toms River Township just south of Water Street near the New Jersey Transit bus depot / park-and-ride facility.

* * *

This plan is divided into three components. The first element contains narrative sections (chapters). The second element contains technical appendices highlighting trail routing alternatives, construction estimates and engineering data. The third element presents a trilogy of fold-out maps featuring construction phasing, proposed trail improvements, surface treatments, parking locations and planning data for the entire corridor.

With respect to the narrative elements, Section 1 introduces the project while Section 2 outlines the planning objectives. Section 3 contains a history of the Barnegat Branch Railroad and provides context for the design recommendations contained in this plan. Section 4 introduces a photographic and informational tour of the trail corridor from Barnegat Village north to Toms River. Sections 5 and 6 discuss trail benefits and design guidelines commensurate with designs for proposed trail cross-sections, surface treatments, replacement bridge structures, visitor and community facilities and directional signage – all utilize a contemporary design that reflects the historic railroad flavor and architectural vernacular of the CNJ system. Finally, Section 7 discusses management and security factors relevant to *The Barnegat Branch Trail*.

The technical appendices present routing studies for a number of controversial or complicated locations, including: Barnegat Boulevard, Waretown Village, Oyster Creek Nuclear Generating Station, Lacey Business Park, Lacey Road, Railroad Avenue (proposed) and Hickory Lane. Also contained in the appendices are construction cost estimates broken down by section, an engineering inventory of bridge and culvert structures and a guide to 24 of New Jersey's existing rail-to-trail parks.

* * *

Whether built atop land owned by Ocean County or that of another jurisdiction such as Lacey Township or Beachwood Borough, *The Barnegat Branch Trail* will be maintained and managed according to a uniform set of design standards established by Ocean County. In so doing, Ocean County recognizes the need to coordinate all trail activities with municipal and community partners.

Physically speaking, *The Barnegat Branch Trail* corridor maintains an average width of 50 feet with several areas widening to 100 feet. This is the legal width of land that once belonged to the CNJ. The width of the improved trail surface, however, will be considerably narrower and will vary from 7-10' wide with the remainder land to serve as a natural vegetative trail buffer. The 10' surface width meets with federal design guidelines for the management of bi-directional trail traffic and periodic use by maintenance and emergency vehicles. A secondary trail width of 8' is suitable for asphalt-paved sections, and a narrower width of 7' - 8' is

suggested for a 2.0 mile trail segment that may be constructed alongside a new municipal road ("Railroad Avenue") within Lacey Township.

Depending upon the projected level of use the trail will be finished with one of three surface treatments. The lightest level of trail use will receive a stone dust surface finish. Where appropriate, existing soil along the trail will be excavated as necessary, rolled and compacted and several inches of imported limestone fines added over a stabilized stone base course to create a stable, usable surface. The result will be a surface that is natural in appearance but firmer, faster and more efficient for bicyclists, pedestrians, handicapped access and light-duty emergency vehicles. The second surface treatment – intended for areas of moderate use – consists of the application of a stabilizing agent over several inches of limestone fines layered atop a stabilized stone base. This cross section will create a heavier, more durable and efficient trail surface. The final surface treatment is that of asphalt or bituminous pavement. This treatment will be limited to areas of heaviest anticipated use

This plan calls for a number of appurtenant trail facilities including community centers, comfort stations, trail signage and historical exhibits. The proposed community centers will be constructed by Ocean County in a style reminiscent of passenger and freight stations that once served Barnegat, Forked River, Pinewald and Toms River. The plan also proposes several comfort stations, either co-located with community centers or as stand-alone facilities stationed at regular intervals along the trail.

Under this plan the cost for constructing the trail and related improvements is estimated at $9,370,000. This figure includes the cost of clearing, grading, stabilizing and finishing the trail surface, adjacent natural and structural landscaping, including plantings, bollards and gate controls, crosswalk treatments, parking, lighting and the extension of public utilities to remote sites. This estimate, however, does not include the cost of improving or replacing a handful of bridge structures; a separate engineering and cost-analysis will be required to better estimate bridge and construction permit obligations.

For purposes of trail construction, the Consultant Team has divided the 15.6-mile trail into three *design-build* segments:

Phase	***Mile Markers***	***Endpoints***	***Cost***
1	0.0 to 2.6	From Burr Street Barnegat to Country Lane, Ocean Township (Rt. 532)	$2,950,000
2	9.2 to 13.6	From South Street, Lacey Township to Berkeley-Beachwood municipal boundary	$2,450,000
3	2.6 to 9.2	From Country Lane, Ocean Township to South Street, Lacey Township	$3,970,000

Excluding a small area within Section 2 (Hickory Lane), each phase can be constructed quickly and with a minimum of disruption due to public land ownership and beneficial trail alignment conditions. This plan calls for the immediate construction and dedication of Section 1, the 2.6-mile phase between Burr Street in Barnegat and Country Lane in Ocean Township . Unlike other sections, this reach does not require the reconstruction or replacement of bridges. Subject to additional engineering, Phases 2 and 3 can be constructed once new or replacement spans are established at Oyster Creek and over the Middle Branch of the Forked River (both in Lacey Township), as well as the restoration or replacement of the existing timber span over the Cedar Creek (Lacey and Berkeley municipal boundary).

Introduction to the Project

The planned Barnegat Branch Trail is destined to become the most visible and visited park in Ocean County. Guided by the success of rail-to-trail and greenway projects throughout New Jersey, the Barnegat Branch Trail will carry thousands of bicyclists and pedestrians along the right-of-way formerly used by Barnegat Branch Division of the Central Railroad of New Jersey (also known as the "Jersey Central" or "CNJ"). Under Ocean County's management this 13.6 mile abandoned rail line - combined with 2.0 miles of on-road connections - will be improved to link Barnegat with Toms River and, in the process, will offer residents and visitors a new type of recreational trail experience.

Over the last twenty years abandoned railroad lines like the Barnegat Branch have been transformed into trail parks in nearly every state in the country. Local governments and citizen groups have cooperated in preserving over 13,000 miles of abandoned rail lines for recreational trail use. According to the Rails-to-Trails Conservancy, the nation's largest rails-to-trails advocacy group, the key to success is having a trail plan that provides for recreational amenities, environmental safeguards and practical use. The Conservancy advises that government and constituency groups must recognize that trails are more than parks; that trails also comprise vital transportation infrastructure and are valuable environmental resources.

Upon completion, the Barnegat Branch Trail will join the list of 43 existing and proposed rail-trail projects across New Jersey. These projects currently total more than 200 trail miles and have proven exceptionally popular. While the Barnegat Branch Trail represents a first for Ocean County, nearby rail-trail projects include the Manasquan Trail, the Henry Hudson Trail and the Freehold & Jamesburg Trails (all located in Monmouth County); the Delaware and Raritan Canal Trail (located in Hunterdon, Mercer and Middlesex Counties); the Woodbine Trail (in Cape May County), the Pemberton Rail Trail (Burlington County); and the Middlesex Greenway (Middlesex County). See, Appendix D for a review of 24 successful trails in New Jersey. There are more than twenty additional New Jersey trails in various stages of planning and design, ready to take flight in the next several years.

One key aspect of the Barnegat Branch Trail is its proximity to Ocean County's population centers of Barnegat, Waretown, Forked River, Bayville, Beachwood, South Toms River and Township of Toms River/ Downtown Toms River. The Barnegat Branch Trail is readily accessible to the 162,806 residents of the seven host municipalities and will be within a short drive of Ocean County's resident population of 510,916. As the County's population grows, the Barnegat Branch Trail will play an increasingly vital role in meeting recreational and alternative transportation objectives.

This Plan recognizes that the Barnegat Branch Trail is a work-in-progress. Subject to public funding and the development of a schedule for capital improvements which will incorporate bridge reconstruction and new visitor facilities, some segments of the Barnegat Branch Trail will be opened before the entire Trail is complete and functionally connected as a contiguous 15.6 mile linear park.

Public safety is key to long-term acceptance and success of the Barnegat Branch Trail. Issues of visitor security within several more remote sections of the Trail must be addressed through cooperative agreements between Ocean County's park police and local police, fire and EMT squads. Pedestrian and bicycle safety at several heavily-traveled road crossings must be designed and implemented. In addition, many of the potential trail linkages that will allow users access to the Pinelands and Barnegat Bay must be promoted by Ocean County, host municipalities and local partners. Ocean County will be responsible for developing and maintaining the Barnegat Branch Trail.

For the first time, the Barnegat Branch Trail will provide the County with an alternate north-south bicycle and pedestrian route. This off-road "spine" will accomplish something that new roads and traffic improvements cannot: the permanent relief of traffic congestion. During its first years of operation the Barnegat Branch Trail will primarily serve recreational users. However, as connections are established between neighborhoods, schools, shopping and municipal facilities, trail use will begin to accommodate a broader range of functional, non-recreational trips.

If inadequate care is given to the planning and development of the Barnegat Branch Trail and/or adjacent lands, then the Trail's value to the region will be diminished. In context, this Plan and its recommendations are intended to guide Ocean County and host municipalities through the design, timely instruction and management of a safe, efficient and hospitable regional trail.

Project Goal Statement

Ocean County's goals for the development of the Barnegat Branch Trail include:

A. Provision of safe and enjoyable public recreational access. An outdoor recreational trail provides County residents and visitors with a unique and safe form of access to natural and cultural features along the 15.6 mile corridor.

B. Identification, interpretation, integration and restoration of the railroad's historic character. Historically sensitive design treatments and the use of vernacular railroad signage and visitor structures will provide Trail users with connections to a bygone era.

C. Establishment of new links to off-trail natural, cultural and community features. The Barnegat Branch Trail will create new north-south *and* east-west connections to neighborhoods, schools, shopping and natural areas, and to sites along the Barnegat Bay and within the Pinelands.

D. Creation of an inter-municipal, non-motorized transportation corridor. As an alternate, non-vehicular route paralleling Route 9, the Barnegat Branch Trail will, over time, help to manage the growth of vehicular traffic.

E. Improve cooperation between and among county and municipal governments. The success of the Barnegat Branch Trail relies on cooperation between and among host municipalities and Ocean County.

F. Implementation of a physical development plan that establishes an attractive, cost-effective and sustainable public park. Ocean County must recognize that a 15.6 mile linear park requires creative design, management and maintenance obligations.

Discussion of Goals:

The Barnegat Branch Trail is fundamentally a man-made structure; its straight reaches and regular geometry, including built-up embankments, timber bridges and historic ruins point to the facility's 19th century construction. Yet, because of its near 30-year abandonment and subsequent reforestation, the Trail has become part of the natural setting and is valued by local residents and conservationists alike. Until the length of the Trail is walked and seen first-hand, some would not believe how wonderful this natural character is, with aromatic coastal forests and productive wetlands bordering the Trail, just a stone's throw away from the nearby activity of Route 9.

It is the marriage of the railroad's engineered 19th century characteristics and nature's handiwork that makes the Barnegat Branch Trail unique to Ocean County. Development of the Trail corridor must not simply recognize the historical importance of the railroad, but must balance the need for public access with the protection of open space and natural habitats that provide critical buffer and add beauty to the corridor. Development of trail facilities, such as parking lots, visitor comfort stations, informational kiosks and picnic areas must uphold a standard of craftsmanship that reflects the quality of the 19th century improvements as well as the natural beauty of this portion of Ocean County.

The Barnegat Branch Trail's special character arises from its function as a 15.6-mile linear park. The chief role of the Barnegat Branch Trail will be to serve as an intra-County (inter-municipal) connector. The Trail will be about movement, as nearly all trail users will be on the move. Strollers, hikers, joggers, bicyclists and in-line skaters will all be in motion. With an average legal width of 50 feet – which expands to 100 feet in certain areas – and a length of 15.6-miles, the Barnegat Branch Trail will function as a narrow corridor of public parkland that will strike through central and southern Ocean County. As such, the Barnegat Branch Trail will bring a ribbon of recreational opportunity into the historic population centers of Barnegat, Waretown and Forked River, just as it can deliver a worker who rides a bicycle to the office at the Courthouse in Toms River. Along the way the Barnegat Branch Trail will connect residential subdivisions and office parks to the forests of Barnegat and Ocean Townships, the tannic lakes of Lacey Township and the premier canoe-kayak access of Cedar Creek.

For Ocean County, the Barnegat Branch Trail will provide a connection between the fast-moving activities of the 21st century and the relative simplicity of 19th century life along the Bay. The 19th century was a time when the local economy centered on the extraction of timber from white cedar forests or seafood from the Barnegat Bay itself. No matter what resources were removed, all required transportation north to the sprawling industrial markets of Elizabeth, Jersey City and Manhattan. To profit from this exchange – as well as to carry passengers and vacationers – the Central Railroad of New Jersey operated its Barnegat Branch Division for more than a century.

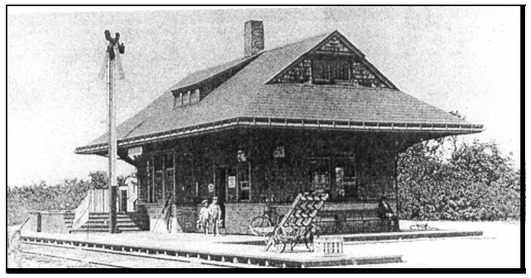
History of the CNJ Barnegat Branch Line

Introduction

While the Toms River & Waretown Railroad, later known as the Barnegat Branch Division of the New Jersey Central Railroad (CNJ), was a relatively small line of only 15 miles, the story of its development, ownership, bankruptcy and ultimate abandonment is representative of the turbulent history of railroads in New Jersey. From its humble beginnings, this popular and scrappy branch line operated at the precipice of financial insolvency and commercial failure. Today, little remains of the line beyond a few rails embedded in local cross-streets, decaying timber bridges and the memories of the trains that hauled "piney kids" to school in Toms River, the cedar shingles, iced clams and fish to market in Jersey City, and the weekend anglers from points north who journeyed south to their favorite redoubts along the Barnegat Bay.

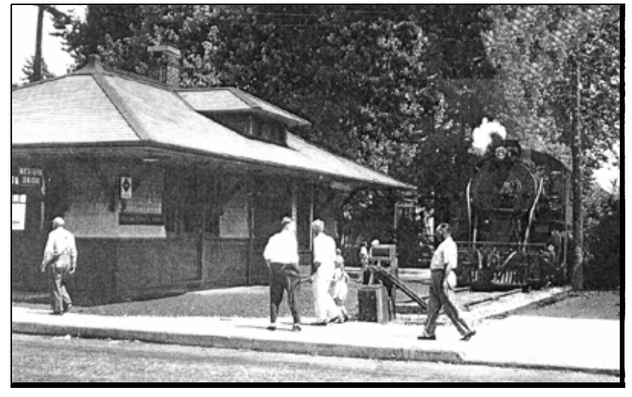
The First Line: Toms River & Waretown Railroad

Anticipating great growth in Ocean County's shore area passenger traffic, the Toms River & Waretown Railroad (TR&W) was incorporated in March 1870 by a group of Toms River investors including John Aumack and William Low of the Ocean County National Bank, and Ralph Gowdy, the Republican Party boss. These men planned to connect the TR&W with the Tuckerton Railroad below Waretown to Barnegat, although that railroad, extending from Tuckerton to Whiting, was then also just under construction. The idea was to create a commercial loop south of Toms River leading to development of the Bay's western shore and the movement of passengers and freight. This speculative approach had already proven beneficial to the development of many coastal areas, including Long Branch, Asbury Park, Lavallette, Beach Haven, Atlantic City, Sea Isle City and Cape May. Why not the Barnegat Bay? It certainly mattered little to the original investors that an adjacent railroad – the Tuckerton Line – was nearly complete, for the economic spirit of the age saw no limit to the number of railroad lines that could be built. All the better for investors if they could sell their nascent line to a bigger and better-capitalized interstate railroad company.



Waretown. Circa 1905 E. Cruser collection

Lacking sufficient capital, the directors of the TR&W decided to grant operating rights to the New Jersey Southern Railroad (NJS), which had a connecting spur out of Manchester (Lakehurst) running north to Sandy Hook, where passengers boarded ferries and crossed the Raritan Bay to New York City. Two years passed before construction was complete on the TR&W and the first NJS train, with five cars, pulled into Barnegat Junction (near present-day Burr St. in Barnegat Twp.) on May 4, 1872. On that day the competing Tuckerton Railroad did not stop long enough for NJS passengers to board for points south, even though the connection had been advertised; an ominous beginning.



Barnegat, June 1947 G. Thomas photo, W. Blackburn collection

The New Jersey Southern Railroad

Regular NJS train service on the TR&W line was begun in 1872 with two passenger trains and one combined passenger/freight train in each direction. Intermediate stations along the line were located at Bayville, Cedar Creek and Forked River. A small turntable was built at Waretown for servicing locomotives and cars. Eventually it was negotiated that NJS trains would continue south to connect with the Tuckerton Railroad at Waretown Junction (south of present-day County Route 532). Steamers were available in Toms River, Forked River and the Barnegat Town Pier to take passengers across the Bay to the oceanfront beach resorts.

Unlike other rail beds laid with diabase traprock ballast that stood firm against the elements, the TR&W was laid with ash from steam locomotives collected at Lakehurst and Red Bank. This moneysaving tactic led to rapid physical deterioration and reduced operating speeds along the line as early as the 1900s.

To the regret of its owners, the communities along the TR&W line failed to industrialize, to become wildly popular resort destinations, or to experience significant population growth. Early outgoing

Origins of New Jersey Southern

The New Jersey Southern began its corporate life as the Raritan and Delaware Bay Railroad (R&DB), incorporated in 1854. The early tracks of the R&DB extended from Port Monmouth to Lakewood and Whiting (Manchester). Rails were then laid from Whiting/Manchester to Toms River, a distance of 7.4 miles. The first passenger train to Toms River began in 1866. This constituted the first section of the Barnegat Branch. The Central Railroad of New Jersey purchased the NJS in 1879.

freight loads included small shipments of clams, fish, fish fertilizer, oysters, peat moss, charcoal, cranberries, peaches, shingles and salt hay. Incoming freight included packaged goods and building supplies. Mail traveled in either direction with the bags hung trackside on poles, to be picked up by engineers as the trains chugged by.

Concerned by what was perceived as the Tuckerton Railroad's lack of cooperation, TR&W and NJS officials considered building their own two-mile extension from Waretown Junction south to Barnegat. As it turned out, neither the TR&W nor the NJS were in a position to expand. As NJS spun toward bankruptcy, the TR&W was sold under foreclosure to a group led by Ralph B. Gowdy, one of the original investors, in August 1873. Unfortunately for the investors, the number of passengers and the freight business remained flat, leading to chronic financial difficulties. Total receipts from freight in 1873 topped-out at $778.00.

With the NJS under trusteeship and experiencing labor unrest, service was discontinued on the TR&W for a time. In February 1874 a temporary contract with the Tuckerton Railroad was drawn up for operation of service on the TR&W line for half the net earnings. The Tuckerton ran a mixed train and a passenger train each for a roundtrip between Toms River and Barnegat. After several months of what appeared to be a successful partnership, on May 9, 1874 the TR&W was returned to a reorganized NJS operation, and the Tuckerton returned to the limits of its own track. For the short term, the TR&W remained a locally owned track but continued to be operated with NJS equipment as an extension of the Toms River branch.

By 1879 New Jersey Southern (NJS) was acquired by the much larger Central Railroad of New Jersey (CNJ), and the NJS ceased to exist as an independent entity, but as a subsidiary of CNJ. The CNJ embarked on a series of improvements along its newly acquired NJS track and looked to make the most of its new access to New Jersey resort traffic. After the Tuckerton Railroad refused a request for through-operation, the CNJ agreed to operate a 1.8-mile parallel extension from Waretown Junction to Barnegat provided that the TR&W directors would raise the required construction capital. The necessary right-of-way and funds were quickly raised and service to Barnegat, consisting of three round trips, began in August 1879. This helps to explain why today there are two parallel rights-of-way running through forest between Barnegat and (just south of) Waretown.

The Tuckerton Railroad

The adjacent Tuckerton Railroad was a locally owned, independent short line with its own rolling stock and engine equipment, whereas the TR&W never had its own engines or personnel. The Tuckerton's route to Tuckerton via Barnegat originated inland at Whiting. Faster "through-trains" of the Pennsylvania Railroad delivered passengers and freight to Whiting from Philadelphia and Camden. The Tuckerton Railroad formed an important tourist connection with the Long Beach Island Railroad at Manahawkin. The competition between the TR&W / CNJ and the Tuckerton Railroad continued until the Tuckerton's demise in 1936.

The New Jersey Southern made up only a small section of the CNJ empire. For the most part, the CNJ was shaped by its participation in the long distance coal trade centralized in the Scranton / Wilkes-Barre area of Pennsylvania and the railroad's direct access to the New York City market. Along with the Reading Railroad, the Pennsylvania Railroad and the Lehigh Valley Railroad, the CNJ was one of the great 19th and early 20th century "anthracite lines" – a label given to the railroad companies that controlled coal lands, coal production, overland transportation and portside distribution. This monopoly was broken-up by the U.S. Supreme Court in a series of decisions during the 1920s and marked the beginning of the end for most of the operators.

Life Under CNJ: Construction of Barnegat Branch Facilities

The CNJ negotiated a new lease of the TR&W in May 1880. The company erected a depot, engine house and turntable at Barnegat, and the old engine terminal at Waretown was abandoned. The still older turntable at Toms River was removed after 1885. Although unused for regular interchange of freight or passenger service after 1879, the Waretown Junction interchange remained for special moves. A 1905 agreement between the CNJ and the Tuckerton Railroad provided for each to maintain half of the 726–foot connecting track at the northern end of Waretown Junction.

Throughout the late 1880s the CNJ attempted to exert more control over leased lines and went through the process of acquiring the entire property of NJS by deed. The TR&W – the last railroad line outside CNJ control – was purchased at a foreclosure sale in 1893 and conveyed to a new CNJ subsidiary named the Toms River & Barnegat (TR&B) Railroad. In 1917, the TR&B was formally merged into the CNJ parent organization, along with 23 other subsidiaries including the NJS itself. At last, all property of the NJS Division was vested in common ownership. Upon the merger, the TR&B was referred to as the Barnegat Branch (BB).

Although the CNJ was able to operate the Barnegat Branch profitably enough as part of the larger NJS line, big profits proved illusive to local resort developers and investors. An interesting but failed venture was Barnegat Park, located four miles south of Toms River

(present day Pinewald, Berkeley Twp.), which was designed as a retirement community for Civil War veterans. The project was laid out in 1887 on 300 acres with adjacent hunting grounds. A hotel, post office, store and bank were built by 1890, but the company fell into receivership by 1892 and suspicious fires burned down the buildings in 1893 and 1895.

Barnegat Village

The following description is from an 1881 publication, *Summer Resorts on the New Jersey Coast.*

"This well known historic village requires little information to be given in regard to its location, as no other place on this continent can boast of more world-wide reputation. The name Barnegat is of Dutch origin, being a corruption of the name Barnegat, signifying Breakers' Inlet – the Inlet being noted for the dangerous nature of its breakers. On the south side of this Inlet stands the famous Barnegat Lighthouse. It rests upon a brick tower, 150 feet in height from base to focal plane. Within the mainland village of Barnegat the Tuckerton and CNJ Railroad passes through the town, and is also the terminus of a branch of the Central Railroad of New Jersey."

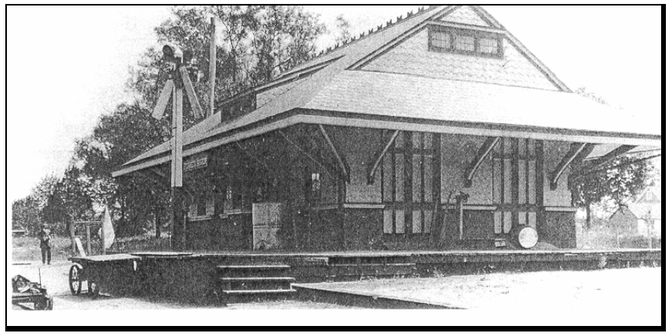
At the same time, Atlantic City, on the oceanfront beach, was becoming a magnet for middle class vacationers. Through service between Red Bank and Barnegat – which had consisted of two round trips – was reduced with the introduction of Atlantic City trains. Several daylight Red Bank-Barnegat locals were canceled in November 1900. Although the Barnegat Branch was lightly traveled, residents of Ocean County protested their inability to get to the County seat in Toms River. In response, one Red Bank-Barnegat train was restored until 1905. The principal train on the Barnegat Branch was the rush hour round trip, which ran as a local during the summer. Sunday service was provided by the "fisherman's train" established in 1897 which ran year round between Jersey City and Barnegat.

Rolling stock never moved quickly along the Barnegat Branch, as poor track, tie and ballast limited train speeds to 30 miles per hour. The flag stops at Pine View and Apollonio (Berkeley Twp.) were discontinued. A new station was built at Ostrom, between Forked River and Waretown in 1896. Cedar Creek was renamed Lanoka in 1895 and new freight and passenger depots replaced the old combination station in 1900. New stations were also constructed at Waretown (1900), Barnegat (1910), and Forked River (1913). By 1914, portions of the Barnegat Branch were badly warped due to the lack of quality ballast.

In the decades leading up to World War I the Barnegat Branch and the Tuckerton, which had inked an operating arrangement with the Pennsylvania Railroad, continued to vie for seasonal passenger and freight traffic. This period represented the height of traffic in fresh farm produce in the areas around Vineland, Lakewood and Toms River. In addition to cranberries, tomatoes and peaches, the area also became a center for poultry production, creating a large demand for feed. Refrigerator cars were used to ship fresh fruit by 1902, which required large quantities of ice brought in from the Pocono's. And in addition to the fresh produce, many canneries were established in the area to process the produce, requiring cross delivery of cans and bottles as well as fruits and vegetables. In retrospect, this pre-war period also represented the transitional period, when rail travel, especially long distance, was far more reliable and efficient than that of the newfangled motorcars.

The Barnegat Branch and the First World War

With the arrival of World War I and the related demands of war traffic, the federal government assumed operation of the nation's railroads through the United States Railroad Administration (USRA), effective December 1917 and lasting for three years. The railroads received a guaranteed return based on their average profits in the previous three years. The USRA was freed from taxes and anti-trust restrictions and was able to reduce service while increasing regular freight and passenger rates. In addition, the USRA recognized the American Federation of Labor unions as bargaining agents for employees in 1918, effectively altering postwar labor negotiations for the railroad companies.



Forked River, circa 1916 National Archives

The Not-So-Roaring Twenties

After the war, labor unrest disrupted service and antitrust actions forced the railroads to divest of coal interests. The CNJ was joined as a subsidiary to the significantly larger and better-capitalized Reading Railroad. For the most part, however, the operation of the New Jersey Southern Division – including the Barnegat Branch – of the CNJ remained unaffected.

By 1923, America was entering a new age of prosperity and technology. However, the railroads were adversely affected by the increase in automobile and truck use, by the decreasing reliance on coal and by increasing telephone use that replaced the train depot telegraph office.

History of the CNJ Barnegat Branch Line

At first after the war passenger service on the Barnegat Branch remained at pre-war levels with weekday commuter trains and Sunday "fisherman" trains running from Jersey City. Service was upgraded as mixed passenger/freight trains were discontinued. But by the mid-twenties, despite the building boom at the oceanfront resorts of Atlantic City and Asbury Park, connecting passenger trains on the Barnegat Branch were so lightly patronized that passenger service remained hard to justify, despite public pressure to continue service to the County seat in Toms River. It was determined by CNJ officials that the local route could be more economically served by bus. In May 1927, six Lakehurst-Barnegat local trains were discontinued and were replaced by buses operating over State Highway 4 (now Route 9) between Lakewood, Toms River and Barnegat. The new bus service was advertised as the "Jolly Tar Trail."

Despite low patronage for the Barnegat Branch a few Barnegat Bay communities continued to attract investment, such as Beachwood and Pinewald. Beachwood opened in 1915, with 300 bungalows built within ten years in part because the town prohibited large hotels. The town then pursued the possibility of becoming a retirement community for railroad employees, but the concept never came to fruition. Although the Pennsylvania Railroad and the CNJ each made a Beachwood stop, neither railroad would build a station for passengers. In desperation, the town of Beachwood built its own rail station.

Around 1925, a new builder began construction on 16,000 acres in Pinewald (formerly Barnegat Park). In addition to a new railroad station and pavilion, a fashionable new eight-story hotel was built facing Crystal Lake. While this development proved to be the grand finale for bayside resorts, Pinewald owed its success as much to the automobile and improved road access as to the railroad. Bayville Station was renamed Barnegat Park in 1888 when a new station was built. It was renamed Barnegat Park-Pinewald in 1912, and then again renamed Pinewald in 1921 when another new station was built. The Pinewald Station was demolished in 1974.

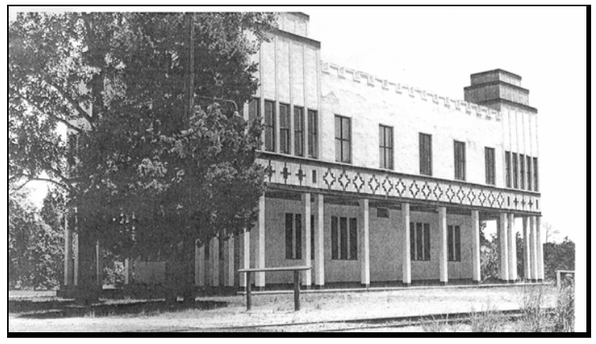
Freight traffic on the NJS trains remained steady but the regional transportation picture underwent significant changes during the 1920s, due in large part to state highway construction. Over 3,000 miles of rural road were paved in New Jersey during the 1920s. Automobile access into the New York metropolitan area was increased through construction of the Holland Tunnel and the Pulaski Skyway, and the railroad hammerlock on Delaware River port traffic at Philadelphia-Camden was dealt a mortal blow when the Ben Franklin Bridge was opened late in the decade.

Adding insult to injury, agricultural markets decreased along the Barnegat Branch during this period. Berry production had dropped before the war, but then between 1920 and 1925, a virus further devastated the cranberry bogs. It was estimated that by 1925 half of New Jersey's farm products were being shipped by trucks and by 1929, three quarters of the agriculture business was lost to trucks. However, as the produce business dropped, the glass and sand rail business began to grow on the Barnegat Branch and on other CNJ lines throughout Ocean, Cumberland and Monmouth counties.

Beachwood, circa 1910 R.E. Farrell collection

Ironically, the CNJ and the Barnegat Branch in particular benefited in the short-term from the large shipments of sand, stone and cement used for highway construction in the 1920s. The Triangle Pulverizing Company opened a sand plant at Quail Run, 1.4 miles north of Pinewald (Berkeley Twp.) in 1923. Two years later the company was sold and renamed the New Jersey Pulverizing Company. The New Jersey Pulverizing Company became the biggest shipper on the Barnegat Branch into the 1930s and 1940s and continues its operation to this day.

The Focus on Passenger Service


Pinewald, July 1950 E.H. Weber photo

The CNJ began the marketing campaign for its popular Blue Comet trains in 1929, not long before the country was deep into the Depression. These "luxury" trains were painted and appointed throughout in a royal blue that seemed to strike a chord with the public. The Blue Comet trains provided a number of additional services, such as assigned seats and separate smoking and observation cars for all at the regular fare. The Blue Comet trains did not run the Barnegat Branch however, but stopped at Lakehurst to pick up area residents and travelers using the Jolly Tar Trail bus service. Known as a rolling fanfare for the common man, the Blue Comet became something of an icon with several copycat versions developed by other train lines.

History of the CNJ Barnegat Branch Line

During the Depression some passenger trains rolled into Barnegat, although by the early 1930s the CNJ had replaced all midday trains with the Jolly Tar Trail bus service between Lakehurst and Barnegat, leaving one daily train plus weekend service. A typical passenger train in the mid-1930s consisted of six cars. On Sundays, the CNJ ran a ten car "fisherman's train," which remained popular. As the Depression dragged on the CNJ offered special excursion fares that increased the number of passengers but not the railroad's profit margins.

Freight service was cut back drastically during this period, combined with the increased use of trucks and changes in local agriculture. In April 1938, the Barnegat Branch lost the mail business as the local Post Office shifted to truck use. Freight service between Barnegat and Toms River was cut to three times a week, although additional trips were added to serve the New Jersey Pulverizing Company.

Pressure to Abandon, and Failure of the Tuckerton

In a 1931 Report of Consolidation of Railroad Services, the New Jersey Board of Public Utility Commissions recommended abandoning the 14.2-mile portion of the Barnegat Branch between Barnegat and just south of Toms River, and was in favor of retaining the Tuckerton Railroad to serve the local communities. As only one passenger train was operated on weekdays in each direction, the report cited decreasing passenger ticket sales in Forked River, Waretown and Barnegat. In addition the report maintained that there would be a substantial public benefit in eliminating the Barnegat Branch's two grade crossings over Route 9 in Lacey and Ocean Townships that were classified as dangerous. No action was taken by the State.

In 1936 the Tuckerton Railroad took its last gasp and declared bankruptcy. A New York City salvage firm that had taken the name Southern New Jersey Railroad Company (SNJR) purchased the line and equipment. After some refurbishment, the Tuckerton line resumed service between Barnegat and Tuckerton in August 1937. By mid-1939, however, the SNJR elected to abandon the track and take advantage of the growing scrap and munitions market. By December 1939 rails were in the process of being removed between Whiting and Barnegat. By October 1940 the line was officially abandoned.

Railroad Life During the Second World War

After the Blue Comet made its last run in September 1941, all weekend passenger service on the Barnegat Branch was pared down, but the Barnegat commuter trains remained the same. And once the Sunday Blue Comet was dropped, only the Barnegat "Sunday fisherman's train" was left to provide service.

War preparations resulted in a welcome increase to business for the railroad. The federal government did not nationalize the railroads during World War II but proceeded with strict regulation of the operators. In April 1942 the government forced the cancellation of the Sandy Hook steamer line, the site of which was requisitioned for military use. By 1946, the Barnegat Branch primarily carried summer travelers as the number of regular commuter passengers further decreased on the three-hour run between Barnegat and Jersey City. Bus service was discontinued during World War II to conserve gasoline and rubber as part of the war effort, so the CNJ reverted back to an all-rail schedule.

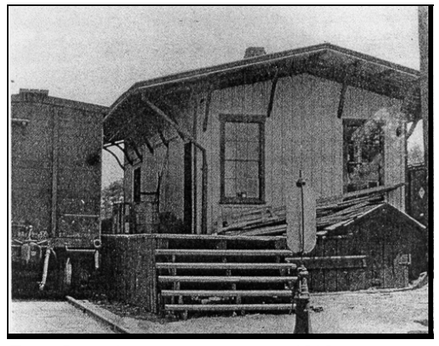
On the whole, there was less activity on the Barnegat Branch during World War II as compared to service levels of WWI. Despite active nearby military facilities such as Fort Dix, there seemed to be a reduced reliance – statewide- on the railroads. Fort Dix, for instance, was heavily mobilized but the facility contained no rail trackage in Ocean County, with all service via roads or tracks running through Pemberton in Burlington County. The Naval Air Station at Lakehurst had been expanded but freight payloads remained low. Passenger service picked up slightly, as hotels and other resorts along the Atlantic Ocean and Barnegat Bay were requisitioned to serve as hospitals and rest houses as they were during World War I.

Through the Fifties and Sixties: The End of Passenger Service

Eventually the Barnegat Branch's passenger trains succumbed to increasing auto traffic, and this occurred before the Garden State Parkway opened in 1958. The weekday train from Barnegat to Red Bank carried its last passengers in March 1952. The Sunday only passenger train from Jersey City to Barnegat lasted another year until March 1953. The CNJ sold the Barnegat station in 1949. Several stations, including Beachwood, Cedar Creek and Forked River were demolished in 1954-55. The Waretown Station, built in 1900 and sold in 1955, appears lost to history. The Toms River Freight Station, built in 1868 and retired in 1973, today remains the only surviving structure. The Freight Station sits idly (and unrestored) on the spit of land between Route 166 and Flint Road in South Toms River, a stone's throw from Water Street in Toms River, Huddy Park and Jack Baker's Lobster Shanty restaurant. Beyond the Freight Station, there are no surviving passenger or similar facilities along on the entire line.

Although passenger service was terminated in 1953, more sand and mining industries opened on or near the Barnegat Branch. Freight train connections continued three times per week, with additional service for the New Jersey Pulverizing Company. In 1952, the Toms River Chemical Company – later known as Ciba-Geigy Corporation – opened with nine buildings and 200 employees and became the Branch's largest shipper. Within twenty years, Toms River Chemical Company expanded to thirty buildings and 1,300 employees.

By the end of the 1950s, however, the CNJ, along with other railroads in the Northeast, was experiencing serious financial difficulties. Some of the factors that played a role in the railroads' difficulties included a general downturn in the economy, increased labor costs, steel strikes, a decline in heavy freight traffic, a deficit in passenger service, a deteriorated and outmoded physical plant, and what were perceived as punishing State railroad property taxes. In addition, the CNJ lacked the lucrative long haul freight lines that kept other rail lines competitive. The last year that the CNJ turned a profit was in 1957, with a whopping $43,000.



Toms River freight house, circa 1916
National Archives

Despite the CNJ's overall decline and its declaration of bankruptcy, it continued to operate freight trains on the Barnegat Branch until the bitter end. In 1964, the CNJ installed a rail siding at Oyster Creek for construction of Jersey Central Power & Light's new nuclear plant. The siding was very busy during construction of the plant but was quiet once construction was completed. The Glidden Company, a paint manufacturer, opened an ilmenite ore facility near South Lakewood in 1960 that utilized about 20 train cars a week for the next two decades. Lacey Materials Company opened a sand pit near Forked River in 1966 and sent about 40 train cars per week to Bethlehem Steel until 1969. Trucks hauled the sand from the Forked River station from the pits long Lacey Road, east of the Garden State Parkway.

The CNJ went into its fourth and final bankruptcy in 1967. By this time, New Jersey had been providing millions of dollars in financial assistance for CNJ's statewide commuter rail operations. With no money available for repairs and maintenance, anthracite falling into obsolescence, bituminous coal no longer in favor – a New York City ordinance of April 1966 put a ban on all coal burning because of growing concern over air pollution – and more efficient trucks on the roads, the CNJ worked toward a merger with other railroad companies. But by 1971, even the merger effort was dead.

The Seventies: Closing the Gate at CNJ

The abandonment of CNJ's railroad line holdings continued from the late 1960s into the fall of 1972. Half of the Barnegat Branch was abandoned effective April 6, 1972. The four miles between Barnegat and Oyster Creek had already been out of service since June 1970 due to poor track conditions. A year later, permission was given to abandon the tracks from Pinewald to Barnegat. The Jersey Central Power and Light Company then acquired 6.2 miles of track between Pinewald and their Oyster Creek nuclear power plant in case rail service should be needed to build the planned second unit at Forked River. The second unit was not built and the tracks were never used. Aside from Ciba-Geigy, the Barnegat Branch produced only two freight cars per week between Lakehurst and Toms River during 1973.

Conrail, the federally chartered railroad operator, assumed control over the CNJ's rail by early 1974. Right from the start Conrail was prepared to list the Barnegat Branch south of Toms River as "excess trackage" and secure a federal revocation of federal franchise licenses and taxes. Shippers and local politicians managed to get Conrail to agree to run the excess trackage lines for at least a year before making any major decisions. Conrail officially began operations on April 1, 1976, and sure enough, on April 1, 1977, exactly a year later, Conrail completed the legal abandonment and track removal process for segments south of Beachwood. The line then ended at South Toms River. In 1981, Conrail cut the remaining Toms River Branch back to the Ciba-Geigy plant in Toms River Township due to the poor condition of the bridges over the Toms River. Today, only a few miles of the original Barnegat Branch run out of Lakehurst.

Prior to abandonment and salvaging, a "Rail Enthusiast" special train made its way to Toms River in March 1972 and served as the last passenger train along the Barnegat Branch. Many nostalgic spectators waited to see the train arrive.

Upon the formation of Conrail, the CNJ became Central Jersey Industries (CJI) and focused on selling its real estate properties not included in Conrail. In 1981, CJI auctioned off the abandoned right-of-way between Toms River and Barnegat to a private investor, HAG Holdings, Inc.

Existing Right-of-Way Conditions

Introduction

Although rail-trail parks differ according to local conditions and landscapes, they share a common characteristic: they have an extensive park boundary or edge. Unlike large and consolidated recreational parks, rail-trail corridors contain a high ratio of *perimeter* to interior land area. This unique feature requires the planner, designer and manager to take particular note of the uses that occur alongside the park's boundaries. As the saying goes: No park is an island and the Barnegat Branch Trail will serve its users best if we understand its relationship to the surrounding area.

Location and Description of the Trail Corridor

The former railroad right-of-way is an intact and largely continuous linear corridor that runs 13.6 miles and contains approximately 92 acres. As noted, the Trail corridor spans seven municipalities. From the south the municipalities include: Barnegat Township, Ocean Township (Waretown), Lacey Township (Forked River, Lanoka Harbor), Berkeley Township, (Bayville, Pinewald) Beachwood Borough, South Toms River Borough and Downtown Toms River. The Trail's southern terminus is located at Burr Street in Barnegat Township and the northern terminus is located at the Garden State Parkway, (abandoned Pennsylvania Railroad) near Water Street in the vicinity of the bus station. Using a railroad underpass, future extension of the Trail to the north can be accommodated along the Toms River as it passes through Winding River Park (Township of Toms River) and beyond to Lakewood and Brick Townships. Portions of the railroad right-of-way in Toms River and in South Toms River are either privately owned or have been occupied by public roads, which preclude Trail use. Lacey Township owns the entire section of abandoned railroad within their border, the result of an *in rem* tax foreclosure nearly ten years ago.

The Barnegat Branch Trail will occupy the abandoned railroad right-of-way of the Central Railroad of New Jersey (CNJ) and has a variable width ranging from fifty (50') to one hundred feet (100'). This legal width does not imply that the trail surface itself will cover the full 50' or 100' width. Rather, this Plan recommends a Trail surface of a 10' width. Currently, the right-of-way is unimproved and consists of mostly sand and cinder, varying in width from 7' to 10', as the track and tie of the railroad were removed nearly thirty years ago. As a result, the right-of-way has the look and feel of a nature Trail as it passes through undeveloped natural sections consisting of pine and oak forests, wetlands and open fields. In built areas the Trail shares a common boundary with residential subdivisions, shopping centers and the historic village centers of Barnegat, Waretown, Forked River and Toms River.

Along the way, portions of the Trail are bordered or bisected at-grade by local and arterial roadways. Some of these roadways are minor, with light traffic. Other roads, such as Route 9, carry heavy traffic volume with high design and safety challenges. While most of the road crossings are at-grade, the proposed Trail right-of-way has eleven principal bridge crossings over waterways including the Route 166 Bridge over the Toms River. To the south of Beachwood Borough most of the railroad bridges are in satisfactory condition for conversion to trail use, baring two notable exceptions. As discussed in this Plan, establishment of the trail calls for the replacement of two spans: (a) that of the Middle Branch of the Forked River; and (b) that of the Cedar Creek. Depending on final routing through Lacey Township, a new bicycle-pedestrian bridge may have to be constructed or attached to the existing Route 9 highway bridge over the outfall (southern) channel of the Oyster Creek.

Regardless of their "abandoned" condition, several sections of the right-of-way are currently serving a recreational function. People are already using the unimproved corridor for jogging, walking and bicycling, as well as for fishing and hunting access. One of the most notable active use sections is in Lacey Township where residents use the right-of-way in the vicinity of Lacey Road and South Street as an alternate footpath to schools and commercial shopping areas abutting the east side of the corridor. In addition, portions of the right-of-way in Berkeley and Barnegat Townships are also subject to local foot traffic. And in Beachwood Borough, between Berkeley Township and South Toms River, all 1.3 miles of the rail line is municipally-owned and improved with a six foot wide public trail paved with asphalt. This Beachwood section is municipal trail used by residents of this small, densely populated Borough, which was originally laid-out by the railroad as a retirement community for railroad workers.

Regional Open Space and Recreation Resources

The proximity of many wonderful existing open space resources along the length of the proposed Barnegat Branch Trail bodes well for the future of the linear park. The Trail has direct and indirect connections to many existing parks and recreational areas administered by local municipalities and school boards, the County of Ocean, the State of New Jersey and even the federal government. Some of the locally administered parks include Barnegat-Waretown Little League Field, Clune Park, Hebrew Park, William Dudley Park, and Huddy Park. A number

of schools with their own recreational facilities are also located near the proposed Trail. Eventually, local children will be using the Barnegat Branch Trail to get to school and back home again.

Several Ocean County parks are located within walking or bicycling distance of the Barnegat Branch Trail; all are potential destinations for Trail users. Premier County park facilities include Berkeley Island County Park and Good Luck Point Natural Area (Berkeley Township), Rose Hill Natural Area (Barnegat Township), Wells Mills County Park (Ocean Township – with a recent 618 acre acquisition), and Eno's Pond (Lacey Township). Wells Mills County Park covering more than 1,500 acres of oak-pine forest offers miles of hiking and bicycling trails, fishing, canoe rentals, a nature center and playground. In Lacey Township, Eno's Pond is a relatively new addition to the County park system that features playing fields, nature trails, volleyball and a history dating back to the Colonial period. A series of trails at Eno's Pond leads through a maritime forest to pristine salt marshes, bird habitat and a network of foot trails maintained by the adjacent Edwin B. Forsythe National Wildlife Refuge.

The State of New Jersey Department of Environmental Protection administers the adjacent Forked River Game Farm and Double Trouble State Park and historic village. The U.S. Fish and Wildlife Service manages the expansive Forsythe Refuge, with its 8-mile Wildlife Drive and foot trails, tidal salt meadow and marshes, located on the East Coast's most active flight path for migrating wildlife. As indicated in the maps that accompany this Plan, these parks provide important lateral or "rib" connections to the Barnegat Branch Trail and include facilities for hiking, baseball, soccer and skateboard use, as well as nature and wildlife preserves, family picnicking and group camping areas.

In addition to the many ballfields, playgrounds and wooded parks located in proximity to the proposed Barnegat Branch Trail, there also are numerous public beaches, municipal piers and wharfs located nearby, or within bicycling distance. Some of these facilities include the lovely Barnegat Lakes in Forked River, with public beaches that support swimming and fishing in the summer, and ice skating in the winter; and Cedar Creek Beach in Berkeley Township which is popular for swimming, boating and picnicking. The Forked River State Marina, along with the many privately owned marinas located along the North and Middle Branches of the Forked River, provide an attractive view of, and access to the County's maritime culture.

Trail crossings offer an important source of regional recreational access and opportunity. The best established local trail connection with the Barnegat Branch Trail is that of the U.S. Fish and Wildlife Service's Wetlands Trail, also known as the "Double Creek Trail," located on Bay Shore Drive just east of Route 9 (and about one-mile north of Barnegat Village). This short trail runs along an elevated walkway to a high quality tidal marsh, and terminates at a viewing platform adjacent to several hundred acres of brackish ponds teeming with resident and migratory waterfowl.

Future Trail Connections

There are a number of regional trail planning and development projects throughout Ocean County and Southern New Jersey. If completed, these trails would link to the northern and southern terminus of the Barnegat Branch Trail. Several trail projects utilize abandoned railroad lines. Others rely on the existing network of public parks and bicycle-compatible roadways, or recommend additional land acquisition to further improve user safety and trail connectivity.

Future trail connections are described on the next page by number.

Existing Right-of-Way Conditions

1. **River to Bay Greenway** (+/-48 mi.) – This regional trail was first proposed in 2001 by the nonprofit organization, the Trust for Public Land. When complete, the Greenway will connect the Delaware River at Wiggins Park in Camden to the Barnegat Bay or Little Egg Harbor in the vicinity of Tuckerton. Connections to the Barnegat Branch Trail may occur via a northern or southern alignment radiating from Whiting, following the former Pennsylvania Railroad to Toms River or along the Tuckerton Branch to Barnegat. As planned, the River to Bay Greenway employs on-and-off-road routing measures while taking advantage of existing trails through Camden County, including the Cooper River Trail, the Haddonfield Trail and planned footpaths through Wharton State Forest and the Forsythe National Wildlife Refuge

2. **Long Beach Island Connector Trail** (+/-12 mi.) – This potential trail could be routed atop several remaining sections of abandoned railroad which runs south from the Burr Street station in Barnegat. In Stafford Township, the LBI Connector Trail could be extended to Manahawkin and then follow east along Hilliard Boulevard, which is bicycle-compatible. Between Barnegat and Manahawkin the former rail line runs through wooded wetlands east of Route 9. At the eastern end of Hilliard Boulevard the trail would have to be routed to the Route 72 bridge and causeway where a narrow, bi-directional sidewalk exists. Proper trail planning calls for dedicated bicycle-pedestrian lanes as part of a replacement bridge for the aging Rt. 72 span, or a separate bridge trail, perhaps following the right-of-way of the former Pennsylvania Railroad Bridge. This right-of-way sits just north of the Route 72 span; in fact, the pilings are still visible near the mainland shore. Appropriate U.S. Coast Guard clearances will be required for bridge construction, which would include a 60' vertical over mean high tide due to the Intercostal Waterway. Despite the long-term planning nature of the LBI Connector Trail, the opportunity exists to better connect the State's premier vacation area to the County's mainland population.

3. **Barnegat Boulevard Trail** (+/- 3 mi.) – Nearly complete, this local trail will connect to the Barnegat Branch Trail along the south (or eastbound) travel lane of Barnegat Boulevard, opposite the Barnegat Township Sports Complex. Approximately two years ago Barnegat Township constructed an 8' pedestrian and bicycle trail within the County-owned road right-of-way. The trail links several subdivisions with the elementary and middle school complex and municipal skateboard park. With adequate planning this trail could be extended east to (and of) Route 9 to the Pebble Beach subdivision and Bay Shore Drive.

4. **Golden Triangle Trail / Southeast Leg** (+/-13 mi.) – This much-discussed trail utilizes three "legs" of abandoned rail right-of-way, thereby forming a large triangle through the Pinelands interior of Lacey, Manchester and Barnegat Townships. The north-south extension is the Barnegat Branch Trail. The second leg consists of a +/-13 mile extension along the former Tuckerton Railroad from Whiting southeast to Tuckerton Junction (located midway between Barnegat Village and Waretown). This leg runs south of Bamber Lake in Lacey Township, and is partially visible to drivers along Lacey Road west of the Popcorn Park Zoo. The railroad right-of-way is presently owned by JCP&L and contains electrical transmission structures. The bed is a broad, unfinished sandy trail heavily used by ATVs and off-road vehicles. Successful reuse of the corridor will require a strong trail stewardship and enforcement program by the intended facility manager, be it Ocean County, Lacey Township, a non-profit organization, or some combination thereof. Cooperation with JCP&L is essential for co-locating a public recreational trail on their property.

5. **Golden Triangle Trail – Northeast Connector** (+/-8 mi.) – The Northeast leg of this trail runs from Whiting east through Berkeley Township to Toms River, following sections of abandoned Pennsylvania Railroad. The eastern portion is partially active, forming a branch connector to the Ciba-Geigy site located north of Route 37 in western Toms River Township. From Ciba-Geigy east to the line's terminus at the Toms River Bus Station (and the Barnegat Branch Trail) the line is abandoned; all track, tie and bridge structures over the Toms River were removed long ago. Portions of the section within Berkeley Township are known to harbor state- and federally-listed endangered species and future development of this line as a connector trail must proceed with the proper habitat controls in place. In addition, the functional connection to the Toms River Bus Station will require reconstruction of the bridge over the section of the Toms River located west of the Garden State Parkway.

6. **Pine Beach / Good Luck Point Trail** (+/-5.5 mi.) – This long-abandoned section of former Pennsylvania Railroad once ran from Philadelphia to Toms River, then across the Barnegat Bay to Seaside Park, Seaside Heights and Lavallette via a wooden bridge span south of the Route 37 / Mathis Bridge. Today, the alignment is a bicycle-compatible public road known to citizens of Pine Beach as Pennsylvania Avenue, and to citizens of Ocean Gate as Atlantic Avenue. The roadway / trail leads east to the assemblage of County-owned public habitat and recreational lands at Good Luck Point.

7. **Toms River Trail to Winding River Park** (+/-1.2 mi.) – There is no railroad line that follows the Toms River for any meaningful distance. In fact, the Toms River is scarcely visible or accessible to the public. The opportunity to change this is presented by the proposed connection between downtown Toms River, the bus station (off Water Street), and Toms River's Winding River Township Park located north of Route 37 just west of the Garden State Parkway. The connector consists of a 1.2 mile utility right-of-way owned and maintained by JCP&L. Once a trail connection is established residents of the Oak Ridge section of Toms River Township as well as residents, office workers and those frequenting commercial outlets that may someday be built at the Ciba-Geigy site would enjoy trail access to both Toms River and the Barnegat Branch Trail. Implementation of this connection begins at the bus depot and passes beneath the Garden State Parkway on the former Pennsylvania Railroad right-of-way. West of the Garden State Parkway the construction of a bicycle / pedestrian bridge will be required to span the Toms River. In addition, the trail facilitator will need to secure from JCP&L a grant of public access along their utility easement as it parallels the Parkway and connects to Winding River Park. This short trail section will also require the construction of a new bicycle / pedestrian bridge over Route 37 where at-grade trail passage is presently unsafe.

Environmental Issues

Because the Barnegat Branch Trail is located within a fragile natural environment, an evaluation of the proposed Barnegat Branch Trail's potential impact on its surroundings is required. The Consultant Team field analysis confirms that the proposed re-use of the Barnegat Branch Railroad's right-of-way for a bicycle-pedestrian trail is compatible with adjacent development and will pose minimal negative impacts on sensitive environmental features. In support of this position, the recent Environmental Impact Study for the proposed Barnegat Branch Trail prepared by Baypointe Engineering (now a unit of Schoor DePalma), concurred that there would be no adverse environmental impact. The primary environmental issues that must be addressed before future Trail development involves: (1) the possible infill of freshwater wetlands where the Trail elevation is low or geometry impaired; and (2) the reconstruction of bridge crossings over waterways. It is the Consultant Team's opinion that neither item will hinder Trail development, although both factors will influence Trail design and the permits required from the New Jersey Department of Environmental Protection (DEP).

(A) Freshwater Wetlands:

Portions of the Trail pass through and are built atop freshwater wetlands. Even though the railroad bed itself was constructed more than a century ago and is elevated several feet above the existing wetland topography, the bed could be interpreted by the New Jersey Department of Environmental Protection (DEP) as a regulated wetland. Although the physical width of the existing rail bed, as it passes through wetlands, is sufficiently wide to accommodate a bicycle-pedestrian trail (often 20-30' wide), an individual wetland permit may be required. This could necessitate the submission of wetlands mapping and the design of sufficient buffer to protect the adjacent jurisdictional wetland. Also, where the Trail crosses streams or culverts, additional DEP permitting authority may be required under the stream encroachment process.

(B) Bridge Crossings:

The second major permitting issue concerns bridge crossings (i.e., where the Trail utilizes a bridge to cross a roadway, stream, creek or drainage area). Here, the adaptive reuse of timber railroad bridges for bicycle and pedestrian use is encouraged as a means of saving time and cost. Several old spans remain along the right-of-way. Construction permits for new or replacement bridges will require preliminary engineering and are apt to trigger permits for modification of earthen embankments (where additional width, height and fill is required), as well as for flood mitigation. Depending on final access, local maintenance and policing obligations, several bridges may require structural reinforcement to accommodate motorized service vehicles.

Trail bridges that need the least rehabilitation include the timber spans crossing the Lochiel and Waretown Creeks in Barnegat and Ocean Townships, respectively. Further north, new bridges will be required at various branches of the Forked River, including a proposed bicycle-pedestrian walkway cantilevered along the east-side of the Route 9 / Oyster Creek bridge, or the rehabilitation of existing wooden spans owned by the parent company of the Oyster Creek Nuclear Generating Station. In addition, a new steel or timber bicycle-pedestrian bridge will be needed for the Middle Branch of the Forked River where the former railroad span was removed years ago.

Along the Lacey-Berkeley municipal boundary, a major restoration or replacement of the Cedar Creek Bridge will be required. Here, the impressive and historic timber truss span has been damaged by the removal of two of its flanking approach deck elements (following bridge abandonment by the railroad), and the work of local pranksters and/or arsonists whose activities have weakened and destroyed several supporting piers. The dilemma of re-use versus removal (and replacement) of this bridge must be evaluated carefully for the construction of a new bridge on a separate alignment will trigger substantial re-grading of the Trail berm, slope and embankment, requiring an extended permitting process.

Ocean County recently replaced the Rt. 166 bridge into Downtown Toms River and wisely included in the redesign dedicated bicycle and pedestrian lanes, sidewalks and signaled safety crossings. The new span will help ease traffic bottlenecks while providing improved connections between the Barnegat Branch Trail corridor and Downtown Toms River. Although not a part of this plan, future studies will be required to facilitate bicycle and pedestrian connections between Downtown Toms River and the Barnegat Branch Trail in the vicinity of Flint Rd in South Toms River and the existing trail segment within Beachwood Borough.

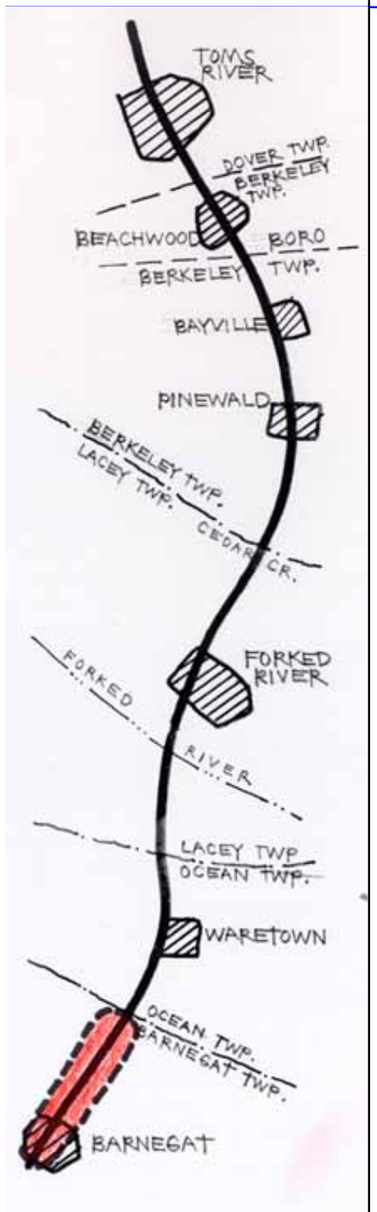
With respect to the trail corridor, a structural engineer will need to evaluate all bridge crossings, especially the older wooden trestles and their foundations. Although this Plan contains conceptual bridge models and construction costs (See, Appendix), actual new bridge designs will require topographic surveys, preliminary and engineering, permitting schedules and construction cost estimates. A list of anticipated environmental permits follows:

Permit		
Environmental Impact Study	DEP / various municipalities	Frame overall project sketch alternatives
Endangered Species Study	DEP	Identify critical habitat and likely effects
Freshwater Wetland Permit	DEP	Delineate wetlands, Letter of Interpretation
Stream Encroachment Permit	DEP	Identify stream crossings, flood and grading
CAFRA Permit	DEP	Coastal Area general authorization / permit
Soil Erosion / Sediment Plan	Ocean County Soil Conservation District	Mitigate soil loss during construction
Site Plan Approval	Various municipalities	Courtesy review of proposed Trail / facilities

Site Analysis Matrix: Existing Conditions and Observations

To understand the full range of existing and potential uses along the right-of-way, the Consultant Team conducted a review of adjacent land uses. The principal tool for checking conditions has been in-field inspectors. The entire right-of-way has been evaluated on foot, and its environs have been subject to further analysis (via foot, bicycle and automobile). Without question, the character of the existing right-of-way is drawn from perimeter land use and nearby attractions will draw visitors to the trail. Proximate land uses include rural wooded and wetlands areas, schools, residential subdivisions, neighborhood commercial, light manufacturing, as well as resource extraction zones (sand and gravel pits). The existing right-of-way is unique; as one travels the full length one notes the diverse activity and changing character along the different sections. This diversity is summarized in the matrix that follows, which contains a narrative and photographic review of existing conditions and design considerations.

For the purposes of this analysis, the Trail corridor has been divided into seven sections, each corresponding to the seven municipalities traversed by the Barnegat Branch Trail. The following matrix includes photographs and descriptive observations of the Trail corridor and its adjacent uses. Observations include: the physical condition of the right-of-way or adjacent lands; notable recreational, cultural and commercial amenities, land use conflicts; trail safety / traffic; and unique opportunities.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

N

Township Key Plan
No to Scale

N

Figure 1

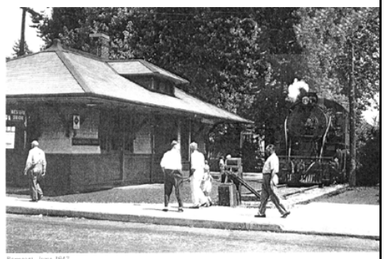


Figure 2

Figure 3

Figure 4

Existing Observations

Vacant site of the Barnegat Branch Railroad passenger station and freight house. This site, located west of Main St. (Rt. 9) and north of Bay Avenue, is within walking distance of the commercial and residential center of Barnegat, and is an easy bike ride from the Bay.

The Barnegat Branch Railroad passenger station, first built in 1879, was rebuilt in 1910 and razed in 1973. The freighthouse was built in 1888 and included a Western Union office. With the town of Barnegat established as the southern terminus of the line, a turntable was needed to facilitate northbound locomotive trips. The turntable operated from 1879 until 1954.

Established in 1707 by colonial settlers, the Friend's Meeting is located in Barnegat's historic district, east of the passenger station site and proposed trailhead.

Located just south of Barnegat's historic district is the Perrine Boat Works, one of two authentic builders of the famous Barnegat Bay "Sneak Box" sailboat. The Sneak Box (pictured in Figure 53) served generations of watermen, hunters and local sailors.

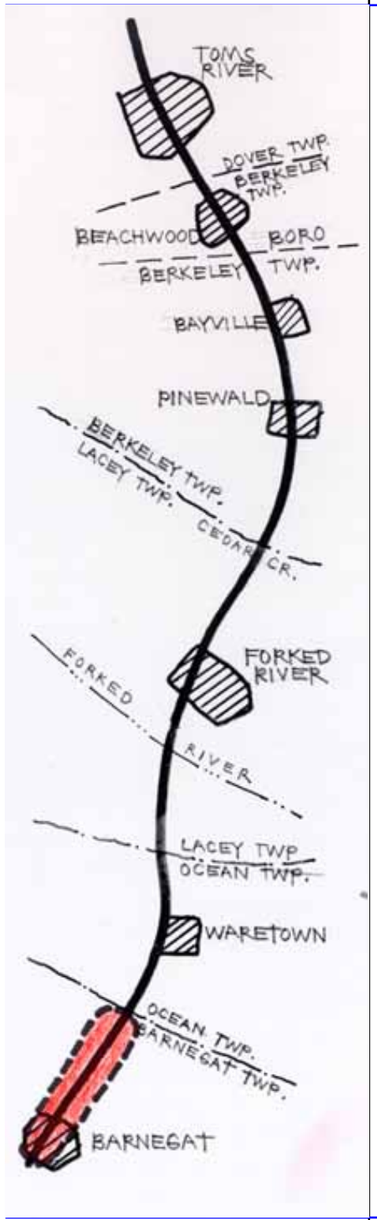
Opportunities

This site is well-suited to serve as a regional trailhead where visitors can park and access the Bay Trail, historic Barnegat village and public access areas along the Bay. Proposed facilities include parking, informational kiosks, bathrooms, directional and historical signage.

Facilities for the trail should be designed with an eye toward history and the architectural vernacular employed by the Central Railroad of New Jersey. This vernacular drew its inspiration from the functionalism of the American Arts & Crafts movement, and utilized strong triangular elements, deep roof overhangs to protect passengers from weather, and simple wood frame construction.

The proximity of Barnegat's historic district is a major attraction for visitors to the trail. Here, pedestrians and bicyclists are introduced directly to the commercial and historic town center, its cafes, antique shops and period homes.

To the east Perrine Boat Works are several points-of-interest, including the municipal pier, swimming beach, ecology trail and waterfowl observation boardwalk maintained by the U.S. Fish and Wildlife Service.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

N

Township Key Plan
No to Scale

N

Figure 5

Figure 6

Figure 7

Figure 8

Existing Observations

Looking north across Burr Street, Barnegat. Here, the Trail entrance is adorned with native trees – red cedar, oak and pitch pine.

Looking south along the Trail at Rose Hill Road. Rose Hill Road is a lightly traveled local street that contains a remnant section of railroad tracks.

The Veterans of Foreign Wars (VFW) provides an important connection between the Rt. 9 and the Bay Trail. The site contains a nice picnic grove and access directly to the Trail.

The Trail must cross Barnegat Boulevard, a dualized east-west County road that provides critical off-trail connections but carries heavy traffic volume. Safe accommodation of trail users will require crosswalk striping, signage and possible signal control.

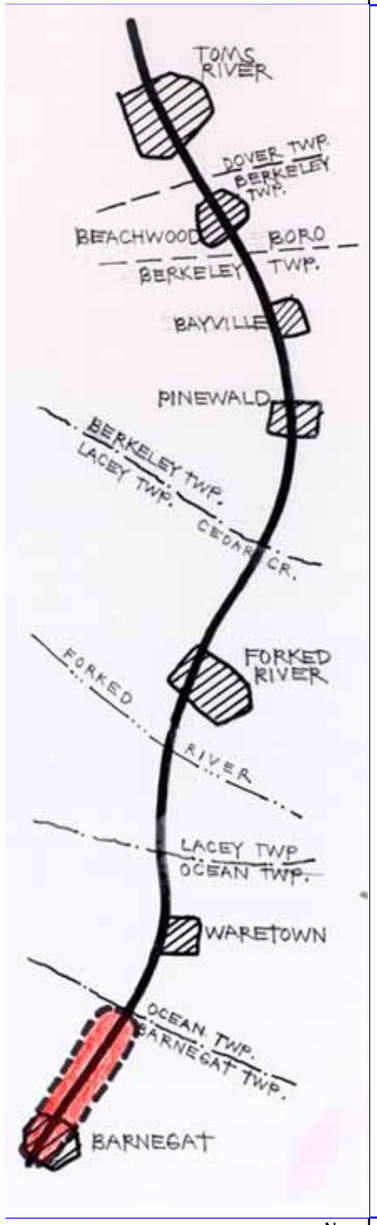
Opportunities

Burr Street is a quiet local way that provides compatible bicycle and pedestrian access to the west, including a historic cemetery, the Horbelt Elementary School and the Barnegat branch of the Ocean County Library.

This Plan recommends that Rose Hill Road be developed as a neighborhood or local access point with directional signage and parking for a limited number of vehicles. With construction of adjacent residential subdivisions this embarkation point will grow in popularity.

Subject to an agreement with the VFW Post, the trail could benefit from public access, including co-located parking and directional signage at the Rt. 9 entrance.

Land parcels to the north or south of Barnegat Boulevard serve regional trailhead needs. Lateral access opportunities include a municipal "western spur trail" to connect residential subdivisions and recreational lands owned by Ocean County and the Barnegat Regional School District and the locally-popular skateboard park.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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Township Key Plan
No to Scale

N

Figure 9

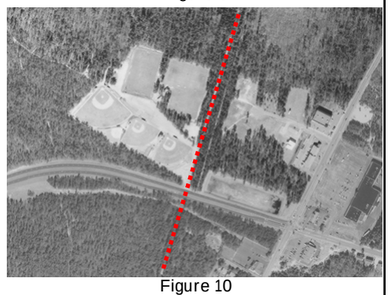


Figure 10

Figure 11

Figure 12

Existing Observations

Barnegat Boulevard looking south: Pictured is a municipally-built, 8-foot wide asphalt pedestrian and bike trail located within the County-owned highway right-of-way (the "Barnegat Boulevard Trail").

The Barnegat Youth Sports Complex is located at the northwest corner of Barnegat Boulevard and the Trail. This 40+ acre active-use recreational facility is home to the Barnegat Soccer Club and the Barnegat-Waretown Little League.

Lochiel Creek is a high quality freshwater course that drains a pristine wetland complex situated to the west. Known to fishermen and conservationists, the Creek's dark, cool waters and adjacent forest canopy provide an inviting location for a picnic or rest stop

A deep forest canopy envelopes the Trail north of Lochiel Creek. Here, the Bay Trail passes through one of the most pristine forest and wetlands areas in Central Ocean County.

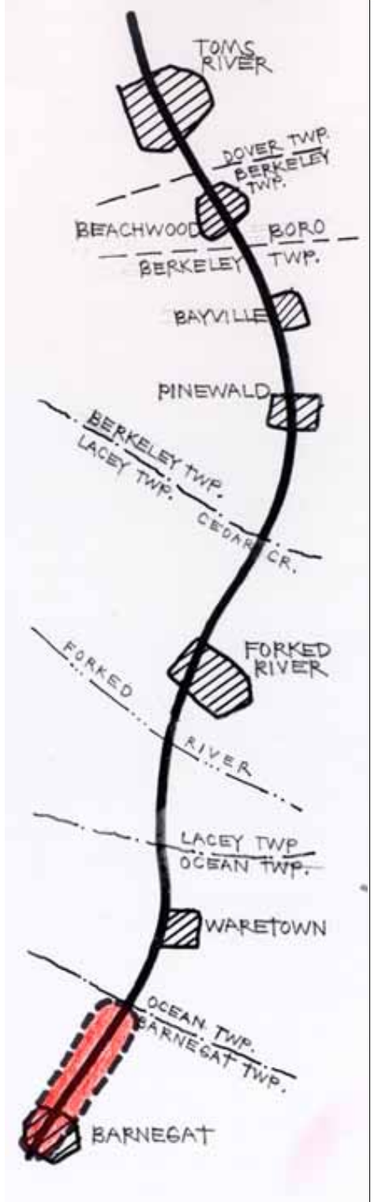
Opportunities

The completion of this trail will provide an important public access link to the Brackman Middle School, the Rose Hill Natural Lands Preserve (Ocean County), and the Barnegat Branch Trail.

As noted, the Barnegat Sports Complex contains parking and facilities for prospective Trail users. The site can be developed into a regional trail-head subject to agreements between Ocean County and Barnegat Township.

This Plan recommends low impact water access and construction of a primitive picnic area along the Lochiel Creek. Since there is no adjacent road or vehicular access, Trail users would adhere to a policy of "packing-out" trash from this (and similarly-designated) locations.

Recommendations include land acquisition of adjacent parcels to help protect natural resources and to buffer the Trail from incompatible residential or commercial development. This is one of several areas adjacent to the Trail where public land acquisition is recommended.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

N

Township Key Plan
No to Scale

N

Figure 13

Figure 14

Existing Observations

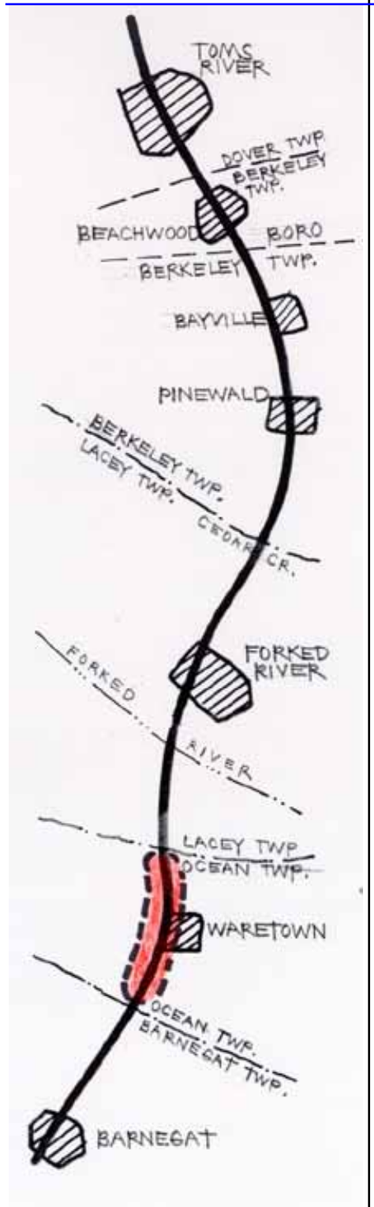
Phase I of the Greenbriar residential subdivision under construction. With new road access and utilities, Green Briar is one of several subdivisions approved or under construction atop formerly isolated forest lands adjacent to the Trail.

The Double Creek walkway and interpretive wetlands habitat is located east of Rt. 9 near the trail, and is accessible by foot or bicycle. Depending on the season, a visitor to Double Creek will encounter a range of shorebirds and migratory waterfowl.

Opportunities

Projects like Atlantic Heights and Greenbriar at Waretown (1,500 dwelling units) will transform the trail experience. Given their scale, the projects will physically and visually encroach upon the Trail, and will compromise the natural isolation and wilderness experience. Conversely, residential development will introduce a new community of Trail users and future open space constituents.

Double Creek is part of the E.B. Forsythe National Wildlife Refuge, whose 25,000 acres along the Barnegat Bay and trail are managed by the U.S. Fish and Wildlife Service. The Trail allows easy access to the many Refuge "land management units" located in Barnegat, Waretown, Forked River and Bayville. These management units are open for passive public recreation, including hiking, birdwatching, environmental education and research.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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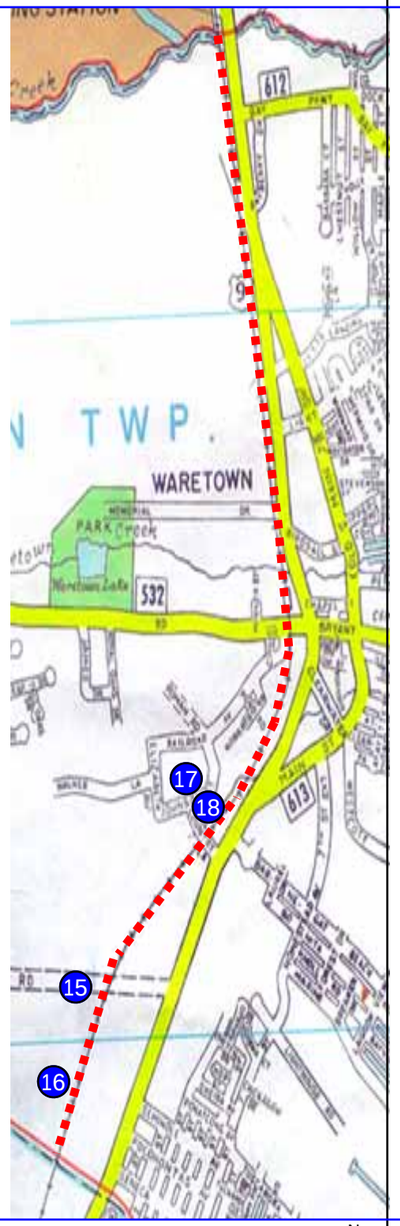


Township Key Plan
No to Scale

N

Figure 15

Waretown Junction – currently overgrown and unheralded – marks the merger of the Barnegat Branch and Tuckerton Railroads. It is from this junction that the Barengat Branch continued its journey north to Toms River while its competitor, the Tuckerton Railroad, shot west to Whiting. Today, abandoned Tuckerton right-of-way runs along Lacey Road in the vicinity of Bamber Lake.

This Plan calls for interpretive signage and a picnic or rest stop at Waretown Junction. A future trail spur running to Whiting can be accommodated along the abandoned Tuckerton line, subject to approval of the Exelon Company and GPU, which operate the electric transmission line located within the right-of-way.

Figure 16

Greenbriar at Waretown is an extensive adult and golf course community of 1,500 homes on 900 acres. Although the project lies west of the Trail, access to Rt. 9 is provided through a roadway easement granted by the U.S. Fish and Wildlife Service through habitat lands along the Trail's eastern boundary.

As discussed in Figure 13, Greenbriar can be expected to introduce additional trail users. The opportunity for future connections abounds, as a corner of Greenbriar overlaps with Waretown Junction; the project's northeastern boundary is checked by the Tuckerton Railroad spur.

Figure 17

The historic 'Dogtown' neighborhood sits along the western perimeter of the Trail in the vicinity of Country Lane (Ocean Twp.). This 200 year old residential community, provides the Trail user with an interesting historical side-trip and destination.

Trail planning opportunities call for interpretive and historical signage.

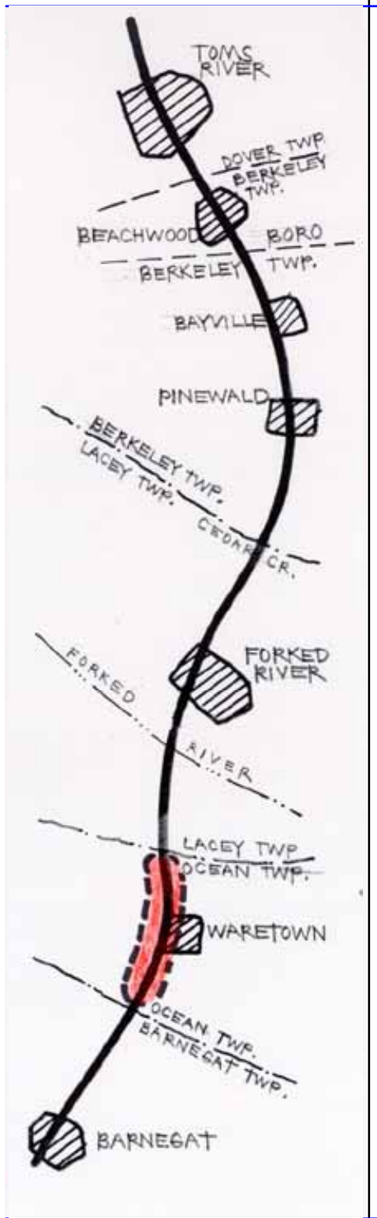
Figure 18

The Lighthouse Tavern, located at Rt. 9 west and Country Lane (Dogtown) is a local landmark.

The Lighthouse Tavern is one of many eating establishments that can be quickly and safely accessed using local cross-streets. Ocean County recently purchased lands immediately south of the Tavern with the goal of providing trail access.

Existing Observations

Opportunities



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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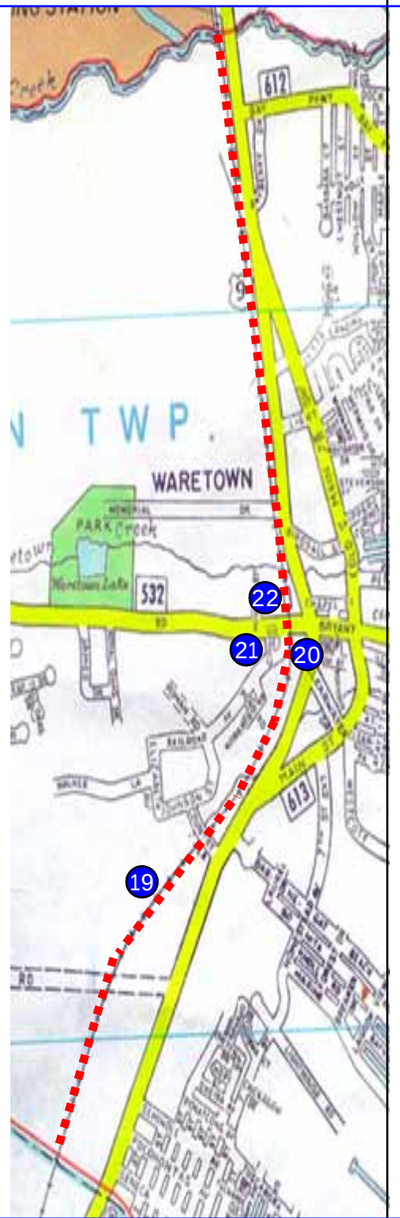


Township Key Plan
No to Scale

N

Figure 19

Figure 20

Figure 21

Figure 22

Existing Observations

The Trail surface and forest canopy south of Waretown village highlights the beautiful and tunnel-like quality of the maritime forest as well as trail geometry and drainage conditions.

This abandoned farmhouse dating to the 19th century is located along the Trail south of Waretown. It is a fine example of the housing type that served the farmers and Baymen of Waretown.

Albert Hall, located just west of the Trail on Rt. 532 (Wells Mills Rd.) is home to the historic Pinelands Cultural Society. Founded by the Ridgway Family, Albert Hall hosts live folk concerts on Saturday nights throughout the year, and is a cultural attraction of regional and statewide significance.

This aerial image shows the Trail alignment as it passes through to the historic Waretown village center (Rts. 9 and 532).

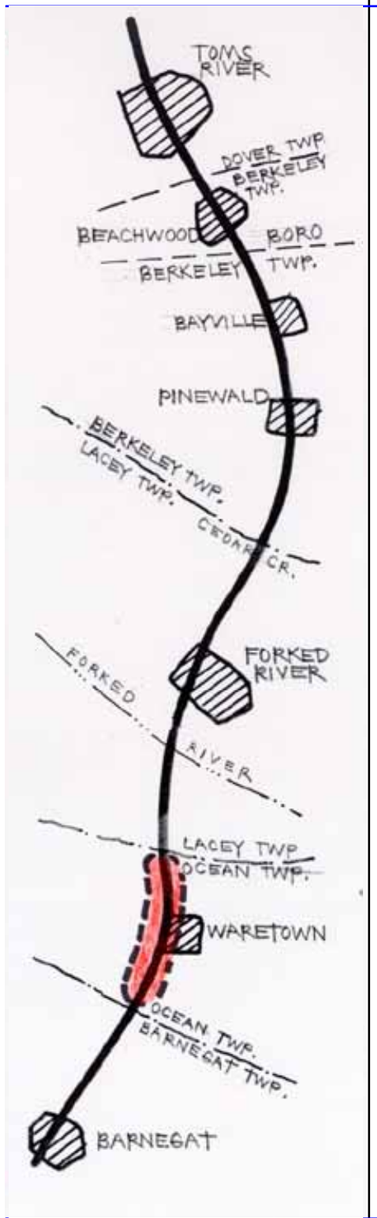
Opportunities

Proposed Trail improvements must accommodate heavy visitor use while advancing environmental factors, such as improved surface drainage and preservation of existing forest and ground cover.

The subject property is ideal for acquisition and restoration as a historic residence or living quarters for a park ranger or Trail Tender organization. Acquisition and restoration can be accomplished by Ocean County, the Township of Ocean (Waretown) or a qualified nonprofit conservation or historical group.

The proximity of the Bay Trail to Albert Hall and the adjacent Ocean Twp. School and Park is an asset. Opportunities abound for concerts and cultural events that focus on heritage tourism, such as a 'Music Trail' or Music Festival. Both activities further heritage or 'eco-tourism' and will draw visitors to Waretown and environs.

The Trail provides access from the north and south to many of Waretown's habitat preserves such as the Lighthouse Camp, Barnegat Beach and Sands Point Harbor, as well as the marinas and eating establishments along the Bay.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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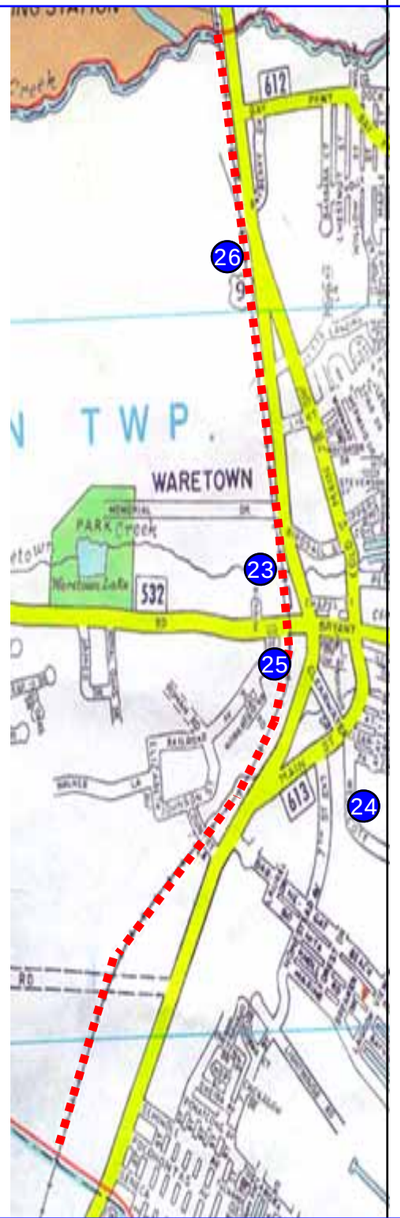


Township Key Plan
No to Scale

N

Figure 23

Figure 24

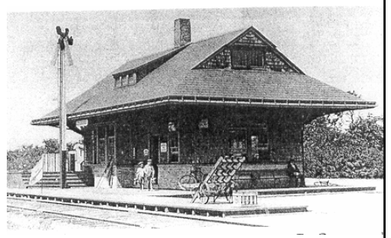


Figure 25

Figure 26

Existing Observations

This simple timber bridge spans the Waretown Creek just north of Rt. 532. Several railroad bridges that served the Barnegat Branch Railroad remain.

Situated along the Barnegat Bay at 7th St. in Waretown is the nationally famous Lighthouse Camp, which provided a summer camp experience to generations of visually-impared children and adults. The land and improvements were sold in 2000 to the DEP for preservation and public access.

Long since lost to history, the Waretown Station was located along the western side of the railroad in the Village of Waretown, near the intersection of Rt. 9 and County Route 532. The railroad alignment is presently occupied by a combination of public roads and private driveways. The County, in conjunction with the Township and Waretown Historical Society, is currently checking the feasibility of moving and restoring the original railroad building.

Just north of the Waretown Creek the railroad right-of-way emerges from the woods and forms an open alignment along the west side of Rt. 9. Though legally separate from Rt. 9 the Trail alignment is physically indistinguishable from the highway corridor where

Opportunities

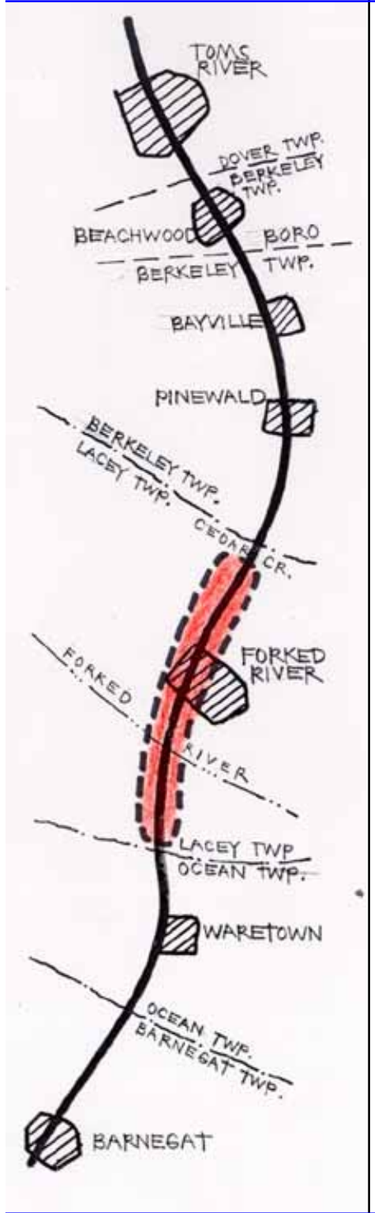
Here, bridge abutments and supporting elements appear to be in reasonably good condition and subject to engineering inspection, should support Trail traffic and emergency vehicles. Surface decking will need to be replaced, and safety side-rails or fencing installed.

A visit to the Lighthouse Camp will make an excellent side-trip for trail users. Pending the execution of a lease between DEP and a local nonprofit manager, "The Lighthouse Center for Natural Resource Education" will be opened to the public for recreational access, environmental education, teacher training and scientific research.

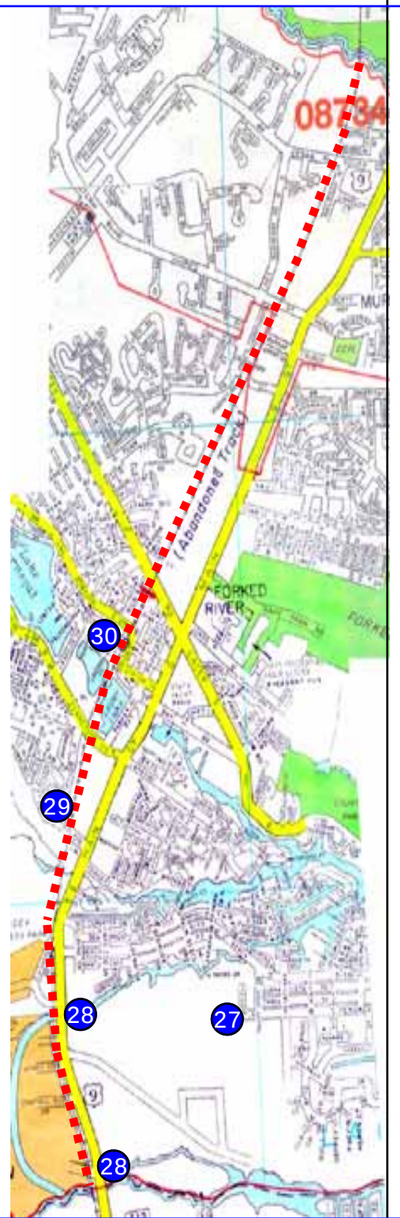
This plan contemplates construction of replica stations / multiple-use facilities for trail visitors, historical displays, community meetings and the like. Such a facility would be owned and managed by Ocean County as part of the Barnegat Branch Trail, but available for municipal and community events.

There are a number of design treatments that can be utilized to improve Trail safety and aesthetics which begin at this location and run approximately two miles north to Lacey Township. Recommended improvements include construction of a low earthen berm or noise-reducing screens comprised of native trees and shrub species. Trail user protections at cross-streets are provided through the use of signage and lighting.

Lacey Township



Overall Trail Plan
Scale: 1"=1.4 +/- Miles



Township Key Plan
No to Scale

Figure 27

Figure 28

Figure 29

Figure 30

Existing Observations

Vincent Clune Park is an active recreational area that covers nearly 25 acres. A portion of Clune Park is owned by Lacey Township; the balance is owned by Exelon, parent company to the Oyster Creek Nuclear Generating Station. Clune Park is located about one-mile east of the trail, accessible by Beach Blvd.

OCNGS Trestle: Two former railroad bridges paralleling Rt. 9 provide continuous trail access over the Oyster Creek Nuclear Generating Station intake and outfall canals. Both trestles are owned by the Exelon Company and appear to be in satisfactory condition for trail use.

This Forked River metal fabrication shop is physically occupying a portion of the railroad right-of-way owned by Lacey Township. Although this business is reasonably respectful of the right-of-way, its only legal access (to the nearest public street) is along the Trail right-of-way.

The Trail crosses Lower Barnegat Lake in Forked River along a narrow isthmus and bridge.

Opportunities

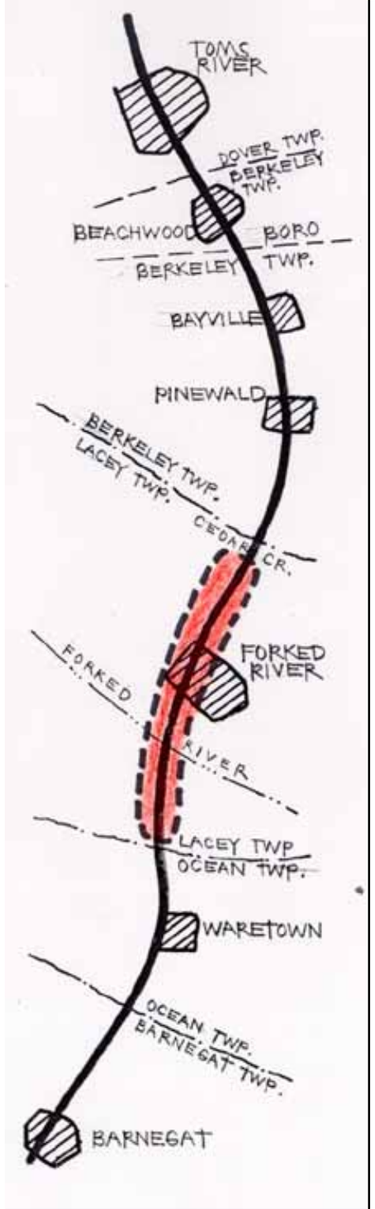
Due to 9/11 security concerns raised by managers of the Oyster Creek facility this plan contains an off-trail routing study utilizing Clune Park. Trail users would access Clune Park via Beach Boulevard and a system of trails extending south across the Finninger Farm to a proposed walkway cantilevered to the Rt. 9 bridge over the Oyster Creek outfall canal. (See Appendix, A-5)

Subject to an agreement between Ocean County and the Exelon Company, these bridges could be opened for trail access. Specific design issues include public security and trail-user safety at each of the entry / exit gates to OCNGS.

Prior to Trail construction these questions of legal and physical access must be resolved for businesses and residences deemed to encroach on the Trail. In certain cases the public Trail owner can subdivide and sell or lease to the private entity land needed to ameliorate the situation.

The Barnegat Lakes are among the Trail's prized amenities and anticipated destinations. The Lakes attract swimmers and fishermen in the summer; skaters and 'bladers in the winter. Water access, interpretive signage and picnicking areas are proposed for various Barnegat Lakes locations.

Lacey Township



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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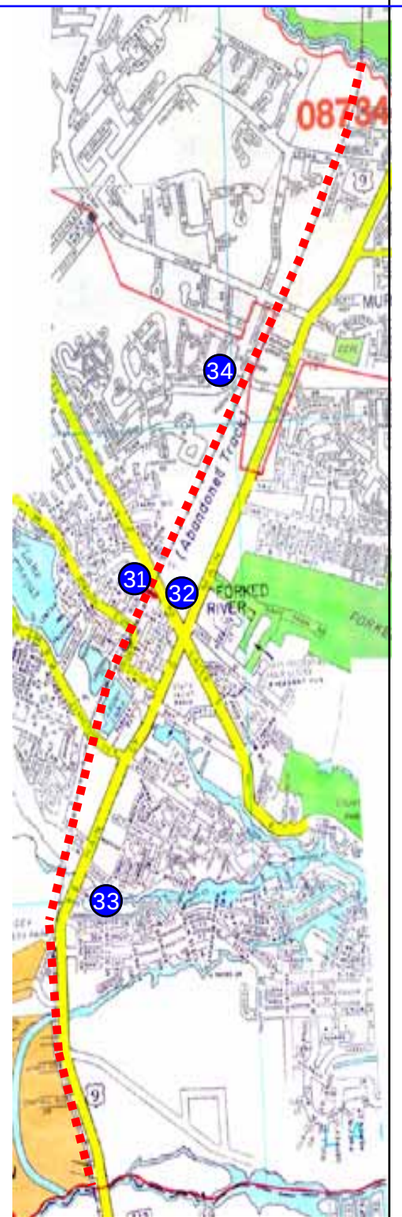


Township Key Plan
No to Scale

N

Figure 31

Figure 32

Figure 33

Figure 34

Existing Observations

Historic view of Forked River Railroad Station, Mill Street near Lake Barnegat (circa 1905).

Aerial photograph of Forked River (circa 1995) in the vicinity of Rt. 9 and Lacey Rd. Lower Barnegat Lake appears at lower left. The two major crossroads are Lacey Rd. and the Barnegat Branch Trail.

Marina access along the North Branch of the Forked River. Pictured is the Forked River State Marina, which is managed by the DEP Division of Parks and Forestry.

Forked River trail right-of-way north of Lacey Rd. near Haines St. The trail is currently unimproved with an oak-pine forest buffer. Along the west are residential subdivisions; the eastern boundary consists of residential, commercial and vacant land uses.

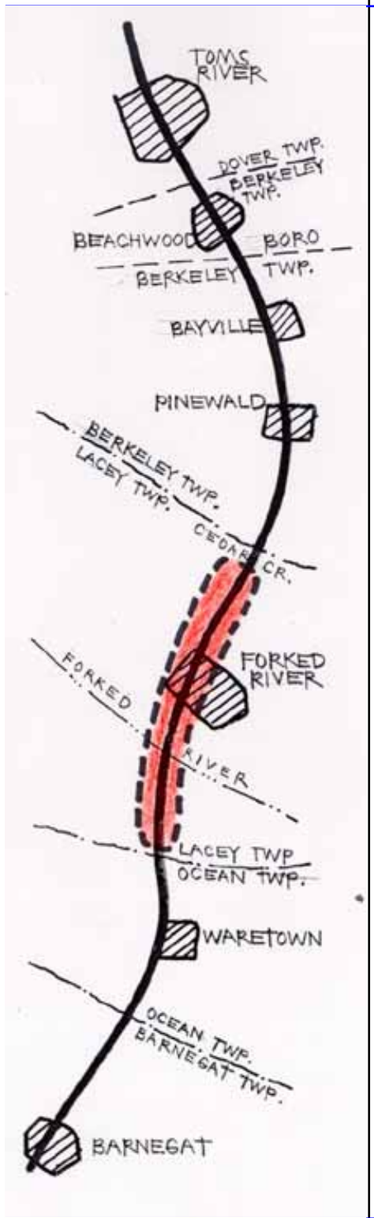
Opportunities

This historical site is adequately-suited to serve as a local trailhead, where a replica of the original railroad station could be constructed and managed by Ocean County, Lacey Township or a local historical group. A small picnic area, interpretive and directional signage and a limited number of parking spaces could also be constructed here.

Similar to Barnegat and Waretown, Old Forked River affords Trail users a compact commercial and residential village center with a streetgrid to venture along. Opportunities abound to visit local businesses, schools, stores and historic homes, in addition to marinas located along Forked River east of Rt. 9.

Marinas make for interesting destinations for those Trail users who cross Rt. 9 to view hundreds of boats at-dock or motoring along the creeks and lagoons. In addition, many boaters carry folding bicycles to ease and expand their landward visits. The Trail's proximity to marinas will help attract visits from sailors interested in flexing their sea-legs.

Since 2001, this section of trail has been subject to extensive public debate in Lacey Township. Proposed alternatives include: (a) no change to existing unimproved use patterns; or (b) occupancy and construction of a municipal roadway and trail combination. Depending on trail use, design and public safety standards the trail will occupy a minimum 12' right-of-way along the western boundary of the railroad line.



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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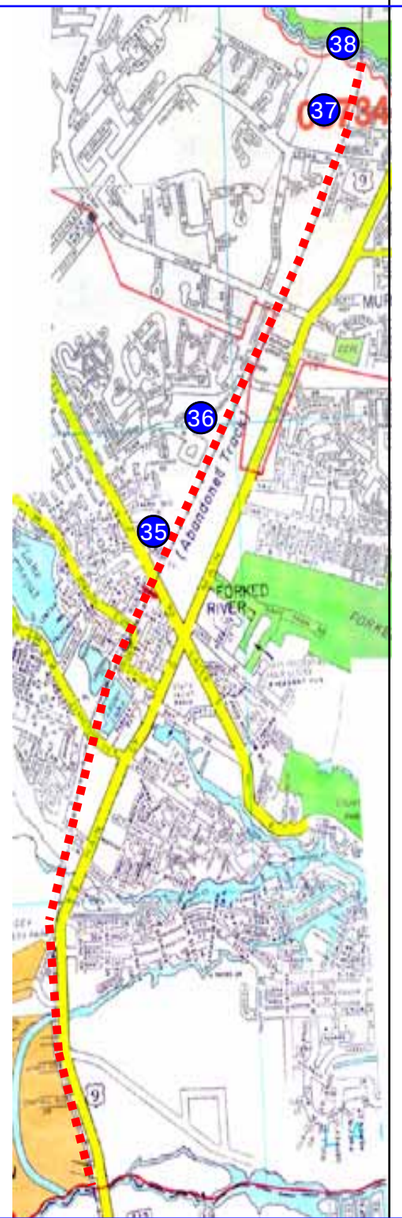


Township Key Plan
No to Scale

N

Figure 35

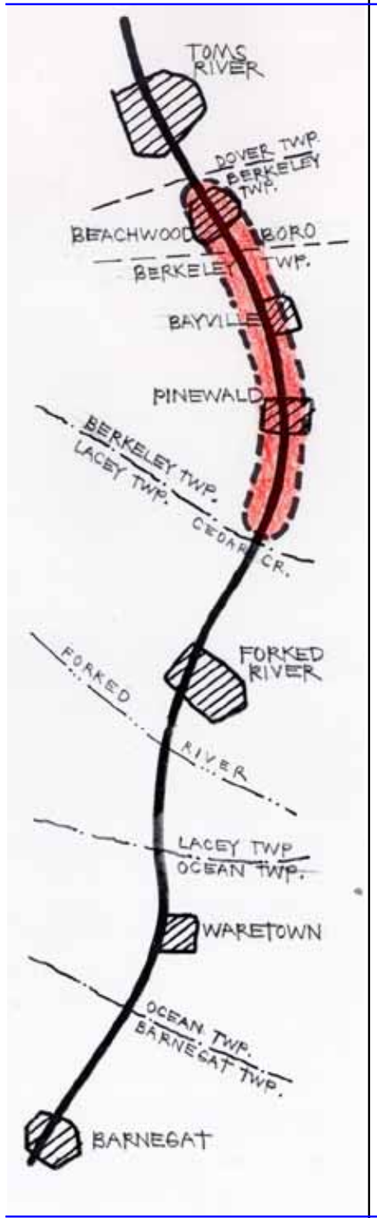
Figure 36

Figure 37

Figure 38

Existing Observations	Opportunities
Lacey Municipal Utilities Authority pumping station, parking and double-wide right-of-way north of Lacey Road	Similar to Mill Street, this location is suitable for a local trailhead consisting of a picnic area, directional and historical / interpretive signage, bathrooms and a small parking area.
ShopRite supermarket and shopping center located at the southeast corner of Haines Street and the Trail (Lacey Township).	Adjacent to the Trail are substantial shopping opportunities; in Lacey Township many residents living west of the Trail walk to shopping along Rt. 9, with kids walking daily to their elementary and intermediate schools near Lacey Road. Even without a formal Trail many Lacey residents have become active pedestrians
Lacey Township's Hebrew Park is located along the Trail near the municipal border with Berkeley Township. The park provides active recreation by incorporating ballfields, basketball courts, playgrounds and a fitness track.	The park provides an opportunity to co-locate Trail access and serve as a local trailhead for journeys north into the less accessible Berkeley section.
Railroad trestle bridge at Cedar Creek (Lacey and Berkeley Townships). This abandoned span is the longest and highest of the timber bridges linking the subject study area. The bridge is also the most severely damaged (abutments and deck) as well as the gullied and severely eroded approaches.	While it may be possible to salvage the old bridge, extensive earth work will be required to restore the earthen approaches. This study proposes stabilization of the old bridge for historical purposes and construction of a new, parallel timber or steel bridge of adequate size and load to carry emergency vehicles over the Cedar Creek.

Berkeley Township



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

N

Township Key Plan
No to Scale

N

Figure 39

Berkeley Township's William Dudley Park provides an important recreational connection, linking the Trail with Cedar Creek and Rt. 9. The park functions as a premier active and passive recreational site, and contains a picnic arbor and swimming beach. Dudley Park is used by children enrolled in the Township's summer camp.

Dudley Park is recommended as a local and regional trailhead with existing parking, restrooms and directional signage. The park is appurtenant to the trail and offers excellent connections via existing footpaths along the north bank of Cedar Creek.

Figure 40

Heavily-eroded Trail segment north of Cedar Creek, Berkeley Township. Erosion and damage caused by heavy motorcycle and 'quad' use is evident along this Trail section. This problem is somewhat unique to Berkeley, as erosion is not present in the Barnegat, Ocean and Lacey Township sections.

Trail improvements call for re-grading, soil stabilization and restoration of native groundcover. Motorcycle impacts can be mitigated by the active involvement of neighbors and use of permanent Trail manager (ranger or police officials) prepared to enforce rules and regulations.

Figure 41

Trail in wilderness area north of Cedar Creek, Berkeley Township.

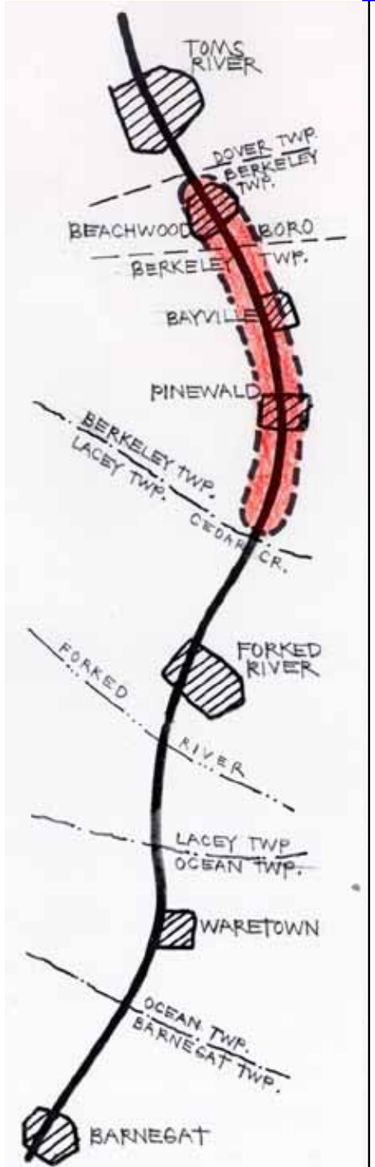
The southern trail section within Berkeley Township includes several long and isolated segments used by motorized "quads" and off-road motorcycles. Long-term trail success will require policing and neighborhood support to reduce impacts caused by unauthorized motorized access.

Figure 42

The Trail crossing at Serpentine Drive presents users with a potentially dangerous situation, including steady traffic volume, modest speeds, and poor sight conditions created by confused road geometry and lack of signage.

Recommendations call for improving the area through crosswalk striping, signage and pedestrian warning lights.

Berkeley Township



Overall Trail Plan
Scale: 1"=1.4 +/- Miles
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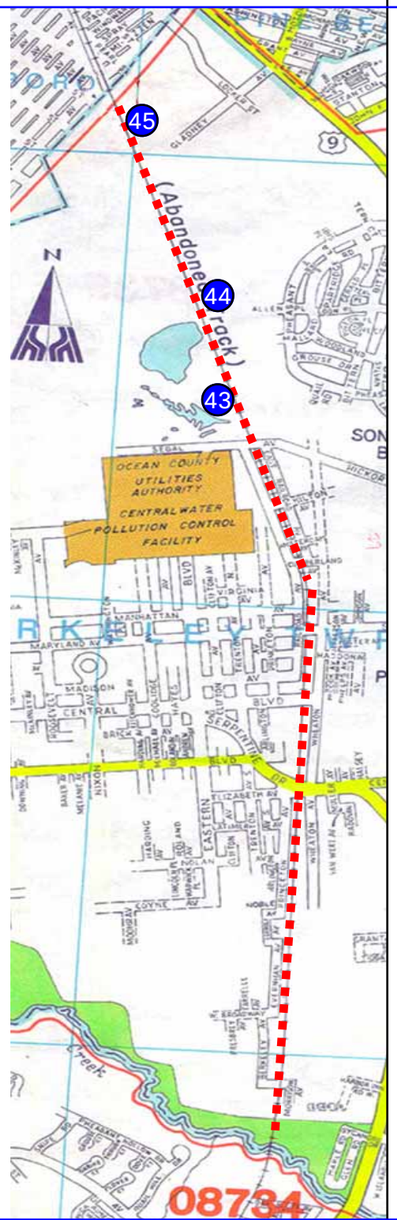


Township Key Plan
No to Scale
N

Figure 43

Figure 44

Figure 45

Existing Observations

Trail realignment will be required in the vicinity of Hickory Lane, an east-west public street that forms the southern boundary of New Jersey Pulverizing's sand mining operations, which continues two miles north to the Beachwood Borough municipal boundary.

Existing Trail 'isthmus' separating sand and gravel excavation pits, Berkeley Township. Here, years of neglect have resulted in the deposition of topsoil and debris atop the legal Trail right-of-way. Current conditions necessitate extensive regrading and slope stabilization before the Trail can be built.

This Berkeley section of Trail terminates at Beachwood Borough, where an existing 1.3 mile paved bikeway carries the user north to Toms River.

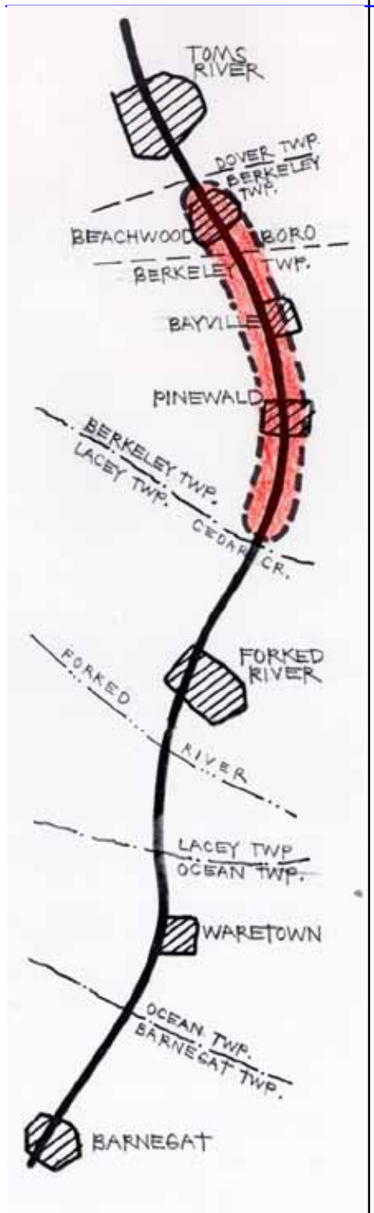
Opportunities

Opportunities to realign the Trail are available north of Hickory Lane where the Trail right-of-way abuts silos and truck loading zone.

This Plan calls for relocating the Trail to the adjacent road and easement maintained by the Ocean County Utilities Authority. In addition, the Berkeley Town Center Redevelopment proposal will incorporate the trail into future development, akin to Waretown's plan.

A local trailhead with parking and signage is recommended at Mizzen Avenue, approximately one block north of the municipal boundary.

Beachwood Borough



Overall Trail Plan
Scale: 1"=1.4 +/- Miles
N

Township Key Plan
No to Scale
N

Figure 46

Figure 47

Figure 48

Figure 49

Existing Observations

Southern trail section, Beachwood Borough. The 1.3 mile section of the former Barnegat Branch Line was acquired and developed as a trail by Beachwood Borough more than a decade ago. The trail spans the length of Beachwood Borough, from Berkeley Township to South Toms River Borough.

Beachwood Borough trail section, view looking northwest across Railroad Avenue. The figure highlights the curvelinear nature of the trail and use of a swale to drain runoff from the trail surface and base.

Beachwood Borough trail view north to Rt. 9 at Admiral Avenue and Flint Road (South Toms River Boro).

Beachwood Borough welcome sign and public gazebo at intersection of trail and Rt. 9.

Opportunities

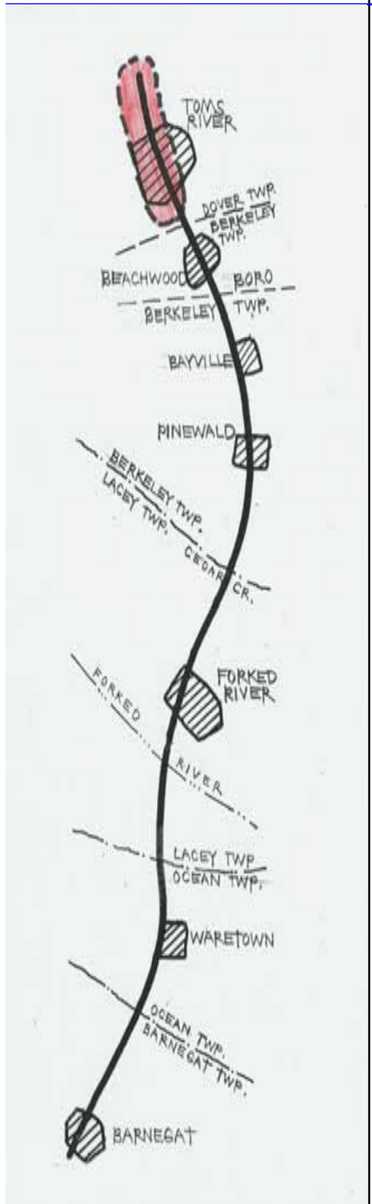
Beachwood's section consists of the full 50-foot railroad right-of-way with a 7-8' paved-asphalt trail surface. Public road crossings are fully signed and striped to warn users of vehicular traffic. The trail contains a grass buffer, control fencing at public cross-streets and trash receptacles.

Residential dwellings line both sides of Beachwood Borough's trail segment, a testimony to the compatibility of trails and homes. In many instances the trail park enhances the property values of adjacent homes.

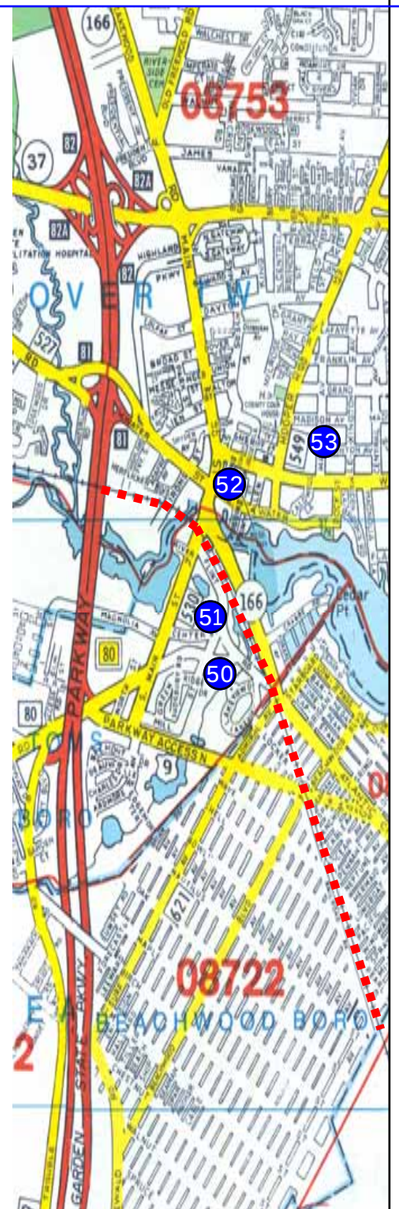
Cooperation between and among NJDOT, Ocean County, Beachwood and South Toms River Borough resulted in the recent upgrading of this intersection. Trail users benefit from enhanced crosswalk striping, adequate signal timing to facilitate safe pedestrian crossing of busy Rt. 9 (with four travel lanes), and split-rail fencing to limit pedestrian activity to the crosswalk zone.

Opportunities exist throughout the Barnegat Branch Trail for each municipality to define its image through a program of improved signage and improved public areas. Such public areas do not have to be large parks or regional trailheads; some of the most useful facilities are small and located in shady areas appurtenant to the trail and under the watchful eye of neighborhood associations.

South Toms River Borough / Downtown Toms River



Overall Trail Plan
Scale: 1"=1.4 +/- Miles



Township Key Plan
No to Scale

Figure 50

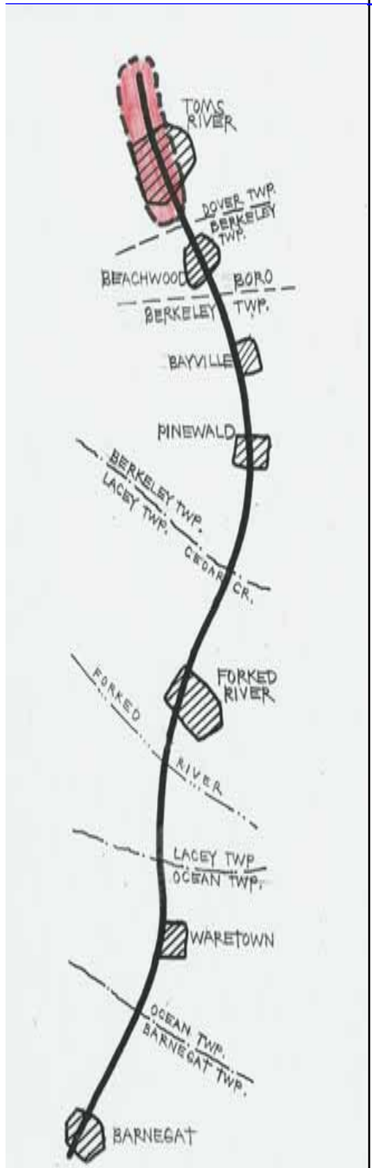
Figure 51

Figure 52

Figure 53

Existing Observations	Opportunities
View north along Flint Road, South Toms River Borough. Due to alignment, roadway construction and removal of trestle bridges, the Barnegat Branch right-of-way is no longer accessible for trail use within South Toms River Borough. The former right-of-way is not contiguous or safe for trail access.	Future connection of the Barnegat Branch Trail to the downtown Toms River commercial district through South Toms River Borough must be established along existing public streets, principally Flint Road.
View of former Toms River Freight Station (2004), located between Flint Road and Rt. 166, South Toms River Borough. Ironically, the sole remaining structure along the entire reach of the Barnegat Branch Line today sits within an overgrown, isolated triangular lot adjacent to Huddy Park.	Opportunities exist for on-site restoration and historic interpretation of the freight station, or for purchase and relocation of the structure to an appropriate setting elsewhere along the Barnegat Branch Trail.
View of Main Street (Rt. 166), Toms River, Toms River Township. The downtown Toms River shopping district is in the midst of a revival with commercial redevelopment occurring along Water Street and the expansion of Ocean County Library / Toms River Branch located on Washington Street.	The connection of the Barnegat Branch Trail to Toms River will be mutually beneficial: trail users will be attracted to a destination "node" complete with restaurants, shopping, civic and festival events; and the downtown district will benefit from increased recreational and weekend visitation by trail users.
Toms River Maritime Museum, winter storage of Barnegat Sneakbox Sailboats. Located at the corner of Hooper Avenue and Water Street, the Toms River Maritime Museum is one of Ocean County's most unique attractions, a mecca for wooden boat enthusiasts and students learning the craft.	The Maritime Museum is an important cultural institution in Toms River and would benefit greatly from increased visitation and traffic from the Barnegat Branch Trail. Bicyclists and hikers can rest in the pine-needle shade of the Museum grounds, amidst wooden boat relics of the Jersey Shore.

South Toms River Borough / Downtown Toms River



Overall Trail Plan
Scale: 1"=1.4 +/- Miles

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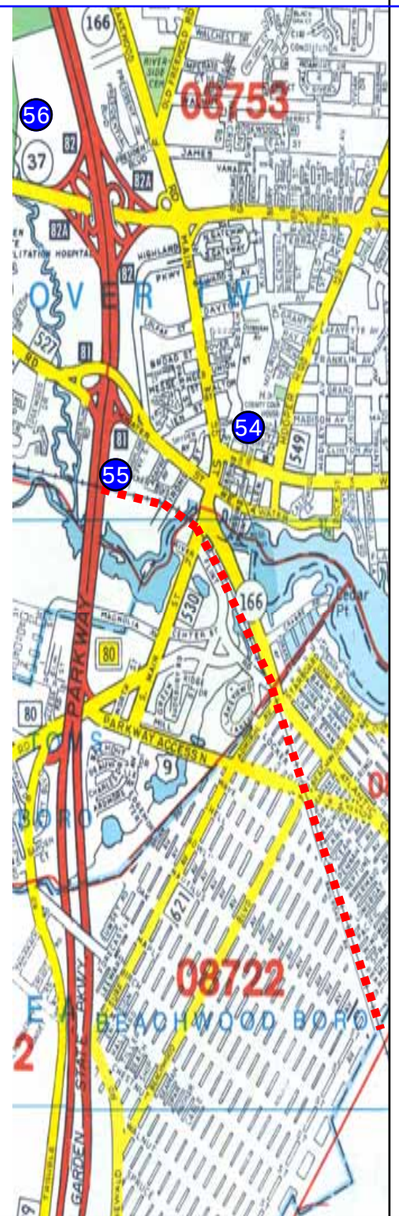

Township Key Plan
No to Scale

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Figure 54

Figure 55

Figure 56

Existing Observations

"Old" Ocean County Courthouse, Toms River. Built in 1850, the Old Ocean County Courthouse is a reminder of the central role played by Toms River in the County's business, institutional and civic life.

Pennsylvania Railroad Overpass, Garden State Parkway, Toms River. This overpass abuts the Toms River Bus Station off Water Street. The Pennsylvania Railroad formerly operated a dual-line between Toms River and Camden-Philadelphia via Whiting. The two lines – the Pennsylvania and Barnegat Branch – intersected in the area presently occupied by the Beachwood junction of the intersection of Rt. 9 bypass and Beachwood Boulevard.

Winding River Park, Toms River Township. Located just north of Rt. 37, Winding River Park contains walking and bicycling trails, active and passive recreational fields and an ice skating center within its 600-plus acres.

Opportunities

The County complex represents an important element in long-term Trail success. Each weekday, approximately several thousand workers enter Toms River by automobile. If the Trail can eliminate just five-percent of these trips, it will have succeeded in reducing roadway congestion far beyond traditional traffic mitigation measures.

Future trail opportunities include a western Pinelands spur (through Berkeley Township) along the abandoned Pennsylvania Line, as well as a northern link following the Toms River or existing utility corridors to Winding River Park (Toms River Township).

Future trail expansion plans should consider access links between Winding River Park and the Barnegat Branch Trail in Toms River. As shown in Figure 55, the former Pennsylvania Railroad overpass provides a seamless connection to Toms River provided the construction of trail bridges over the Winding River and/or Toms River.

Recreation:

As previously mentioned, portions of the proposed Barnegat Branch Trail are already in active and passive recreational use by local residents. The primary goal of this Plan is to enhance the recreational use of the proposed Trail corridor through increased access and visibility, and improved physical conditions. Proposed uses for the Barnegat Branch Trail include bicycling, walking, hiking and jogging, cross-country skiing (in the winter), sitting and picnicking, boating and fishing, and bird watching, all healthful activities good for both the body and the soul. The development of the Barnegat Branch Trail is also proposed to incorporate other recreational and service amenities such as parking lots, comfort stations, and perhaps some playground equipment.

Use of motorized recreational vehicles (cross-country motorcycles, 'quads,' ATVs, etc.) will be banned on the Barnegat Branch Trail. The Trail surface and infrastructure, such as bridges, will be designed primarily for the non-motorized user, with the exception of security and maintenance vehicles. In addition, the level grades, hardened trail surfaces, and obstacle-free design will make the Barnegat Branch Trail an ideal destination for handicapped persons and others with accessibility issues.

Bicycling, Walking, Hiking and Jogging

All of New Jersey's rail-trails and greenways are busy on nice weekends, successfully attracting a variety of active user groups that include bicyclists, hikers with their rucksacks, dog walkers, families with strollers, and joggers of every size and speed. The new and improved Barnegat Branch Trail will also offer a fine location for this group of users to conduct their outdoor recreation. With but a few exceptions the Trail will be separate from the urban road network and will provide a safe place to walk that is free from the hazards, sights and smells of vehicular traffic on Route 9, a real amenity for families with small children and people with dogs. Along the Trail there will be trees for shade, mile markers to gauge distance and glimpses of other users. In the winter when there is snow, the Barnegat Branch Trail will offer long flat surfaces perfect for cross-country skiing.

In addition to providing Ocean County residents with a wonderful opportunity for outdoor exercise, the Barnegat Branch Trail will offer users an enjoyable alternative to using the automobile for sight seeing, running errands or getting to work along Route 9. One of the unique characteristics of the Barnegat Branch Trail is the fact that while much of the Trail runs through beautifully wooded surroundings, it actually links up and services the County's towns and village centers as efficiently as the train line once did. Residents and tourists alike will be able to walk or bicycle between village centers on their way to lunch or a shopping excursion. For many people, having a destination at the end of the line will give them a real incentive to use the trail and get some exercise.

Boating, Fishing and Swimming

While the proposed Barnegat Branch Trail is located inland of the Barnegat Bay and offers few opportunities for direct access to the water, this Plan calls for trail connections at several creeks and inland lakes. These freshwater resources play an important role in the ecology, history and recreational needs of County residents. The key water-related uses that will be supported by the new Barnegat Branch Trail include boating, fishing and swimming:

- Boating – The Barnegat Branch Trail offers good access for canoe and kayak users seeking to complete or launch a trip. Access, however, is of a perpendicular nature since no watercourses parallel the trail. Key water access points include Double Creek and the Barnegat Bay (proximate to Barnegat Village), Barnegat Lakes and various branches of the Forked River (Lacey), Cedar Creek (Lacey-Berkeley municipal border), and the Toms River.

- Fishing – The Barnegat Branch Trail will offer improved access to key freshwater streams, including the Lochiel Creek, Waretown Creek, Cedar Creek and Toms River, all of which supply the Barnegat Bay. Fishermen should be encouraged to use the Barnegat Branch Trail, not only because the Trail will be a resource for this group, but also because fishermen add to the ambiance of the park for other people who use it. People walking along the Trail often stop to say hello and inquire after a fisherman's luck. In return, the fishermen provide a human contact and an extra element of interest. Access at the above-referenced creeks is recommended (See, Proposed Trail Improvements map).

- Swimming – The Barnegat Branch Trail will provide a safe off-road route for families to travel to a number of local "swimming holes". Nearby opportunities for public swimming include the Barnegat Lakes in Berkeley Township and the Cedar Creek public beach.

Sitting and Picnicking

Even within a linear park there are many visitors who will choose to remain stationary, or relatively so. Some users may hike or bike to a chosen location for a rest period. Others may elect to park and recreate close to their auto. The ability of the Barnegat Branch Trail to accommodate these relatively "passive users" is essential. Selected trail surface, park furniture, comfort facilities and parking trailheads will be critically important.

Bird Watching

A continuous linear park environment such as the Barnegat Branch Trail provides a natural venue for bird watching, an increasingly popular past time in New Jersey's coastal communities. It has been calculated that ecotourists interested in shorebird migration spend millions of dollars annually in New Jersey.

Alternative Non-motorized Transportation

The importance of the Barnegat Branch Trail as an alternative means of travel can be evaluated in simple transportation terms, such as in anticipated reduction of automobile trips, traffic counts and improved intersection efficiencies. By providing an alternative means of travel, the Barnegat Branch Trail also will provide proven health benefits for users in terms of physical exercise and also will help reduce air pollution.

Environmental Conservation

Although the rail corridor of the Barnegat Branch Trail was originally industrial in nature and not intended to be part of nature, the current state of the rail corridor indicates that the natural environment has prevailed. Currently, the rail corridor provides a wonderful continuous eco-system for plants, animals and birds.

Use of Historic Railroad Architecture

There are several design principles guiding this Plan. Perhaps the most important of these principles is that the design of recreational amenities for the new and improved Barnegat Branch Trail should incorporate the architectural vernacular of the 19th and 20th century railroad companies that built and ran the train line. This requires thoughtful documentation of the structures built and architectural styles employed by the Central Railroad of New Jersey. The railroad's style was classic and is still recognized and broadly appreciated by residents of Ocean County, especially those residents who once relied on the railroad, or recollect its historical importance. For residents who never had the opportunity to ride on the Barnegat Branch Line, the historical railroad design will provide a powerful image for a rail-trail 'conversion.'

The "Central" or "CNJ," as it was known, employed a consistent architectural and engineering motif throughout its operating divisions statewide, including the Barnegat Branch Division. Facilities such as passenger and freight stations, Western Union outlets, coal tipples, watering towers, signage, signal equipment and even tenders' houses bore a consistent design message. It is the goal of the Consultant Team to ensure that the Barnegat Branch Trail utilize – to the maximum extent practical – CNJ design elements in the Trail's design. These elements are reflected in the drawings contained in Section 8. In this fashion the Trail will be understood not only as a representation of a bygone period in our nation's history, but more importantly, as a leitmotif for a new type of County park.

Classifications of the Trail Corridor

Beyond the use of railroad vernacular, this Plan seeks to apply design standards to individual Trail segments based on environmental conditions and use characteristics inherent to a given section. Trail design must respect adjacent land use as well as the intensity of human recreational activity anticipated in various segments. To guide this task the Consultant Team has established five Trail classifications. As outlined below, these classifications help to define the types of improvements (i.e. trail surface treatments, landscaping, parking facilities, signage, etc.) that are recommended for different portions of the trail, depending on the degree of use anticipated for each section. In theoretical terms, as the surrounding area around the proposed Trail becomes more urbanized, trail use will increase. Therefore, the proposed intensity of the design and the durability of materials should also increase. In suburban New Jersey, however, it must be recognized that the intensity of recreational use will correspond not only with the degree of surrounding urbanization, but also with the convenient location and size of parking lots and trailheads.

Classifications:

- *Natural* – A "natural" classification is one in which signs of human impact are slight, where forest, plant and wetland succession substantially separate the right-of-way from nearby urbanization. The largest "Natural" sections are located along the Barnegat-Ocean municipal boundary, and within Berkeley Township. Inasmuch as humans built the railroad line it is nearly impossible to avoid some evidence of man's historic impact. Several areas, however, attest to the predominance of a relatively untouched natural setting, and lend pastoral character to adjacent trail segments.

- *Suburban / Inhabited* – The "suburban / inhabited" environment features a high degree of openness dominated by low-density physical improvements (residential, commercial, industrial, institutional). The "Suburban / Inhabited" sections of the right-of-way include Waretown South, where an extensive new residential development is underway, and central Lacey Township, where existing subdivisions abut the corridor.

- *Village* – In an urban or "village" environment the right-of-way is surrounded by a historically dense pattern of development. Many of the older villages developed around and in support of the railroad. These are potential destination points and gathering places for trail users. Visual and natural buffers are minimal. Along the right-of-way, the "Village" designation highlights the pedestrian-friendly connections to the built community, such as downtown Toms River or the historic centers of Barnegat, Waretown and Forked River.

- *Transportation* – Here, the principal 'environment' abutting the right-of-way consists of a local or arterial roadway or regional highway. The proximity of Route 9 to the right-of-way in the vicinity of the Oyster Creek Nuclear Generating Station in northern Ocean Township and southern Lacey Township is indicative of the "Transportation" designation; here, the right-of-way is fully visible to and shares a common boundary with the west side of Route 9. This classification will of course require additional safety precautions.

- *Special Node* – There are short sections of the right-of-way, usually connected to points where roads cross, that have a character unlike what is on either side, or that present unusual or special development potential. Some of the designated nodes include the Barnegat Boulevard intersection, the Routes 9 and 532 intersections at Waretown Village, and Lacey Business Park. These areas are discussed further in Appendix A

General Design Considerations

Trail Width – This Plan recommends a Trail cartway width of seven to ten feet (7'-10'). Such a width allows bicyclists to safely pass and/or travel two abreast. This width also allows for emergency and patrol vehicles to travel the cartway without excessively loading or damaging the soft Trail edge or perimeter plantings. A narrower-width section of seven feet (7') is recommended for the Trail section in Lacey Township, between Lacey Road and Haines or South Street, where a future municipal roadway may be constructed.

Trail Surface Materials – Per the design cross-sections shown in Section 6, this Plan contemplates three (3) surface treatments, each depending on the anticipated level of use and existing soil conditions. The treatments discussed below proceed from that of lowest-cost and anticipated impact to that of highest cost and use.

- Proposed Treatment – Stone Dust Surface
  Sections of the Trail that are anticipated to receive a light level of use are proposed to remain in a natural-appearing condition through the use of a "Stone Dust Surface." These sections of the Trail will first be graded and compacted. Then 2" of stone dust will be placed over 4" of dense graded aggregate to provide a firm, multi-use surface. The surface will look natural in appearance (i.e., sand or grey colored), but its "action" will be faster, firmer and far more efficient for bicyclists, pedestrians and walkers and wheelchairs. The surface will shed water and support maintenance and emergency vehicles.

- Treatment Option A – Stabilized Stone Surface
  Sections of the Trail that are anticipated to receive a medium-level of use are proposed for a surface composite of stone and sand over 4" of dense graded aggregate. This section of the trail will first be graded and compacted. A stabilizing agent will then be mixed with a nominal 1/4" minus aggregate and installed on the surface at a depth of approximately 3". This layer will be supported by 4" of dense graded aggregate and will produce a hard surface capable of receiving considerable use.

- Treatment Option B – Bituminous Pavement
  The bituminous pavement section of the Trail is essentially a typical asphalt sidewalk common in many parks and natural areas. The Trail surface will be graded and compacted, receive 4" of a dense-graded aggregate sub-base and topped with 1½" of asphalt. This treatment, while common, is the most costly of the three recommended alternatives. However, construction techniques are widely understood and this type of walkway will accommodate considerable use.

Trail Drainage – Proper drainage is one of the most important factors in maintaining an attractive and safe trail surface. The profile of the trail surface will largely depend on the surface materials used. The ideal is to efficiently remove excess water from the trail while minimizing erosion.

Plants –To the extent feasible, flora introduced to the Barnegat Branch Trail should be native to the region. The diversity of habitats within the Trail corridor support a range of plant communities, from cedar bogs to oak-pine forests, to vanishing open field and savannah, as well as freshwater lakes, sand and gravel pits. This Plan anticipates that the Barnegat Branch Trail landscape will evolve naturally. In certain areas, however, undesirable views will need to be screened, slopes re-graded, stabilized and seeded to prevent erosion. Shade trees should be planted near benches and picnic tables.

Park Furniture – Constructed landscape elements must harmonize with nearby features. The placement of park furniture such as picnic tables, benches and bike racks must take into account current and planned park activities. Landscaping and park furniture can be used together to create a host of environments. Semi-private and public places can each be provided for through the judicious placement of furniture, trees and plantings. Semi-enclosed areas from which to observe the Trail and its users can be created in one area, while nearby larger open areas are available for groups who are actively using the Trail. This would include the creation of family and group picnic sites, either on the Trail or by improving links to existing off-site facilities.

Public Safety / Cross-Street Control – Lights, fences, gates and barriers should be minimized, except where needed for safety or to prevent intrusion or unacceptable access (such as ATVs and motor cross bikes). The trail will need to be designed to carry security and emergency vehicles, with vehicular barriers that can be removed as necessary.

Signs – Signs should be kept to a minimum, clustered where appropriate and be readily understood. Throughout the Barnegat Branch Trail, signs should adhere to a standard "way finding" nomenclature and be consistent in style and content. Here, 'way finding' is interpreted as those signs that direct a Trail user to points along the Trail corridor. This is separate from 'directional signage,' which helps orient regional motorists to the Barnegat Branch Trail and its parking / trailhead areas. For both systems, signs should follow established principles with regard to materials and durability. Graphic symbols are preferred over words. International symbols are now sufficiently known that they can be used in signs without words. Interpretive signs explaining the history of the former railroad and the adjacent communities should be placed at appropriate cross-streets and trailheads. Historic markers should be cited at points of interest. A system of mile-markers should be established to assist the user in gauging distance and for future park mapping initiatives.

Parking – A wide range of parking options should be available, including street side parking (parallel and perpendicular), formal parking areas ("trailheads") and the informal pull-outs of five or fewer spaces situated at minor crossroads, but within the land owned by Ocean County for the Barnegat Branch Trail. Given the linear nature of the Trail and the roads that form linear boundaries in certain areas, it is likely that people will park alongside adjacent roads where they can find a wide enough spot on the shoulder of the road. To the extent that these parking spots do not present hazards and do not deteriorate from constant use, they will require little improvement, although coordination will be required with municipal police. Where parking use is sufficiently high, an improved parking surface, protection for nearby trees, trash receptacles, visitor comfort facilities and informational kiosks will be required. Where more frequent and higher volume traffic is expected, as in "urban" classification areas or in the vicinity of active sporting areas, canoe launching points, or group picnic areas, large and well-constructed parking will be required.

In addition, parking should be as informal as possible, but take into account the level of recreational activity nearby and the demand for parking it will generate. Design of parking areas must incorporate safe, clear trail continuity for the trail user, and must not simply relegate the bicyclist or walker to the vehicular cartway. One difficulty in designing parking is to deal with the tremendous variation in level of use. Winter parking demand will be much lower than summer demand; weekend and holiday use will be much greater than midweek. Small overflow lots can be sited to handle peak needs.

Finally, parking surface materials should be adequate to the demand placed upon them, but not excessive to the task. Parking areas of relatively high use will require a good foundation to keep from deteriorating, but the actual surface material should be asphalt only where snow removal is required in winter or use is very intense. Crushed stone, cinders or gravel fines (limestone quarry dust) on a well-packed base is considered adequate for most Barnegat Branch Trail parking facilities.

Design Guidelines: Features / Amenities

Two locations along the existing right-of-way will require the installation of new pedestrian scale bridges. Two basic alternatives are readily available and appropriate for use on the trail. One should utilize either a pre-fabricated weathered steel or a laminated wood bridge structure. For the purpose of the conceptual design, it has been assumed that the weathered steel bridge will be utilized due to its appearance and minimal maintenance requirements.

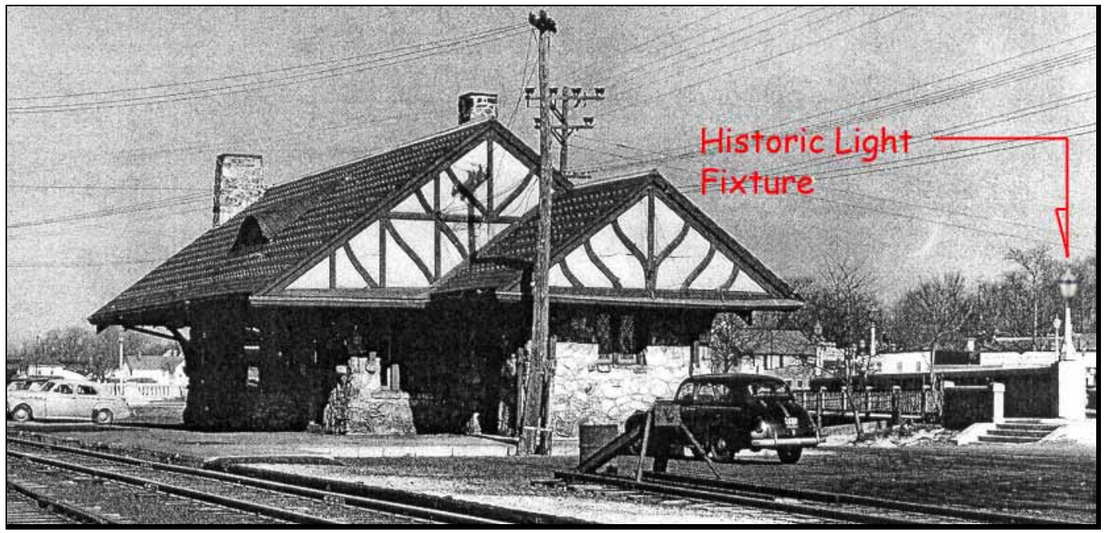
The bridge is intended to accommodate the multiple users of the trail, but is not being planned to accept vehicular traffic. Railings will need to be 45 inches high and curbs should be provided to help bikers prevent hitting the railing with their handlebars. Bridges are available in standard sizes, including spans up to 80 feet and widths up to 8 feet.

Design Guidelines: Features / Amenities

There are several opportunities at Regional Trailhead locations where Community-constructed playgrounds can be located. The type of playground that could be constructed is illustrated above

Rustic and durable wooden picnic tables and benches are proposed to be located in key areas along the length of the trail. Furniture made from recycled products should be considered.

Design Guidelines: Features / Amenities

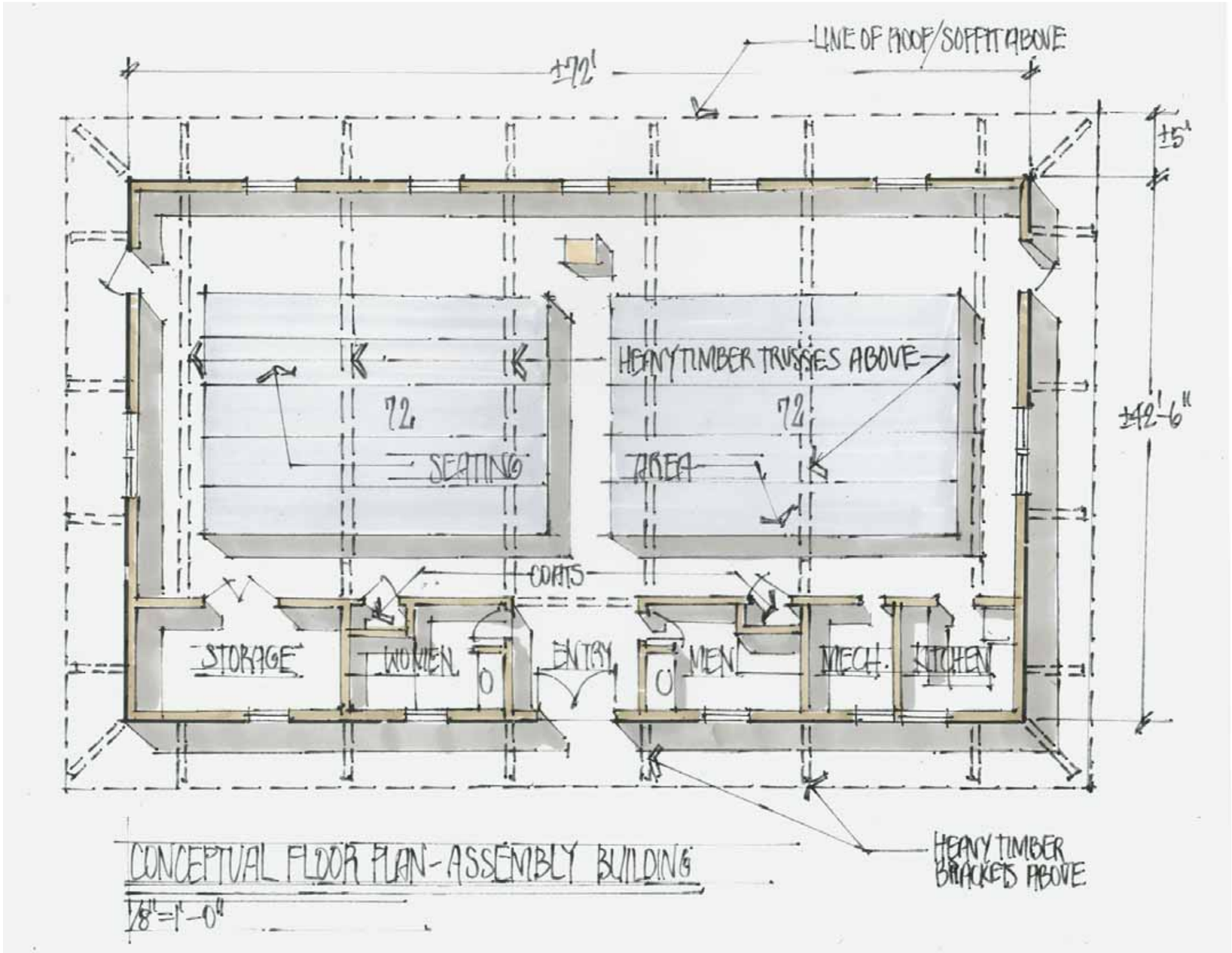


It is proposed that site lighting fixtures be reminiscent of the fixture that were used when the rail line was operational. Additionally, the fixture illustrated has the option of being customized with the addition of the CNJ logo.

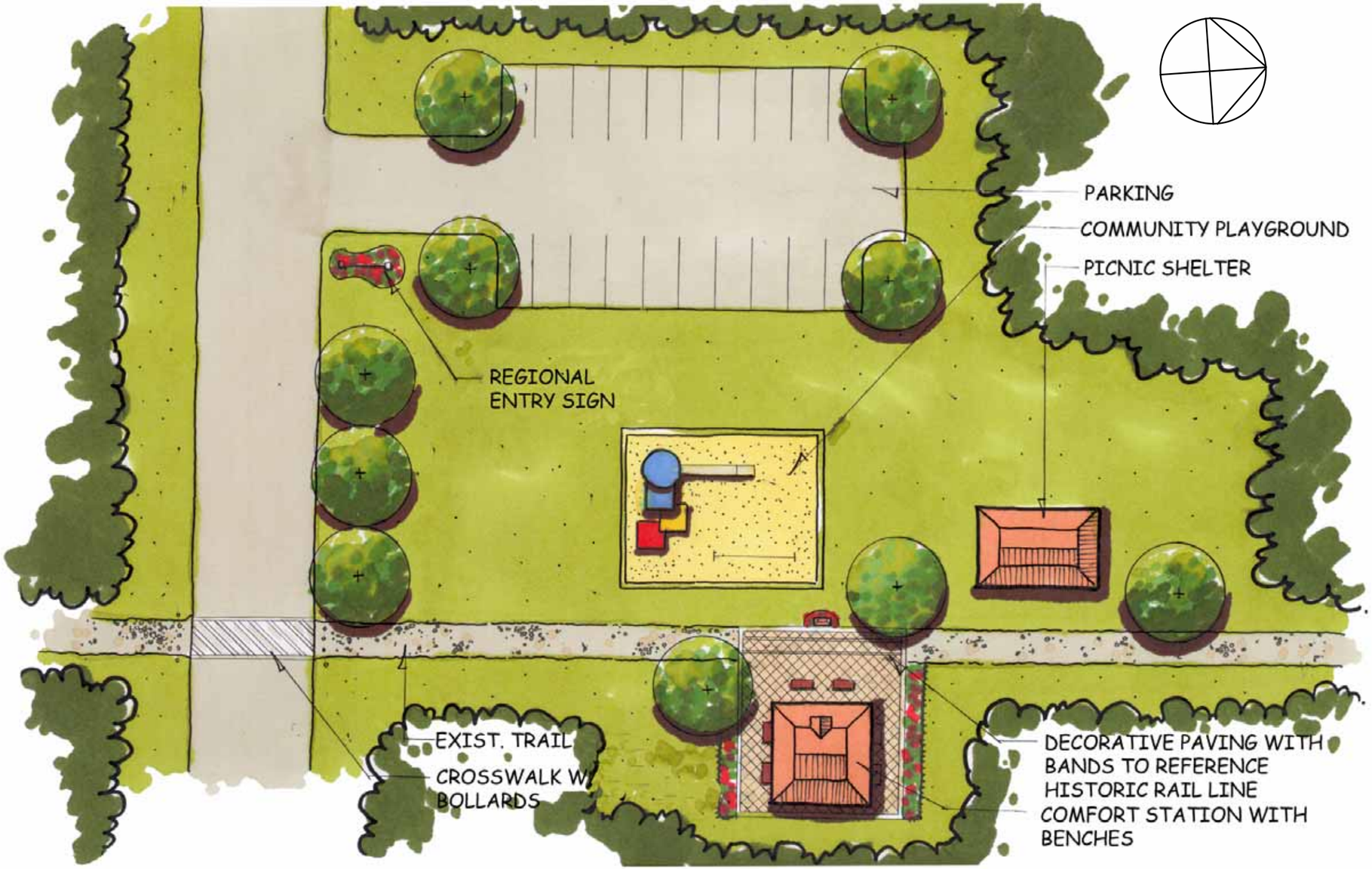
CUSTOM LIGHT FIXTURE WITH CNJ LOGO

Design Guidelines: Trailhead Design

CONCEPTUAL SKETCH OF COMMUNITY CENTER



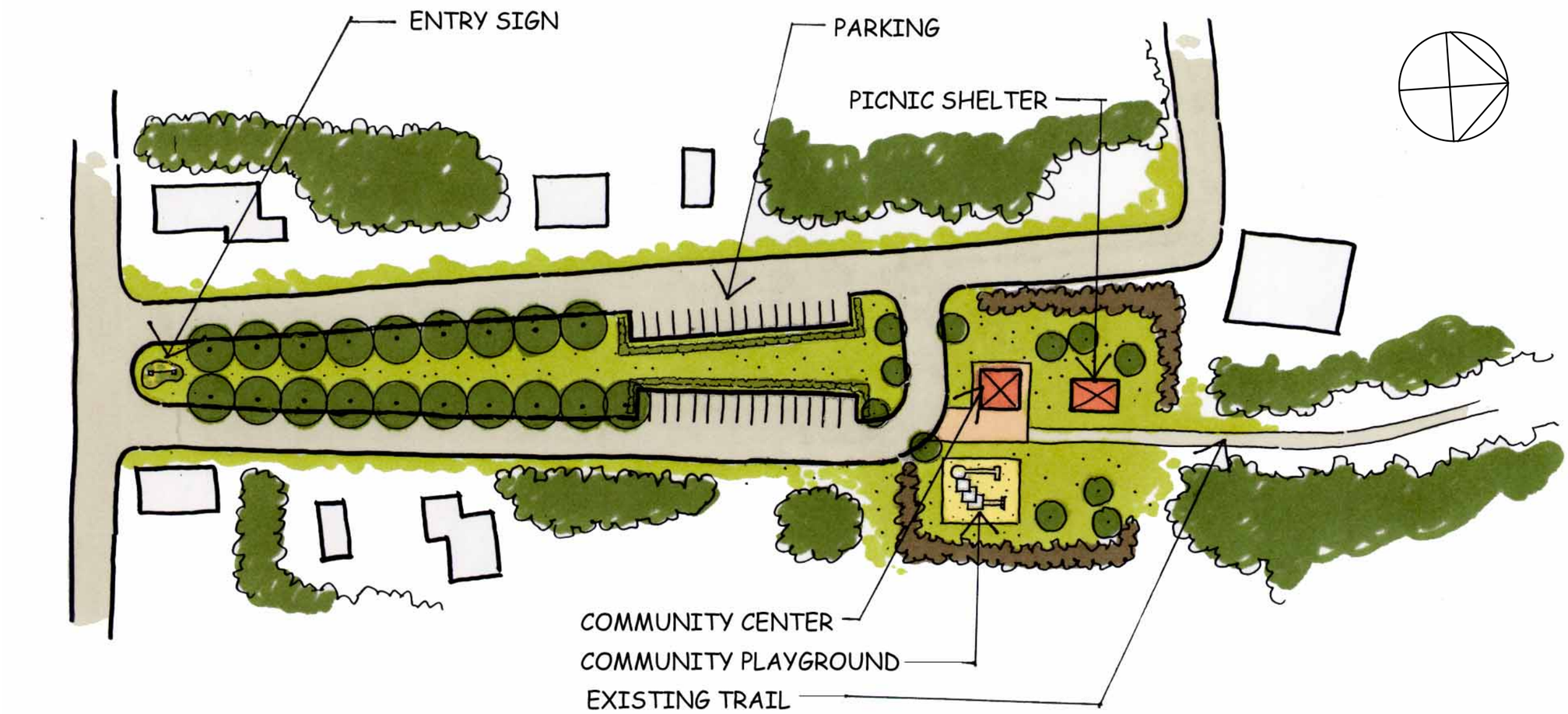
CONCEPTUAL PLAN OF COMMUNITY CENTER



TYPICAL CONCEPTUAL SITE PLAN FOR TRAILHEAD

CONCEPTUAL SKETCH OF TYPICAL TRAILHEAD

Design Guidelines: Trailhead Design



BURR STREET TRAILHEAD / COMMUNITY CENTER

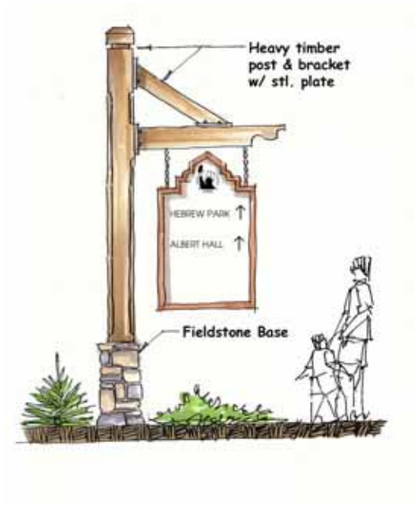
Design Guidelines: Wayfinding / Trail Signage

REGIONAL TRAILHEAD SIGNAGE

Wayfinding signs will be located in trailhead areas as well as along the length of the trail. The primary purpose of the sign is to direct trail users to landmarks or points of interest adjacent to or on the trail

WAYFINDING SIGNAGE

LOCAL TRAIL ACCESS SIGNAGE



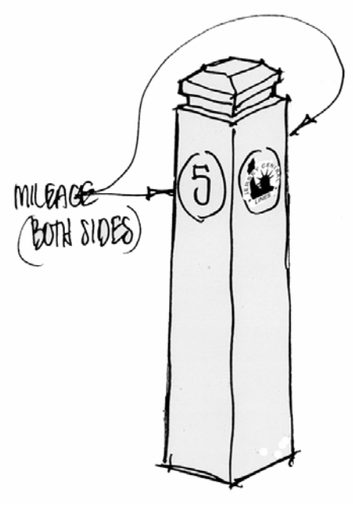
Directional signage is proposed to be located on local, county, or state roadways to direct visitors and potential users to Regional Trailheads.

DIRECTIONAL SIGNAGE

INFORMATIVE SIGNAGE

INFORMATIVE SIGNAGE

KIOSK



MILE MARKER

Design Guidelines: Trail Access Control

Pennsylvania Canal Drop Plate near Washington Crossing, PA

The Pennsylvania Department of Conservation and Recreation uses a center-mount "drop plate" control structure to limit vehicular access on many trails within the State Park system. The drop plate is approximately 26" high and constructed of reinforced steel, hinged and set within a concrete base. The unit is padlocked and can be folded flat for use by emergency vehicles. Landscaping and guardrails are used to narrow the entry and limit vehicular access.

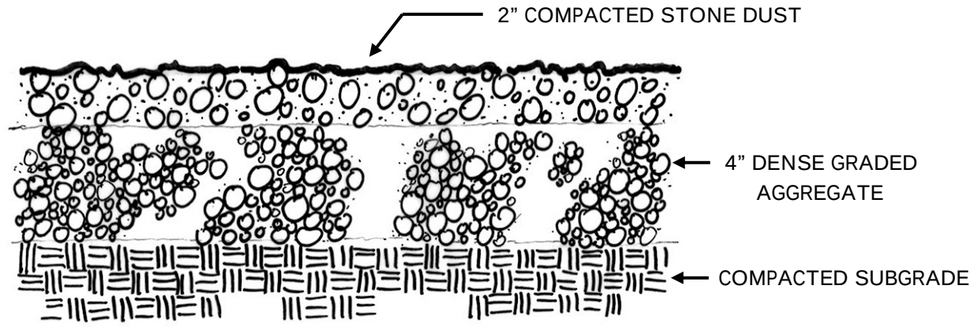
Delaware & Raritan Canal Gate near Lambertville, NJ

This trail control gate is standard equipment along the 60-mile Delaware & Raritan Canal and Towpath. The gate is located where the trail is bisected by a public road or private driveway and is constructed of reinforced and welded angle iron, and equipped with a padlock for use by emergency and maintenance vehicles. Mature trees and strategically-placed granite bollards help to limit access to a narrow (3') corridor at each end of the gate. This corridor allows easy pedestrian and bicycle entry.

Design Guidelines: Trail Surface Treatments

PROPOSED TRAIL SURFACE TREATMENT

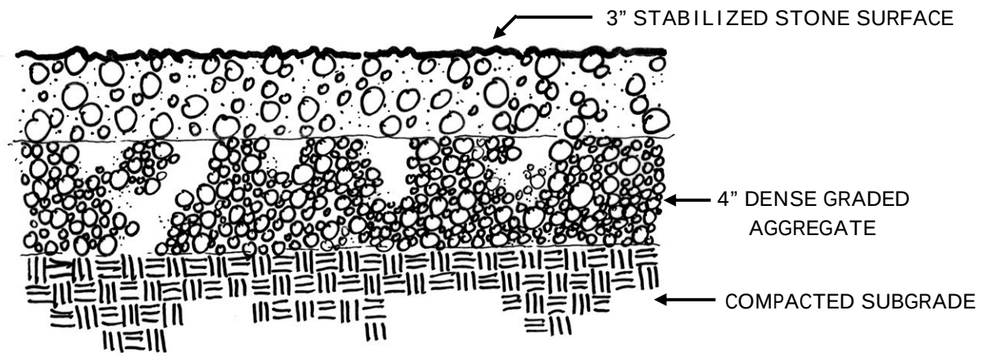
STONE DUST SURFACE



Sections of the trail shown to receive a stone surface will first be graded and compacted. After the trail has been graded and compacted, it is proposed that approximately 2" of compacted stone dust be installed over 4" of dense graded aggregate. The trail will continue to be natural in appearance.

TRAIL SURFACE TREATMENT-OPTION A

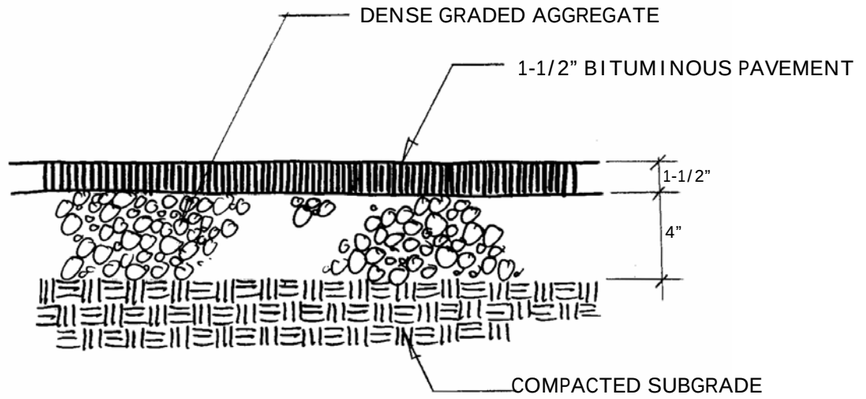
STABILIZED STONE SURFACE



This section of the trail will first be graded and compacted. A stabilizing agent will then be mixed with a nominal 1/4" minus aggregate and installed on the surface at a depth of approximately 3". This layer will be supported by 4" of dense graded aggregate and will produce a hard surface capable of receiving considerable use.

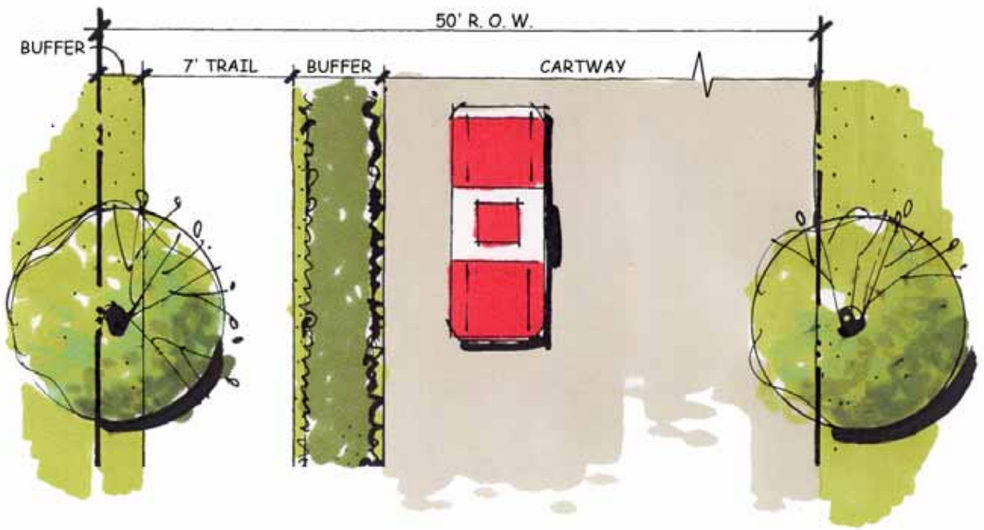
TRAIL SURFACE TREATMENT-OPTION B

BITUMINOUS PAVEMENT

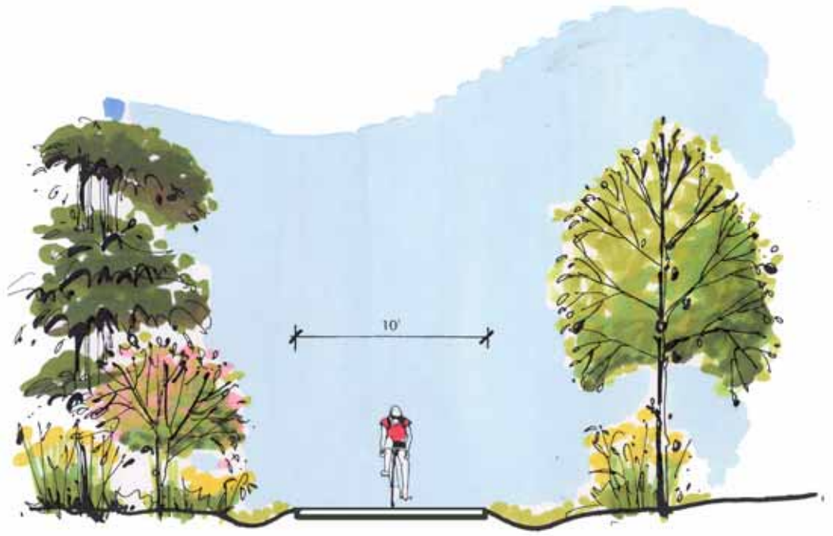


The bituminous pavement section of the trail is essentially a typical asphalt sidewalk common in many parks and natural areas. The trail surface will be graded and compacted, receive 4" of a dense graded aggregate sub-base and topped with 1½" of asphalt. This treatment, while being common, is the most costly of the options being proposed. However, construction techniques are widely understood and this type of walkway will accommodate considerable use.

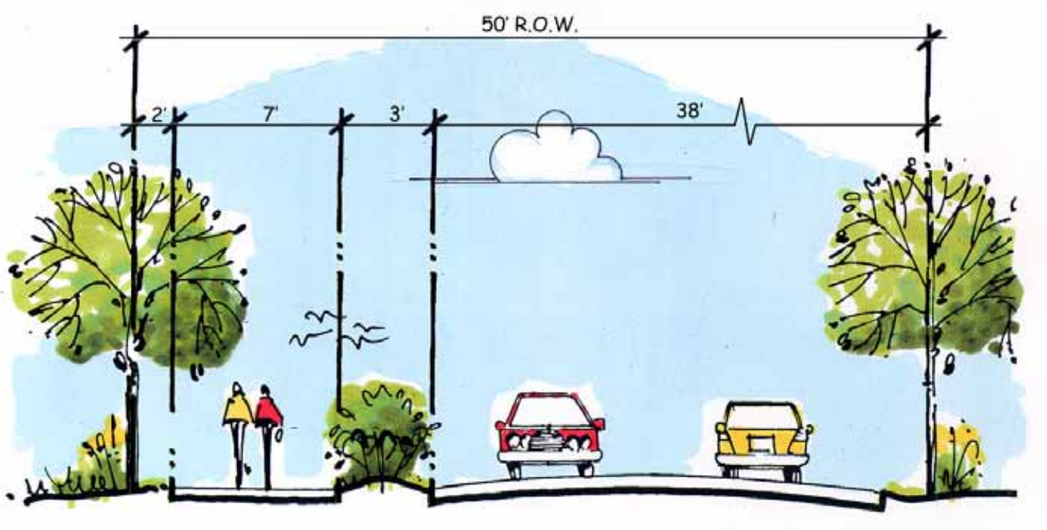
Design Guidelines: Typical Trail Sections



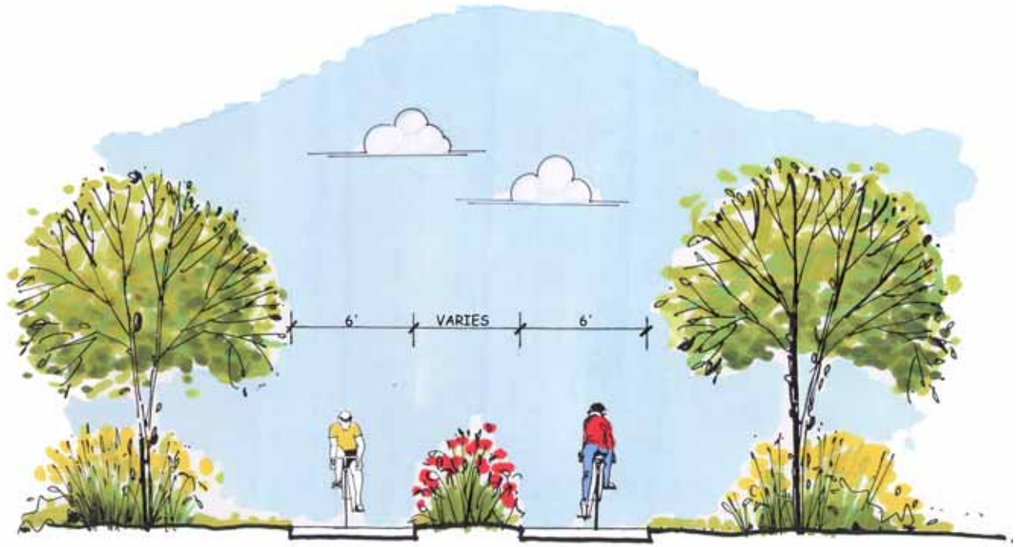
There are sections of the proposed trail where the there may be a combination of uses within a given right-of-way. The above plan illustrates one possible assignment of widths based on the proposed uses.



A typical, two-way trail section that will be utilized varies from a minimum of 7' in width to a maximum of 10' in width.



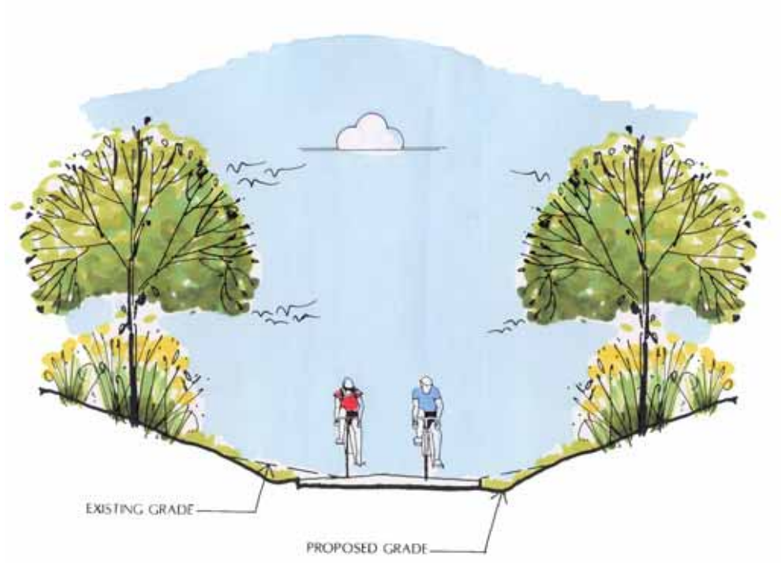
This section graphically illustrates the relationship between the trail user and vehicles that is anticipated to occur in Lacey Township. A landscape buffer to visually separate the two functions will greatly aid in segregating the uses.



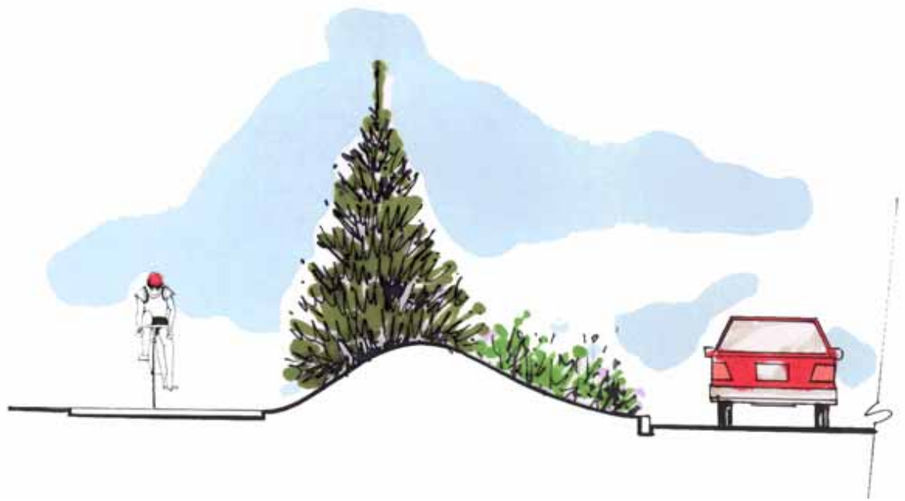
A single direction of travel trail section could be utilized where adequate width is available and to introduce added interest and variety. Sections of the trail that may benefit from this technique will be determined in the field.

Proposed Native / Selective Plant List

Vegetation Type	Botanical Name	Common Name	Minimum Size
Deciduous Trees	Quercus velutina	Black Oak	1.75"-2' Caliper
	Quercus prinus	Chestnut Oak	1.75"-2' Caliper
	Quercus alba	White Oak	1.75"-2' Caliper
	Quercus stellatta	Post Oak	1.75"-2' Caliper
	Quercus coccinea	Scarlet Oak	1.75"-2' Caliper
	Sassafras albidum	Sassafras	1.75"-2' Caliper
Evergreen Trees	Pinus rigida	Pitch Pine	5'-6' Height
	Pinus echinata	Shortleaf Pine	5'-6' Height
Shrubs	Quercus ilicifolia	Scrub Oak	15"-18" Height
	Kalimia latifolia	Mountain Laurel	15"-18" Height
	Gaylussacia bacata	Black Huckleberry	15"-18" Height
	Vaccinium pallidum	Early Lowbush Blueberry	15"-18" Height
	Myrica pensylvanica	Bayberry	15"-18" Height
	Clethera alnifolia 'Rosea'	Pink Summersweet	15"-18" Height
	Euonymus alatus compacta	Dwarf Burning Bush	2'-2.5' Height
	Hydrangea macrophylla 'Nikko Blue'	Blue Hydrangea	15"-18" Spread
	Hydrangea quercifolia 'Snow Queen'	Snow Queen Oakleaf Hydrangea	18"-24" Spread
	Juniperus conferta	Japanese Shore Juniper	15"-18" Spread
	Myrica pennsylvanica	Northern Bayberry	18"-24" Height
	Prunus x cistena	Purpleleaf Sand Cherry	18"-24" Height
	Prunus Maritima	Beach Plum	2'-3' Height
Ground Cover, Perennials, & Ornamental Grasses	Calamagrostsis arund. 'Stricta'	Feather Reed Grass	1 Gallon
	Echinacea purpurea 'Magnus'	'Magnus' Purple Coneflower	1 Gallon
	Hemerocallis species	Wild Orange Daylilly	1 Gallon
	Miscanthus sinensis 'Gracillimus'	Maiden Grass	1 Gallon
	Miscanthus sinensis 'Varigatus'	Varigated Maiden Grass	1 Gallon
	Pennisetum alop. 'Nat. Arboretum'	National Arboretum Fountain Grass	1 Gallon



Trail in Sloped Location in Southern Berkley Township Section



Typical Landscape Berm Along Route 9

Maintenance

Practicing good trail management will mean providing excellent maintenance on the new Barnegat Branch Trail. Conscientious maintenance will be key to encouraging recreational use and ensuring user safety. The County will want to set high maintenance goals and standards for levels of service on the trail. Providing a well maintained trail will not only keep users safe and encourage use but will also project a positive image of the trail and of those responsible for it.

The proposed Barnegat Branch Trail will join a system of 17 County parks. The Ocean County Department of Parks and Recreation has the expertise and the management structure necessary to manage and maintain a new 15.6-mile long trail. However, managing a 15.6-mile Trail will pose different issues and problems for the County. Before the maintenance management system can be developed, the County must identify the entity and the persons that will be accountable for developing and maintaining the Trail on a long-term basis

As any consumer and/or craftsman knows, the best and perhaps most cost effective way to keep maintenance issues (and costs) to a minimum is to design for low maintenance upfront. For the Barnegat Branch Trail, this will mean solving drainage problems, selecting the proper trail alignment and addressing questions of surface material durability before construction, among other items. Preventing drainage problems through design will be much more desirable than dealing with the consequences of erosion later.

Beyond providing for quality design, it will be important for the County to establish a maintenance management system for the Barnegat Branch Trail once development of the new trail is complete. Some recommended steps for establishing such a system are as follows:

1. Establish a trail log system to provide an up-to-date inventory of trail conditions and features. The log should be updated when elements of the trail are in need of repair or replacement and also when items are repaired, replaced or added. A comprehensive trail log will be useful in the preparation of the maintenance budget.

2. Identify routine, emergency and long-term maintenance requirements. Set specific maintenance goals, uniform standards for desired levels of service, and timing schedule for at least the following trail-related maintenance tasks:

Routine Maintenance:

- Trash removal – weekly
- Tree pruning / maintenance of sight distances and clearance – monthly (seasonal)
- Trail drainage control; cleaning out drainage facilities – weekly in the fall, after storms
- Cleaning/sweeping of trail surface –weekly (seasonal)
- Weed control – weekly (seasonal)
- Mowing grass – weekly (seasonal)
- Trail edging (maintains trail width and improves drainage) – monthly in growing season.
- Cleaning restrooms -- weekly
- Minor repairs to bridges, structures, fencing, parking areas, trail surface – as needed
- Graffiti control – as needed

Emergency Maintenance:

- General inspection of trail user safety – after storms
- Snow removal – after storms

Long-Term Maintenance:

- General safety inspection -- yearly
- Repainting – every five years, or as needed
- Major repairs to bridges, structures, fencing, parking area, trail surface – annually
- Trail replacement/resurfacing.—every 10 years, or as needed
- Revegetation (plantings to minimize erosion) – every 5 years, or as needed
- Signage replacement – every 10 years, or as needed

3. Develop necessary and routine inspection and maintenance checklists to provide desired levels of service, and determine appropriate staffing levels. All maintenance should be categorized tasks as “routine” or “major,” i.e. trail sweeping/cleaning and trash removal would be considered to be “routine” tasks, but tail replacement would be “major.”

4. Develop and execute those maintenance programs and inspections on a regular schedule using the most efficient combination of resources. This should be done in conjunction with updating the trail log, as needed. Various items will require daily, weekly, monthly or quarterly inspection and/or service at different times of the year. Prioritization of repairs based on safety issues and consideration of whether the repair can be performed by the regular park

maintenance crew will be part of the process. If work will be deferred or contracted out, a plan should be developed to ensure its accomplishment.

5. Control and evaluate the effectiveness of work in relation to the desired level of service. Monitoring and training of maintenance workers will be essential for effective trail management.

6. Provide any related cost information needed to develop and implement maintenance budgets. Budgets should include labor and materials.

Regular and routine maintenance will ensure trail safety and help prolong the life of the facility. Documentation of all trail inspections will provide for the orderly processing of repairs and will also reduce the County's legal liability. Likewise, tracking of citizen complaints and encouraging users to report problems will also be helpful.

Management accountability is also key to ensuring high quality park maintenance. By and large, the overall responsibility for taking care of the Barnegat Branch Trail should reside with one county department or division. The management structure required for the proper administration and maintenance of the Barnegat Branch Trail must be straightforward and direct, as they would need to be for any park in the County system. The unwieldy nature of the 15.6 mile Barnegat Branch Trail just makes it more so.

Programming and Services

Management of the new Barnegat Branch Trail will also involve making decisions regarding the social interaction and public recreation opportunities of a 15.6 mile recreational trail. Some of the relevant programs to be considered include, develop public awareness, education and interpretation, and volunteer coordination. First and foremost in regard to creating public awareness about the Barnegat Branch Trail, the County has developed an identity for the new facility by employing a standard trail logo. Secondly, to further enhance public awareness, the County will need to adopt and post a uniform list of rules and regulations for the Barnegat Branch Trail. The goal will be to create an understanding or a culture among visitors about the proper trail use and etiquette. Rules and regulations promote user safety by helping to reduce user conflicts and by establishing standards of conduct for the trail, i.e. "always stay to right except when passing." Thirdly, several of the most accessible and busiest trail heads should be selected as locations for large mounted trail maps showing the full extent of the 15.6 mile trail accompanied by pertinent historical information about the Barnegat Branch Trail.

Education and interpretation are clearly related to public awareness but expand the notion beyond public safety. There will be many opportunities to provide educational and interpretative signage along the Barnegat Branch Trail. At the very least, the County will want to use informational signage to highlight the Trail's role in the region's railroad history. Other related initiatives might include special nature programs for local schools and/or educational tours. The production of an informative trail map will also be essential for educating the public and promoting trail use. In addition, a good foldout map will be important for internal park use and maintenance.

Volunteers can provide valuable service to the Barnegat Branch Trail through increased public support and awareness, not to mention any labor they may be willing to offer. Appropriate avenues of volunteer involvement might include providing educational tours, helping to pick up litter, reporting storm damage, monitoring possible conflict areas, conducting health walks/runs, or fundraising for special improvements, just to name a few ideas.

Appendix A: Special Routing Studies

The following section contains six different Trail alignments or routing alternatives, each drawn atop a digital aerial photograph (2000). Each alternative has been prepared in response to unique Trail conditions, such as pedestrian safety at busy cross-streets or the loss of railroad right-of-way to the Trail project. For purposes of this Plan, each alternative serves as a conceptual design proposed by the Consultant Team; each will require additional study, public review, engineering and financing to complete.

From the south, the seven routing alternatives to be considered include:

- Barnegat Boulevard (Barnegat Twp.)
- Waretown Village (Ocean Twp.)
- Oyster Creek Nuclear Generating Station Bypass (Ocean-Lacey Twps.)
- Lacey Business Park (Lacey Twp.)
- Lacey Road (Lacey Twp.)
- Railroad Avenue (Lacey Twp.)
- Hickory Lane (Berkeley Twp.)

Special Routing Studies: Barnegat Boulevard

Existing Conditions:

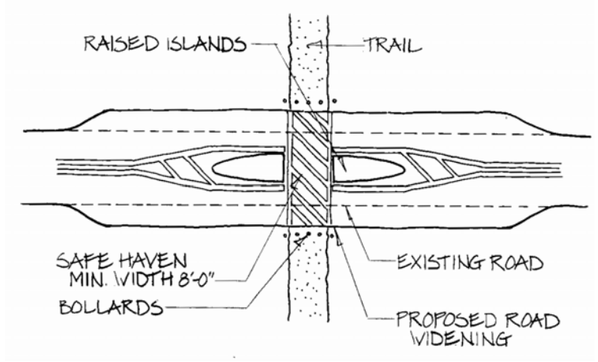
Barnegat Boulevard is an un-signaled four-lane County highway designed to carry a high volume of auto and truck trips. This east-west road serves as the arterial collector for Route 9 and subdivisions along the Bay and provides access to the Garden State Parkway as well as Barnegat's commercial hub situated along West Bay Avenue. Within the Boulevard's southern right-of-way is a graded area where Barnegat Township is in the process of constructing a three-mile bike trail. This trail will form a perpendicular link between the Barnegat Branch Trail, schools, housing and shopping. The Barnegat Township Sports Complex is located at the northwest corner of the Barnegat Branch Trail and Barnegat Boulevard. Several hundred acres of Ocean County Natural Trust Lands (habitat preservation) abut the western boundary of the Sports Complex, thus providing park and trail users with a unique passive recreational activity.

Design Constraints:

For the Barnegat Branch Trail user the primary challenge is safe crossing of the Boulevard's four-lanes. This factor is complicated by a County roadway interstate design that invites the motorist to speed up and stare ahead. Heavy traffic volume during the AM and PM rush hour combined with vehicular speeds in excess of 50 mph, add to the challenge. The road contains no crosswalk or signage and, as a result, drivers do not expect to encounter a pedestrian or bicyclist.

Design Solutions:

There are opportunities to design a safe pedestrian and bicycle crossing at this location. Coordination with the Ocean County Highway Department will be required. One possibility is to route Trail users west along a "U" shaped bypass utilizing the municipal bike trail west to a signal crossing, then returning via a shoulder trail (See, yellow trail alternative). A better solution calls for construction of a wide crosswalk consisting of 20-30' of striping with a concrete "safe haven" stationed midway to facilitate pedestrian passage (See, sketch), which would permit eastbound vehicular turns into the sports park. Roadway approaches to the safe harbor require lighted warning signs and additional warning stripes. If traffic continues to build and/or pedestrians cannot cross safely or comfortably, an aerial overpass should be considered. Such an overpass, while costly, would increase the overall visibility of the Trail and access to the sports park.



Special Routing Studies: Waretown Village

Existing Conditions:

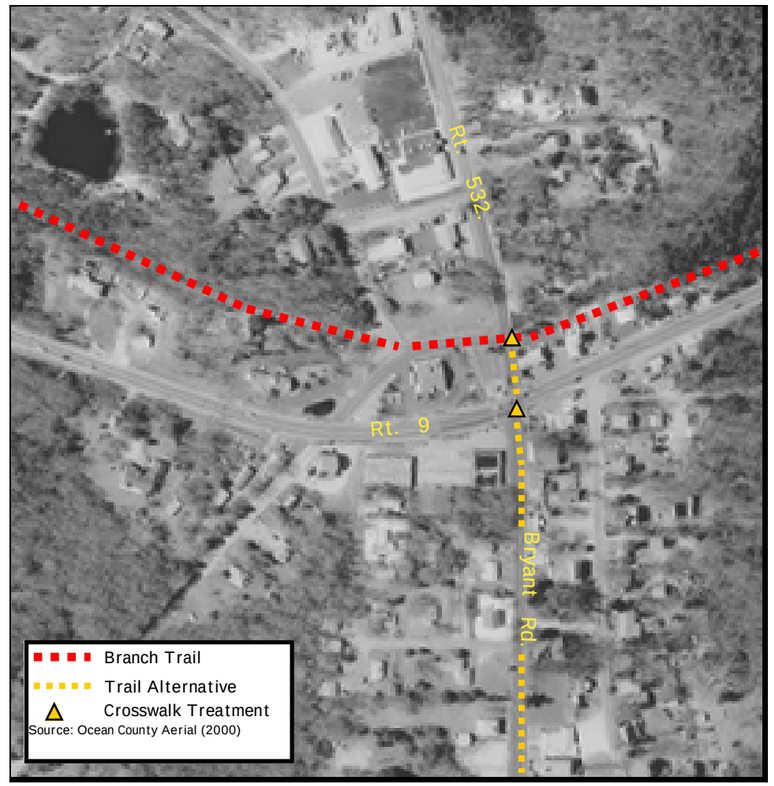
Waretown Village straddles two busy roadways, Route 9 and County Route 532 (Wells Mills Rd.). Both roads carry a considerable volume of traffic, although traffic moves at reasonably low speeds due to road constriction, signals and respect for existing pedestrian activity within the village center.

Design Constraints:

Pending the final Trail alignment, there are three design constraints: (1) Crossing Route 532 — Drivers along Route 532 / Wells Mill Rd. are not in the habit of seeing pedestrians or bicyclists crossing along the Trail alignment [note yellow triangle in aerial photo], which is situated within 200 feet of Route 9; and (2) Wawa — Quick acceleration and erratic turning movements generated by the nearby Wawa threaten safe passage of the Trail user; and (3) Crossing Route 9 — An at-grade crossing of Route 9 [yellow triangle] will be required to guide Trail users to Bryant Rd. and the proposed Oyster Creek Bypass.

Design Solutions:

Similar to those proposed for Barnegat Boulevard, striping, signage and safety lighting will be required. An aerial overpasses will no be required as Waretown village can use the Trail and a traffic calming measure to improve pedestrian and bicycle opportunities. Unlike Barnegat Boulevard, drivers are moving slowly through Waretown, especially at rush hour. Here, the principal issue is coordination between DOT, which administers Route 9, and Ocean County, which administers Route 532.



Special Routing Studies: Oyster Creek Nuclear Generating Station Bypass

Existing Conditions:

A close examination of the west side of Route 9 between Waretown and the Lacey Business Park (just north of the Oyster Creek Nuclear Generating Station) reveals the former railroad right-of-way. The railroad right-of-way, however, is not particularly easy to spot as the line has been re-graded and modified years ago to facilitate the widening of Route 9 along with commercial land development to the west. As a result, much of the trail exists on paper ("legally") but is not physically detectable from a field inspection. Ironically, this 1.5-mile stretch is the only section south of Toms River where the Barnegat Branch Trail parallels and shares a common boundary with a public road (Route 9).

Design Constraints:

As a result of September 11 and heightened national security concerns, the Exelon Corporation, operator of Oyster Creek requested that Ocean County consider limiting public Trail access in the vicinity of the plant and its three gates along Route 9, all of which cross the railroad line. This request requires the consultant team to consider two alternate routing studies to the preferred (existing) railroad alignment. Implementation of Routing Study A or Routing Study B (below) requires the cooperation of the Exelon Corporation, for Exelon owns the two timber railroad bridges that span the Oyster Creek channel (See photo, Sec. 4, Fig. 28. Exelon also owns the land beneath the bridges and may hold a full or partial legal interest into the railroad right-of-way as it crosses its property (approximately 3,000').

Design Solutions:

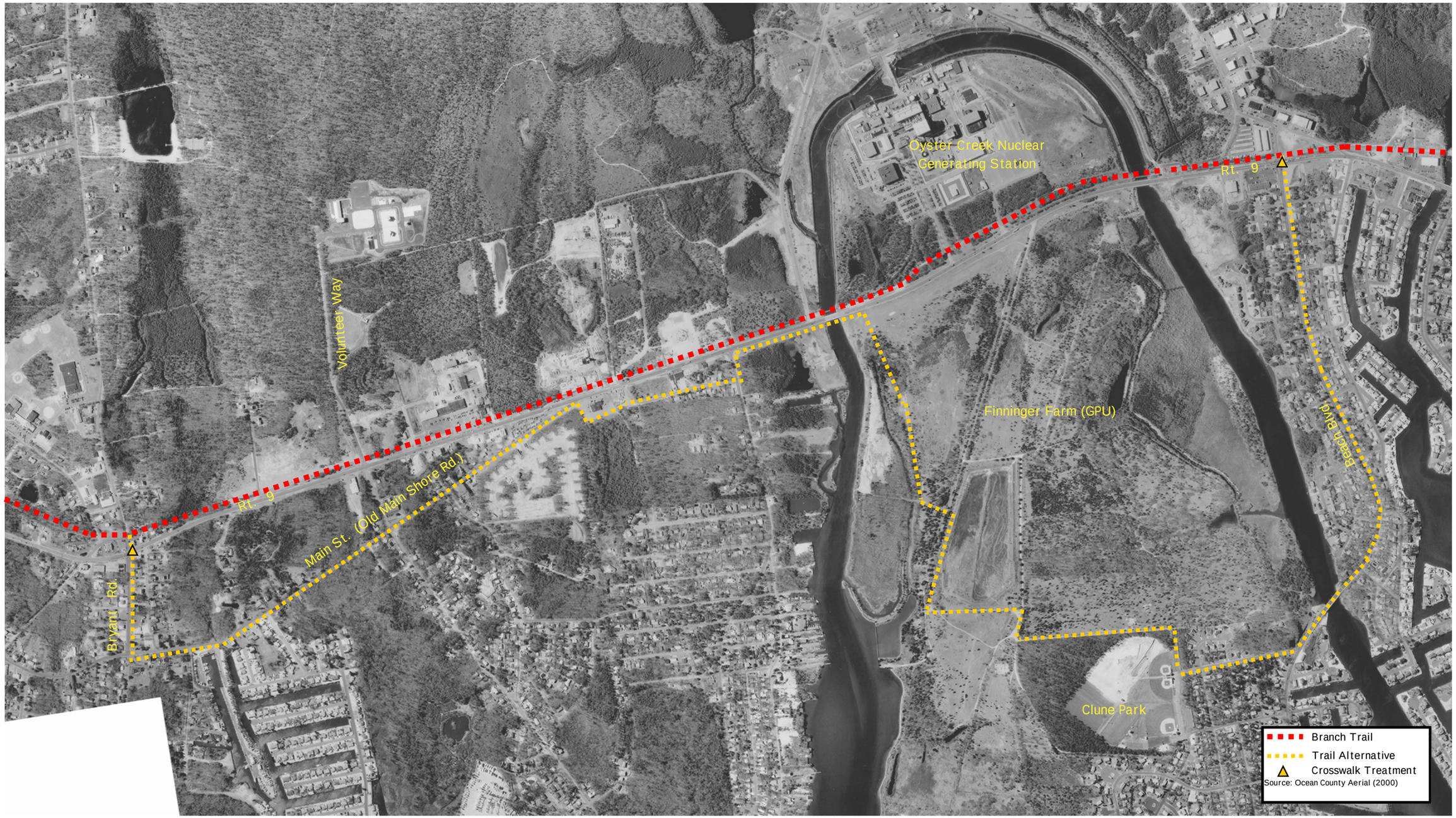
Although this plan calls for the Trail to be sited along the existing legal/ physical railroad right-of-way immediately west of Route 9, security concerns require an alternative route. To accommodate Exelon's concerns, we recommend three security measures: (a) construction of an 8-foot perimeter chain-link fence; (b) consolidation and relocation inland of the three existing plant gates; and (c) construction of an enclosed vaulted-arch fence atop the two railroad bridges. Although lacking in aesthetic quality, these three measures improve security at the generating plant while permitting safe, compatible public Trail access along the historic railroad.

Alternatively the trail can be relocated and rerouted east of Route 9, thus avoiding any interference with the plant entrance, rail bridges or gates. Subject to additional design and execution of legal agreements, northbound Trail users would follow a detour beginning in Waretown and running north to Clune Park in Lacey Township (See, aerial photo on following page). This requires the trail user to cross Route 9 in Waretown (at the Wawa) and travel north toward Oyster Creek via Bryant Avenue and Old Main Shore Road to a 50-foot right-of-way belonging to the Ocean County Utilities Authority. At the south (outfall) channel of the nuclear plant the Trail will cross on a new, separate walkway attached to and cantilevered from the east face or northbound travel lane of the Route 9 highway bridge. From there the Trail will pass through the historic Finninger Farm to Clune Park. At Clune Park the Trail would follow Beach Boulevard northwest approximately 1.2 miles to its junction at Route 9 and the Trail at Lacey Business Park.

Summary:

Each routing alternative has its advantages and disadvantages. The preferred alternative allows the trail user to remain on the railroad right-of-way as it parallels Route 9. However, this alternative requires extensive fencing and relocation of plant entrances westward of the trail. The alternative route removes the trail user from the historic railroad alignment and introduces her to a bypass trail requiring two crossings of Route 9.

Special Routing Studies: Oyster Creek Nuclear Generating Station Bypass



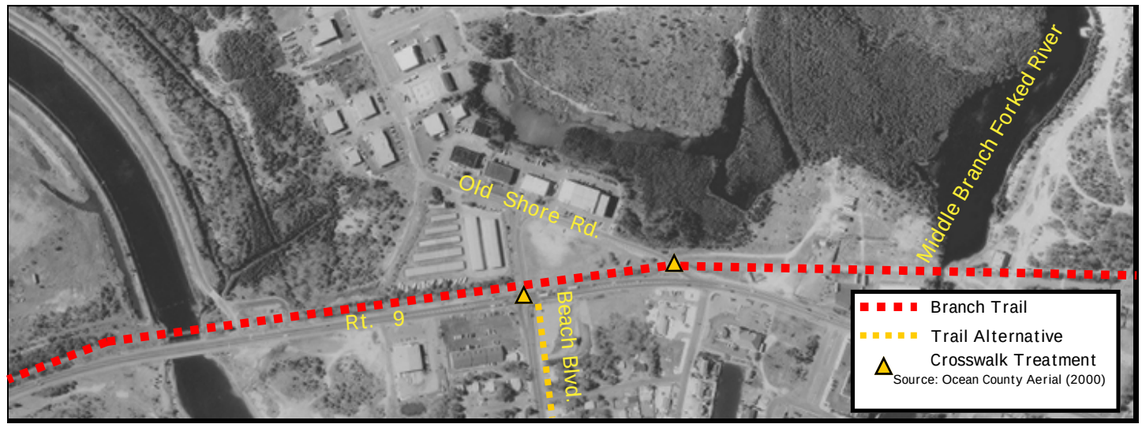
Special Routing Studies: Lacey Business Park

Existing Conditions:

Trail users following the former railroad line in the vicinity of Beach Boulevard and Old Shore Road find themselves in a perilous traffic situation; road access to the Lacey Business Park conflicts with safe Trail use.

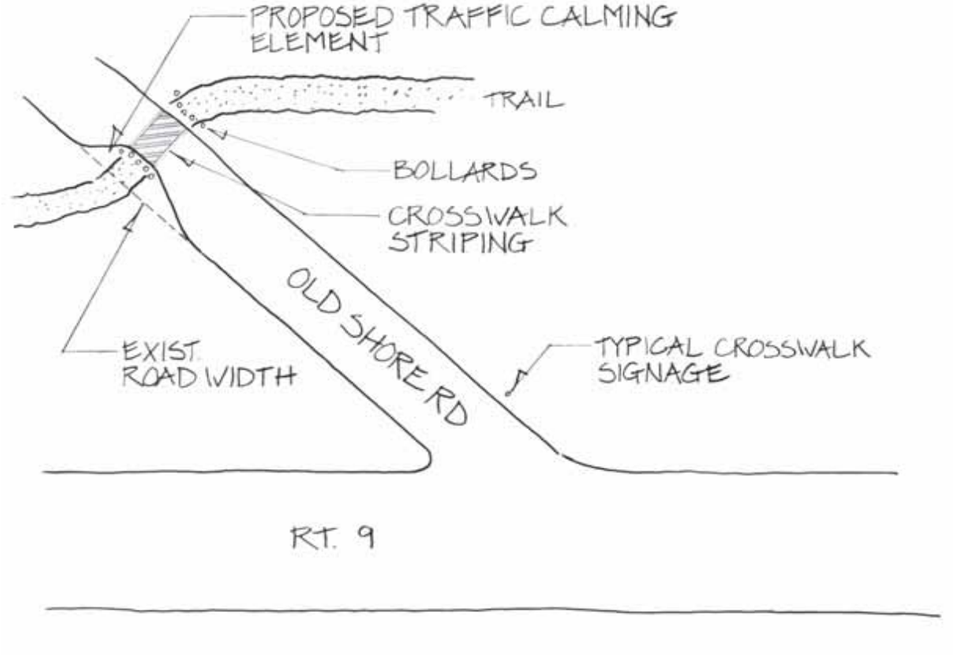
Design Constraints:

Southbound Route 9 motorists entering the Lacey Business Park (Aphrodite Marble, etc.) via Old Shore Road do so at an exceptionally high rate of speed combined with limited sightlines. All of this occurs at the existing Trail crossing (note yellow triangle). In addition, a pedestrian crossing of Route 9 to Beach Boulevard will be needed in the event the Oyster Creek Bypass is required.



Design Solutions:

Introduce traffic calming along Old Shore Road by combining speed limits, signalization, signage, improved road striping and a roadway “apron” or “safe haven” as shown in this sketch.



TRAFFIC CALMING OPTION FOR CROSS WALK TREATMENT

Special Routing Studies: Lacey Road

Existing Conditions:

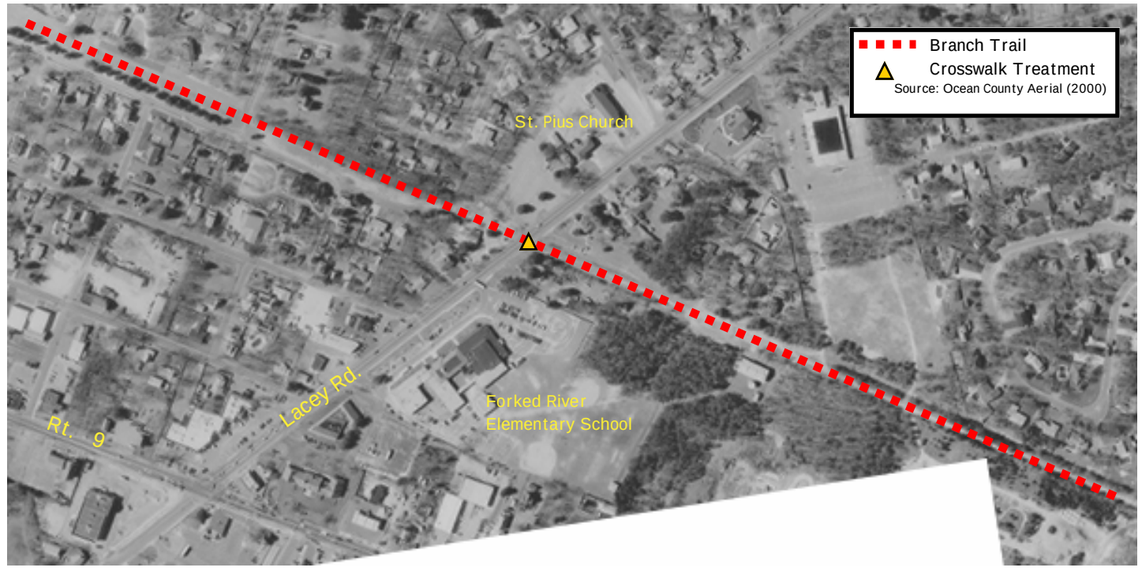
Lacey Road is a busy commercial corridor whose vehicular load west of Route 9 is heavy. The location where the proposed Barnegat Branch Trail would cross is an un-signaled County highway that has recently been widened to four-lanes. In addition to its commercial purpose, this east-west road serves as an arterial passage between the Garden State Parkway and Route 9, and for subdivisions located to the north and south. In the vicinity of the Barnegat Branch Trail are several institutional uses, including the Forked River Elementary School and St. Pius X Church and Parochial School. These two facilities generate unique traffic events during weekdays, as well as on weekends, necessitating crossing guards and police oversight.

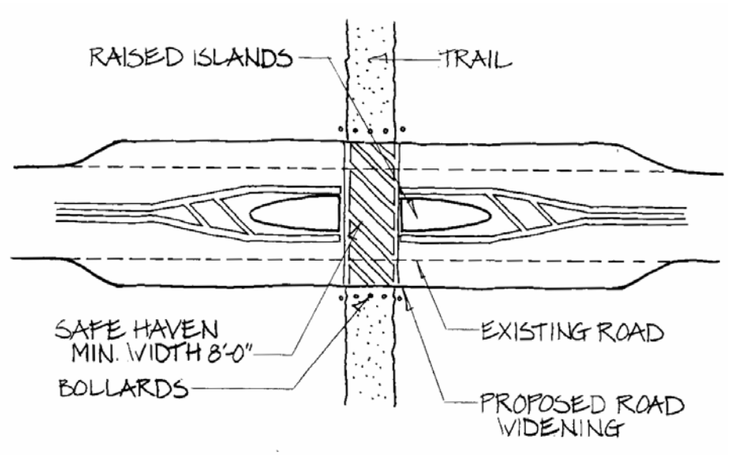
Design Constraints:

Due to heavy vehicular traffic loads and turning movements, Trail users will not be able to safely cross Lacey Road without some type of signal control. Currently, school crossing guards and police provide safe passage to school children and buses during AM and PM periods.

Design Solutions:

Depending on the availability of funds for widening Lacey Road and the proposal for constructing a road atop the railroad right-of-way north of Lacey Road, a traffic signal, concrete "safe haven" (See, sketch) and pedestrian crosswalk will be required. In the instance that plans for Lacey Road and/or Railroad Avenue do *not* proceed, then a traffic signal should still be considered at this location, for it would help control north-south pedestrian movements among Trail users, and will also facilitate safe crossings by school children.





Proposed Lacey Road crosswalk and safe harbor design; traffic signal recommended at this location.

Existing Conditions:

Through a tax foreclosure several years ago, Lacey Township secured fee-simple ownership to the entire length of the abandoned Barnegat Branch line, a distance of 4.8 miles. The Township cleared debris and encroachments from its section, which is presently used by pedestrians and bicyclists as a *de facto* municipal trail. Recently, the Township proposed construction of a road, known as "Railroad Avenue" atop a 1.8-mile segment of right-of-way, from Lacey Road north to South Street, near Hebrew Park. The purpose of Railroad Avenue is to alleviate Route 9 traffic pressure by providing parallel roadway access. The roadway design, which requires a CAFRA permit, was completed in a manner consistent with the NJDOT's Route 9 Smart Growth Study. The design elements were proposed by the NJDOT's Smart Growth consultant. The use of a portion of the Township's property for road purposes was approved by voter referendum in 2006.

Design Constraints:

The design constraints relate to physical practicalities, public safety and aesthetic considerations: (a) Physical – Can the trail be located within the legal width of the proposed roadway? (b) Safety – Can the trail be accessed and traveled by users without undue risk from motorists, especially at cross-streets? (c) Aesthetic – Will the trail experience prove to be enjoyable given the proximity to a local collector or arterial roadway? Each of these constraints is colored by the width of the existing railroad line – which averages 50 feet – and the load or service objectives of the proposed roadway.

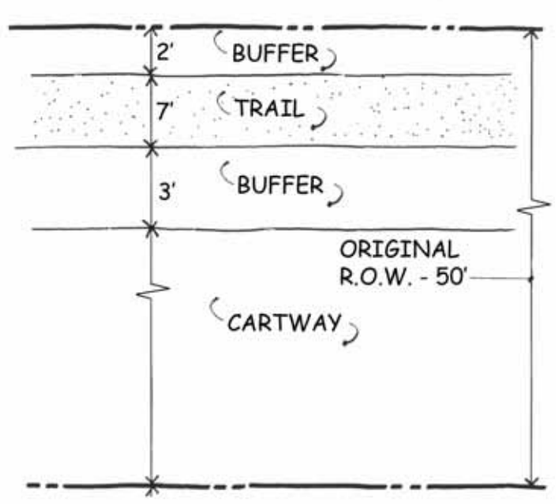
Design Solution:

The proposed solution is to buffer the impacts of the proposed roadway on the trail. Lacey Township has granted a minimum 12 foot pedestrian and trail easement to Ocean County allowing for construction and maintenance of the Barnegat Branch Trail through the length of the Township (4.8 mi.). In the vicinity of Railroad Avenue the easement is located along the western boundary of the former railroad right-of-way and requires attentive planning and design to safely and efficiently accommodate trail users within its cross-section. Appropriate landscaping is important in this section.

Planning and design guidelines from the NJDOT Bicycle Compatible Roadways Report notes that a minimum of 8 feet for a bike path is adequate where bicycle traffic is low, pedestrian use of the facility will be occasional and there will be good horizontal and vertical alignment in the design. These conditions apply to the section of the trail in question. There will be a sidewalk constructed on the east side of the road to minimize pedestrian conflicts with the bike trail. The trail shall be designed to permit n adequate roadway buffer. This buffer will also provide for appropriate landscaping.

Linear trail-roadway compatibility is but one measure of success. The second measure requires safe, controlled street crossings with adequate notice to trail users and motorists approaching the crossings. Here, we recommend that: (a) minimum additional cross-streets and access drives are to be constructed as part of the Railroad Avenue plan; and (b) aggressive use of striping, signage and signal controls to assure maximum safety of pedestrians and bicyclists seeking cross-street access. In designing Railroad Avenue, Lacey Township has provided the County with its initial plans for cross access which will be incorporated into the trail design.

Special Routing Studies: Proposed Railroad Ave.



Proposed roadway and trail widths.

Existing Conditions:

Two design challenges face Trail planning in the vicinity of Hickory Lane and the NJ Pulverizing site. This enormous site begins along north of Hickory Lane and follows the Trail nearly two miles north to the Beachwood municipal boundary. The first challenge arises from conflicts of stone crushing, silage and transport close to Hickory Lane. The second problem involves encroachment, extraction and possible dumping along the legal right-of-way (a.k.a., the isthmus) leading through the east and west gravel quarries just north of the silos.

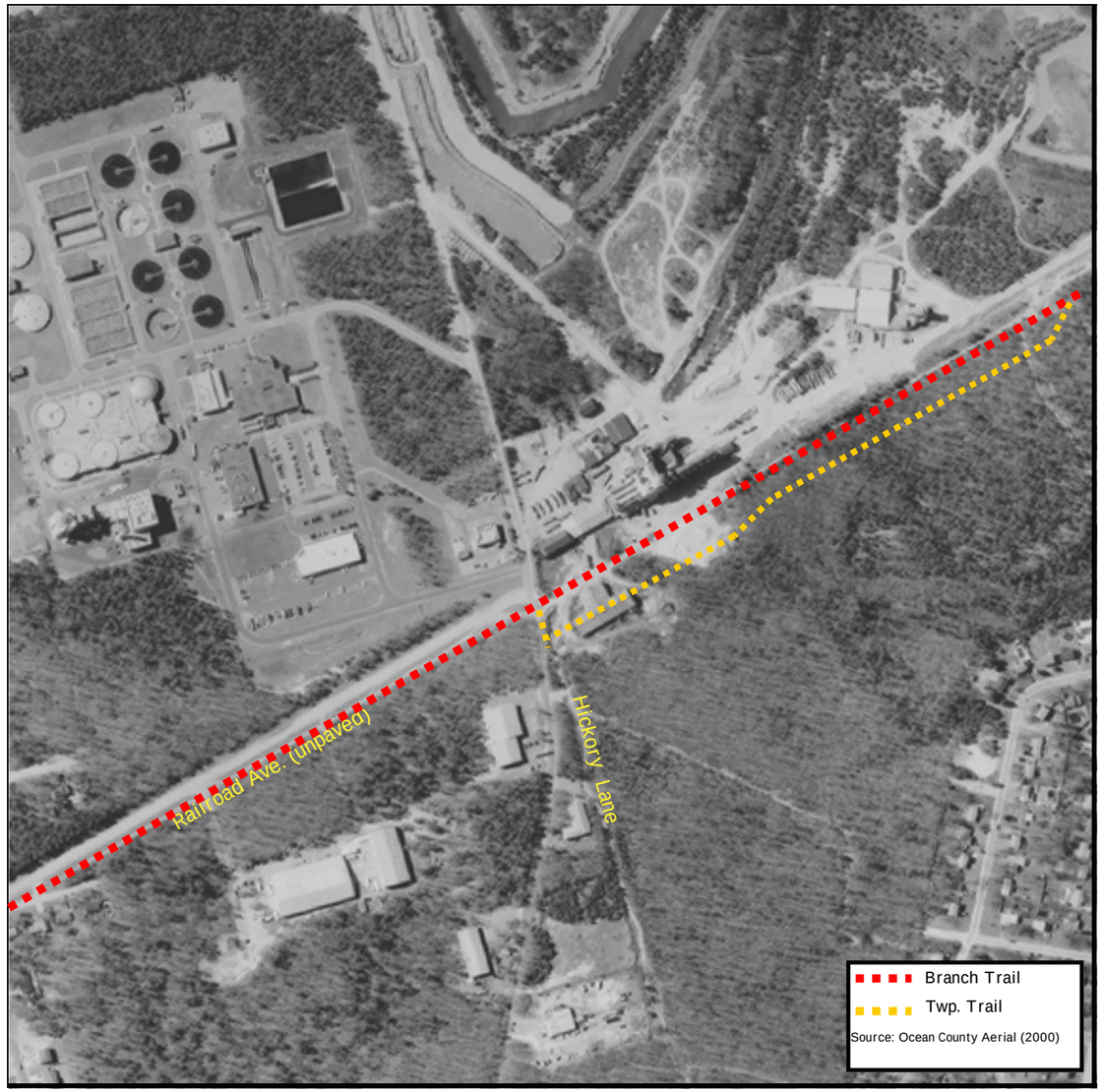
Design Constraints:

In the vicinity of the silos the physical location of the Barnegat Branch line presents a danger to the Trail user. In this case, the Trail right-of-way passes directly beneath the east flange or foundation of the six story concrete silos where crushed stone and sand are conveyed, stored and loaded onto trucks. Weekday truck movements and dust present hazardous conditions to the Trail user; Trail re-routing is necessary.

To the north the legal and physical right-of-way belonging to the Barnegat Branch has been destroyed through a combination of mining (here, the existing surface and subsurface has been mined to approximate 15-20 feet below grade) and the remaining area has been used as a dump for concrete slabs, telephone poles and slash piles. Restoration of grade, either by filling mined areas or leveling the trash piles will be costly and time-consuming.

Design Solution:

In the vicinity of the silos the Trail should be relocated to the east, either through or behind a parking area near a corrugated metal warehouse (See, dashed-yellow line). This relocation will require execution of a lease or easement with the site's owner, adequate signage and safety controls, and buffering. To the north, the Trail should be relocated to the existing OCUA easement and roadway, which is situated just west of the legal Barnegat Branch right-of-way and runs north approximately 1.5 miles. Given its limited vehicular use, the OCUA easement will need some re-design for Trail accommodation, including addition of semi-permanent surface (the existing sand may be too soft for bicycle tires) and some perimeter planting of shade trees.



Appendix B-Estimate of Probable Cost

Phase 1 - From Mile Marker 0.0 to 2.6, approximately 14,000 Linear Feet

Order of Magnitude Cost Estimate (Year 2007 Dollars)

	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE	REMARKS
1	Clearing and Grubbing	1.5	Ac	$9,000	$13,500	
2	Drainage	2,700	SY	$1.50	$4,050	Shape Swale
3	Erosion Control					
3a	Silt Fence	26,000	LF	$5.00	$130,000	
3b	Erosion Mesh	1,500	SY	$3.25	$4,875	
4	Surface Treatment *					
4a	Stone Dust Surface	12,000	SY	$14.00	$168,000	Graded and compacted; 3" Stone Surface
4b	Stabilized Stone Surface		SY	$18.00	$0	Graded and compacted; 3" Stabilized Stone Surface
4c	Bituminous Pavement		SY	$23	$0	Graded and compacted; 4" Aggregrate Base, 1 1/2 " Bituminous Surface
5	Spread Topsoil (from off-site)	1,600	CY	$42	$67,200	Topdress Disturbed Areas
6	Fine Grading	19,000	SY	$1.20	$22,800	Prepare Topsoil for Seeding
7	Seeding	19,000	SY	$1.50	$28,500	
8	Landscaping	14,000	LF	$6	$84,000	Trees, Shrubs and Groundcover
9	Signage / Wayfinding					
9a	Regional Trailhead / Identification	2	Allowance	$18,000	$36,000	
9b	Local Trail Access	6	Allowance	$7,500	$45,000	
9c	Directional / Advisory	6	Allowance	$5,500	$33,000	
9d	Informational Kiosk	4	Allowance	$9,000	$36,000	
10	Cross-walk Treatment	4	Allowance	$12,000	$48,000	Includes Signage, Textured Pavement, Paint
11	Parking	75	Per Car	$3,000	$225,000	Includes excavation, grading, bituminous pavement, storm drainage, etc.)
12	Lighting	18	Each	$3,600	$64,800	Custom "Signature Series" Hadco Fixture, Includes Conc. Foundation
13	Site Utilities					
13a	Electric Distribution	800	LF	$8.50	$6,800	Public Utilities
13b	Sanitary Sewer	600	LF	$14.50	$8,700	Public Utilities
13c	Water Distribution	600	LF	$14.50	$8,700	Public Utilities
14	Gates, bollards	60	Each	$1,100	$66,000	Wooden Bollards and/or Wooden Swing Gates
15	Site Furniture	12	Allowance	$3,000	$36,000	8' Wooden Bench, 10' Bicycle Rack, Trash Receptacle
16	Playground Equipment	1	Allowance	$18,000	$18,000	
17	Comfort Station	1	Each	$300,000	$300,000	At Youth Sports Complex; Includes site work, signage, etc.
18	Community Center	1	Each	$900,000	$900,000	At Burr Street; Includes site work, signage, etc.
Sub-total					$2,354,925	
Note: Include 25% Contingency for General Conditions and Design Development					$588,731.25	
PHASE 1 GRAND TOTAL					**$2,943,656**	

* Cost of Trail Surface from Bay Boulevard to Pancoast Road not included.

Phase 2 - From Mile Marker 9.2 to 13.64, approximately 23,500 Linear Feet

Order of Magnitude Cost Estimate (Year 2007 Dollars)

	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE	REMARKS
1	Clearing and Grubbing		Ac	$9,000	$0	
2	Drainage		SY	$1.50	$0	Shape Swale
3	Erosion Control					
3a	Silt Fence	47,000	LF	$5.00	$235,000	
3b	Erosion Mesh		SY	$3.25	$0	
4	Surface Treatment					
4a	Stone Dust Surface	26,000	SY	$14.00	$364,000	Graded and compacted; 3" Stone Surface
4b	Stabilized Stone Surface		SY	$18.00	$0	Graded and compacted; 3" Stabilized Stone Surface
4c	Bituminous Pavement		SY	$23	$0	Graded and compacted; 4" Aggregrate Base, 1 1/2 " Bituminous Surface
5	Spread Topsoil (from off-site)	3,000	CY	$42	$126,000	Topdress Disturbed Areas
6	Fine Grading	30,000	SY	$1.20	$36,000	Prepare Topsoil for Seeding
7	Seeding	30,000	SY	$1.50	$45,000	
8	Landscaping	23,500	LF	$6	$141,000	Trees, Shrubs and Groundcover
9	Signage / Wayfinding					
9a	Regional Trailhead / Identification	2	Allowance	$18,000	$36,000	
9b	Local Trail Access		Allowance	$7,500	$0	
9c	Directional / Advisory	5	Allowance	$5,500	$27,500	
9d	Informational Kiosk	5	Allowance	$9,000	$45,000	
10	Cross-walk Treatment	2	Allowance	$12,000	$24,000	Includes Signage, Textured Pavement, Paint
11	Parking	60	Per Car	$3,000	$180,000	Includes excavation, grading, bituminous pavement, storm drainage, etc.)
12	Lighting	10	Each	$3,600	$36,000	Custom "Signature Series" Hadco Fixture, Includes Conc. Foundation
13	Site Utilities					
13a	Electric Distribution	400	LF	$8.50	$3,400	Public Utilities
13b	Sanitary Sewer	200	LF	$14.50	$2,900	Public Utilities
13c	Water Distribution	200	LF	$14.50	$2,900	Public Utilities
14	Gates, bollards	12	Each	$1,100	$13,200	Wooden Bollards and/or Wooden Swing Gates
15	New or Renovated Bridge		Allowance			At Cedar Creek near mm 9.6
16	Site Furniture	8	Allowance	$3,000	$24,000	8' Wooden Bench, 10' Bicycle Rack, Trash Receptacle
17	Playground Equipment	1	Allowance	$18,000	$18,000	
18	Comfort Station	2	Each	$300,000	$600,000	In Dudley Park; Includes site work, signage, etc.
19	Community Center		Each	$900,000		Includes site work, signage, etc.
Sub-total					$1,959,900	
Note: Include 25% Contingency for General Conditions and Design Development					$489,975	
SEGMENT 4 GRAND TOTAL					**$2,449,875**	

Appendix B-Estimate of Probable Cost

Phase 3 - From Mile Marker 2.6 to 9.2, approximately 34,500 Linear Feet

Order of Magnitude Cost Estimate (Year 2007 Dollars)

	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE	REMARKS
1	Clearing and Grubbing		Ac	$9,000	$0	
2	Drainage		SY	$1.50	$0	Shape Swale
3	Erosion Control					
3a	Silt Fence	70,000	LF	$5.00	$350,000	
3b	Erosion Mesh		SY	$3.25	$0	
4	Surface Treatment					
4a	Stone Dust Surface	38,500	SY	$14.00	$539,000	Graded and compacted; 3" Stone Surface
4b	Stabilized Stone Surface		SY	$18.00	$0	Graded and compacted; 3" Stabilized Stone Surface
4c	Bituminous Pavement		SY	$23	$0	Graded and compacted; 4" Aggregrate Base, 1 1/2 " Bituminous Surface
5	Spread Topsoil (from off-site)	10,000	CY	$42	$420,000	Topdress Disturbed Areas
6	Fine Grading	55,000	SY	$1.20	$66,000	Prepare Topsoil for Seeding
7	Seeding	55,000	SY	$1.50	$82,500	
8	Landscaping	34,500	LF	$6	$207,000	Trees, Shrubs and Groundcover
9	Signage / Wayfinding					
9a	Regional Trailhead / Identification	1	Allowance	$18,000	$18,000	
9b	Local Trail Access		Allowance	$7,500	$0	
9c	Directional / Advisory	16	Allowance	$5,500	$88,000	
9d	Informational Kiosk	4	Allowance	$9,000	$36,000	
10	Cross-walk Treatment	8	Allowance	$12,000	$96,000	Includes Signage, Textured Pavement, Paint
11	Parking	75	Per Car	$3,000	$225,000	Includes excavation, grading, bituminous pavement, storm drainage, etc.)
12	Lighting	10	Each	$3,600	$36,000	Custom "Signature Series" Hadco Fixture, Includes Conc. Foundation
13	Site Utilities					
13a	Electric Distribution	700	LF	$8.50	$5,950	Public Utilities
13b	Sanitary Sewer	500	LF	$14.50	$7,250	Public Utilities
13c	Water Distribution	500	LF	$14.50	$7,250	Public Utilities
14	Gates, bollards	50	Each	$1,100	$55,000	Wooden Bollards and/or Wooden Swing Gates
15	Repair Bridge	1	Allowance		$0	Re-furbish 10' x 25' Bridge over Waretown Creek @ mm 3.3
16	Add Walkway to Bridge	1	Allowance		$0	Cantilever Walkway over Oyster Creek Bridge @ mm 4.6
17	Repair Bridge	1	Allowance		$0	Repair Bridge @ South Branch of Forked River @ mm 5.4
18	Replace Bridge	1	Allowance		$0	Replace 3-span Timber Trestle over Middle Branch of Forked River @ mm 5.8
19	Replace Bridge	1	Allowance		$0	Replace 3-span Timber Trestle at Lower Lake @ mm 6.7
20	Site Furniture	12	Allowance	$3,000	$36,000	8' Wooden Bench, 10' Bicycle Rack, Trash Receptacle
21	Playground Equipment		Allowance	$18,000	$0	
22	Comfort Station		Each	$300,000	$0	Includes site work, signage, etc.
23	Community Center	1	Each	$900,000	$900,000	At Mill Street in Forked River: Includes site work, signage, etc.
Sub-total					$3,174,950	
Note: Include 25% Contingency for General Conditions and Design Development					$793,737.50	
PHASE 3 GRAND TOTAL					**$3,968,688**	

Cost Estimate Summary

	Mile Marker	Approximate Length	Trail Surface	Community Center	Comfort Station	Estimated Cost
Phase 1 *	0.0 - 2.6	14,000 LF	Stone Dust Surface	1	1	$2,943,656
Phase 2	9.2 - 13.64	23,500 LF	Stone Dust Surface		2	$2,449,875
Phase 3	2.6 - 9.2	34,500 LF	Stone Dust Surface	1		$3,968,688
Totals		72000 LF				$9,362,219
		13.64 Miles				

Note: Does not include allowances for items identified in engineering report(s), such as drainage related issues, repair or replacement of bridges, trestles, etc.

* Does not include cost of Trail Surface from Barnegat Boulevard to Pancoast Road.
This segment of the Trail shall be privately funded per the Developers Agreement with Ocean County in 2007.

(Source: Technical Memorandum, Schoor dePalma Engineers, 6/6/03)

Structure No. 1 – Two 48" Reinforced Concrete Culvert Pipes
The first crossing is Lochiel Creek at Milepost 1.8, bordering Barnegat and Ocean Townships. A culvert comprised of two 48" reinforced concrete pipes with a stone-type headwall carries this creek under the Trail. The pipes and headwall appear to be in satisfactory to fair condition and appear salvageable.

Structure No. 2 – 30" Steel Culvert Pipe
At Milepost 2.8, an unknown tributary north of Country Lane crosses the Trail. This tributary is carried by a 30" steel pipe culvert approximately 30 feet in length and formerly buried about 2'-6" deep, now heavily eroded along the Trail and its embankments. The pipe itself appears to be in satisfactory condition and is salvageable. Fill material will be required along the embankments and the Trail to maintain sufficient cover over the pipe. Environmental permits may be required for this work. Depending on the limits of the repair, a headwall may also be required to retain the embankments along the trail.

Structure No. 3 – Single Span Timber Trestle Bridge
At Milepost 3.3, a timber trestle bridge crosses Waretown Creek. This bridge is approximately 10 feet wide and 25 feet in length. The inspection team considers the condition of the bridge substructure to be satisfactory and the bridge superstructure to be fair. It was decided that the bridge may be salvageable.

Structure No. 4 (No present structure) – Drainage Ditch
At Milepost 3.8, the Trail crosses a small drainage channel in proximity of two reinforced concrete culverts with headwalls and a parking lot. The exact location of the intersection of the Trail and channel could not be determined. Although no current structure exists, if the Trail must pass over the drainage channel between the two culvert headwalls, an extension of one of the existing culvert pipes may be feasible, depending on drainage conditions in the vicinity. Further evaluation of the drainage requirements and conditions as well as environmental permits will be required.

Structure Nos. 5 and 6 – Single Span Timber Trestle Bridge(s)
The Trail crosses into Lacey Township from Ocean Township at Milepost 4.6, via two timber trestle bridges over the Oyster Creek intake and outfall channels. Due to proximity to the Oyster Creek Nuclear Generating Station and heightened security concerns, visual inspection of these bridge were limited and dimensions were not obtainable. The bridge(s), however, appear to be in satisfactory to fair condition and may be salvageable.

Structure No. 6A – Timber Retaining Wall
Just North of Structure No. 6A, a timber retaining wall supports a segment of the Trail along its southern end adjacent to a local park trail. The wall, comprised of circular timber ties, is dilapidated in some areas and in overall fair to poor condition. It is recommended that a new retaining wall be constructed with aesthetic treatment to replace the existing wall. Subsurface borings, field survey and structural design will be required to develop repair plans. Proprietary systems will be analyzed along with associated architectural treatment.

Structure No. 7 – Single Span Timber Trestle Bridge
In South Toms River Borough, timber abutments were found at the Trail crossing over Jakes Branch at Milepost 14.6. The bridge superstructure has been removed. The inspection team determined that these abutments are not adequate to accommodate the required trail configuration and a new bridge is recommended.

Structure No. 8 – Single Span Timber Trestle Bridge
In South Toms River Borough, timber abutments were found at the Trail crossing over Toms River at Milepost 15.0. At this crossing, the bridge superstructures have been removed. As such, the inspection team determined that these abutments are not adequate to accommodate trail configuration over this waterway and a new bridge is recommended.

In addition to the eight (8) structures listed above that were found during our field inventory, several crossings were noted previously, during the preliminary proposal efforts, in Lacey Township. Although these structures were not physically seen in the field by the Bridge Department, we have prepared a preliminary assessment based solely upon the photos provided to us. The three (3) structures found are a follows:

Structure No. 9 – Multi-Span Timber Trestle Bridge
At approximately Milepost 5.4, along the Trail, a timber trestle bridge crosses South Branch of the Forked River. From the photos available, it appears that the bridge is in satisfactory to fair condition and may be salvageable. The substructure appears to require extensive repair at the waterline.

Structure No. 10 – Three-Span Timber Trestle Bridge
At approximately Milepost 5.8 along the Trail, a timber trestle bridge crosses the Middle Branch of the Forked River. From the photos available, the bridge has had its superstructure removed. The remaining substructure appears to be in poor condition. It is anticipated that the bridge requires full replacement.

Structure No. 11 – Three-Span Timber Trestle Bridge
At approximately Milepost 6.7 along the Trail, a timber trestle bridge crosses Lower Lake (just east of Lake Barnegat). From the photos available, it appears that the bridge is in fair condition and does not require replacement.

(Source: Great Rail-Trails of New Jersey, C. Della Penna, New England Cartographics, 1999)

1. Berkshire Valley Wildlife Management Area Trail
Edison Branch of the Central Railroad of New Jersey (CNJ)

Endpoints: Gordon Road to Minnisink Road in Roxbury Township
Location: Morris County, Roxbury Township
Length: 2.1 miles
Surface: Cinder
Map(s): Dover, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses. Horses by permit only.

Trail Description: Trail passes through quiet hardwood forests and provides views of the valley below. This trail is unusually steep with a rough rocky terrain. A large pipeline parallels the trail.

History: The historical importance of this trail has been well described by Larry Lowenthal, the author of *Iron Mine Railroads of Northern New Jersey*. "All of the Iron Mine railroads were small; some were classic short lines. They were all quaint and several had truly unique features. Yet, of them all, the Ogden Mine Railroad comes closest to being a legend."

In the highlands north of I-80 and west of I-287, the whole area was once pock-marked with iron and other mineral mines. Copper and zinc were some of the more common ones, while one of the rare minerals was Franklinium. The only place on earth this is found is in Franklin, New Jersey, making the area famous among geologists.

A railroad connection to the mining industry in this area was not developed until the Civil War period. In 1864, the Ogden Mine Railroad was chartered by a group of men from eastern Pennsylvania. The line was finished in 1866 and ran only from the mines north of Lake Hopatcong at Edison, to Nolan's Point on the eastern shore of the Lake where transfer of iron to the waiting canal barges was made. The entire branch from the mainline to the Ogden Mine was 15.2 miles. A fancy resort hotel used to be located at Nolan's Point. It was in operation from the late 1880's to the late 1920's. The Odgen Mine Railroad Path, which begins five miles further north, is a continuation of this trail.

2. Black River County Park Trail
Hacklebarney Branch of the Central New Jersey Railroad

Endpoints: Chester (all within the County Park); Route 206 to Willowwood Arboretum
Location: Morris County, Chester Township
Length: 9.4 miles
Surface: Gravel and dirt
Map(s): Chester, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses, except bicycles are prohibited on one mile historic section.

Trail Description: This trail follows the Black River and passes by the northern section of Hacklebaney Pond. The trail surface is flat and dry but lined with rocks and tree roots. There is a one mile segment extending from the historic Cooper Mill to Chubb Park, both located on Route 513 in Chester. The Cooper Mill, an operating gristmill, is open to the public. The Fay Environmental Center is also located on the trail and provides tours and nature programs.

History: The discovery of iron ore brought prosperity to Chester, and it also brought railroads. Among them was the Hacklebarney branch of the High Bridge Railroad., which later became part of the Central Railroad of New Jersey (CNJ). This branch line was built in 1883 to serve the iron mines along the Black River. In use for less than 30 years, the branch enabled the Hacklebarney and Langdon mines to transport their ore northward to the Chester Furnace and the Chester branch of the CNJ. At the Hacklebarney mines, ore cars were loaded directly using a large loading trestle, and the mines also boasted a "Roaster," a furnace which was used to reduce the sulfur content of the ore.

3. Black River Wildlife Management Area Trail
Chester Branch of the Lackawanna Railroad (DL&W)

Endpoint: Chestnut Hill Road to nearly Ironia Road, Chester
Location: Morris County, Chester Township
Length: 4.0 miles
Surface: Ballast
Map(s): Chester, U.S.G. S. 1:24,000 series
Uses: All non-motorized uses. Horses by permit only.

Trail Description: The trail goes through the Black River Wildlife Management Area along streambeds and forest. This is a level and pleasant wooded path with no road crossings.

History: This trail is located on the original grade of the Chester Branch of the Delaware Lackawanna & Western Railroad. This branch ran ten miles from a mainline junction just west of Dover and Wharton to Chester. The rail-trail is on the last 4.5 miles, between Ironia Road and the site of the old Branch was built in 1868 to serve the needs of the local iron mining industry, whose boom lasted into the 1890s. In 1873, a competing rail line was built to serve the area from Long Valley. Between it and the Chester Branch terminus was the Chester Furnace complex (Just east of Route 206 between Furnace Road and the Black River). The Chester Branch carried many train loads of iron ore from the area mines, along with ingots from the Chester Furnace, to the furnaces and foundries in Wharton and Dover. The 1892 discovery of easily accessible, higher-grade ore in the Mesabi Range of Minnesota ended the local boom. Passenger service began in early 1933 and the track was removed from Succasunna to Chester later that year. In 1965, the section from Ironia to Chester came into state ownership and is now part of the Black River Wildlife Management Area.

4. Capoolong Fish and Wildlife Management Area
Pittstown Branch of the Lehigh Valley Railroad

Endpoint: Ouakertown Road in Pittstown to Landsdown Road in Landsdown
Location: Hunterdon County, Pittstown and Landsdown
Length: 3.7 miles
Surface: Cinder and gravel and dirt
Map(s): Pittstown, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses. Horses by permit only.

Trail Description: This is a pleasant curving, but flat trail that parallels the Capoolong Creek. It is suitable for hiking, horses, and off-road bicycles. It is not improved, but has a smooth, hard cinder base.

History: This was formerly the Pittstown Railroad, a branch from the Lehigh Valley (now Conrail) mainline, from Lansdown to Pittstown. Today, it is owned by the State of New Jersey Department of Environmental Protection and administered by the Division of Fish, Game and Wildlife as a wildlife management area and is in use as a trail.

5. Columbia Trail
High Bridge Branch of the Central Railroad of New Jersey (CNJ)

Endpoint: Bartley Road in Flanders to Main Street in High Bridge
Location: Morris County and Hunterdon County, townships of Flanders, Long Valley, Califon, and High Bridge
Length: 16.2 miles
Surface: Dirt, gravel and cinder
Map(s): Chester, Hacksttstown, Califon and Highbridge in the U.S.G.S. 1:24,000 series or Newark in the 1:100,000 series.
Uses: All non-motorized

Trail Description: This is a great trail for bicycling. This relatively flat picturesque trail curves along the mountainside about the southbranch of the Raritan River for seven miles., and then passes through old mill and farm towns dotted with antique shops.

History: The Jersey Central's High Bridge Branch was laid out as 33 miles of single track and built in the 1860s to connect the mainline at High Bridge with a series of small branches that led to a number of iron mines. As the years went by, more than half of the iron ore production of the state of New Jersey went over the High Bridge Branch. The high point of this traffic was reached in May 1882, when 118 cars of ore were shipped over the branch in one day.

But as the traffic on the branch inevitably declined, the CNJ was faced with the hard choices that all the other railroads in the east were facing: How to stop the hemorrhaging caused by unprofitable branch-lines. Larry Lowenthal explained the situation in *The Iron Mine Railroads of New Jersey:*

"In March 1971, as part of its "Blueprint for Survival," the collapsing CNJ decided to

eliminate most of its remaining branches in order to preserve a fragment of the system under this philosophy of trying to survive as a multiple amputee, the CNJ petitioned the ICC on May 27, 1971, to abandon the High Bridge Branch, Dove & Rockaway RR, and the Mount Hope Mineral RR – all its remaining Morris County Trackage."

6. Delaware & Raritan Canal State Park
Bel-Del Division of the Pennsylvania Railroad

Endpoint: Bridge Street in Frenchtown to Parkside Avenue in Trenton
Location: Hunterdon and Mercer Counties, towns of Frenchtown, Stockton, Lambertville, Titusville, West Trenton, and Trenton.
Length: 29.3 miles
Surface: Cinder and Asphalt
Map(s): Frenchtown, Lumberville, Stockton, Lambertville, Pennington, and Trenton West in the U.S.G.S. 1:24,000 series.
Uses: Non-motorized uses except horses.

Trail Description: The Delaware & Raritan Canal State Park is one of the most heavily used state parks in New Jersey. It is a flat well maintained trail open for hikes, joggers, and bicyclists from Lawrence Township to New Brunswick, and from Trenton to Raven Rock on the abandoned Bel-Del Railroad ROW. The canal is stocked with fish every spring and camping is allowed on Bull's Island. The trail starts in downtown Frenchtown, which is a lively small town with some gourmet restaurants and B&Bs. There are many kiosks along the current trail which describe the local history.

History: The 66-mile-long Delaware & Raritan Canal was planned to be 75 feet wide and 8 feet deep, and was hand-dug by Irish immigrants in 1834. There was a great labor shortage in the early 1800s, so contractors brought in many thousand laborers from Ireland. The rate of $1-a-day was a large sum of money for men who had nothing in their homeland.

With 14 locks, the canal was operated as an inland water-way between the Delaware and Raritan Rivers. Its primary traffic was coal barges pulled by mules along a tow-path to the New York City market. In March, 1836, the Belvidere Delaware Railroad Company was incorporated as one of the earliest railroads in the country and one of a small handful that shared the RoW with a canal. Plagued by financial uncertainty in the markets, the Bel-Del, as it was known to the locals, did not reach north to Phillipsburg until 1854. This corridor, along with the equally attractive section that runs through Princeton to New Brunswick, became a state park in 1974. The canal itself provides drinking water to hundreds of communities in Central New Jersey and is managed by the NJ Water Authority.

7. Edgar Felix Memorial Trail
Eastern end of Penn Central Railroad's Freehold Secondary

Endpoint: North Main St., Manasquan, to Hospital Road, Wall Township.
Location: Monmouth County, Wall Township
Length: 4.3 miles
Surface: Asphalt
Map(s): Asbury Park, U.S.G.S. 1:24,000 series
Uses: Non-motorized uses except horses.

Trail Description: This urban-suburban trail starts in Manasquan among hardwood trees that offer shade. The trail passes wooded areas as well as residential and commercial areas. There is a bicycle bridge over the Garden State Parkway. The trail ends at the golf course where it connects with the Freehold and Jamesburg Trail.

History: This trail is part of what originated as the Freehold and Jamesburg Agricultural Railroad in the 1800s. When fully built, it ran from Monmouth Junction (west of Jamesburg), right through the Jamesburg business district, then through Freehold, Farmingdale, Allenwood, Manasquan, and finally terminated at the New York and Long Branch (now the New Jersey Coast Line). The road eventually became part of the Penn-Central (PC) System.

Most of this road, from Monmouth Junction to Farmingdale, is still active as Conrail's Freehold Secondary and might see future commuter service. The portion east of Farmingdale was abandoned by the PC and sold to Jersey Central Power and Light, which sold it to Wall Township. The Felix Bike Path was developed on the section from Hospital Road to Main Street in Manasquan in 1971 and 1972. The remainder towards Farmingdale is mostly within the boundaries of Allaire State Park and is open to public use as the Freehold and Jamesburg Trail.

8. Freehold and Jamesburg Trail

Penn-Central's Freehold Secondary

Endpoints: Hospital Road, Allenwood, to Route 547, Farmingdale
Location: Southeast Monmouth County, Wall Township, and Farmingdale.
Length: 4.5 miles
Surface: Gravel and dirt and asphalt
Map(s): Asbury Park and Farmingdale in the U.S.G.S. 1:24,000 series, or Trenton in the 1:100,000 series.
Uses: All non-motorized uses.

Trail Description: This trail has some interruptions and is not marked as a completely independent trail. However, it still can be easily followed and it provides a very scenic route. Two detours are necessary; one around the golf course and another around I-195, both of which cut the corridor. Note that bicycles are not permitted in the Allaire Village or on the immediate adjacent trails. To visit the village area by bicycle, enter on the access road and check with the ranger.

History: This trail is part of what originated as the Freehold and Jamesburg Agricultural Railroad in the 1800s. When fully built, it ran from Monmouth Junction (west of Jamesburg), went right through the Jamesburg business district, then through Freehold, Farmingdale, Allenwood, Manasquan, and terminated at the New York and Long Branch (now the North Jersey Coast Line.) The road eventually became part of the Penn Central System. Most of this, from Monmouth Junction to Farmingdale, is still active as Conrail's Freehold Secondary, and might see future commuter service. The portion east of Farmingdale was abandoned by the Penn Central and sold to Jersey Central Power and Light, which sold it to Wall Township. Part of this latter piece, from Hospital Road to Main Street in Manasquan, has been developed as the Edgar Felix Memorial Trail. This trail (the F&J) is the remainder in the middle, which is now inside Allaire State Park.

9. Hamburg Mountain WMA

Hanford Branch of the New York, Susquehanna & Western Railroad

Endpoint: Ogden Way, Ogdensburg, to just west of Beaver Lake Road, Franklin
Location: Sussex County, townships of Ogdensburg and Franklin
Length: 3 miles
Surface: Cinder
Map(s): Franklin, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses. Horses by permit only

Trail Description: Visitors to this site will find a scenic trail with a mild uphill climb that is suitable for hiking, bicycles, and horses (with permits). The trail parallels an active line for most of its length. There are tours of the mine at Sterling Hill. Also the Franklin Mineral Museum is of interest.

History: Franklin and Ogdensburg are known to geologists throughout the world for the unusual minerals that have been mined here for over two hundred years. During the height of mining operations, the Hanford Branch of the New York, Susquehanna & Western Railroad was built through the Hamburg mountains to service the New Jersey Zinc Company mines in Ogdensburg and Franklin, as well as towns north and west of here. Zinc and iron ores were transported from the mines along this branch to the NYS&W's mainline at Beaver Lake Junction, and then onto the smelters, which would refine ores into metal. Although the mines are no longer active, the Hanford Branch, which served them, has gained new life as part of the Hamburg Mountain Wildlife Management Area.

10. Henry Hudson Trail

Bay Shore Branch of Central New Jersey Railroad (CNJ)

Endpoint: Corner of Lloyd Road and Gerrard Avenue in Aberdeen Township to North Leonard Avenue, Leonardo.
Location: Monmouth County, townships of Keyport, Union Beach, Keansburg, Port Monmouth, Belford, and Leonardo.
Length: 9.0 miles
Surface: Asphalt
Map(s): Keyport and Sandy Hook in the U.S.G.S. 1:24,000 series.
Uses: All non-motorized uses except horses

Trail Description: This trail consists of nine miles of paved surface. Work has begun on another nine miles extending to Freehold Borough. Although the trail is flat, there are a lot of road crossings which make it less than ideal for children.

History: A charter was first granted in 1849 for a line from Freehold to Keyport, but there was so much opposition that the charter expired. Another group got a new charter in the 1860s and they began construction of a rail bed and track from Freehold to Keyport. This was known as the Monmouth County Agricultural Railroad (MCARR), and it opened for business around 1875. About the same time, the Central Railroad of New Jersey (CNJ) developed and opened the New York to Long Branch line. It crossed the MCARR about 0.5 miles east of Matawan station.

There was a move by a group of merchants in Atlantic Highland to construct a line from that city through Hopping Station in Port Monmouth to Keyport. This later became known as the Bayshore Branch of the CNJRR, and it carried passengers until Novermber, 2, 1966. During its last stages it was carrying 400 passengers a day, 100 of which were pass-holders (people who were offered a free-pass). CNJ also provided freight service until around 1976 when Conrail took over service to the one remaining major customer, IFF Corporation in Union Beach. Conrail finally gave up on the line in November of 1984.

Around 1984-85, the Freeholders of Monmouth County floated a bond issue of approximately $5 million to purchase the 9-mile right-of-way from Conrail. The initial idea was to hold it for future development as a light-rail commuter serving the shore towns. But then the Bayshore economy was hurt by the economic recession of the late eighties and the plan for a commuter line was abandoned. The property was then turned over to the Monmouth County Park Service (MCPS) to be developed as a recreational trail. Sections of it in Keyport had been used as a defacto trail, but most of the RoW was impassable, owing to the fact that 13 of the 14 bridges were out or unsafe. MCPS began to work on the trail around 1990, and finally dedicated it on July 4, 1995, as the Henry Hudson Trail.

11. Kingston Branch Loop Trail
Kingston Branch of the Pennsylvania Railroad

Endpoints: South Brunswick Township Village of Kingston at Route 27 to the Georgetown Franklin Township Route 518 at Rocky Hill in the township of Franklin.
Location: Somerset County, townships of Kingston and Rocky Hill.
Length: 3.7 miles
Surface: Stone-dust and gravel.
Map(s): Monmouth Junction and Rocky Hill in the 1:24,000 series, and Trenton, in the 1:100,000 series.
Uses: Non-motorized uses.

Trail Description/History: The Kingston branch trail is unique because it travels a loop back to the starting point, using the rail corridor for the out-bound journey and then the canal tow-path for the return trip back. Though similar to the other leg of the D & R Canal, which utilizes the Bel-Del Division, this trail ties into a different branch of the Pennsy, the Kingston Branch, and is part of the *East Coast Greenway.* There are interesting sights such as the Lock Tender's House in Kingston, now an interpreter station, a quarry of the Trap Rock Industries, which is where George Washington wrote his Farewell to the Troops Speech, and other interesting canal and railroad history. The trail is totally flat.

12. Linwood Bikeway

Somers Point Branch of the Pennsylvania-Reading Seashore Lines RR (PRSL)

Endpoint: Oak Crest Avenue, Linwood, to Bethel Road, Somers Point
Location: Atlantic County, cities of Linwood and Somers Point
Length: 5.6 miles
Surface: Asphalt
Map(s): Atlantic City, U.S.G.S. 1:24,000 series
Uses: Non-motorized uses, except horses.

Trail Description: This trail is different from others because of the layout of the ROW. The trail is paved, 10 feet wide, and is in the grassy area between two parallel streets that have suburban-urban single-family houses between them. There are many streets to note and cross on this trail, but the majority are neighborhood streets and don't present a great safety problem. A sign at the north end of the trail says *Welcome to Linwood's George K. Francis Bikeway*.

History: This line, built in 1880, became the Shore Fast Line, which originated in Atlantic City and headed south through Pleasantville to Somers Point and then out on a causeway to Ocean City. It became electrified in 1906, running orange trolley cars that were known locally for their on-time service. The inter-urban service ran until 1948. Freight service continued on to Somers Point, but freight service to Ocean City ran through the Tuckahoe Branch. By the mid 1960a, the Somers Point Branch was only seeing bi-weekly service, so it came to an end in 1966. The trail is currently owned and maintained by the different municipalities along the route.

13. Middlesex Greenway
Lehigh Valley Railroad's Perth Amboy Branch

Endpoints: Middlesex Avenue in Metuchen to Crows Mill Road in the village of Fords
Location: Middlesex County, town of Metuchen
Length: 3.8 miles
Surface: Cinder and gravel and dirt
Map(s): Perth Amboy, U.S.G.S. 1:24,000 series
Uses: Non-motorized uses, except horses.

Trail Description: Trail surface conditions poor. There are several street crossings that are currently unmarked. For the most part, the scenery consists of industrial and commercial developments.

History: This railroad, the first to go through the Metuchen and Edison area, was the Pennsylvania Railroad and now it is AMTRAK's Northeast Corridor. The other railroad line through town was the Lehigh Valley Railroad (LV). The LV was built in the 1870s primarily to take the coal from the mines of eastern Pennsylvania to both the Great Lakes terminal at Buffalo and the New York City market at Jersey City. At the Great Lakes, the LB and other competing railroads even maintained a fleet of ships that carried the coal to the Midwest. These maritime operations were shut down by the Interstate Commerce Commission around the time of the First World War. The federal government felt the monopolistic tendencies of these water operations exacerbated the threat that the railroad companies might take over the traffic from the conventional steam ship companies.

With the creation of Conrail in 1976, the line saw service, but not much in the way of upgrades or creative marketing initiatives, and it continued to decline until Conrail finally abandoned the line in 1986. The idea of a Greenway germinated in the fall of 1990 in Metuchen. Conrail finally pulled out the rails and ties in November of 1993. In December 2002, Middlesex County officially purchased the ROW.

14. Monroe Township Bikeway
Williamstown Branch of the Pennsylvania-Reading Seashore Lines (PRSL)

Endpoints: Church St. and Bodine Avenue in Williamstown to Fries Road
Location: Gloucester County, town of Williamstown
Length: 3.5 miles
Surface: Paved and gravel
Map(s): Williamstown and Pitman East in the U.S.G.S. 1:24,000 series, and the Hammontown and Wilmington in the 1:100,000 series.
Uses: Non-motorized uses. Horses not allowed on the paved section within the town of Williamstown.

Trail Description: The trail runs through residential and commercial neighborhoods along the former railroad right-of-way. There are some wooded sections.
History: The Pennsylvania-Reading Seashore Lines (PRSL) was one of those railroads that held a special place in the hearts of those in the communities they served. The company was forged from a union of two competing companies that jointly decided to merge together in 1933 and

fight the true competition, trucks, rather that continue fighting each other. It all began when both the Reading Railroad and the Pennsylvania Railroad were laying track together to reach the resort of Atlantic City in 1880. Both companies then turned south to lay track and build to the resorts of Ocean City, Wildwood, and Cape May. As the tourist traffic to the Jersey shore grew in value, each railroad tried to out-do the other – price wars, faster trains, better service, etc.

15. Ocean City Branch
Ocean City Branch of the Pennsylvania-Reading Seashore Lines Railroad (PRSL)

Endpoints: Within the city of Ocean City
Location: Cape May County, Ocean City
Length: 25 blocks; .9 mile
Surface: Asphalt
Map(s): Ocean City, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses, except horses.

Trail Description: This very short trail runs through the center of busy Ocean City and allows visitors to see into the history of this seaside community.

History: The Ocean City community was eager to become a successful resort town, so the town fathers met with some railroad companies to have them build a line into the Ocean City. The West Jersey and Seashore Railroad was attracted to build to the shore by the town's offer to secure all easements and titles for the ROW, grade and otherwise prepare the corridor; and provide land for a station. All the railroad had to do was to lay track and run the trains. Accordingly, the trains started running in November of 1884. This original line into town ran down the middle of West Avenue.

A competing line, the South Jersey Railroad, came to town by way of Tuckahoe in 1898. This dual railroad build-out paralleled much of South Jersey. The South Jersey Railroad was controlled by the Reading Railroad and the original line was a subsidiary of the Pennsylvania Railroad.

16. Ogden Mine Railroad Path

Edison Branch of the Central New Jersey Railroad (CNJ)

Endpoints: Hurdtown within the borders of the Mahlon Dickerson Reservation
Location: Morris and Sussex Counties, towns of Hurdtown and Sparta
Length: 2.5 miles
Surface: Original ballast and cinder and dirt
Map(s): Franklin, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses.

Trail Description: This trail is totally contained within the 32,000 acres of beautiful near wilderness. The trail runs along ponds and wetlands. There great views but the surface is bit rough. This trail is a continuation of the Berkshire Valley WMA Trail.

Today, the park has picnic tables, shelters, rest rooms, public phones, water and bicycle racks. There is parking for cars and horse trailers, plus RV and tent camping sites. There is also a ballfield and horseshoe pits. There are approximately eight miles of trails on the reservation which form many loops. The non-railroad trails can be steep and rocky, with an elevation change of nearly 400 feet (from 1,000 to 1,388 feet above sea level).

History: In 1855, five iron and other mineral mines were active around what is now Mahlon Dickerson Reservation, including the upper and lower Weldon Mines located near the existing water treatment building. The Ogden Mine Railroad (OMRR) was originally built to service these and other mines. The OMRR was originally built in 1864 and connected to the outside world by way of a water borne connection at Lake Hopatcong where canal boats took the ore to the furnaces.

The inventor Thomas Edison established an iron ore refining business in Ogden , the town at the end of the line. He was attempting to use modern technology to refine the low grade ore to a higher quality right at the mine. Edison gave up on the venture in 1900 after losing over three million dollars.

17. Patriots' Path

Rockaway Valley Railroad

Endpoints: Speedwell Park to Sunrise Lake in Morristown; E. Hanover Clinton Park to Allmuchy State Park in Sussex; and Village of Highbridge in Hunterdon.
Location: Morris County, Morristown; Sussex, Hunterdon
Length: 50 miles
Surface: Asphalt, cinder and gravel
Map(s): Morristown and Mendham in the U.S.G.S. 1:24,000 series, and Newark in the 1:100,000 series.
Uses: All non-motorized uses.

Description: Patriots' Path is a gradually developing network of trails linking several dozen sites across Morris County. Much of the path lies along the corridors of the Whippany and Black Rivers and South Branch of the Raritan. There are some steep sections, winding bends, road crossings and woods.

History: The Rockaway Valley Railroad Company was incorporated in 1888 to build a 25-mile line from the Central New Jersey Railroad mainline at Whiter House, New Jersey, and heading north through New Germantown, Potterville, Peapack, and Mendham, up to the swampy area at Watnong and on to the outskirts of Morristown. With the likelihood of extremely high construction costs associated with getting past the ledges at Speedwell Lake, the line ended at Watnong.

Commonly, whenever the major commodity disappeared, the railroad was abandoned. On the majority of other railroads that commodity was either milk, coal, or an ore such as zinc or iron. On this railroad, however, that major source of revenue was bushels of peaches. At the peak of the harvest in the late 1890s, over 400,000 bushels were loaded onto trains, and that was just from the New Germantown and White House areas. A one-day record high of 72 cars full of peaches was set in 1896.

Matters deteriorated in early 1913, when a fire destroyed much of the RVRR infrastructure in Watnong and operations ceased in October of the year. The line was eventually sold at auction to Frank B. Allen who then arranged for government funding to help him rebuild the line with heavier duty track and ties. He kept promising that operations would resume "any day now," but of course the never did. And so, in July of 1917, Allen supervised the dismantling of the line. The crew used Allen's Model-T Ford outfitted with railroad wheels to pull a small trailer on which the rails were neatly stacked and sold at a premium to the wartime scrap dealers.

18. Paulinskill Valley Trail
New York, Susquehanna & Western Railroad (NYS&W)

Endpoints: Columbia to Sparta Junction
Location: Sussex and Warren Counties
Length: 27.3 miles
Surface: Cinder and gravel
Map(s): Portland, Blairstown, Flatbrookville, Newton West, and Newton East in the U.S.G.S. 1:24,000 series. Allentown and Middletown in the 1:100,000 series.
Uses: All non-motorized uses.

Trail Description: The trail follows the route of the NY, Susquehanna and Western Railroad, crossing the Paulinskill River several times as it passes through adjacent farmland and forests. There are some wet areas and steep sections. Remains of several old railroad stations are visible. Overall the trail makes for a nice bike ride.

History: The first rail line in this area was built by John I. Blair. In 1876, he started construction of a steam railroad going west out of Blairstown to the river at Columbia and named it, not surprisingly, "The Blairstown Railroad." In 1881, the Midland Railroad (a forerunner to the New York Susquehanna & Western Railroad, NYS&W) bought the line to extend its own line from Jersey City. When a bridge was built over the Delaware River in 1882, this line was a natural to bring desirable anthracite coat from Pennsylvania to the markets in New York and New England.

The Lehigh & New England Railroad (L&NE) saw fit to obtain trackage rights from the NYS&W and run on the line from Hainesburg Junction all the way out to Swartswood Junction, a distance of about 19 miles. (Trackage Rights is an agreement between two railroads that allows one to travel on the tracks of another. Payment for this privilege is usually money, though sometimes an arrangement is made to reciprocate in a similar fashion at another location.) After the L&NE pulled out in 1961, there wasn't enough NYS&W traffic to sustain the line, and it was abandoned totally shortly thereafter.

In 1962, the rails and ties were pulled up and the ROW languished as an unofficial trail for decades. Today, after the efforts of the Paulinskill Valley Trail Committee, the trail is the

anchor of the network of open and under-development projects in New Jersey.

Abandoned by the New York Susquehanna and Western Railroad in 1962, the trail was purchased by the City of Newark for a possible future water conduit to connect the proposed Tocks Island Dam reservoir with the Pequannock Watershed. The cinder base trail traverses two counties for 27 miles, has a average width of 66 feet and a total area of 102 acres.

19. Pemberton Rail-Trail
Pennsylvania Railroad

Endpoints: Hanover St. in Pemberton to Bimingham Rd. in Birmingham.
Location: Burlington County, townships of Pemberton and Birmingham.
Length: 3.0 miles
Surface: Cinder and gravel and crushed stone.
Map(s): Pemberton, U.S.G.S. 1:24,000 series
Uses: All non-motorized uses, except horses.

Trail Description: This trail consists of nice hard packed walking surface. It is a beautiful tree-lined walkway through the Pine Barrens. The river can be seen from several places. The old railroad station is interesting to see.

History: The first train ran from Nathong to Pemberton in 1861 and, by 1870, the railroad was the single largest employer in town. At that time, it served 40 businesses and 7 industries in the Pemberton. Like many other secondary lines that became rail-trails, this one had a number of owners in the early years. The usual rounds of mergers, acquisitions, and reorganizations that plagued these light density lines attracted the attention of the locally larger railroad. In this case, that railroad was none other than the Pennsylvania Railroad, otherwise known to locals as "the Pennsy." In 1883, the Pennsy merged the final small railroad, the Pemberton & Hightstown Railroad, into their system.

The Pemberton Rotary Club took responsibility for getting the trail built. With a population of only 1,200 people, Pemberton Borough is a typical old-style town with friendly residents, interesting historical sites, and a quiet ambiance that invites you to pause and relax. The best time to visit the trail might be the fall when the Fall-Festival is in full swing. There is a historical component as well, with reenactments of Revolutionary and Civil Way engagements.

20. Pequest Fish and WMA
Lehigh & Hudson River Railway (L&HR)

Endpoints: From the intersection of Routes 31 and 46 in Buttzville, to Pequest Road in Townsbury
Location: Warren County
Length: 4.1 miles
Surface: Cinder, gravel, original ballast and ties
Map(s): Washington and Belvedere in the U.S.G.S. 1:24,000 series, and Allentown and Newark in the 1:100,000 series.
Uses: All non-motorized uses. Horses by permit only.

Trail Description: This trail is best suited for walking rather than biking or horseback riding. The area is managed for hunting and fishing, so visitors must take precautions during hunting season. There are three steel bridges over the Pequest River that are not suitable bikes or horses. Otherwise the trail is level and very scenic.

History: Located in Pequest Valley of Warren County, near Great Meadows, this trail is the former rail bed of the Lehigh & Hudson River Railroad. This line was a perfect example of a number of smaller railroads combining to form a larger route under one corporate entity. Constructed between 1861 and 1882, this line served as one of the "Anthracite Roads" connection into New England and was built mainly to carry coal.

21. Sussex Branch Trail
Sussex Branch of the Erie- Lackawanna Railroad (DL&W)

Endpoints: Waterloo Road at Allumuchy State Park in Byram, to Decker Road in Lafayette.
Location: Sussex County, townships of Byram, Andover, Newton, Hampton, and Lafayette
Length: 21.2 miles
Surface: Cinder, gravel and original ballast
Map(s): Stanhope and Newton East in the U.S.G.S. 1:24,000 series, and Newark and Middletown in the 1:100,000 series.
Uses: All non-motorized uses.

Trail Description: The Sussex Branch Trail travels 21 miles through farmland, forests and small towns. The trail is picturesque as it passes through the Kittitiny Valley State Park in Andover. There are a couple of creek crossings where the bridges are out. The trail goes through Newtown.

History: In 1848, Abram S. Hewit, the owner of an iron manufacturing business in Phillipsburg and Trenton, wanted to access the ore that was known to be in the Sussex County town of Andover. The major mine there was only 7 miles from the port of Waterloo on the Morris Canal, so he proposed to build a 40-inch narrow-gauge line that would be a mule drawn operation. It would transport the ore to the transfer docks in Waterloo and then barge the material to Phillipsburg on the Delaware River. It was known as the Sussex Mine Railroad and became operational in 1851. In 1853, the line was extended to Newton. The new track was built to standard gauge specifications and the company received a new name as well. "The Sussex Railroad." In 1864, a new owner by the name of John I. Blair took over and extended the line to Branchville wit a spur line to the Iron Furnace at Franklin.

As a local carrier, the Sussex Railroad became successful and attracted the attention of the major railroad in the area, the Delaware, Lackawanna, & Western Railroad (DL&W or Lackawanna). In 1881, the Lackawanna took over to prevent the Sussex from joining with another N-S road being built in New Jersey. (This future line would be known as the Lehigh & Hudson River Railroad, one of the numerous "anthracite roads" that rose to transport that hard coal from eastern PA in New England.) It then became the Sussex Branch of the Lackawanna and underwent a series of measures to upgrade and modernize. The traffic base on the line was also diversified beyond the ore business. Lackawanna was very actively marketing milk traffic to major cities so an agrarian branch like this was very heavily involved in that effort. In fact, the last dairy that was a regular shipper of milk was the Henry Becker & Son plant at Straders, a small community between Augusta and Lafayette. This creamery shut down in late 1964 and was said to be the last creamery in the state of New Jersey to ship by rail.

The Depression saw the first major track reduction at the spur from Branchville Junction to Franklin. The furnace there was no longer competitive with midwestern plants and was closed down. The merger between Erie and Lackawanna in 1960 (now known as Erie-Lackawanna-EL) created much duplicate trackage. Consequently, the management of the new company, which was dominated by Erie men, downgraded some of the Lackawanna lines, including the Sussex Branch.

As a result, the level of through traffic business that connected at Andover Junction with the Lehigh and Hudson River Railroad saw a serious decline. Six short years later, in 1966, the tracks north of Andover Junction to Newton were pulled out and the line north of Sussex Junction in Stanhope saw fewer and fewer trains until the last one in 1969. The Sussex Branch was not part of the plan that created Conrail in 1976 so it stayed with the other unwanted and unprofitable routes of EL. The track languished in the weeds until 1977, when it was scrapped. In 1979, the southern section of right-of-way from Netong to Andover Junction was sold to the state of New Jersey Department of Environmental Protection (DEP). In 1982, the segment north of Andover Junction to Branchville was sold to the Jersey DEP and the trail is now managed by the State Park Service within the Division of Parks and Forestry.

22. Traction Line Recreation Trail
Morris County Traction Line

Endpoints: Route 510 and Morris Avenue in Morristown, to Convent Station in Madison
Location: Morris County, Morristown and Madison
Length: 3.2 miles
Surface: Asphalt
Map(s): Morristown, U.S.G.S. 1:24,000 series
Uses: Non-motorized uses, except horses.

Trail Description: This trail has a gentle slope and a wide paved path perfect for inline skating. There are a number of street crossings. Notably, Morris County clears snow off the trail within 24 hours. NJT's Morris and Essex Rail Line runs alongside the trail.

History: The Traction Line Recreation Trail, located between Morris Avenue in Morristown and Convent Road in Madison, was previously part of a 2.6-mile segment of the Morris Traction

Company Trolley Line (MTC), The MTC, which was chartered in 1899, operated 32 interconnected routes from Lake Hopatcong to Elizabeth. This segment was opposed by wealthy landowners, and subsequently was denied a franchise to operate on public roads. Because a trolley company lacked the land condemnation authority possessed by railroads, MTC incorporated itself in April of 1913 as a steam railroad, Morris Railroad, and thus obtained the needed property. Trolley service between Morristown and Maplewood began in February of 1914. When it was no longer able to compete with the automobile, MTC was sold at public auction in October of 1927. The new owners then sold the property and franchises to the Public Service Company and, in March of 1928, the New Jersey Public Utilities Commission approved the dissolution of the corporation, ending MTC's brief history.

The Traction Line Recreation Trail was developed by the Morris County Park Commission through a federal grant and was dedicated in June of 1986. The land was donated by Jersey Central Power and Light Company (JCP&L). A chain link fence separates the trail from the NJ Transit passenger trains. Thus, this corridor is also famous as being one of the country's original "rail-with-trail" corridors. There are now over 50 similar trails in operation across the country.

23. West Essex Trail
Caldwell Branch of the Erie Railroad

Endpoints: Francisco Avenue (Near the Great Notch railroad station) in Little Falls, to Ar nold Way in Verona
Location: Passaic County, town of Little Falls, and Essex County, towns of Cedar Grove and Verona
Length: 3.3 miles
Surface: Cinder and gravel
Map(s): Orange, U.S.G.S. 1:124,000 series
Uses: All non-motorized uses.

Trail Description/History: Although grading and landscaping of the trail are incomplete, the trail is heavily used. The West Essex Trail (WET) is located on the original grade of the Caldwell Branch of the Erie Railroad. The trail runs along cuts and fills through moderately hilly terrain past suburban houses and occasional wooded parcels. It is suitable for hiking, horses and off-road bicycles. It is not improved but has a good cinder base, with some sections covered with small gravel.

The WETis a low-key route through a suburban area. It passes through Cedar Grove Community Park, and features an impressive high trestle over Peckman River, where the stream drops through a small gorge over exposed ledges of Watchung Basalt, the geologic basis of the First Orange Mountain. South of the present terminus is the only obvious railroad structure, the old Verona Freight station at Personnette Avenue, now a warehouse for Keifer Brush Company. Further on are the tunnel under Bloomfield Avenue, which is scheduled to be filled-in; the Grover Cleveland homestead, a state park near the trail in Caldwell; the Kiwannis Oval Park; and the Grover Cleveland Park, originally planned to be the southern terminus of the WET.

24. Woodbine Railroad Trail
Cape May Branch of the Pennsylvania Railroad (before the PRSL merger)

Endpoints: Fidler Hill Rd. to Grant Ave. within the borough of Woodbine
Location: Cape May County, borough of Woodbine
Length: 3 miles
Surface: Asphalt
Map(s): Woodbine, U.S.G.S. 1;24,000 series
Uses: All non-motorized uses.

Trail Description: This is a level paved pathway through a small town in rural South Jersey.

History: Once the Pennsylvania and Reading lines in the area merged in 1933, this line was among the first to be abandoned with the end coming in 1936. This line was the ex-Pennsy line to Cape May which ran from Manamuskin to Cape May and was 36 miles long. Cape May, the oldest resort community in the country, is within an easy bike ride.

Appendix E: Acknowledgements / Bibliography

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Lee Dashti, Assistant Planner of Planning and Solid Waste
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Rob Mulloy, Principal Engineer
Mike Fiure, Assistant to the Director of Parks and Recreation

Participants
Ocean County Historical Society, Toms River
Lacey Township Historical Society, Forked River
Al Cirulli, Mayor, Barnegat Township
Daniel M. Van Pelt, Mayor, Ocean Township
Brian Reed, Mayor, Lacey Township
Jason Varano, Mayor, Berkeley Township
Harold R. Morris, Mayor, Beachwood Borough
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Paul Brush, Mayor, Toms River Township
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Bibliography:

The following publications were consulted and contributed to the development of *The Conceptual Plan for the Barnegat Branch Trail:*

American Association of State Highway and Transportation Officials (AASHTO), Task Force on Geometric Design, Guide for the Development of Bicycle Facilities, Wash., DC, 2001.

Baer, C., Coxley, W. and Schopp, P., The Trail of the Blue Comet, West Jersey Chapter of the National Railway Historical Society, 1994.

Brinckmann, John, The Tuckerton Railroad, National Railway Historical Society, 1974.

Commonwealth of Pennsylvania, Dept. of Conservation and Natural Resources (DCNR) and Pennsylvania Dept. of Transportation (PennDOT), Rail-Trail Bridges in Pennsylvania: A Guidebook for the Structure Evaluation and Disposition Process, Harrisburg, PA, 2000.

Appendix E: Acknowledgements / Bibliography

Delaware Valley Regional Planning Commission (DVRPC), Abandoned Railroad Inventory, Phase I, Philadelphia, PA, June 1996.

Delaware Valley Regional Planning Commission (DVRPC), Abandoned Railroad Inventory and PolicyPlan, Philadelphia, PA, September 1997.

Della Penna, Craig P., Great Rail-Trails of New Jersey: The Garden State's Best Multi-Use Recreational Trails Built on Abandoned Railroad Grades, New England Cartographics, Amherst, MA, 1999.

Federal Highway Administration (FWHA), U.S. Dept. of Transportation, Selecting Roadway Design Treatments to Accommodate Bicycles, No. 92-073, Wash., DC. January 1995.

Federal Highway Administration (FWHA), U.S. Dept. of Transportation, Bicycle Crash Types: A Guide, No. 96-104, Wash., DC, April 1997.

Federal Highway Administration (FWHA), U.S. Dept. of Transportation, National Bicycling and Walking Study, Wash., DC, 1992-1997:
Case Study No. 7: Benefits of Bicycle and Pedestrian Facilities;
Case Study No. 11: Balancing Engineering, Law Enforcement and Education;
Case Study No. 19: Traffic Calming and Other Traffic Management Techniques;
Case Study No. 21: Integrating Bicycle and Pedestrian Considerations into Local Transportation Planning, Design and Operations; and
Case Study No. 24: Current Planning Guidelines and Design Standards Used by State and Local Agencies for Bicycle and Pedestrian Facilities.

New Jersey Board of Public Utility Commissions, Report of Consolidation of Railroad Services, Trenton, 1931.

New Jersey Conservation Foundation, New Jersey Rails to Trails: Linear Recreation for Abandoned Railroad Rights-of-Way, Far Hills, NJ 1980.

Websites: www.octrainguy.mybravenet.com