

**PRE-APPLICATION
FOR
PARKLAND DIVERSION**

For

I-95/Scudder Falls Bridge Improvement Project

**Township of Ewing
Mercer County, New Jersey**

Submitted to

**New Jersey Department of Environmental Protection
Green Acres Program
Project File No. SHC-2008-0004**

JULY 2011

Submitted by



Delaware River Joint Toll Bridge Commission

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**Delaware River Joint Toll Bridge Commission
I-95/Scudder Falls Bridge Improvement Project
Pre-Application for Parkland Diversion**

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1.0 PROJECT DESCRIPTION

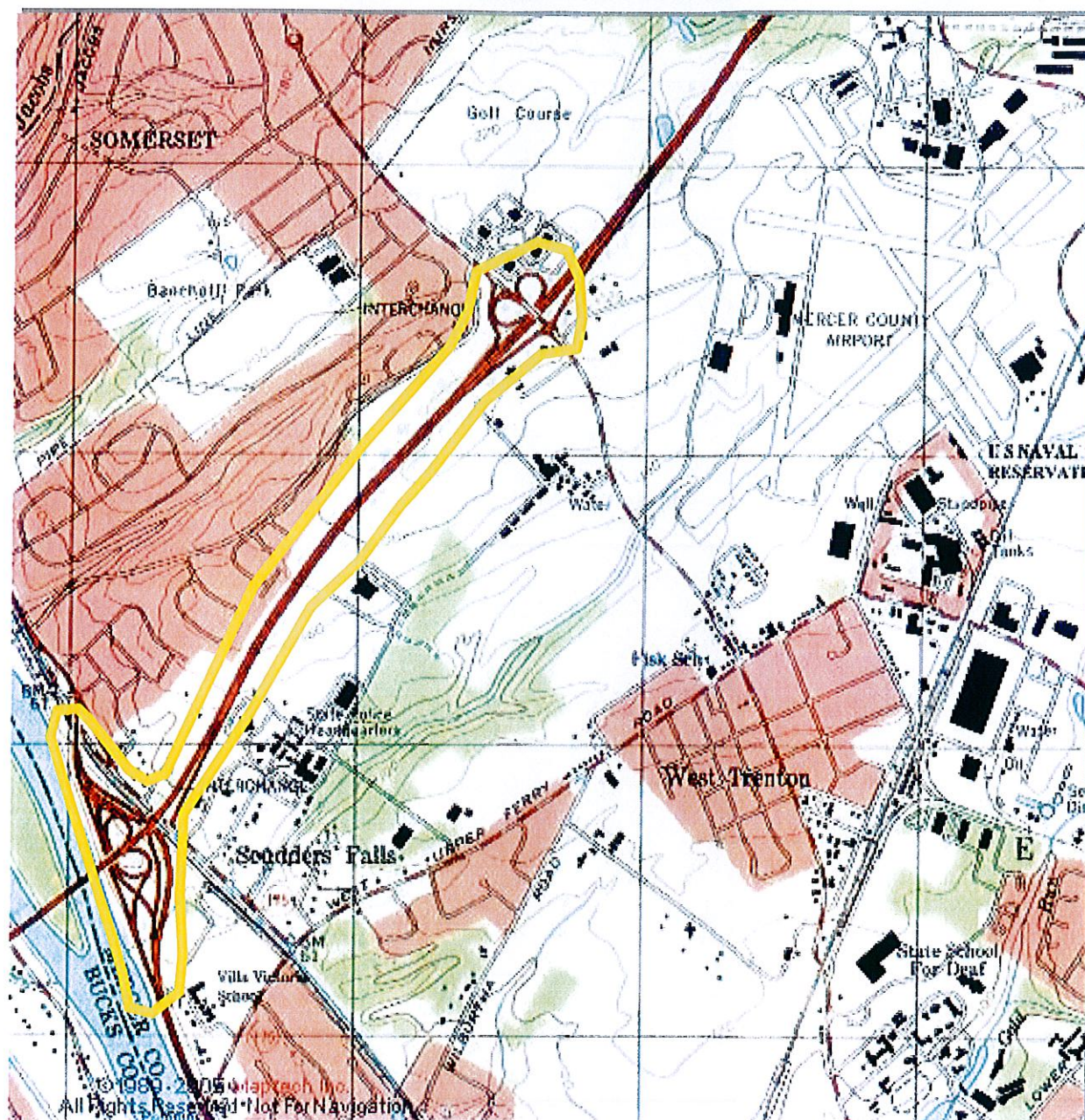
1.1 Proposed Project

The Delaware River Joint Toll Bridge Commission (DRJTBC), in cooperation with the Federal Highway Administration (FHWA) – the lead federal agency, the Pennsylvania Department of Transportation (PennDOT), and the New Jersey Department of Transportation (NJDOT), is proposing improvements to the I-95/Scudder Falls Bridge and 4.4 miles of I-95 (Figures 1 and 2). The project is included in the Delaware Valley Regional Planning Commission (DVRPC) Long Range Transportation Improvement Program (TIP) and the New Jersey 3-Year TIP.

From west to east, I-95 in the project area consists of two lanes in each direction between PA Route 332 and NJ Route 29 and three lanes in each direction east of NJ Route 29 to Bear Tavern Road. This highway segment is operating over capacity during peak periods under existing conditions and is projected to operate well over capacity in 2030. The goal for the improvements in this segment of I-95 is to achieve a traffic level of service (LOS) of LOS D, considered to represent an acceptable traffic operating level in an urban environment, in the future year 2030. The project involves adding a travel lane and adequate outside and inside shoulders in each direction with additional lanes to accommodate entry and exit from adjoining interchanges (auxiliary lanes) on the I-95/Scudder Falls Bridge. The project includes highway improvements necessary to transition to the existing six-lane section of I-95 extending approximately 1.5 miles east from NJ Route 29 to the Bear Tavern Road (County Route 579) Interchange.

The project includes improvements to the Taylorsville Road Interchange (PA Exit 51) in Pennsylvania and the NJ Route 29 Interchange (NJ Exit 2) in New Jersey to meet current highway and geometric design standards. Interchange improvements include reconfiguration, the addition/modification of acceleration and deceleration lanes and providing adequate spacing of ramp merges.

The DRJTBC is proposing to toll the I-95/Scudder Falls Replacement Bridge as part of the I-95/Scudder Falls Bridge Improvement Project in the southbound direction only. The DRJTBC determined that the I-95/Scudder Falls Replacement Bridge will be tolled in order to fund the needed improvements. Tolling will be “cashless”, or “all electronic tolling (AET).” With AET, tolls will be collected electronically through the E-ZPass system or video capture and billing. A conventional toll plaza will not be built. AET is an electronic toll collection system that allows the motorists to travel at prevailing speeds without having to stop to pay the toll. License plates of motorists passing through the “cashless” toll system who are not E-ZPass tag holders will be subject to video capture by electronic equipment mounted in the overhead gantry. The DRJTBC will send a bill to the customer to collect the toll.



Project Location Map

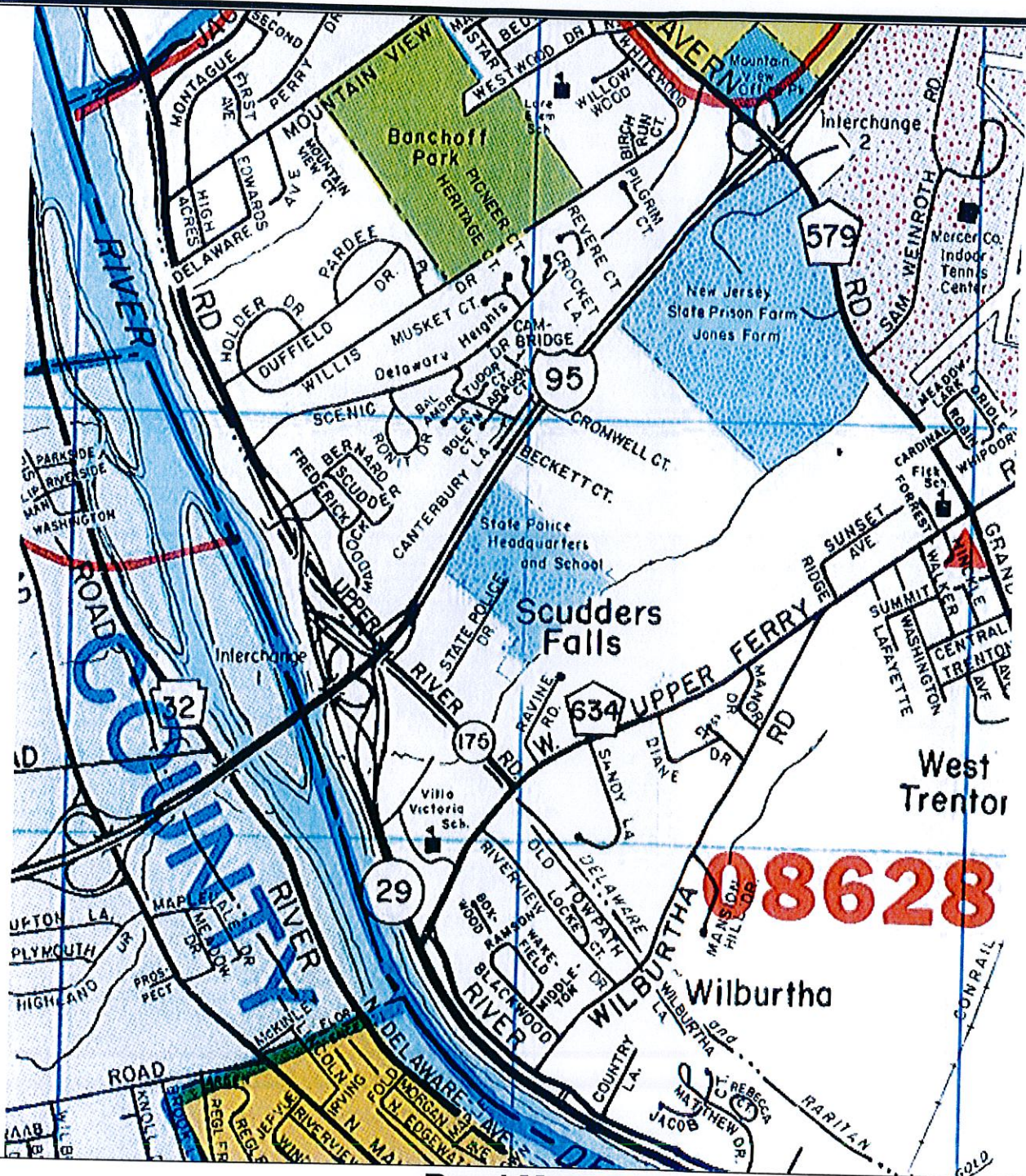
Delaware River Joint Toll Bridge Commission
I-95/Scudder Falls Bridge Improvement Project

EWING TOWNSHIP, MERCER COUNTY, NEW JERSEY

FIGURE 1

Source: U.S. Geological Survey
Trenton West, N.J.-P.A. Quadrangle
Scale: 1:24,000
Date: March 2011

AECOM



Road Map

Delaware River Joint Toll Bridge Commission
I-95/Scudder Falls Bridge Improvement Project

EWING TOWNSHIP, MERCER COUNTY, NEW JERSEY

FIGURE 2

Source: Mercer County Street Map
Scale: Not to scale
Date: March 2011

On the I-95/Scudder Falls Replacement Bridge, tolling will be in the southbound direction only (i.e., entering Pennsylvania). This one-direction toll collection is consistent with all other tolled DRJTBC bridges crossing from New Jersey to Pennsylvania. Electronic toll equipment will be mounted in an overhead gantry structure that is on or adjacent to the new bridge on the Pennsylvania side of the bridge. Cabinets for electronic equipment will be located on or below the bridge outside of natural or human resource areas or in areas planned to be disturbed as part of the improvements. Therefore, there will be no change to the physical footprint impact, and thus there will be no additional direct or indirect impact to natural or human resources due to the AET facilities.

The DRJTBC currently uses the E-ZPass system to collect tolls on seven of its twenty bridges including Trenton-Morrisville, New Hope-Lambertville, Interstate 78, Easton-Phillipsburg, Portland-Columbia, Interstate 80 (Delaware Water Gap) and Milford-Montague. The remaining DRJTBC bridges, including the I-95/Scudder Falls Bridge, are toll-supported bridges. Tolls are not collected on toll-supported bridges, but their operation, maintenance, and improvements are funded by toll revenues.

The design for the toll gantry may be a monotube design, where a single pipe forms the horizontal and vertical support for the gantry, or a column-supported space frame.

As depicted on the Aerial Map provided in Appendix B, the project will span a greater portion of the Delaware and Raritan Canal (D&R Canal) State Park at Ewing Township Block 425, Lot 1. The existing NJDOT easement for the mainline I-95 over the Canal is 100 feet long and 225 feet in width (See Tax Map in Appendix C). In the proposed condition, the span width of the I-95 bridge over the D&R Canal will be somewhat larger than the existing span width and two new ramp bridges, each of approximately 40 feet in width, will be constructed over the Canal. This would result in an increase in the area spanned of approximately 0.23 acres over the D&R Canal. Of these 0.23 acres, approximately 0.10 acre will be located within the existing highway right-of-way (ROW) and 0.13 acre will be located outside the existing ROW. This increased shading to the D&R Canal State Park is not considered a substantial impact on park or recreational users since the portions of the towpaths and Canal spanned by the bridges are a very small portion of the entire system.

In addition, approximately 0.004 acres would be required for construction of new bridge piers outside of the existing highway ROW while 0.009 acres of pier construction would occur within the existing ROW. The area where this work is proposed is along the back slope of the D&R Canal immediately adjacent to NJ Route 175 (Upper River Road) and in the general location of the existing bridge pier. The area is on the opposite Canal bank from the Canal towpath, and is not used by recreation users because it is generally inaccessible due to vegetation and its location immediately adjacent to NJ Route 175.

In order to construct the proposed improvements, additional parkland takings will be required at two locations; one area north of the southbound I-95 exit ramp to northbound Route 29 and the other south of the Route 29 northbound entrance ramp to northbound I-95. These parkland takings for construction and future maintenance would total 0.21 acres.

Provisions for a pedestrian/bicycle facility across the Delaware River would interconnect the recreational facilities on each side of the Delaware River and the two Canal parks and would provide a regional pedestrian/bicycle connection. The proposed pedestrian/bicycle facility on I-95 is considered to represent recreational benefits to park users.

The proposed pedestrian/bicycle facility would be constructed within the Route 29 ROW and would require a connection to the towpath within the D&R Canal State Park. This connection is anticipated to occur within the existing easement that NJDOT obtained for the construction of Route 29. The NJDOT easement includes adequate area on the west side of the Canal north of the Route 29 ramp over the Canal for the towpath connection. This area extends 60 feet west of the Canal towpath and approximately 180 feet north of Route 29. For this aspect of the project, a Maintenance Agreement will be executed between the NJDEP Green Acres Program (GAP), the Delaware and Raritan Canal Commission (D&RCC), and the DRJTBC.

In summary, the I-95/Scudder Falls Bridge Improvement Project would require 0.34 acres of ROW easement from the D&RCC.

1.2 Project Purpose and Need

The purpose of the project is to alleviate recurring current and future traffic congestion and upgrade safety and traffic operational conditions on the I-95/Scudder Falls Bridge and adjoining highway segments in Pennsylvania and New Jersey. The I-95/Scudder Falls Bridge provides critical access for community facilities and emergency services between Pennsylvania and New Jersey; it will support continued economic development and interstate commerce by accommodating the movement of people and goods.

From west to east, I-95 in the project area consists of two lanes in each direction between PA Route 332 and NJ Route 29 and three lanes in each direction east of NJ Route 29 to Bear Tavern Road. This highway segment is operating over capacity during peak periods under existing conditions and is projected to operate well over capacity in 2030. The goal for the improvements in this segment of I-95 is to achieve a traffic LOS D, considered to represent an acceptable traffic operating level in an urban environment, in the future year 2030. The project involves adding a travel lane and adequate outside and inside shoulders in each direction with additional lanes to accommodate entry and exit at adjoining interchanges (auxiliary lanes) on the I-95/Scudder Falls Bridge. The project includes highway improvements necessary to transition to the existing six-lane section of I-95

extending approximately 1.5 miles east from NJ Route 29 to the Bear Tavern Road (County Route 579) Interchange.

The project includes improvements to the Taylorsville Road Interchange (PA Exit 51) in Pennsylvania and the NJ Route 29 Interchange (NJ Exit 2) in New Jersey to meet current highway and geometric design standards. Interchange improvements include reconfiguration, the addition/modification of acceleration and deceleration lanes and providing adequate spacing of ramp merges.

The I-95 corridor is a major commuter route for employment destinations in or near the project area, as well as for commuters residing in bedroom communities along the route. I-95 in this area provides access to the nearby Trenton-Mercer Airport and Southeastern Pennsylvania Transportation Authority (SEPTA) and New Jersey Transit (NJ Transit) stations on either side of the river. The project area is within commuting distance to Philadelphia and major nearby employment centers in Bucks and Mercer Counties, the New Jersey state capital in the City of Trenton, and even New York City. Many of the towns proximate to the Delaware River have also become tourist destinations or second-home communities.

The project area also adjoins areas that have experienced considerable growth in recent years and are expected to experience continued growth. The I-95/I-295 Transportation Development District, which borders the project area to the east, is designated as a Regional Growth Area under the New Jersey Development and Redevelopment Plan. Recent developments at the Scotch Road Interchange (NJ Exit 3) on I-95 include 1.7 million square feet of office development for Merrill Lynch and related interchange improvements to accommodate this development. I-95 in Pennsylvania also provides accessibility to neighboring Newtown Township, designated for residential growth under a joint regional plan with neighboring townships, and Middletown Township, one of the fastest growing townships in the region. The trend of New Jersey workers residing in Pennsylvania is reflected in highly directional traffic flows on the I-95/Scudder Falls Bridge.

During the morning and evening peak hours, I-95 experiences frequent backups and delays related to commuter traffic, affecting the quality of life for area residents and commuters. Peak travel directions on I-95 are northbound in the A.M. peak and southbound in the P.M. peak, reflecting the fact that 13% of Bucks County residents work in Mercer County, compared to 4% of Mercer County residents that work in Bucks County. With projected growth in regional employment and population, delays on the I-95/Scudder Falls Bridge, which is already operating above capacity, are expected to increase in future years without improvements.

1.3 Site Description and Surrounding Land Use

Existing land use in the project area is mixed and includes residential, farmland, institutional, and commercial uses. The Pennsylvania segment of I-95 adjoins largely suburban development, consisting primarily of residential subdivisions, and public and privately owned farmlands. In accordance with the Lower Makefield Township zoning ordinances, many of these developments incorporated visual buffers, including berms and landscaping, that shield I-95 from most of the adjoining neighborhoods.

In New Jersey, the north (southbound) side of I-95 primarily adjoins single-family homes or attached multi-family residential complexes. Many of these residential properties are screened from view from I-95 by fencing, a 4,000-foot noise barrier along the southbound travel lanes, or landscaping. An undeveloped parcel of land adjoining the north side of I-95 and west side of Bear Tavern Road is proposed to be developed as an age-restricted residential complex. The south side of I-95 consists largely of public lands.

Commercial development along the I-95 project area is limited to the Lower Makefield Corporate Center at the PA Route 332 Interchange, at the westerly limit of the project, and the Mountain View Office Park at the Bear Tavern Road Interchange at the easterly limit of the project.

1.3.1 *Demographics*

Table 1 presents population, housing, and income characteristics for the study area communities, compared to the State and county as a whole.

Overall, Mercer County is forecasted to experience a 15% growth in population. From 2000 to 2025, the population of Mercer County was forecasted to grow by over 50,000 persons. Population growth in Ewing Township is expected to increase by 8.43% by 2025, due in part to the built-up nature of the township and the expectation of the township that future development will consist largely of commercial or industrial development.

Table 1—Demographics of Ewing Township, New Jersey

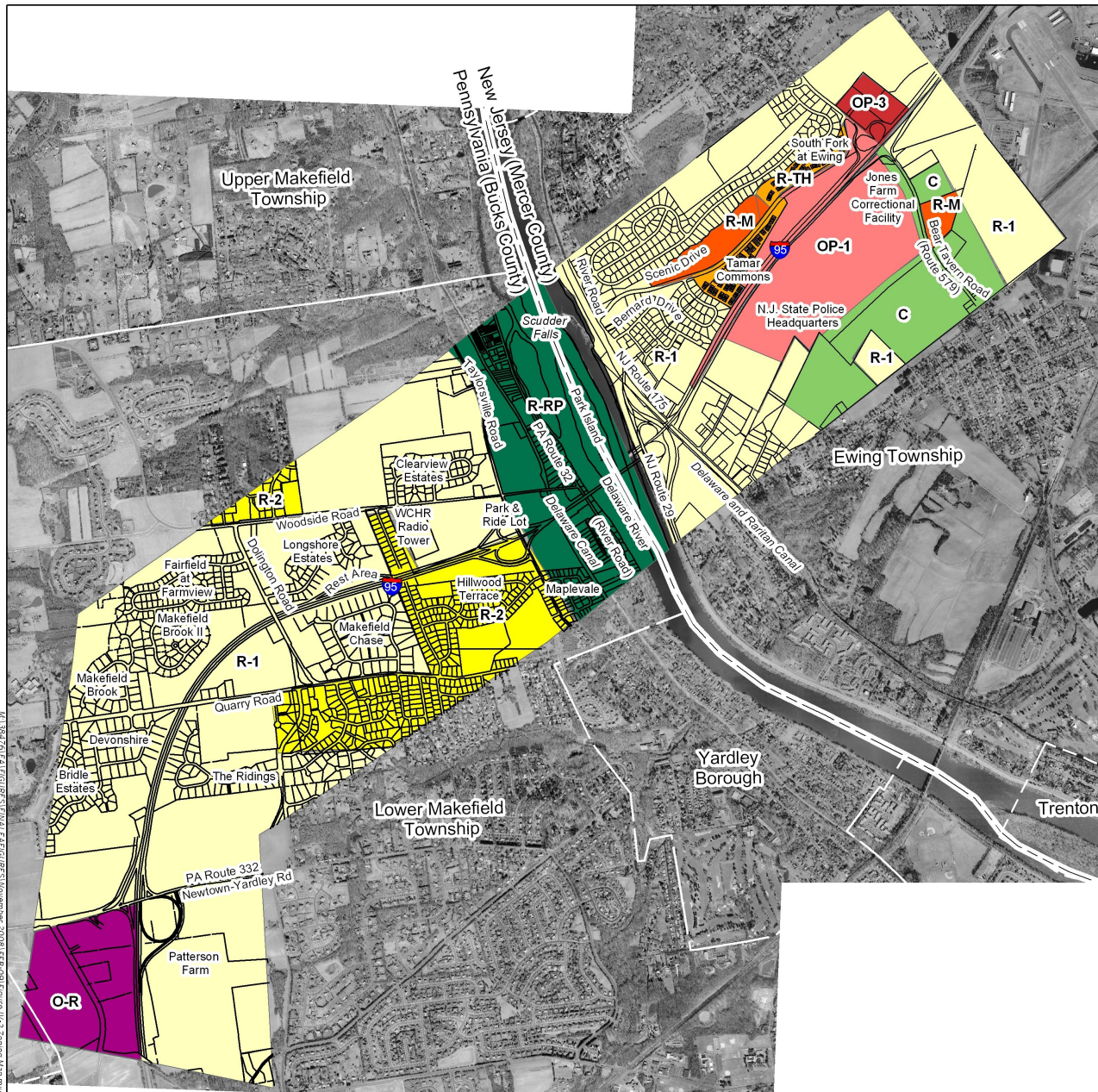
	New Jersey	Mercer County	Ewing Township
1990-2025 POPULATION AND EMPLOYMENT TRENDS			
	Population/Employment	Population/Employment	Population/Employment
1990	7,730,188/6,129,923	325,824/220,592	34,185/32,234
2000	8,414,350/6,546,155	339,650/236,650	35,707/32,550
% Change 1990-2000	8.85%/6.79%	4.24%/7.28%	4.5/0.98%
2025	—	390,800/269,900	38,717/34,417
% Change 2000-2025	—	15.06%/14.05%	8.43%/5.74%
OTHER EMPLOYMENT AND POPULATION CHARACTERISTICS			
Educational Attainment (High School Degree)	82.1%	81.8%	84.1%
Educational Attainment (College Degree)	29.8%	34.0%	29.1%
Persons per Household (2000)	2.68	2.62	2.45
% Unemployment (1999)	4.52%	3.9%	4.6 (2000)
Median Housing Value (2000)	\$170,800	\$147,400	\$136,700
Median Household Income (1999)	\$55,146	\$56,613	\$57,274
Per Capita Income (1999)	\$27,006	\$27,914	\$24,268
Source: U.S. Census Bureau, 1990, 2000; DVRPC Year 2025 County and Municipal Population and Employment Forecasts; NJ Department of Labor Unemployment Statistics, April 2004; Bureau of Labor Statistics, 1999.			

1.3.2 Zoning

The portion of the proposed project area located within New Jersey traverses four Ewing Planning Zones. The southern and northern ends of the project area are located in a residential zone (R-1), the middle portion of the project area is located within an office park district (OP-1), the northeastern corner is abutted by a conservation zone (C), and the northwestern corner is abutted by an office park zone (OP-3). Ewing Township zoning in the vicinity of the project area are shown on Figure 3.

1.3.3 Existing Traffic Patterns

Two-way average annual daily traffic (AADT) on I-95 in the study area ranged from 53,900 vehicles per day to 63,300 vehicles per day in 2003. Heavy vehicle traffic comprises approximately 6% of total vehicular traffic. Table 2 summarizes these AADT volumes for each mainline segment in the study area and also includes future year 2030 AADT without any improvements (No Build) for comparison. The highest volume segment is the segment west of the PA Route 332 Interchange, which is immediately west of the project area. At 59,500 vehicles per day, the I-95/Scudder Falls Bridge has the highest AADT in the project area.



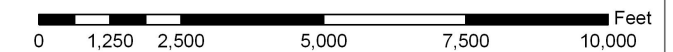
Legend:

Lower Makefield Township, PA

- R-RP - Residential-Resource Protection District
- R-1 - Residential Low-Density
- R-2 - Residential Medium-Density
- O-R Office Research

Ewing Township, NJ

- R-1 - Residential District-Single Family Detached
- OP-1 - Office Park District
- OP-3 - Office Park Zone
- C - Conservation
- R-M - Residential Multi Family Apartments
- R-TH - Residential Single Family Attached Townhouse



**I-95/Scudder Falls
Bridge Improvement Project
Environmental Assessment**

**Zoning Map
Figure 3**



Table 2—I-95 2003 and 2030 No Build Average Annual Daily Traffic

I-95 Mainline	Limits	Base 2003	2030 No Build	% Change
		AADT (vpd)	AADT (vpd)	
I-95 west of project area	US 1 (Exit 46) to PA 332 (Exit 49)	63,300	77,400	22.3%
I-95	PA 332 (Exit 49) to Taylorsville Road (Exit 51)	53,900	68,100	26.3%
I-95/ Scudder Falls Bridge	Taylorsville Road (Exit 51) to NJ 29 (Exit 1)	59,500	76,500	28.6%
I-95	NJ 29 (Exit 1) to Bear Tavern Road (Exit 2)	57,100	76,000	33.1%
I-95 east of project area	Bear Tavern Road (Exit 2) to Scotch Road (Exit 3)	57,500	76,900	33.7%

Source: I-95/Scudder Falls Bridge Improvement Project Environmental Assessment, DRJTBC, October 2009.

Future traffic projections for the year 2030 were developed by the DVRPC, based on projected regional growth and county-wide development. In 2030, with no improvements to I-95, two-way AADT on I-95 in the study area is projected to range from 68,100 vehicles per day to 77,400 vehicles per day (Table 2). Growth in AADT volumes from 2003 to 2030, under the No Build condition, are forecasted to range from 22% to 34% along the I-95 mainline, with the higher growth rates occurring in the eastern sections of the study area. At 76,500 vehicles per day, the I-95/Scudder Falls Bridge is projected to continue to have the highest AADT in the project area under the 2030 No Build condition. The adjoining segments east and west of the project area are projected to have even higher AADT volumes under the 2030 No Build.

The I-95/Scudder Falls Bridge accommodates high volumes of traffic that are highly directional during peak traffic periods. Peak flow directions are northbound in the A.M. peak and southbound in the P.M. peak, reflecting the predominant commuting pattern of Bucks County or Pennsylvania residents traveling to employment destinations in Mercer County or New Jersey. Northbound traffic in the 2003 A.M. peak period accounts for 67% to 79% of the total I-95 traffic, and 68% to 74% of the P.M. peak traffic is heading southbound.

The directionality of peak hour traffic flows on I-95 is projected to continue in future years, but it will be somewhat less pronounced. Northbound traffic flows in the 2030 A.M. peak are projected to range from 61% to 71% of the total two-way traffic. The 2030 P.M. southbound peak flows are projected to comprise 62% to 65% of total two-way traffic on I-95. This reduced directionality in future years may reflect capacity constraints in the peak flow directions. Traffic growth in peak flow directions from 2003 to 2030 is estimated to range from 12% to 29%, compared to 47% to 77% traffic growth in the non-peak flow directions (Table 3).

Table 3—I-95 2003 and 2030 No Build Peak Hour Traffic Volumes

I-95 Mainline Direction		Location	2003 Base		2030 No Build		% Change 2003 to 2030	
			A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
I-95 west of project area	NB	US 1 (Exit 46) to PA 332 (Exit 49)	2,834	2,265	3,500	2,910	23.5%	28.5%
	SB		2,440	3,523	3,150	3,940	29.1%	11.8%
Total			5,274	5,788	6,650	6,850	26.1%	18.4%
I-95 NB		PA 332 (Exit 49) to Taylorsville Road (Exit 51)	3,191	1,594	3,750	2,350	17.5%	47.4%
I-95 SB			1,540	3,402	2,440	3,920	58.4%	15.2%
Total			4,731	4,996	6,190	6,270	30.8%	25.5%
I-95/ Scudder Falls Bridge	NB	Taylorsville Road (Exit 51) to NJ 29 (Exit 1)	5,111	1,570	5,810	2,500	13.7%	59.2%
	SB		1,394	4,183	2,460	4,970	76.5%	18.8%
Total			6,505	5,753	8,270	7,470	27.1%	29.9%
I-95 NB		NJ 29 (Exit 1) to Bear Tavern Road (Exit 2)	4,744	1,419	5,540	2,460	16.8%	73.4%
I-95 SB			1,405	4,074	2,480	4,930	76.5%	21.0%
Total			6,149	5,493	8,020	7,390	30.4%	34.5%
I-95 east of project area	NB	Bear Tavern Road (Exit 2) to Scotch Road (Exit 3)	4,500	1,745	5,300	2,740	17.8%	57.0%
	SB		1,578	3,605	2,580	4,500	63.5%	24.8%
Total			6,078	5,350	7,880	7,240	29.7%	35.3%







Source: I-95/Scudder Falls Bridge Improvement Project Environmental Assessment, DRJTBC, October 2009.

A license plate matching survey conducted on December 16, 2003 during peak hours demonstrated that the predominant movements on the I-95/Scudder Falls Bridge are through trips (trips made from and to points outside the study area) or regional movements (trips made between points within the study area and points outside the study area). Through and regional trips account for 90.2% of northbound A.M. peak trips and 94.2 % of P.M. peak southbound traffic.

The I-95/Scudder Falls Bridge also accommodates the highest peak hour traffic volumes in the project area, as shown in Table 3. For comparison, Table 3 also includes future year 2030 peak hour traffic volumes without any improvements (No Build).

Traffic operations are evaluated according to traffic levels of service (LOS), on a scale ranging from LOS A (free flow traffic with little or no delays) to LOS F (severe congestion with considerable delays) (Table 4). In 2003, traffic congestion resulted in two hours of LOS E or F on the I-95/Scudder Falls Bridge during peak hours in the predominant traffic flow direction (northbound in the A.M. and southbound in the P.M.).

Table 4—Definition of Traffic Levels of Service

LOS	Definition	Typ. Illustration
Acceptable	A Represents a free-flow operation. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	
	B Represents reasonably free-flow operation. The ability to maneuver within the traffic stream is slightly restricted.	
	C Represents a traffic flow with speeds near or at free-flow speed of the freeway. Ability to maneuver within the traffic stream is noticeably restricted.	
	D Represents speeds that begin to decline with increased density. Ability to maneuver within the traffic stream is noticeably limited.	
Unacceptable	E Represents operation at its capacity. Vehicles are closely spaced within the traffic stream and there are virtually no useable gaps to maneuver.	
	F Represents a breakdown of vehicle flow. This condition exists within queues forming behind the breakdown points.	

While base (2003) operating conditions are undesirable on two project segments that coincide with the I-95/Scudder Falls Bridge, design year (2030) operating conditions are projected to be undesirable on five segments of I-95 in or adjoining the project area (Table 5). The projected future increase in traffic volumes will result in severe congestion in 2030 along an additional two miles of I-95 extending west of the bridge in the northbound direction during the A.M. peak and an additional five miles extending further west of the bridge in the southbound direction during the P.M. peak. Severe traffic congestion (LOS E or F) is projected to extend west to PA Route 332 in the northbound direction during the A.M. peak and will extend west to U.S. Route 1 in the southbound direction in the P.M. peak. Although the duration of congestion has not been estimated for the design year, the duration of severe congestion peak hours can also be expected to lengthen from the current duration of two hours of LOS E or F during the morning and evening peak.

Table 5—I-95 Mainline Levels of Service: 2003 and 2030 No Build Peak Hours

Location	Direction	2003 Base		2030 No Build	
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
Between Exit 46 (Route 1 Interchange) & Exit 49 (PA Route 332 Interchange)	NB	C	C	D	C
	SB	C	D	D	E
Between Exit 49 & Exit 51 (Taylorsville Road Interchange)	NB	D	B	E	C
	SB	B	D	C	E
Between Exit 51 & Exit 1 (NJ Route 29 Interchange)—I-95/Scudder Falls Bridge	NB	F	B	F	C
	SB	B	E	C	F
Between Exit 1 & Exit 2 (Bear Tavern Road Interchange)	NB	C	A	D	B
	SB	A	C	B	D
Between Exit 2 & Exit 3 (Scotch Road Interchange)	NB	C	A	D	B
	SB	A	C	B	C

Source: I-95/Scudder Falls Bridge Improvement Project Environmental Assessment, DRJTBC, October 2009.

= Acceptable LOS, A-D

= Undesirable LOS, E, F

With higher traffic volumes and no improvements to existing geometric deficiencies on the I-95/Scudder Falls Bridge and adjoining closely spaced ramp merges at NJ Route 29 and Taylorsville Road, the number of traffic incidents on the bridge can be expected to increase in future years. Existing deficiencies contribute to a crash rate that is higher than adjacent segments of the I-95 mainline. A crash analysis was performed using crash records for I-95 from 1999 to 2001 that were obtained from the PennDOT, the DRJTBC, and the NJDOT. The I-95 segments analyzed experienced a total of 314 crashes over the 3-year period from 1999 to 2001, or an average of roughly 105 crashes per year. Crash clusters for this 3-year period along I-95 are shown on Figure 4.

Table 6—I-95 Project Area Crash Analysis

Segment	Starting Point	Ending Point	Distance (Miles)	Crashes Per Year	Crashes Per Million Vehicle Miles Traveled	PA Statewide Rate	NJ Statewide Rate	Above/ Below State Rate
Extending from northbound off-ramp west of PA Route 332 to Dolington Road								
1	Northbound Exit Ramp for PA 332 (PA)	Dolington Road (PA)	1.5	16.33	0.63	0.47	N/A	Above
Dolington Road to Taylorsville Road Interchange								
2	Dolington Road (PA)	Southern end of Scudder Falls Bridge (PA)	1.12	15.00	0.78	0.47	N/A	Above
I-95/Scudder Falls Bridge								
3*	Southern end of I-95/ Scudder Falls Bridge (PA)	Northern end of I-95/ Scudder Falls Bridge (NJ)	0.227	10.00	2.19	0.47	N/A	Above
						N/A	3.76	Below
NJ Route 29 Interchange to roughly 1.5 miles beyond Bear Tavern Road Interchange								
4	Northern end of I-95/ Scudder Falls Bridge (NJ)	1.5 miles North of Bear Tavern Road (NJ)	3.03	63.33	1.13	N/A	1.66	Below
Sources: PENNDOT Crash Information Systems and Analysis Division, NJDOT Crash database published on NJDOT Official Website Segment 3 (I-95/Scudder Falls Bridge Segment) connects Pennsylvania and New Jersey. Thus, the crash rate for the Segment 3 has been compared with average statewide rates for both the states.								

1.4 Cultural and Historic Resources

Cultural resources in the project area include precontact and buried deposits along the Delaware River, the D&R Canal, and historic buildings and properties that date back to as early as the first quarter of the eighteenth century. The historic and archaeological resources in the project area are described in the following sections.

Historical Resources

For the purposes of historic assessments, an Area of Potential Effect (APE) was defined as the area that may be either directly or indirectly affected by the project.

The historic properties within the APE include the D&R Canal, which is listed in the National Register. Additionally, all buildings over 50 years of age were evaluated as part of the study to identify potentially historically significant architectural resources. A total of 27 properties were surveyed within the APE, three of which were determined to be eligible for

National Register listing.

The historic resources that have been identified within the APE, as shown in Table 7, are as follows:

Table 7—Historic Resources in the Area of Potential Effect

Property Name	Description	National Register (NR) Eligibility Status	NR Listing Criteria
Delaware and Raritan Canal, Ewing Township	Construction began in 1830. Includes Belvedere & Delaware Railroad along former towpath.	NR Listed in 1973	A and C
Charles S. Maddock House, 1076 River Road, Ewing Township	Circa-1830 dwelling with Queen Anne style detailing	Determined NR eligible on December 10, 2008	C
New Jersey State Police Headquarters, Ewing Township	Constructed beginning in 1924	Determined NR eligible on December 10, 2008	A, B, C

Delaware and Raritan Canal: The D&R Canal opened in 1834 and is significant in the areas of commerce, engineering, and transportation. The Canal was constructed to transport freight between Philadelphia and New York across the “waist” of New Jersey and accommodated coal shipments. The portion of the D&R Canal extending north of Trenton and within the APE is known as the Feeder Canal. The Feeder Canal was constructed 22 miles from Bull’s Island near Stockton and Frenchtown to supply the main Canal in Trenton with water from the Delaware River. The planned dimensions of the Feeder Canal were 60 feet at the water line, 50 feet at the Canal bottom, and 6 feet deep. Movement of coal was also facilitated by construction in 1849 of the Belvedere and Delaware Railroad on the present location of the Canal towpath. The railroad was operational by 1855, and the railroad company assumed control of the railroad and Canal through a lease in 1871. The Canal closed in 1932 to 1933, when it was abandoned by the railroad company. The State took over management of the property in 1934 and assumed ownership in 1937, and the State Park was designated in 1974. The period of significance is 1830 to 1933. The historic boundary for the National Register historic district extends 300 feet on either side of the centerline of the Canal.

The Belvedere and Delaware (B&D) Railroad was determined to not be individually eligible for the National Register, but is a contributing element to the D&R Canal Historic District under Criterion A.

Coordination with State officials included a site walkover on May 24, 2005 that was attended by the State Historic Preservation Office (SHPO), the New Jersey Division of Parks and Forestry, the D&RCC, the New Jersey Water Supply Authority (NJWSA), and NJDOT. The project area includes the proposed I-95 and NJ Route 29 crossings of the

Canal; each includes a set of piers located within or adjoining the water although the NJ Route 29 bridge is not affected by this project.

Charles S. Maddock House, New Jersey: The Charles Maddock House, a 1.64-acre parcel, is located at the north end of the NJ Route 29 Interchange. The Charles S. Maddock house is significant as a notable example of the Free Classic subtype of the Queen Anne Style. The property is also eligible for its association with Charles S. Maddock. Charles S. Maddock garnered a modest amount of wealth with the success of his Trenton-based serving ware business during the late nineteenth and early twentieth centuries. The period of significance for this resource dates from its purchase by Maddock in 1902 until his death in 1933.

New Jersey State Police Headquarters (NJSPHQ): The historic portion of the complex consists of twelve buildings located approximately 500 feet south of I-95. Eight of the buildings located around a central courtyard date back to the initial construction in the mid-1920s. During the 1930s, the dormitory, gymnasium, and Bureau of Identification were added. Later construction on the site dates to the late 1940s and early 1950s. The NJSPHQ is significant as a unique collection of structures that remain in their original location and continue to reflect the developing organization, needs, and capabilities of the NJ State Police during the twentieth century. The boundary for the NJSPHQ encompasses an area of land that contains all buildings from the period of significance (1924-1958).

Temporary Construction Impacts to Historic Resources

Temporary construction activities will occur within the historical boundaries for the D&R Canal, but affected areas within the Canal historic district will be restored upon completion of construction.

Long-Term Impacts to Historic Resources

The proposed action will involve work at the D&R Canal for replacement of overpassing bridges. At the NJ Route 29 Interchange, the proposed action will result in a smaller interchange within the footprint of the existing interchange. The proposed design would also move the I-95 Bridge piers, which are currently situated at the edge of the Canal, outside of the Canal area. The I-95 Bridge will be widened at the Canal crossing by approximately 35 to 40 feet, and two additional bridges for the adjoining ramps would be constructed over the Canal. Each of these bridges would be approximately 40 feet wide and 120 feet long over the Canal. This work is determined to have an adverse effect on the D&R Canal.

The project will have no effect on other historic properties.

Mitigation of Impacts to Historic Resources

The concrete surfaces of the noise barriers, new bridge abutment walls and piers at the D&R Canal will be treated with an aesthetic finish to be agreed upon in coordination with the consulting parties during the final design of the project. The mitigation will include the

removal of existing bridge piers from their current location on the back slope of the D&R Canal, and piers for the new bridge will be located further back from the Canal. Further consideration will also be given, during final design, to minimize the footprint of the proposed bridge pier type. Coordination with historic resource and Canal agencies will continue during final design. Mitigation measures for aboveground historic resources have been stipulated in the Programmatic Agreement in accordance with Section 106 requirements. The Programmatic Agreement is included as Appendix D.

The removal of the piers from the D&R Canal will also be staged to minimize impacts and will be carried out in a manner that is sensitive to the materials and design of the earthen ditch and towpath. If it is determined that there may be stone walls that reinforce the prism or towpath present within the area of construction impacts, measures to protect the walls from heavy equipment will be undertaken during construction. To mitigate for the loss of integrity of the D&R Canal, the DRJTBC will make a donation to foster and support the interpretation of historic resources along the D&R Canal. Potential measures to minimize and mitigate for adverse effects have been outlined in the Programmatic Agreement.

Procedures and processes for further consultation/coordination with SHPO and for mitigation for archaeological and above ground resources will be described in the Programmatic Agreement. Changes or refinements in design may necessitate the need to adjust the APE in the future. Should the APE be adjusted or be modified, in consultation with SHPO and consulting parties, preparation of supplemental documentation on eligibility and effects assessments may be necessary.

Archaeological Resources

A Phase IA Investigation was conducted for the site which included background research and review of prior regional studies and geoarchaeology investigations to characterize landforms in the project area. The Phase 1A geoarchaeology investigations were performed in January 2004 to characterize the relative integrity, extent, and ages of soils within the terraces adjoining the Delaware River, specifically the older, higher river terraces that are considered to have a higher potential for archaeological sensitivity. Eight geoprobes were taken as part of the Phase 1A study in areas proximal to the Delaware River.

The landforms in the project area, as confirmed by Phase 1A geoarchaeology investigations, generally include:

- **Park Island:** Situated at elevations of 20 to 25 feet above sea level, the geologic age of the island is uncertain, but the island appears on the earliest historic maps. The lower (downstream) end of the island may have accumulated as recently as the nineteenth century.

- **T1 Terrace and Floodplain:** Defined as the active floodplain and lower river terraces adjoining either side of the Delaware River, the T1 Terrace extends between 20 to 30 feet above sea level. The T1 Terrace is considered to have low potential for archaeological sensitivity, and the geologic age of the lowest terrace is comparatively recent, as confirmed by Phase I investigations. In the early nineteenth century, a channel along the New Jersey side of the river was constructed to supply industrial uses in Trenton (Trenton Water Power Channel) at the present location of the T1 Terrace. This channel was visible during the I-95/Scudder Falls Bridge construction, but was filled in by highway construction.
- **Slope to Older T2 Terrace:** The slope to the T2 Terrace extends between 30 to 36 feet above sea level.
- **Older T2 Terrace:** The older, higher T2 Terrace extends 36 to 40 feet above sea level. These high terraces (T2 and/or T3) offer some archaeological potential, but has already been impacted in the project area by the original construction of the NJ Route 29 Interchange. However, those portions of the T2 Terrace that remained undisturbed during construction would be expected to have an archaeological sensitivity comparable to that in Pennsylvania. The D&R Canal was constructed along the transition between the T2 and a higher (older) terrace or upland formation. The T3 Terrace, west of the D&R Canal, is the highest terrace above the T2 Terrace extending to 60 feet above sea level, yielding evidence of precontact occupation.
- **Uplands:** The uplands extend west to the PA Route 332 Interchange in Pennsylvania and east to the Bear Tavern Road Interchange in New Jersey. The earliest historic occupation near the project area was located on the higher elevation uplands.

Phase IB investigations included further investigation in May to June 2004 of the high terraces (T2/T3). This work included test pitting and excavating a deep test unit to confirm the degree of intact buried deposits with potential for archaeological sensitivity, as shown in Table 8. Additional Phase IB investigations were performed in winter/spring 2005 and fall 2005 at areas potentially affected by the project in the area along I-95 extending west to Taylorsville Road and east to the Bear Tavern Road Interchange.

The T1 Terrace along the Delaware River was not tested, as it was determined to be relatively recent in age and to have little or no potential for precontact period resources.

Temporary Construction Impacts to Archaeological Resources

Two types of impacts from project construction are anticipated at the T2 Terrace. Shallow impacts (less than about 3.3 feet) may arise from general construction activities, construction equipment, and permanent or temporary utility installation. In addition, deep (more than 3.3 feet) impacts would be confined to pier and abutment locations and any deeply buried drainage or utility structures.

Park Island was not investigated for archaeological sensitivity due to difficulty accessing the island and because no new bridge piers are proposed on the island. A pier for the existing bridge is located on the island, and this will be removed as part of the project. The construction of the proposed causeway will require additional Phase I investigations of Park Island, and additional investigations may also be required for the Trenton Water Power Channel if a new bridge pier or other action will impact the buried remnants of the channel.

Long-Term Impacts to Archaeological Resources

The proposed action will involve work in several areas considered to have a high potential for encountering archaeological resources. Areas where excavations are proposed within intact portions of the historic Delaware River terraces will require further archaeological investigations, which is restricted to the southern portions of the NJ Route 29 Interchange that may have been undisturbed by prior highway construction. Project impacts anticipated at each location are addressed in Table 8.

Table 8 summarizes the archaeological resources in the project area, the status of investigations, and anticipated impacts to these areas. The design of the project and limits of work will be refined during final design, and additional archaeological investigations will be required for those areas that will be affected by project construction, as shown in Table 8. Phase I excavations will occur at the Trenton Water Power Channel and Belvidere and Delaware Railroad bed in New Jersey if project design and construction plans will impact this location. Additional investigations may need to be performed on Park Island to inventory resources potentially affected by causeway construction. Design alternatives under consideration include retention basins in the NJ Route 29 Interchange near the Delaware Canal and D&R Canal which may require supplemental archaeological investigation.

Phase III archaeological data recovery is currently being conducted at one site in the area of the NJ Route 29 Interchange.

Table 8—Summary of Phase I Archaeological Investigations

Property	Location/ Landform	Phase I Study	Archaeological Results	Project Impact	Further Study
Park Island	Delaware River	Research	No testing	Causeway proposed	Phase I needed
T1 Terrace, PA-NJ	Low Terrace	Geoarch.	Recent deposits	Causeway proposed	None
Trenton Water Power Channel	T1 Terrace in NJ	Research	No testing	Pier proposed nearby	Record if impacted
Delaware & Raritan Canal NJ	T2/3 Terrace	Research Geoarch.	National Register District	Pedestrian/bicycle facility connection to towpath	Study if impacted
Belvidere & Delaware RR	T2/3 along D & R Canal	Research	No testing; rail bed noted in past	None proposed	Record if impacted
NJ 29 Interchange	T2/T3 Terrace adjoining I-95	Research	Disturbed but deep potential	Retention basins	Phase I in south loop
28Me360 West, NJ	NJ 29 Interchange T2 Terrace	1 TU	19 th century and precontact period resources	NJ Route 29 Interchange	Phase III recovery
28Me360 Center, NJ	NJ 29 Interchange T2 Terrace	1 TU	19 th century and precontact period resources	NJ Route 29 Interchange	Phase II if impacted
28Me360 North, NJ	T2 Terrace east of NJ 29	21 STP 1 TU	Farmed soils, historic and precontact period resources	None proposed	No further study
Area NJ 40	I-95 roadside	4 STP	Disturbed	In ROW	Not required
Area NJ 80 near DeGrave	I-95 roadside	5 STP	Disturbed; 20 th Century artifacts	In ROW	Not required
Area NJ 30	I-95 roadside	5 STP	Farmed soils	In ROW	Not required
Area NJ 50	I-95 roadside	5 STP	No artifacts	In ROW	Not required
Area NJ 70	I-95 roadside	5 STP	No artifacts	In ROW	Not required
Area NJ 90	I-95 roadside	5 STP	No artifacts	In ROW	Not required
Area NJ 110	I-95 roadside	5 STP	Disturbed	In ROW	Not required

Source: I-95/Scudder Falls Bridge Improvement Project Environmental Assessment, DRJTBC, October 2009.

Mitigation of Impacts to Archaeological Resources

A Programmatic Agreement has been developed, outlining provisions for areas potentially affected by the project where archaeological sensitivity is considered to be high. Phase III archaeological data recovery and documentation and additional Phase I and Phase II archaeological investigations for impacted areas will be performed under the Programmatic Agreement. A copy of the executed Programmatic Agreement is included as Appendix D.

1.5 Site Geology, Hydrology, and Soils

Geology

The project area is located in the Piedmont Physiographic Province and is underlain by the Triassic Lockatong Argillite and Stockton Formations. The Lockatong Formation is comprised of red, dense sedimentary rocks of the Newark Group. Within Mercer County, Lockatong Argillite is approximately 2,900 feet thick and forms one of the highest terrains in the county, reaching elevations of approximately 200 feet. The formation outcrops in the Delaware River at Scudder Falls and on I-95 near the Bear Tavern Road Interchange. The Stockton Formation consists of red, grey, and brown shales and arkoses, with local arkosic conglomerates. In New Jersey, only the area containing the southern portion of the NJ Route 29 Interchange is underlain by the Stockton Formation.

The topography in the vicinity of the D&R Canal is flat to gently rolling, sloping from approximately 70 feet above mean sea level (msl) on the west side of the Canal to approximately 76 feet above msl on the east side.

Hydrology

Approximately 6,760 square miles drain to the Delaware River where it passes underneath the I-95 Scudder Falls Bridge. This watershed has a wide array of land uses and hydrologic features including several reservoirs which impound water upstream for various purposes. Since the completion of the Cannonsville Reservoir, there has been a reduction in the number of extreme flood events in the region, although recent flood events in 2005 and 2006 have stimulated public interest in the area of study.

Peak discharge data is available from USGS gage #01463500 Delaware River at Trenton, NJ, where data has been collected from 1897 to 2011. USGS records indicate that reservoir operations have affected the peak discharge values since 1955. The last reservoir of significant size to be constructed within the Delaware River watershed was completed in the late 1960s.

Soils

The project area in the vicinity of the Delaware and Raritan Canal is underlain by two soil types, Cut and Fill Land (Cg) and sandy subsoil variant Birdsboro soils (BnC).

The project area on the western side the Delaware and Raritan Canal consists entirely of Cut and Fill Land. This soil type consists of mixed gravelly and sandy materials which likely were brought in as fill material. The permeability of gravelly sand is rapid in most places unless compaction has occurred by the use of heavy equipment. This soil type is generally well drained, except those areas where thin deposits of gravelly sand were made over wet sites in which the water table is high.

The project area on the eastern side of the Delaware and Raritan Canal consists entirely of sandy subsoil variant Birdsboro soils. These soils are generally well drained, and were formed on stream terraces along the Delaware River and major tributary streams. The soil type within the project area is considered an erodible soil.

1.6 Community and Economic Conditions

1.6.1 State of New Jersey/Mercer County/Ewing Township Plans

Smart Growth, as defined by the New Jersey Office of Smart Growth, is defined as well-planned, well-managed growth that adds new homes and creates new jobs, while preserving open space, farmlands, and environmental resources. In New Jersey, planning at the statewide level is accomplished through the New Jersey State Development and

Redevelopment Plan. Under the State Plan, the majority of the project area west of Bear Tavern Road is designated as Suburban Planning Area (Planning Area 2), and areas east of Bear Tavern Road are within the Metropolitan Planning Area (Planning Area 1). These planning areas are identified in the State Plan as the areas where development or redevelopment should occur in the state. The exception to this zoning is the designation of the Mountain View Golf Course as park or natural area (Planning Area 5).

Additional regional or subarea planning is available through the designation of Transportation Development Districts (TDD). The New Jersey Transportation Development District Act of 1989 provides for the development of district-wide transportation investment plans as the basis for the assessment of fees for off-tract transportation improvements in high-growth areas. These districts allow public/private partnership in funding and implementing transportation improvements necessitated by growth.

In Mercer County, the TDD that has been designated for the I-95/I-295 corridor encompasses the three I-95 interchanges to the east of the project area: Scotch Road, Route 31, and the Federal City Road Interchanges. The 1986 Mercer County Growth Management Plan designated the I-95/I-295 TDD area for growth. The western portion of this area that includes the Merrill Lynch site, at the Scotch Road Interchange just east of the project area, was identified as a Regional Growth Area, while the residential eastern portion was identified as a Suburban Growth Area. Furthermore, under the New Jersey Development and Redevelopment Plan, the area along Scotch Road is identified as a potential Planned Regional Center. The planned improvements under the I-95/Scudder Falls Bridge Improvement Project would accommodate traffic flows emanating from and destined to this designated high-growth region along I-95/I-295. The Mercer County Growth Management Plan, amended January 12, 2000, states that: *"Clearly, the capacity of our County highway network is becoming increasingly inadequate to accommodate the demands being placed upon it..."* The Mercer County Highway Master Plan targets Level of Service (LOS) D during the peak hours as the minimum LOS to provide. The proposed action has been designed to provide LOS D during peak hours on I-95.

The Ewing Township Master Plan (Draft February 2006) states that: *"Some critical transportation investments could strategically enhance mobility and accessibility for residents and a reasonable level of development consistent with the land use plan... The township supports improving capacity of the [I-95/Scudder Falls] bridge, remedying interchange safety improvements and considering park and ride locations to reduce traffic in the area (there is a park and ride across the Delaware River on the Pennsylvania side)."*

In summary, the proposed project conforms to the New Jersey State Development and Redevelopment Plan, the Mercer County Growth Management Plan, and the Ewing Township Master Plan.

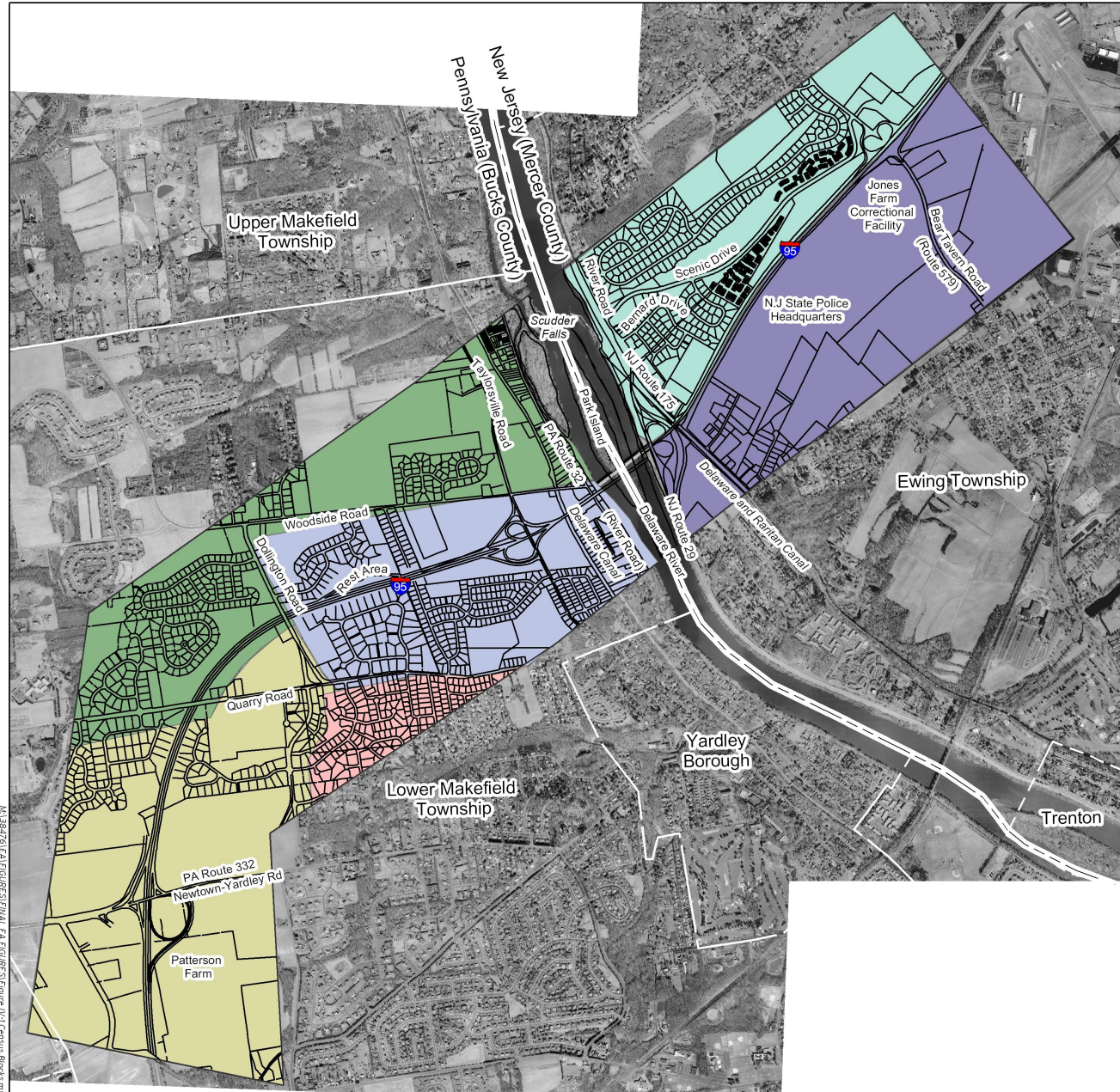
1.6.2 Title VI/Environmental Justice

Title VI of the Civil Rights Act of 1964 and related statutes assure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations", and the U.S. Department of Transportation Order on Environmental Justice (DOT Order 5610.2) set forth policies to ensure that federal actions do not disproportionately affect minority or low-income populations in the U.S.

Demographic data on environmental justice populations was collected for the smallest geographic unit for which data was available from the 2000 U.S. Census; census block groups (see Table 10 and Figure 5). In general, the environmental justice statistics for the census block groups in the study area are largely similar to or lower than that for the state or county as a whole. The exceptions were for statistics for elderly and disabled for several census block groups.

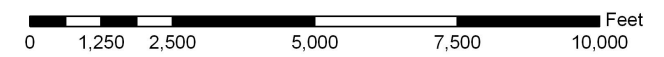
Table 9—Population and Employment Characteristics

	New Jersey	Mercer County	Ewing Township
1990-2025 POPULATION AND EMPLOYMENT TRENDS			
	Population/ Employment	Population/ Employment	Population/ Employment
1990	7,730,188/ 6,129,923	325,824/ 220,592	34,185/ 32,234
2000	8,414,350/ 6,546,155	339,650/ 236,650	35,707/ 32,550
% Change 1990-2000	8.85%/ 6.79%	4.24%/ 7.28%	4.5/ 0.98%
2025	—	390,800/ 269,900	38,717/ 34,417
% Change 2000-2025	—	15.06%/ 14.05%	8.43%/ 5.74%
OTHER EMPLOYMENT AND POPULATION CHARACTERISTICS			
Educational Attainment (high school degree)	82.1%	81.8%	84.1%
Educational Attainment (college degree)	29.8%	34.0%	29.1%
Persons per Household (2000)	2.68	2.62	2.45
% Unemployment (1999)	4.52%	3.9%	4.6 (2000)
Median Housing Value (2000)	\$170,800	\$147,400	\$136,700
Median Household Income (1999)	\$55,146	\$56,613	\$57,274
Per Capita Income (1999)	\$27,006	\$27,914	\$24,268
Source: U.S. Census Bureau, 1990, 2000; DVRPC Year 2025 County and Municipal Population and Employment Forecasts; NJ Department of Labor Unemployment Statistics, April 2004; Bureau of Labor Statistics, 1999.			



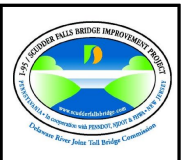
Legend:

- Pennsylvania**
Census Tract 1055.01
- Census Block Group 1
- Census Block Group 2
- Census Block Group 3
- Census Block Group 4
- New Jersey**
Census Tract 37.06
- Census Block Group 2
- New Jersey**
Census Tract 37.05
- Census Block Group 3



**I-95/Scudder Falls
Bridge Improvement Project
Environmental Assessment**

**Census Block Groups
Figure 5**



M:\384761\EA\FIGURES\FINAL_EA\FIGURES\Figure IV-1 Census Blocks.mxd

In Ewing Township, the percentage of persons in poverty (6.4%) for Census Tract 37.06, Block Group 2 (north of I-95), although lower than that for the state and county as a whole, was higher than that for Ewing Township as a whole. The percentage of non-whites for this block group, at 27.3%, although higher than the adjoining block group south of I-95 (12.2%), is lower than that for the state, county and township as a whole. The disability status for persons 5 years or older, at 21%, was also higher than the state, county, and township as a whole for Census Tract 37.06, Block Group 2 in Ewing Township, which is north of I-95. Most of this area is protected by a noise barrier north of, and along the southbound lanes of, I-95.

At 18.9%, the percentage of persons over 65 years of age was slightly higher in Census Tract 37.05, Block Group 3 in Ewing Township than for the state, county, and township as a whole. The portion of this block group that adjoins the south side of I-95 is largely occupied by the Villa Victoria Academy and state property and does not include many residential properties.

Table 10—Title VI/Environmental Justice Characteristics

Demographic Categories	NJ	Mercer County	Ewing Township	Census Tract 37.06 Block Group 2	Census Tract 37.05 Block Group 3
Total Population	See Table 9		34,400	2,561	1,207
% Persons in Poverty (1999)	8.5%	8.1%	5.5%	6.4%	0.8%
% Non-Whites	27.45%	34.6%	31.6%	27.3%	12.2%
% Over 65	13.2%	12.6%	15.7%	9.2%	18.9%
% Persons with 1 or More Disabilities Items Imputed (5 yrs. of age or older)	18%	17.42%	15.36%	21.0%	13.7%
% Employment Disabilities Imputed (16 to 64 years of age)	10.75%	13.37%	9.72%	10.6%	12.7%

Source: U.S. Census Bureau, 2000.

Research was performed to determine if New Jersey had developed policies and criteria for defining Environmental Justice communities in New Jersey. Interviews with municipal officials were also conducted to aid in identifying the locations of environmental justice populations.

In New Jersey, Executive Order 96 established an Environmental Justice (EJ) Task Force and EJ Advisory Council within NJDEP and also established a petition process for designating EJ communities. Ewing has not been designated an EJ Community. The Ewing Township planning official was consulted regarding disadvantaged populations in the study area, and the following populations were identified:

- The proposal for an age restricted residential housing development along the north side of I-95 at the Bear Tavern Road Interchange, north of I-95, is currently on hold.
- A multi-story apartment complex along the north side of Scenic Drive (which is north of I-95) was identified as generally low to moderate housing with a large minority base. This area is at least 500 feet north of I-95.
- The only EJ population noted south of I-95 is outside and south of the project by approximately 1 mile.

The one area identified by the Ewing Township planning official as an area of potential concern (i.e., the multi-story apartment complex on Scenic Drive) is located in an area along I-95 that is protected from traffic noise by an existing noise barrier.

1.7 Required Permits and Approvals

The following permits and approvals are required for implementation of this project:

- United States Army Corps of Engineers (USACE)
 - National General Permit No. 1 – Aids to Navigation
 - National General Permit No. 13 – Bank Stabilization
 - National General Permit No. 25 – Structural Discharges
 - National General Permit No. 33 – Temporary Construction Access and Dewatering
- NJDEP – Flood Hazard Area Permit
- NJDEP - Freshwater Wetlands Individual Permit
- NJDEP - Water Quality Certification
- NJDEP – New Jersey Pollution Discharge Elimination System (NJPDES) General Permit for Stormwater Discharge Associated with Construction Activity
- NJDEP – Green Acres Program Approval
- NJDEP SHPO – Project Authorization under the NJ Register of Historic Places Act
- Delaware River Basin Commission Approval
- D&RCC – Certificate of Approval
- Pennsylvania Department of Environmental Protection (PADEP) – Chapter 105 Water Obstruction and Encroachment Permit (Waiver #6, General Permit #7 and General Permit #11)
- PADEP – Section 401 Water Quality Certification
- Pennsylvania Historical and Museum Commission (PHMC) Approval
- PADEP – NPDES Construction Permit
- Bucks County Conservation District – Erosion and Sediment Control Plan

2.0 PROJECT IMPACT ASSESSMENT

The following provides a description of the temporary and permanent physical impacts to the site which would result from the proposed project.

2.1 Public Health, Safety and Welfare

The existing Scudder Falls Bridge is approximately 50 years old and does not have the required structural capacities for the present and future traffic conditions. The existing bridge superstructure (the two main beams under the concrete deck) is of a non-redundant type. A non-redundant bridge generally has only two primary load-carrying members (beams), where the failure of one of these members results in catastrophic collapse of the bridge. The design of non-redundant structures is no longer permitted nationwide by the FHWA and state departments of transportation. In addition, the bridge lacks shoulders and breakdown lanes and does not meet current minimum highway geometric design standards. The current configuration does not provide adequate shoulder areas to provide refuge for drivers in the event of a breakdown, emergency, crash, or other incidents.

Geometric deficiencies along the I-95 project area also include the configuration of adjoining interchanges. In particular, the NJ Route 29 Interchange adjoining the bridge, has a scissors configuration, with multiple ramp merges and at-grade intersections, and is complex and confusing for drivers.

The lack of, or inadequate configuration of, deceleration and acceleration lanes from the adjoining interchanges, combined with inadequate spacing of interchange ramp merges, creates potentially unsafe weaving and merging/diverging patterns on the bridge. The NJ Route 29 Interchange also marks the transition on I-95 from three travel lanes in each direction to two lanes in each direction approaching the I-95/Scudder Falls Bridge. At the on-ramp from NJ Route 29 to I-95 southbound, the lack of an acceleration lane requires vehicles to come to a complete stop at a stop sign at the end of the ramp, before merging directly into mainline traffic operating at full speeds on the bridge itself.

The proposed action is designed to improve traffic operational conditions and safety conditions on the Scudder Falls Bridge, I-95 mainline, and adjoining ramps. A new, wider bridge will be constructed upstream of the existing I-95/Scudder Falls Bridge over the Delaware River. Provision of auxiliary lanes and adequate acceleration and deceleration lanes on the I-95/Scudder Falls Bridge will contribute to safe entry and exit from adjoining interchanges. The proposed addition of full width inside and outside shoulders on the bridge, which currently lacks adequate breakdown lanes, will allow adequate pullover areas for motorists in the event of an accident, breakdown, or other incident. The interchange operations at the Taylorsville Road and NJ Route 29 Interchanges will be safer with improved interchange and ramp geometrics that have been designed to meet applicable American Association of State Highway Transportation Officials (AASHTO), PennDOT, and

NJDOT design criteria.

2.2 Water Quality and Quantity

The proposed project is located within the HUC14 Mercer (Calhoun Street to Jacobs Creek) Subwatershed ID 11CA08. The Delaware River, Delaware and Raritan Canal, two unnamed tributaries to the Delaware and Raritan Canal, and Reeder's Creek are all present within the project area.

The project will create 20 acres of additional impervious surface in Pennsylvania and New Jersey due to the addition of one lane and a wider left shoulder in each direction of I-95 and due to modifications at the Taylorsville Road interchange in PA and the NJ Route 29 interchange in NJ. The impervious areas are the existing grass median on I-95 which will be converted to impervious areas to accommodate the necessary lanes and wider shoulders.

Delaware River and Tributary

The section of the Delaware River at the I-95/Scudder Falls Bridge is approximately seven miles above the head of tide, which is located south at the Trenton-Morrisville Bridge, and is considered a freshwater river in the project area. The Delaware River is a source of potable water supply for nearly 15 million people and is used for many recreational uses, including fishing and boating.

According to the Delaware River Basin Commission and the New Jersey Department of Environmental Protection's (NJDEP's) N.J.A.C. 7:9B - Surface Water Quality Standards, the portion of the Delaware River within the project area is classified as Zone 1E. This zone has many designated uses, including agricultural water supplies, industrial water supplies after reasonable treatment, maintenance and propagation of resident game fish and other aquatic life, public water supplies after reasonable treatment, recreation, spawning and nursery habitat for anadromous fish and wildlife uses.

Reeders Creek, which is approximately 1.4 miles in length, is a direct tributary to the Delaware River, although only a small portion passes through the project area at the NJ Route 29 Interchange area. Reeders Creek is classified under New Jersey surface water quality standards as FW2-NT. There are no waterways in the project area classified as Category One, Special Protection Waters.

Permanent impacts in the Delaware River are associated with emplacement of the proposed bridge piers. The proposed action will result in five new bridge piers within the Delaware River, permanently affecting approximately 0.4 acre of river bottom. The existing pier stems will be removed to a depth of two to three feet below the river bed elevation. The existing bridge has seven piers in the river. The removal of the existing seven piers will restore approximately 0.1 acre of river bottom, which would partially offset the loss of

river bottom for the new bridge piers, resulting in a net permanent loss of approximately 0.3 acre of river bottom. The proposed action will result in a wider bridge over the Delaware River, with an increase in bridge width of approximately 112 feet and an increase in shading of approximately 3.1 acres. During final design, the bridge and pier design will be refined.

Indirect project effects are related to discharges to project area waterways. Modifications to the bridge drainage system will affect discharges to the Delaware River. The existing bridge currently discharges highway runoff through scuppers directly to the river below. This is a standard practice for long bridges over waterways.

The current proposal is to carry the bridge surface runoff for the outer thirds of its lengths via closed piping off of the bridge for discharge in the overall project drainage system. The runoff from middle third of the bridge will fall directly into the river. The bridge deck area will be more than double the existing as the proposed typical section will be comprised of nine lanes versus the existing bridge carrying four lanes. However, the runoff from the outer two-thirds of the deck area of the bridge will be captured by scuppers on the bridge and piped back to the abutments where they will be connected to stormwater facilities off the bridge. A Manufactured Treatment Device is proposed to provide water quality treatment for the stormwater collected on the bridge.

The proposed interchange at Route 29 will be similar to the existing where stormwater will be collected in existing infield areas; however, these infield areas will be converted into stormwater management basins. The existing "scissor ramp" configuration will be replaced with two roundabouts requiring a complete reconfiguration of the interchange ramp system. The existing Route 29 through lanes will be largely unaffected. While the proposed improvements will require extensive roadway and bridge work within the interchange area, the resultant increase in impervious area is less than 1 acre. This stormwater, which is collected from the area west of the Delaware and Raritan Canal discharges into the Delaware River, will be treated by the Route 29 interchange stormwater management basins.

Delaware and Raritan Canal and Tributaries

The Delaware and Raritan Canal in New Jersey is part of the 30-mile Feeder Canal that diverts water from the Delaware River at Bull's Island near Stockton to supply the main Canal at Trenton. The Canal serves as a public water supply transmission system and is fed by a 100 million gallon per day non-drought diversion entitlement from the Delaware River, as well as by natural streams and storm drains. The water levels in the Canal are monitored by NJWSA, who controls operating gates and flood gates to protect the Canal during heavy rainfall. The New Jersey surface water quality standards (N.J.A.C. 7:9B) classify the Delaware and Raritan Canal as FW2-NT, which is defined as fresh waters that are not designated FW1 or Pinelands Waters and are non-trout waters.

Both I-95 and NJ Route 29 cross over the Canal on structure in the project area, although no work is proposed at the NJ Route 29 Bridge. I-95 crosses the Canal on a bridge, with a variable width ranging from 95 to 120 feet and a length of approximately 100 feet. There are two sets of piers at or adjacent to the Canal.

Two streams discharge into the Delaware and Raritan Canal and flow northeast to southwest. These two tributary streams to the Delaware and Raritan Canal are classified under New Jersey surface water quality standards as FW2-NT streams, which are defined as freshwaters that are not designated as FW1 or Pinelands Waters and are non-trout waters.

The project will involve work within the Delaware and Raritan Canal for removal of one set of existing I-95 bridge piers that are located at the edge of the Canal and along the riprapped backslope of the Canal prism, resulting in approximately 1,100 square feet (0.02 acre) of temporary disturbance of the Canal back slope.

There will also be two new crossings over the Delaware and Raritan Canal for the on- and off-ramps at the NJ Route 29 Interchange. The new I-95 Bridge piers will be relocated outside of the Delaware and Raritan Canal. The D&RCC and other New Jersey park agencies have also requested that the remaining earthen embankment along NJ Route 175 (Upper River Road) that extends into the Canal be faced with stone to reduce erosion. This work may involve temporary disturbance to the Canal and, depending on the design of the embankment, some loss of natural Canal bank, but would result in water quality improvements.

From the Delaware and Raritan Canal, I-95 extends a distance of approximately one mile along an upgrade to a highpoint just west of the Bear Tavern Road Interchange. Proposed roadway improvements typically involve replacing the grass median with roadway pavement. The result is an increase in impervious area of almost four acres. Existing stormwater along I-95 is collected by a system of inlets and culverts which discharges into the Delaware and Raritan Canal. In order to meet the requirements of the DRCC, a minimum of eight acres of runoff from the proposed pavement area will be diverted across the Canal to be treated by stormwater management basins located within the Route 29 interchange area.

Jacob's Creek Tributary

A third drainage area includes the I-95/Bear Tavern Road Interchange and approximately 4,500 feet of I-95 mainline. This drainage area begins at the highpoint west of Bear Tavern Road and extends east to the stormwater outfall at a pond located on the grounds of the Mountain View Golf Course. Roadway improvements tie into the ramps on the west side of the interchange where the proposed improvements add less than one-half of an acre of new pavement and one-half acre of reconstructed pavement. This drainage area 3 is not affected by the diversion of stormwater flows across the Canal and the runoff will be

treated via the construction of one or two new stormwater management basins.

2.2.1 Mitigation

Construction Activities

In accordance with the *NJDOT Soil Erosion and Sediment Control Standards*, a Soil Erosion and Sediment Control (SESC) Plan will be prepared for the proposed improvements. The soil erosion control standards will be implemented during construction to ensure the protection of exposed soils and downstream areas.

Water pollution control measures will be enforced during proposed construction activities so that construction material spills are minimized. Specifically, construction material will not be stockpiled in or near the stream or its adjacent wetlands and will be protected by a silt fence or hay bale barrier.

I-95 and NJ Route 29 Interchange

The existing stormwater facilities associated with I-95 and the NJ Route 29 Interchange will be modified as required to accommodate the additional runoffs. For the most part, the stormwater system will be within the existing highway ROW. Where needed the ditches, pipes, and culverts will be increased in size to accommodate runoff from the new roadway configurations.

Scudder Falls Bridge

The current proposed stormwater control design for the replacement Scudder Falls Bridge is to carry the bridge surface run-off for the outer thirds of its lengths via closed piping off of the bridge for discharge in the overall project drainage system. The runoff from the middle third of the bridge will fall directly into the river. The bridge deck area will be more than double the existing as the proposed typical section will be comprised of nine lanes versus the existing bridge carrying four lanes. However, the runoff from the outer two-thirds of the deck area of the bridge will be captured by scuppers on the bridge and piped back to the abutments where they will be connected to stormwater facilities off the bridge.

However, in the next phase of the project, when the exact details of the bridge superstructure and project drainage system is finalized, a further evaluation of the bridge drainage system will be performed to identify Best Management Practices (BMPs) appropriate to comply with federal and state stormwater regulations.

2.3 Flood Storage

According to FEMA's Flood Insurance Rate Maps for the Township of Ewing, New Jersey (2001), the regulatory floodway along the Delaware River extends to the edge of NJ Route 29/River Road. The 100-year floodplain generally extends along the Delaware and Raritan Canal and borders on, or overlaps portions of, the NJ Route 29 Interchange area.

Temporary Construction Impacts

The construction of a trestle causeway to be used to construct the I-95/Scudder Falls Bridge will involve temporary impacts on flooding characteristics within the Delaware River over the four-year construction period.

The causeway will be constructed in four stages: two stages upstream (Stages I and II) and two downstream (Stages III and IV). Based on the hydrologic/hydraulic modeling, a 1.4-year design storm was used to design the causeway. A more detailed analysis will be performed during the final design to fine tune the causeway elevation once the exact shapes of the piers are established.

The 1.4-year design storm event would result in a modest 0.51-foot increase in elevation immediately upstream, which gradually reduces to no impact approximately 1,500 feet upstream. With this elevation rise, the water elevation remains below NJ Route 29 and does not impact structures.

In order to provide a comparison and general order of magnitude of potential flooding impacts, the causeway was modeled for several flood events. It should be noted that the 1.4-year design storm event yields flows of approximately 62,000 cubic feet per second (cfs) for the entire river. This is fairly conservative when compared to the mean annual high flow of the Delaware River between 1997 and 2006 which was calculated as 25,000 cfs from a United States Geologic Service (USGS) gage located at Trenton, just downstream of the Scudder Falls Bridge.

As with any work in and around the river environment, severe flood events can adversely affect the construction area. Although the Delaware River has experienced severe flooding events in the past several years, the mean annual high flow from 1997 to 2006, as calculated from the USGS gage at Trenton, is significantly lower than causeway design flow. The preliminary causeway elevation has been set for a 1.4-year storm event as a balanced approach. A more robust causeway size would result in unacceptable backwater elevation increase. The area north of the bridge along the river is low and flat and excessive backwater elevation increase would impact the properties beyond an acceptable level.

Post-Construction Impacts

The proposed action will permanently fill approximately 5.8 acres within the 100-year floodplain and 1.16 acres of the regulatory floodway. However, the proposed bridge is designed to be less of an obstruction than the existing bridge, since it will have fewer piers in the river (five bridge piers compared to seven piers for the existing bridge). A hydrologic analysis performed for the project showed that flood elevations under storm events ranging from the 1-year to 500-year storm would be lower (by 0.03 to 0.07 feet) with the proposed bridge than existing bridge.

During final design and permitting, additional hydrologic and hydraulics analysis will be done and compensatory storage will be developed consistent with the degree of impact determined in final design, when detailed bridge design is undertaken.

Design of the proposed improvements is in accordance with the NJDEP *Flood Hazard Area Control Act Rules* (N.J.A.C. 7:13), the NJDEP *Freshwater Wetlands Protection Act Rules* (N.J.A.C. 7:7A), and the *Soil Erosion and Sediment Control Act of 1975* (N.J.S.A. 4:24-42). Consequently, every effort has been made to minimize the placement of fill in the floodplain without compromising the safety and welfare of downstream communities.

2.4 Existing and Potential Water Uses

The Delaware River within the project area has many designated uses, including agricultural water supplies, industrial water supplies after reasonable treatment, maintenance and propagation of resident game fish and other aquatic life, public water supplies after reasonable treatment, recreation, spawning and nursery habitat for anadromous fish and wildlife uses.

Reeders Creek, which is approximately 1.4 miles in length, is a direct tributary to the Delaware River, although only a small portion passes through the project area at the NJ Route 29 Interchange area. Reeders Creek is classified under New Jersey surface water quality standards as FW2-NT.

The Delaware and Raritan Canal is part of the 30-mile feeder canal that diverts water from the Delaware River at Bull's Island near Stockton to supply the main canal at Trenton. The Canal serves as a public water supply transmission system and is fed by a 100 million gallon per day non-drought diversion entitlement from the Delaware River, as well as by natural streams and storm drains. The water levels in the Canal are monitored by NJWSA, who controls operating gates and flood gates to protect the Canal during heavy rainfall.

The New Jersey surface water quality standards (N.J.A.C. 7:9B) classify the Delaware and Raritan Canal as FW2-NT, which is defined as fresh waters that are not designated FW1 or Pinelands Waters and are non-trout waters.

In addition, two streams discharge into the Delaware and Raritan Canal and flow northeast to southwest. These two tributary streams to the Delaware and Raritan Canal are classified under New Jersey surface water quality standards as FW2-NT streams, which are defined as freshwaters that are not designated as FW1 or Pinelands Waters and are non-trout waters.

No impacts are anticipated to the existing or potential water uses of these waterbodies as a result of the proposed project.

2.5 Vegetation, Wildlife, and Fisheries

The project area contains a variety of land cover types that provide cover and foraging habitat for terrestrial and aquatic species. The areas of these habitat types within 1,000 feet of both sides of I-95 are also presented and considered as the project area for the purpose of this evaluation.

2.5.1 Terrestrial

- **Urban, Developed Lands:** Urban developed lands include residential, commercial, and institutional developments that include landscaped grass lawns and ornamental vegetation. Urban land includes approximately 640 acres in the project area. Developed areas along the I-95 mainline ROW include the grassed median and roadside areas and the soccer fields within the Lower Makefield Township Snipes tract. Opportunistic species that typically inhabit these types of urban environments include house mouse (*Mus musculus*), grey squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), blue jay (*Cyanocitta cristata*), rock dove (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*).
- **Cropland and Pasture:** The agricultural fields in the project area encompass approximately 170 acres. The typical species known to inhabit grassland or farmland areas within the project area include woodchuck (*Marmota monax*), striped skunk, meadow vole (*Microtus pennsylvanicus*), house mouse, mole (*Scalopus spp*), and white-tailed deer (*Odocoileus virginianus*). The more obscure species that are known to inhabit this area include red fox (*Vulpes vulpes*) and coyote (*Canis latrans*).
- **Deciduous Forest Land:** Deciduous forestland includes all forested areas having a predominance of hardwood vegetation, such as oak, maple, or hickory, and this cover type encompasses approximately 100 acres in the project area. Portions of I-95 adjoin wooded buffers, and in Pennsylvania, two deciduous forested areas exist: one along I-95 near Dolington Road and the other between the Taylorsville Road Interchange and the Delaware River. The dominant overstory species observed in field visits include box elder (*Acer negundo*), red maple (*Acer rubrum*), tree-of-heaven (*Ailanthus altissima*), and red oak (*Quercus rubra*). Understory species consist of crown vetch (*Coronilla varia*), fox grape (*Vitis labrusca*), garlic mustard (*Alliaria petiolata*), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), stinging nettle (*Urtica dioica*), and white snake root (*Eupatorium rugosum*). Typical fauna species known to occur in forestland within the project area consist of raccoon, eastern cottontail rabbit (*Sylvilagus floridanus*), striped skunk, grey squirrel, chipmunk, and white-tailed deer. The more obscure species that are known to inhabit forestland on occasion include little brown bat (*Myotis lucifugus*), red fox, and coyote.

- **Mixed Forest Land:** Mixed forest includes both evergreen and deciduous vegetation where neither predominates, encompassing approximately 80 acres in the project area. In New Jersey, this cover type includes the area north of I-95 near the Bear Tavern Road Interchange that is proposed to be developed as a retirement community. Typical flora within the overstory include slash pine (*Pinus elliotii*), Norway spruce (*Picea abies*), eastern hemlock (*Tsuga canadensis*), Douglas fir (*Pseudotsuga menziesii*), red maple, tree of heaven, red oak, box elder, sycamore (*Platanus occidentalis*), tulip poplar (*Liriodendron tulipifera*), honey locust (*Gleditsia triacanthos*), silver maple (*Acer saccharinum*), red-osier dogwood (*Cornus stolonifera*), and sweet gum (*Liquidambar styraciflua*). Dominant understory species include poison ivy (*Toxicodendron radicans*) and multiflora rose. Typical species known to occur in this cover type include southern flying squirrel (*Glaucomys volans*), black bear (*Ursus americanus*), and house mouse.
- **Palustrine Wetlands:** This cover type includes all non-riverine wetlands in the project area that cover approximately 20 acres in the project area. According to the *Natural Areas Inventory of Delaware and Lehigh Navigation Canal National Heritage Corridor, Pennsylvania* (1992), the Scudder Falls Islands are a potential natural area, with priority three (county-wide of local importance and small or somewhat degraded population of state-listed rare species). The river islands are forested with mature riparian trees, such as silver maple, river birch (*Betula nigra*), and sycamore. There are also seven wetland areas along the project area in New Jersey. Dominant overstory species consist of box elder, red maple, pin oak (*Quercus palustris*), sycamore and understory includes multiflora rose, poison ivy, spicebush (*Lindera benzoin*), marsh pennywort (*Hydrocotyle umbellata*), sensitive fern (*Onoclea sensibilis*), and skunk cabbage (*Symplocarpus foetidus*). The typical fauna include Virginia opossum (*Didelphis virginiana*), turtle, snake, frog, toad, salamander, lizard, and beaver (*Castor canadensis*).

The proposed action will result in clearing of approximately six acres of forested lands, mostly within the NJ Route 29 Interchange.

2.5.2 Impact to Trees in Parkland

On February 17, 2011, a tree survey was conducted by AEOCM Environmental Planners within the D&R Canal State Park in the vicinity of the Scudder Falls Bridge. The purpose of the tree survey was to evaluate the presence of trees with a diameter at breast height (dbh) of six inches or greater within the proposed ROW of the I-95/Scudder Falls Bridge Improvement Project which would be impacted as a result of the proposed improvements. The survey area was bound to the north by the proposed ROW for the I-95 southbound Ramp G and bound to the south by the proposed ROW for the I-95 northbound Ramp C. The survey area was bound to the east by the D&R Canal State Park limits at River Road, and to the west by the D&R Canal State Park fence boundary.

All surveyed trees were measured and identified by species. In addition, it was noted if any surveyed trees were dead. A summary of surveyed tree species with a dbh of six inches or greater is provided in Table 11.

Table 11 – Trees Within Parkland

Scientific Name	Common Name	Number of Trees	Number of Dead Trees	Minimum dbh	Maximum dbh
<i>Acer platanoides</i>	Norway Maple	12	1	7	21
<i>Acer rubrum</i>	Red Maple	3	0	7.5	9
<i>Fraxinus pennsylvanica</i>	Green Ash	4	1	14	18
<i>Platanus occidentalis</i>	Sycamore	2	0	15	16
<i>Prunus serotina</i>	Black Cherry	1	0	6.5	6.5
<i>Quercus rubra</i>	Red Oak	2	2	21	26
Total		24	4	--	--

On the east side of the D&R Canal, the survey area primarily consisted of steep-sloped embankments between River Road and the Canal. Trees were widely spaced, and the area had a sparse understory of herbaceous and scrub/shrub vegetation.

On the west side of the D&R Canal, the survey area primarily consisted of a narrow band of vegetation between the D&R Canal pedestrian path and the park boundary fence. Trees were widely spaced, and the area had an understory of low grass and sparse scrub/shrub vegetation.

In summary, project improvements would result in the impact of 24 trees within the D&R Canal State Park.

2.5.3 Aquatic

Upper perennial streams flow all year with high gradient and velocity and include the Delaware River. Lower perennial streams flow all year with a low gradient and velocity, and include the Delaware and Raritan Canal and other project area tributaries. These aquatic habitats cover approximately 60 acres in the project area.

The Delaware River supports a variety and an abundant amount of fish. The New Jersey Division of Fish and Wildlife (NJDFW) indicated in its November 17, 2003 letter that fisheries in this freshwater river reach are quite diverse, with more than 50 species present. The river supports anadromous fish that spend most of their lives in saltwater and return to freshwaters to spawn. The anadromous species present include American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), and

striped bass (*Morone saxatilis*). Another migratory species, the catadromous American eel (*Anguilla rostrata*) uses the river for its freshwater component of its life and migrates to the saltwater to spawn. According to the National Marine Fisheries Service (NMFS), the Delaware River in the project area does not include Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act. The Delaware River also supports warmwater fisheries that include largemouth bass (*Micropterus salmoides*) and crappie (*Pomoxis sp.*). The coolwater fish that exist in the Delaware River include smallmouth bass (*Micropterus dolomeiu*) and walleye (*Stizostediam vitreum*). According to the NJDFW, waterfowl associated with the upper perennial habitats include Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), merganser (*Lophodytes cucullatus*), black duck (*Anas rubripes*), common goldeneye (*Bucephala clangula*), bufflehead duck (*Bucephala alebola*), and great blue heron (*Ardea herodias*). The Delaware River also acts as a barrier to migratory birds and concentrates them at water's edge, with several hundred species of birds in both states that may pass through the area as transients.

The Delaware and Raritan Canal is a trout stocked fishery and contains a warmwater fishery composed primarily of bass, sunfish, and catfish. The Canal is stocked annually with rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*) in the spring. The NJDFW has indicated that restrictions for construction work in the Canal extend from March 15th to June 15th in order to avoid the stocking/trout season and spawning for warmwater species. Typical fauna known to inhabit lower perennial streams include frog, turtle, toad, salamander, snake, lizard, and beaver.

Existing I-95 bridge piers along the edge of the Delaware and Raritan Canal will be removed that would affect approximately 0.02 acre of the Canal back slope. The project will also affect 0.04 acres of smaller tributary streams. These impacts are not considered to result in a substantial loss of aquatic habitat. Additional shading of 2.8 acres of the Delaware River and 0.1 to 0.2 acres of the Delaware and Raritan Canal is also not considered to represent a substantial aquatic impact.

The mitigation measures to be specified in the contract documents will incorporate use of turbidity barriers to minimize siltation within the Delaware River. Prior to placement of the causeway and cofferdams, turbidity screens will be installed to contain siltation. The work within the Delaware River will be restricted to avoid critical spawning periods.

In-river construction and removal of the four causeways and cofferdams will be scheduled outside the period March 15 through June 30 in order to prevent disruption of spawning for federally endangered migratory species (as described in the following section). A determination will be made during the final design phase of the feasibility of extending this moratorium to July 15 to protect river herring (alewife and blueback herring), which are important as prey for predatory fish species, during the end of their spawning period.

To the extent practicable, work within the Delaware and Raritan Canal for removal of the existing bridge piers will be scheduled outside of the March 15th to June 15th period, to accommodate trout stocking and in accordance with NJDEP requirements.

2.6 Threatened and Endangered Species

The following rare species were identified by Federal and State resource agencies:

- Federally endangered shortnose sturgeon (*Acipenser brevirostrum*)
- Federal candidate species Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)
- State-endangered peregrine falcon (*Falco peregrinus*)
- State-threatened bald eagle (*Haliaeetus leucocephalus*)
- State-threatened yellow lampmussel (*Lampsilis cariosa*), tidewater mucket (*Leptodea ochracea*), and triangle floater (*Alasmidonta undulata*).

The potential occurrences of these federally and state-protected species is addressed below and is summarized in Table 12.

Table 12—Federal and State Listed Species

Species (Common/ Scientific Name)	Listing Status*	Habitat Areas	Impact	Mitigation
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	FE	Delaware River spawning and passage	Construction of causeway and cofferdams over 4 years, with four phases	Timing restrictions (see Mitigation section)
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	FC	Delaware River passage	Construction of causeway and cofferdams over 4 years with four phases	Timing restrictions (see Mitigation section)
Peregrine falcon (<i>Falco peregrinus</i>)	NJ-E	Observed nesting on I-95/ Scudder Falls Bridge	Bridge demolition	Consultation with PA Game Commission on appropriate protective measures
Bald eagle (<i>Haliaeetus leucocephalus</i>)		No nesting habitats for the bald eagle have been identified within two miles of the bridge.	No impact on nesting areas	Not required
Yellow lampmussel (<i>Lampsilis cariosa</i>)	FSC, NJ-T,	Delaware River survey indicated 64 in all search areas	Causeway and cofferdam construction	Mitigation plan to be developed (see Mitigation for options)
Tidewater mucket (<i>Leptodea ochracea</i>)	NJ-T	Delaware River survey indicated no live or spent shells	Causeway and cofferdam construction	Mitigation plan to be developed (see Mitigation for options)
Triangle floater (<i>Alasmidonta undulata</i>)	NJ-T	Delaware River survey identified one live individual and one spent shell	Causeway and cofferdam construction	Mitigation plan to be developed (see Mitigation for options)

* F=Federally, NJ=New Jersey, E=Endangered, T=Threatened, C=Candidate, SC=Special Concern, R=Rare

a) Federal Listed or Candidate Species

Two species of sturgeon in the Delaware River are listed or being recommended for listing on the Federal endangered species list.

Shortnose sturgeon (*Acipenser brevirostrum*): Spawning habitat within the Delaware River for this federally endangered species was cited in correspondence received from the NMFS, United States Fish and Wildlife Service (USFWS), NJDEP, and the Pennsylvania Fish and Boat Commission (PFBC). The shortnose sturgeon spends the greatest part of its life downstream of the project area in the tidal Delaware River estuary, and this migratory (amphidromous) species moves into the non-tidal Delaware River to spawn. Pre-spawning adult fish overwinter in 13 miles of tidal freshwater below Trenton; the upper end of this reach is eight miles downstream of the I-95/Scudder Falls Bridge. The principal spawning grounds for the sturgeon includes the 7-mile stretch in the vicinity of the I-95/Scudder Falls Bridge. The river bottom that is suitable spawning habitat in this area is dominated by clean-swept, hard-bottom substrate materials (i.e., gravel, cobbles, boulders, and bedrock), with the exception of a small band of silt and sand along the east shoreline of Park Island.

Formal consultation has been initiated with NMFS, and on June 11, 2010 NMFS issued a Biological Opinion (BO) regarding the project's effects on the federally endangered shortnose sturgeon.

- **Temporary Construction Impacts:** Temporary impacts to the shortnose sturgeon are primarily related to causeway and cofferdam construction within the Delaware River and indirect impacts on river flow. Other direct effects of the project include noise associated with heavy equipment, vibration generated by steel sheet driving, and sedimentation due to construction activities.

Construction of the causeway and cofferdams will be scheduled outside of the spring periods for shortnose sturgeon spawning and migration. Once in place, work staged from the causeway or within cofferdams will occur throughout the year.

The BO concludes that the project construction may affect, and it is likely to adversely affect, shortnose sturgeon, but this effect is considered insignificant because the temporary habitat losses will be only a very small percentage of the habitat that is available to them. The area of the seven mile long river reach between head of tide to Scudder Falls where spawning occurs was computed (using an average river width of 1,000 feet) to be approximately 848.5 acres. The proposed causeways and cofferdams would incur temporary impacts to 0.04% of the total available spawning habitat within the 7-mile reach where spawning occurs on the Delaware River. This represents a very small percentage of the total available spawning habitat.

- **Long-Term Impacts:** In order to determine what percentage of the bottom in the seven mile long river reach extending from the head of tide to Scudder Falls might be permanently lost to replacement of the seven smaller existing piers with five larger proposed piers, the area of this river reach was computed using an average river width of 1,000 feet. This area is approximately 848.5 acres. The river bottom areas permanently lost are small compared to total spawning habitat available. The permanent loss (for piers) is 0.03% of total available spawning habitat.

According to the BO issued by NMFS, this project is likely to adversely affect the shortnose sturgeon due to loss of potential spawning habitat. However, the loss should not be considered significant, because it will represent only a minute percentage of the seven miles of river in which shortnose sturgeon are expected to spawn and does not threaten critical habitat.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*): This species is a candidate for Federal listing. A review of the status of this species under the U.S. Endangered Species Act prepared in 2007 recommended that three of the five distinct population segments be listed as threatened, including the New York Bight (and the Delaware River) population. Within the project area, the occasional adult Atlantic sturgeon may move through the Scudder Falls reach of the Delaware River. The Atlantic sturgeon is found in greatest numbers in tidal waters of the Delaware River, and the juveniles are unlikely to be present in the Scudder Falls reach because they remain in tidal waters. Recent work suggests that spawning may occur downriver of the project area, extending as far upstream as near the head of tide at Trenton, New Jersey.

- **Temporary Construction Impacts:** The project area is not a known spawning habitat for Atlantic sturgeon, although the occasional adult may pass through the area. Direct effects to Atlantic sturgeon, which are bottom feeders, include temporary loss of feeding habitat in the footprint of causeways and cofferdams used in bridge construction. The only indirect effects to Atlantic sturgeon that are anticipated from the project are related to cofferdam and causeway impacts.

The construction of the project may affect Atlantic sturgeon because river bottom habitat will be temporarily lost, but the effect to this species should be considered insignificant because the losses will be only a very small percentage of the habitat that is available to them.

- **Long-Term Impacts:** Although the Delaware River spawning grounds of Atlantic sturgeon are largely unknown, spawning occurs in tidal waters, perhaps as far upstream as the head of tide. Juvenile Atlantic sturgeon remain in tidal waters. Therefore, the project will not affect spawning adults, eggs, larvae, or juveniles. The Atlantic sturgeon is found in greatest numbers in tidal waters of the Delaware River and upper Bay, but has been recorded as far upstream as Port Jervis, New York.

Therefore, the occasional adult Atlantic sturgeon may move upstream through the project area after spawning in June and downstream to tidal waters in the fall.

Direct effects to Atlantic sturgeon, which are bottom feeders, include permanent loss of feeding habitat in the footprint of the new bridge piers. This project may affect, and it is likely to adversely affect, Atlantic sturgeon because river bottom habitat will be permanently lost. However, as addressed above, the effect to the Atlantic sturgeon species should be considered insignificant because the losses will be only a very small percentage of the habitat that is available to them.

b) State-Protected Species

The potential occurrences of two state-protected avian species that nest along the Delaware River was assessed, along with habitat for several protected mussel species in the Delaware River.

Peregrine falcon (*Falco peregrinus*): The peregrine falcon was federally delisted in 1999, but is still listed as endangered in New Jersey. The Pennsylvania Game Commission (PGC) reported sightings of a pair of peregrine falcons on the I-95/Scudder Falls Bridge and confirmed nesting on the I-95/Scudder Falls Bridge in the spring/early summer of 2008. A protocol and training for bridge maintenance workers was developed by DRJTBC to avoid disturbance to the nest. The PGC banded the one young chick that hatched. In 2008, there were 27 nesting pairs in Pennsylvania reported by the PGC.

- **Temporary Construction Impacts:** The peregrine falcon nests from late February to late April, and feeding of young extends to early June to late July. Prior to the start of construction activities, the PGC will be consulted regarding the status of nesting at or near the bridge and measures to deter nesting on the bridge prior to the start of construction activities. The feasibility of establishing alternative nearby nesting sites will be assessed, in consultation with the PGC.
- **Long-Term Impacts:** The project when completed will not have an adverse impact on the state-endangered peregrine falcon. The proposed bridge structure will be larger, which may provide additional opportunities and areas in which the peregrine falcon may roost within the bridge itself. To help offset the loss of habitat from demolition of the nest currently located on the bridge, the PGC has requested that a new nesting platform be constructed. During final design, coordination will be conducted with the PGC to determine an appropriate design and location for a new nesting platform.

Bald eagle (*Haliaeetus leucocephalus*): The potential occurrence of bald eagle foraging habitat within the project area was cited in the September 13, 2010 correspondence with the NJDEP Natural Heritage Program. This species was formerly federally threatened and

was delisted in 2007. In New Jersey, the non-breeding population is listed as threatened and the breeding population is listed as endangered. Bald eagles thrive around large bodies of open water, such as rivers, where there are plenty of fish and stands of undisturbed tall trees for nesting and roosting.

The NJDEP Landscape Project was reviewed, and no bald eagle nesting, foraging, or buffer areas were identified within the project area. Field observations, research, and agency coordination have indicated that there are currently no nesting habitats for the bald eagle within two miles of the I-95/Scudder Falls Bridge.

Yellow lampmussel (*Lampsilis cariosa*): Although the yellow lampmussel is a federally-listed Species of Concern and is listed as threatened in New Jersey, it has been documented as often fairly abundant where it occurs. Yellow lampmussel can be considered fairly abundant and was widely distributed in the bridge survey reach where it represented 76% of the live mussels encountered in a mussel survey performed in October 2004. The preferred substrate, a clean-swept mixture of sand and gravel, is abundant among the cobbles and boulders in this part of the Delaware River. Sixty four live yellow lampmussels were found in the survey that extended 500 feet upstream and 800 feet downstream of the bridge, with individuals found in nearly every search area. Hundreds of spent yellow lampmussel shells were observed in the search areas.

Tidewater mucket (*Leptodea ochracea*) and triangle floater (*Alasmidonta undulata*): According to the NJDEP, this portion of the Delaware River may be utilized by several New Jersey-threatened mussel species. No live tidewater mucket or spent shell of this species was encountered in the mussel survey. This was not unexpected because the preferred habitat, quiet water with a substrate of silt and mud, comprised only a very small part of the survey reach. The mussel survey also recorded one live individual and one spent shell of the New Jersey-threatened triangle floater (*Alasmidonta undulata*). Triangle floater inhabits slow and fast-moving water in large creeks and small rivers and sometimes lakes. One individual and four spent shells for the creeper (*Strophitus undulatus*) were also recorded in the survey of this species, which prefers slow-moving water. This is listed as a Species of Concern by New Jersey.

- **Temporary Construction Impacts:** The New Jersey-threatened yellow lampmussel is present in the work zones for causeways and cofferdams. To minimize impact to the yellow lampmussel and other mussel species, those within the work zones will be permanently relocated outside the work zones. It is expected that the areas will be recolonized upon completion of construction, based on PennDOT post-construction monitoring of other bridge projects where causeways were constructed. Studies of other bridge projects on the Allegheny River and French Creek indicate that mussels recolonize the areas within two to three years after construction.

- **Long-Term Impacts:** The change in bridge pier configuration is not expected to result in permanent effects on the yellow lampmussel and other mussel species. As discussed earlier, the loss of available habitat with the change in piers will represent a small percentage of total habitat available to these species. Therefore, the permanent impacts associated with the proposed action is expected to be minimal.

2.6.1 Mitigation of Potential Impacts to Threatened and Endangered Species

Mitigation measures for protected species within the Delaware River include the following:

- In-river construction and removal of the four causeways and cofferdams will be scheduled outside the period March 15 through June 30 in order to prevent disruption of shortnose sturgeon spawning and effects on this species' eggs and larvae. A determination will be made during the final design phase of the feasibility of extending this moratorium to July 15 to protect river herring (alewife and blueback herring), which are important as prey for predatory fish species, during the end of their spawning period.
- A Spill Prevention Control and Countermeasures Plan (SPCP) will be developed to prevent spills from entering the river during construction. Additionally, an SPCP will be prepared to address spills from vehicles using the bridge when construction is completed.
- A debris management plan will be developed and implemented during all phases of construction within the river.
- Turbidity barriers and other erosion/sedimentation controls will reduce in-river sedimentation.
- Water temperature will be monitored between March 1 and July 15 to ensure that no in-water work will occur outside of cofferdams beginning when mean daily water temperature is 8° Celsius and ending 28 days after the mean daily water temperatures reaches 18° Celsius. A report on water temperature monitoring will be provided to NMFS prior to November 1 of each year.
- A water quality monitoring plan will be developed and submitted to NMFS for approval. The plan will be implemented during all in-water construction activities conducted between March 15 and June 30. Parameters to be monitored will include temperature, TSS, and turbidity. Downstream levels will be compared against upstream background levels. A water quality monitoring report will be submitted to NMFS within 90 days of the end of the monitoring period each year in which in-water work was conducted.

- A cofferdam monitoring plan will be developed and submitted to NMFS at least 60 days prior to the beginning of the first construction season in which cofferdams will be constructed in the Delaware River. The plan will monitor potential overtopping between March 15 and June 30. If overtopping is noted, this will be reported to NMFS within 24 hours of the event. Monitoring reports will include the date of overtopping, flow conditions in the river in cubic feet per second (cfs), water depth in the cofferdams, and any visual observations of fish. In the event of cofferdam overtopping, prior to complete dewatering any adult shortnose sturgeon entrapped within the cofferdam will be identified and removed. A report will be provided to NMFS within seven days of any dewatering following overtopping, and will include estimated volume of water removed and any visual observations of fish.
- At least 30 days prior to construction of each cofferdam and installation of piles, a site survey will be conducted to document water depth, water velocity, and substrate type in the area where the cofferdam will be constructed and the piles installed. This information, along with as-built details of the specific cofferdam and pile, will be submitted to NMFS within 60 days after completion of each cofferdam or pile-supported trestle causeway.
- The piles for the trestle and steel sheeting used to construct the cofferdams will be vibrated into place, where feasible. Otherwise, they must be driven.
- Five cofferdams will allow construction of the new bridge piers "in the dry". Similarly, seven cofferdams will allow demolition of the existing bridge piers "in the dry". This will prevent any fish, including shortnose and Atlantic sturgeon, and their eggs and larvae from entering river bottom areas where they may be injured or killed.
- The causeways will be constructed as a temporary trestle to minimize the affected footprint and impacts to fish passage and substrate within the Delaware River.
- Prior to heavy pile driving, each pile will be tapped with the hammer to encourage nearby fish to move out of the area.
- Some bridge drainage scuppers will be eliminated in construction of the new bridge, with the majority of the stormwater directed to land-based passive treatment. This will be an improvement from the existing bridge drainage system.
- The project will also incorporate as mitigation proactive measures to promote the recovery of the shortnose sturgeon. An acoustic receiver will be provided to researchers for use in the project area to record the possible presence of acoustically-tagged shortnose sturgeon. Any sightings of or interactions with shortnose sturgeon will be reported to NMFS within 24 hours. Additionally,

observations will be documented on a NMFS documentation form and submitted to NMFS within 48 hours.

- To the extent feasible, shortnose sturgeon habitat in the project area will be restored to pre-construction conditions once construction is complete. A report on habitat restoration will be submitted to NMFS within 90 days of its completion. A survey will be conducted 90 days after habitat restoration activities in order to document the success of the restoration effort. A report of the survey will be submitted to NMFS.
- A mitigation plan for yellow lampmussel, triangle floater, and tidewater mucket will be developed and coordinated with NJDFW. Mitigation options under consideration include pre-construction surveys, relocation to an upstream reach, collection of additional species survey data, or habitat enhancements. Determination of the mitigation option will be made through further consultation with NJDFW.

Mitigation measures for the peregrine falcon include:

- Consultation with PGC and monitoring of peregrine falcon activities at the bridge site will continue, and appropriate mitigation measures will be developed with input from PGC to protect nesting habitat for this species.
- Consideration will be given to establishing alternative nesting sites to discourage nesting on the bridge, as well as provision of permanent nesting platforms at suitable locations.

2.7 Potential for Acid-Producing Soils

The project area in Ewing Township is located in the Piedmont Physiographic Province and is underlain by the Triassic Lockatong Argillite and Stockton Formations. The Lockatong Formation is comprised of red, dense sedimentary rocks of the Newark Group. Within Mercer County, Lockatong Argillite is approximately 2,900 feet thick and forms one of the highest terrains in the county, reaching elevations of approximately 200 feet. The formation outcrops in the Delaware River at Scudder Falls and on I-95 near the Bear Tavern Road Interchange. The Stockton Formation consists of red, grey, and brown shales and arkoses, with local arkosic conglomerates. Only the area containing the southern portion of the NJ Route 29 Interchange is underlain by the Stockton Formation.

None of these formations are identified to contain potential acid-producing deposits. Therefore, there is a low potential for the presence of acid-producing soils in the project area.

2.8 Hazardous Materials

A Phase I Environmental Site Assessment was performed that included an environmental database/regulatory records review, field reconnaissance, and interviews. The assessment was performed in accordance with the *NJDOT Design Manual*, applicable FHWA guidance and policy publications, and with the American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E 1527-00)*.

The environmental records review identified 42 records of environmental interest in 18 locations within a mile of the project across both Pennsylvania and New Jersey. These records consisted of:

- Four Resource Conservation and Recovery Information System (RCRIS) sites,
- Four Leaking Underground Storage Tank (LUST) sites,
- Seven Underground Storage Tanks (UST) sites,
- Four Facility Index Systems (FINDS) sites,
- Four New Jersey Spill sites,
- 15 New Jersey Release incidents, and
- One unregulated (UNREG) LTANK case.

Additional field reconnaissance, interviews and additional research were performed to determine the potential of these sites to impact project construction. It was determined that these locations have either no or low potential to impact the project due to the distance of the sites from the project and/or the status of the sites.

As part of these investigations, lead-based paint was identified on the I-95/Scudder Falls Bridge, which will need to be addressed during construction. It is assumed that the bridge overpassing the Delaware and Raritan Canal may also contain lead-based paint.

Site inspections of areas within the ROW were performed which included conducting clean fill due diligence determinations for all potential excess materials. During walking field visits and windshield surveys and wetland delineations conducted in October and November 2003, no areas of stressed vegetation, staining on soils, or detectable odors were identified that suggest impact by a spill or release of regulated substances.

Temporary Construction Impacts

The presence of lead-based paint on the I-95/Scudder Falls Bridge, and potentially the I-95 Delaware and Raritan Canal bridge, will require that special measures be employed during demolition and construction to prevent contamination of the Delaware River and the Canal as well as worker exposure.

Post-Construction Impacts

Based on evaluations performed to date, the project is not expected to result in impacts on hazardous materials.

Mitigation

Based on the evaluations performed, no further studies are required. However, the presence of lead-based paint on the bridge will require that bridge demolition employ lead paint containment, worker safety measures, and proper disposal of waste and demolition debris in accordance with Occupational Safety and Health Administration (OSHA), NJDEP, and NJDOT standards.

During final design, an SPCP will be developed to prevent spills from entering the Delaware River and Delaware and Raritan Canal during construction. This plan will address practices for storage of fuels and hazardous materials that will avoid or minimize the occurrences of spills or other incidents in the vicinity of sensitive environmental resources, such as waterways and wellhead protection areas. Additionally, an SPCP will be prepared to address spills from vehicles using the bridge when construction is completed.

2.9 Noise and Air Quality

2.9.1 Noise

The area of the Delaware and Raritan Canal at Upper River Road is predicted to have noise levels at or above 66 A-weighted decibels (dBA) under the 2030 Build condition. Therefore, consideration of noise abatement was warranted. Using DRJTBC criteria, a barrier was determined to be feasible and reasonable. During the final design phase, a detailed optimization of barrier lengths, heights, costs and locations will be conducted in conjunction with the final design engineering process to insure compatibility and the most cost-effective and efficient barrier design.

The majority of bridge construction will be scheduled during daytime hours; however, some construction operations may be necessary during nighttime hours to minimize disruption to traffic flow. The project will involve use of typical roadway construction equipment and activities, and will maintain the use of noise mufflers.

2.9.2 Air Quality

The U.S. Clean Air Act Amendments of 1990 established National Ambient Air Quality Standards (NAAQS) for criteria pollutants to protect public health and welfare. The six criteria pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter, and sulfur dioxide (SO₂).

Motor vehicles emit air quality pollutants that generally consist of CO, nitrogen oxides (NO_x), and hydrocarbons. Hydrocarbons react with nitrogen oxides in the presence of sunlight to form ground-level O₃, or smog. For highway projects, CO impacts are analyzed as an accepted indicator of vehicle-generated air pollutions.

Diesel buses and trucks are also generators of particulate matter. NAAQS standards have been established for particulate matter under 2.5 microns in size (PM_{2.5}) and particulate matter under 10 microns in size (PM₁₀).

Mercer County has been designated by the USEPA as a moderate non-attainment area for O₃. Therefore, transportation projects undertaken in this county must demonstrate conformity with the State Implementation Plan (SIP) developed to comply with the provisions of the U.S. Clean Air Act. The proposed project is included in the Delaware Valley Regional Planning Commission (DVRPC) Long Range Transportation Improvement Program (TIP) and the New Jersey 3-Year TIP (fiscal years 2010-2013). As an element of the State TIP, the project conforms with the SIP, and a mesoscale analysis of regional CO emissions is not required for the project.

According to the USEPA's Air Quality Statistics by County (2006), background concentrations of one-hour CO concentrations in Mercer County are 3.5 parts per million (ppm), while eight-hour CO concentrations are 1.8 ppm.

Impacts

Localized project effects on traffic CO emissions were predicted by performing a microscale analysis for the one-hour and eight-hour averaging periods during future peak A.M. and P.M. traffic periods. The USEPA CAL3QHC dispersion model was used to predict CO concentrations at sensitive receptors in the year 2030. CO emission factors were estimated using the USEPA MOBILE 6.2 model. The results of the air quality modeling predicted emissions generated by the project were added to background concentrations (shown in Table 13) to determine total CO emissions.

Table 13—2030 Maximum Predicted CO Concentrations

	NAAQS	2030 No Build	2030 Build
One-hour concentration (ppm)	35	5.7	6.3
Eight-hour concentration (ppm)	9	2.9	3.8

As shown in Table 13, the future maximum predicted CO concentrations would be well below the NAAQS under the 2030 Build conditions, and no violations of the NAAQS will occur as a result of the project.

The USEPA/FHWA have established screening parameters to determine if a project is of air quality concern for particulate matter, requiring further hot spot analysis. The new federal regulations [(40 CFR 93.123(b)(1)(i-v)] define projects that are not of air quality concern for particulate matter (PM_{2.5}/PM₁₀) emissions. Projects that are not of air quality concern include any new or expanded highway facilities that primarily service gasoline-fueled vehicle traffic and do not involve substantial increases in diesel traffic.

Under federal rules, projects are defined as an air quality concern for particulate matter if the forecasted total Build traffic is equal to or greater than 125,000 average annual daily traffic and 8% or more of this traffic (or 10,000 vehicles) consists of diesel trucks. According to FHWA guidance, the project is not considered to be of air quality concern for particulate matter since the predicted 2030 Build traffic is approximately 85,000 vehicles per day and heavy truck traffic is forecasted to total 5,100 vehicles per day, which are less than FHWA criteria.

Mitigation

There are no long-term air quality impacts anticipated as a result of the project. However, during project construction dust control measures, such as equipment washing and use of water sprays, will be used to minimize emissions of particulate matter from the construction site in accordance with an approved Soil Erosion and Sediment Control Plan.

2.10 Aesthetic and Visual Characteristics

Aesthetics generally refer to the identification of visual resources, the quality of one's view, and/or the overall visual perception of the environment. "Aesthetic value" refers to the perception of the natural beauty of an area, as well as the elements that create or enhance its visual quality. While aesthetic value is subjective, it is typically included as a criterion for evaluating those elements that contribute to the quality that distinguishes an area. Most communities identify scenic resources as an important asset, although what is considered "scenic" may vary according to its environmental setting.

"Scenic resources" can include natural open spaces, topographic formations, and landscapes. These resources can be maintained and enhanced to promote a positive image in the future. Many people associate natural landforms and landscapes with scenic resources such as oak woodlands, lakes, rivers, streams, and some historical areas. Scenic resources can also include urban open spaces and the built environment. Examples of these would include parks, trails, pathways, nature centers, archaeological and historical resources, and architectural features.

"Viewsheds" constitute the range of vision in which scenic resources may be observed. They are defined by physical features that frame the boundaries or context to one or more scenic resources. Visual resources are an important component to the quality of life and identity of any geographic area. When people experience a place, their primary sensory

interaction with that place is visual in nature.

2.10.1 View from the I-95/Scudder Falls Bridge and I-95 Mainline

At approximately 1,150 feet across, the Delaware River is relatively wide at the I-95/Scudder Falls Bridge, which affords scenic vistas of several miles of the river and its forested banks upstream and downstream of I-95. Park Island is visible as an area of forested vegetation adjoining the upstream side of the bridge, and several other islands in the river can be seen from the bridge (see Figure 6). The visual elements on the bridge include the narrow northbound and southbound roadways on the bridge, which lack inside and outside shoulders and are closely bracketed on either side by the concrete median barrier and the low outer bridge railing (see Figure 6).



Figure 6—Views from I-95/Scudder Falls Bridge, looking north (upstream) at Delaware River (left photo) and looking east at the bridge (right photo)

The views within the NJ Route 29 Interchange are dominated by the underpassing highways and adjoining ramps (Figure 7). NJ Route 29 is a designated New Jersey State Scenic Byway, known as the Delaware River Scenic Byway.



Figure 7—Aerial view of I-95 at the NJ Route 29 Interchange, looking north

2.10.2 View of the I-95/Scudder Falls Bridge and I-95 Mainline

At NJ Route 29, the open interchange area includes the elevated structures for I-95 and NJ Route 29 and nineteen ramp merges and seven at-grade intersections (Figure 8). From the Delaware and Raritan Canal within the NJ Route 29 Interchange area, the overpassing bridges for I-95 and NJ Route 29, which include piers within and adjoining the Canal, are highly visible from the towpath (Figure 8). From the Delaware and Raritan Canal towpath, views within the interchange are dominated by roadways and interchange ramps that closely border the Canal, and the Canal runs adjacent to the (riprapped) slope for NJ Route 175 roadway along its length in the project area (Figure 8).

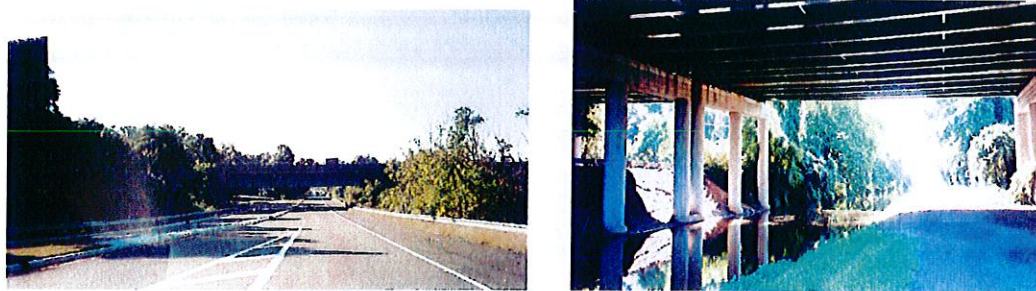


Figure 8—Views looking south at I-95 Bridges from NJ Route 29 (left photo) and from Delaware and Raritan Canal towpath (right photo), where it adjoins NJ Route 175

Temporary Construction Impacts

Construction of the project may involve temporary aesthetic impacts within the project area. The equipment and materials within staging and storage areas may be visible.

Post-Construction Impacts

The new I-95/Scudder Falls Bridge would be a more prominent landscape feature, with its wider cross-section. The new I-95/Scudder Falls Bridge will be similar in appearance to the existing bridge structure, although there will be fewer piers within the Delaware River.

At the Delaware and Raritan Canal crossing, I-95 and adjoining ramps will span a larger section of the Canal, and there will be two new bridges for overpassing ramps. However, the NJ Route 29 Interchange would be bisected by fewer roadways, and the highway approaches would be consolidated. This consolidation of ramps and approaches would provide larger areas of grassed areas within the interchange than the existing interchange configuration.

Mitigation

Aesthetic treatments will be provided at the Delaware River and Delaware and Raritan Canal crossings. The bridge piers and abutments immediately adjacent to the Canal and retaining walls at the Canal will be faced in stone, as requested by the D&RCC, or treated to replicate a stone-faced abutment. Landscaping will be used to enhance the visual quality for park users. Consultation with the D&RCC will be performed in developing the design plans and treatments for the bridge piers and abutments.

2.11 Secondary Development and Cumulative Effects

Secondary impacts are those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable," as defined in the NEPA CEQ regulations (40 CFR 1508.8). Secondary impacts typically refer to induced development that is an indirect result of the proposed action. However, regional and local zoning and plans have a bearing on the manifestation of development pressures in a given area and provide a context for secondary impact evaluations. Past, current, and future development trends are also relevant in assessing secondary development in a given area.

Cumulative effects are impacts which result from the incremental consequences of an action when added to other past and reasonably foreseeable future-actions (40 CFR 1508.7). Evaluation of cumulative impacts requires identifying past and ongoing actions.

Because of the interrelationship of past development trends to the likelihood of secondary induced development, the following sections address recent and proposed development and development trends in the area, as they are relevant to a cumulative impact assessment.

2.11.1 Attractiveness of Area for Development

Since its initial construction, the I-95 corridor has experienced substantial growth over the years, with residential and commercial development spurred on by interstate highway access. Development pressures in the I-95 corridor have continued in recent years due to access provided by I-95 and several regional transit lines that service Philadelphia and New York City-Newark. This transportation access has enhanced the attractiveness of the area for commuters since the project area is within commuting distance of major metropolitan areas in Center City Philadelphia, within 20 miles, and New York-Newark, within 50 miles.

The project area is close to the Trenton-Mercer Airport and the Trenton Station, where connections are available into Newark-New York and Philadelphia via the NJ Transit/AMTRAK Northeast Corridor. From the Trenton Station, the SEPTA R7 Line also provides service to Philadelphia and the River LINE provides service to Camden, New Jersey. From the West Trenton Station in Ewing Township and the Yardley Station in Lower Makefield Township, service into Philadelphia is provided by the SEPTA R3 (West Trenton) Line.

I-95 in the project area also provides access to designated growth areas in the north in New Jersey (I-95/I-295 Transportation Development District) and rapidly growing areas to the south in Pennsylvania.

2.11.2 Past Actions and Proposed Developments

Past actions recently constructed in the vicinity of the project area include:

- I-95/Scotch Road Interchange Improvements
- Merrill Lynch office park development on Scotch Road
- I-95/PA Route 332 Interchange Loop (reconfigured northbound on- and off-ramps at PA Route 332)
- New Jersey State Police (NJSP) Emergency Operations Center on NJSP property
- Lower Makefield Township Makefield Highlands Golf Course on Woodside Road

Currently proposed projects include:

- Pennsylvania Turnpike/Interstate 95 Interchange Project
- Route 1, Mercer County Congestion Management & Concept Development Study
- Route 1 Bus Rapid Transit Study
- West Trenton Passenger Rail Service Restoration Study (West Trenton Line)
- Trenton Rail Intermodal Project (Trenton Station Rehabilitation)
- Trenton Mercer Airport Improvements

- New Jersey Public Health, Environmental, and Agriculture Facilities (New Jersey State Police property)
- Tamar Age-restricted Development (I-95/Bear Tavern Road Interchange)
- Lower Makefield Township Recreational Complex on Snipes Tract

2.11.3 *I-95/I-295 Transportation Development District*

At the I-95 interchange immediately north of the project area, recently constructed projects in the I-95 corridor include the Scotch Road Interchange improvements proposed in conjunction with the Merrill Lynch office park development. These improvements involved interchange reconstruction and addition of collector/distributor roadways along I-95 and widening along Scotch Road. The Merrill Lynch office park development encompasses approximately 1.7 million square feet off the interchange area and includes 3.5 million square feet of office space.

These developments, and other transportation improvements and office park developments at the three I-95 exits north of the project area (Scotch Road, Route 31, and Federal City Road within Ewing, Hopewell, and Lawrence Townships) are being constructed consistent with the I-95/I-295 Transportation Development District (TDD) Plan and the New Jersey State Plan. The TDD district allows for public/private partnership in funding and implementing transportation improvements necessitated by growth. Under both the New Jersey Development and Redevelopment Plan and the Mercer County Growth Management Plan, the Scotch Road Interchange area is slated as a Planned Regional Center and Regional Growth Area, respectively.

2.11.4 *Development Trends in Ewing Township*

In Ewing Township, much of the area adjoining I-95 is currently developed or in state ownership. The only exception, the undeveloped parcel northwest of the Bear Tavern Road Interchange, is proposed to be developed as an age-restricted development by a private developer. Adjoining the project area, the New Jersey State Police recently completed construction of an Emergency Operations Center within the New Jersey State Police Headquarters property, south of I-95. In the area south of the Emergency Operations Center and Jones Farm, the recently constructed New Jersey Public Health, Environmental, and Agricultural (NJPHEA) Laboratory Facilities encompass approximately 275,000 square feet.

Due to the built-out nature of Ewing Township, local planning officials and the Ewing Township Master Plan anticipate that current development trends, for redevelopment of existing developed parcels, will continue in the future. Rapid growth and suburbanization of Ewing Township over the past few decades has resulted in construction of single-family, attached housing, and multi-family dwellings along the majority of the north side of the I-95 corridor. Because the areas north of I-95 are largely occupied by residential development,

the Ewing Township Master Plan anticipates that future redevelopment activity in the project area to occur in areas surrounding the Bear Tavern Road Interchange and areas south of I-95.

The property south of I-95 in the project area consists predominately of state-owned lands, including the NJDOT maintenance facility, the Jones Farm Correctional Facility and the New Jersey State Police property. Redevelopment within these parcels would be controlled by the state. Moreover, the development rights for the Jones Farm Correctional Facility, a working farm, were deeded to the New Jersey Department of Agriculture in 1999 to restrict future development to agricultural uses only.

The New Jersey State Plan identifies the project area, west of Bear Tavern Road, as a Suburban Planning Area, and areas east of Bear Tavern Road are designated as Metropolitan Planning Area. These planning areas are identified in the State Plan as the areas where development or redevelopment should occur in the state.

2.11.5 Secondary Development

Secondary development in the project area is constrained by the current built-out nature of the project area. Land use and zoning patterns are well established in the project area. The remaining undeveloped parcels in the project area are generally either currently proposed to be developed or are protected as public open space or preserved farmland. The north side of I-95 in Ewing Township is largely built out with residential development, and the majority of land south of I-95 in New Jersey is controlled by the state.

Within designated areas in New Jersey, future growth is planned to occur, consistent with smart growth principles. A growth center has been designated for the I-95/I-295 TDD in New Jersey.

The future development or redevelopment in the area is expected to occur whether or not the project is constructed, and no secondary impacts are anticipated as a result of the project. Within the project area, future development is also constrained by the lack of available developable parcels that are not protected or publicly owned. The current trend of redevelopment of existing parcels is expected to continue in Ewing Township.

The project will not create a change in access, but would enhance the existing transportation network. Transportation improvements are needed because this development is occurring and will continue in future years, and the proposed capacity and safety improvements support planned development.

2.11.6 Cumulative Impacts

Regional transportation plans include plans for a new I-95/Pennsylvania Turnpike Interchange, approximately 8 to 10 miles to the south of the project. North of the project area, I-95 terminates where it meets U.S. Route 1, and is discontinuous in New Jersey. This is the only section of I-95 that is discontinuous in the Northeast, and the I-95/Pennsylvania Turnpike Interchange project would redesignate existing I-95 and make I-95 continuous through New Jersey via a connector with the New Jersey Turnpike at Interchange 6 in Burlington County. Once the new interchange is in place, the designation for I-95 in the project area would be changed to I-195.

Other regional transportation initiatives include the Route 1 Mercer County Congestion Management and Concept Development Study and the Route 1 Bus Rapid Transit project. The latter project includes consideration of adding feeder bus service from parking lots in the project area in Pennsylvania.

Transit improvements in the area include plans to restore service on 27 miles of the West Trenton Line, north of the West Trenton Station, to provide service into the Newark/New York area via the Raritan Valley Line. This project would include a new I-95 Station in the area of the I-95/Scotch Road Interchange. The Ewing Township Master Plan also envisions transit-oriented development for the West Trenton Station site area and adjoining underutilized industrialized parcels, as part of future station development and redevelopment occurring in this area.

Improvements proposed by Mercer County at the Trenton-Mercer Airport include a new terminal facility and access, taxiway, and apron improvements. The Ewing Township Master Plan envisions ongoing redevelopment at underutilized industrialized parcels surrounding the airport property within this area of West Trenton.

The I-95 improvements, along with other transportation improvements proposed for the area, are being planned to accommodate existing and future projected transportation demands and planned future development. The project goal of providing LOS D is consistent with the transportation goals for Mercer County. The Mercer County Highway Master Plan targets a LOS D during the peak hours as the minimum LOS to provide for the roadway network. Development in the area is expected to continue according to the framework established by statewide, regional, county, and local land use and master plans.

The plan in Ewing Township for redevelopment of existing developed parcels support future growth that is protective of remaining open space, natural resources, and farmlands. Similar to the proposed I-95 improvements, the proposed transportation improvements in the area generally involve reactivation, rehabilitation, or reuse of existing transportation facilities. For instance, highways or rail corridors on new location are not currently proposed. The loss of natural resources would be subject to review by the townships, in

implementing their land use plans, and is also regulated by existing federal and state natural resource protection programs. Since existing agriculture lands in the project area and open space are largely preserved or protected, it is not anticipated that cumulative impacts would result in a loss of protected open space or farmlands along the project corridor.

2.12 Construction Measures to Minimize Impacts

During construction of the proposed project, provisions would be made to minimize adverse impacts to the maximum extent practicable. These provisions are discussed below.

2.12.1 Soils

A Soil Erosion and Sedimentation Control Plan will be prepared for the project in accordance with the *NJDOT Soil Erosion and Sediment Control Standards* which will identify means for both temporary and permanent stabilization of disturbed soil areas. Temporarily disturbed soils will be stabilized with mulch. Disturbed soils will be permanently stabilized with geo-reinforcement/geo-grids, grasses and plantings. Construction site entrances will be stabilized with appropriate means to minimizing tracking of sediments.

2.12.2 Water Resources

The project has been designed to minimize the number of piers within the Delaware River and the Canals. Because the river bed in the project area consists of clean coarse and granular type material, significant turbidity problems are not expected. However, the contract documents will incorporate use of turbidity barriers to mitigate this potential issue. Prior to placement of the causeway and cofferdams, turbidity screens will be installed to contain siltation. These will be maintained until the causeway and cofferdams are in place, at which time they will be removed. Once the silt fence barrier is placed along river banks and embankment toe of slopes, the causeway construction activities will begin.

The use of a trestle causeway was selected over an earthen causeway to avoid and minimize effects on the Delaware River to the greatest extent practicable. The trestle causeway will maintain river flows with little or no effect on hydraulic flow. The trestle will be disassembled and removed upon completion of each stage of the construction.

Individual pier construction and the removal of the existing piers will be accessed from the causeway, but all dewatering will occur within localized cofferdams. Groundwater that may seep into the cofferdams will be dewatered through pumps and hoses. The hoses will outlet into sediment filter bags and traps before reentering the river environment.

The bridge spread footings will be topped with large rock (30-inch diameter nominal) for scour protection, and if the drilled shaft option is employed instead, it would also require scour protection similar to that for the spread footings.

Erosion and sedimentation control devices will be used to minimize siltation in the Canals. Dewatering basins will be utilized, as well as pollutant removal filter bags. The D&RCC also requested that the earthen embankment along NJ Route 175 (Upper River Road) that extends into the Canal be faced with stone to reduce erosion. To minimize impacts to the earthen embankment adjacent to the D&R Canal along NJ Route 175 (Upper River Road) beneath the proposed I-95/Scudder Falls Bridge, the design of the project will consider methods to reduce erosion of the embankment. The design of the drainage system for the new roadways will divert water flow away from the Canal prism to the maximum extent possible.

During final design, a Soil Erosion and Sedimentation Control Plan will be prepared for the project outlining BMPs to be implemented during and after construction. The design of stormwater controls will employ the latest New Jersey Stormwater BMP Manual.

To meet the stormwater management requirements, a series of stormwater management facilities are proposed to treat runoff prior discharge to the applicable receiving water. For the area west of the D&R Canal, stormwater will be treated by construction of stormwater management basins within the Route 29 interchange. These stormwater management basins will also treat the stormwater that is diverted across the Canal from the drainage area east of the Canal. For the stormwater that is collected on the Scudder Falls Bridge, this runoff will be treated by a Manufactured Treatment Device prior to discharge. In the vicinity of the I-95/Bear Tavern Road Interchange, stormwater will be treated via the construction of one or two new stormwater management basins within the interchange or near the Mountainview Golf Course pond.

2.12.3 Traffic

The construction of the project is expected to be completed in approximately four years. The construction will be staged to maintain the number of travel lanes currently provided during peak hours, with two lanes of traffic maintained on the I-95/Scudder Falls Bridge and two to three lanes in each direction in New Jersey.

The proposed I-95/Scudder Falls Bridge will be partially constructed upstream of the existing bridge, allowing traffic flow to be maintained on the existing bridge. Two lanes of traffic will be maintained in each direction during peak hours. Warning signs, speed restrictions, and work zone safety measures will be implemented throughout the construction period. Single lane closures will be required at times, but these will be scheduled during non-peak hours. Even though the existing number of travel lanes will be maintained during peak periods, traffic delays may increase due to reduced speeds, the

presence of construction activities nearby, and within transition zones.

Staging areas will be located within the I-95 ROW or DRJTBC, PennDOT, and NJDOT property. Construction work, access, and staging will occur from the roadway rights-of-way. Temporary construction access roads across private property are not anticipated for construction of the replacement bridge.

One primary construction access point to each causeway stage on the Delaware River will be provided from either Pennsylvania or New Jersey. Access will be provided from one construction entrance from PA Route 32 (River Road) for the first and third stages of construction. The entrance and access roads will extend across DRJTBC property for both stages of construction. Access during the second and fourth stages of construction will be from NJ Route 29, via two separate entrances north and south of I-95, respectively.

2.13 Unavoidable Adverse Impacts

The proposed project will result in some unavoidable environmental impacts in order to achieve project objectives. The most significant of these environmental impacts would consist of the following:

- Air quality impacts during construction;
- Noise impacts during construction;
- Impacts to D&R Canal;
- Shading impacts to the Delaware River;
- Potential impacts to archaeological resources;
- Potential soil erosion and sedimentation during construction;
- Potential water quality impacts due to increased impervious surface area and hence, additional runoff;
- Potential reduced groundwater infiltration due to additional impervious surface area;
- Displacement of 5.8 acres of floodplain and 1.16 acres regulatory floodway;
- Removal of 6.3 acres forest;
- Impacts to potential shortnose sturgeon and Atlantic sturgeon spawning habitat;
- Temporary impact to yellow lampmussel and triangle floater habitat;
- Temporary impact to peregrine falcon nesting habitat.

These impacts would be minimized to the maximum extent practicable and would be mitigated to reduce the overall project impact to the environment.

3.0 SUMMARY OF ALTERNATIVES CONSIDERED

A broad range of alternatives for the I-95/Scudder Falls Bridge Improvement Project was considered to meet the project purpose and need. For the Build alternatives, several configurations were evaluated for the two project segments in New Jersey: (1) the I-95/Scudder Falls Bridge and approaches and (2) the NJ Route 29 Interchange. The project segments are summarized in Table 14. These design options were developed to provide the number of lanes and shoulders required to provide LOS D in the design year 2030 and to meet current design criteria. A preferred option was selected for each project segment for inclusion in the proposed action.

In addition to the Build options considered, the No Build alternative and strategies for managing transportation demand and increasing the safety and efficiency of existing Transportation Systems Management (TSM)/Transportation Demand Management (TDM) alternatives were also evaluated. However, the No Build and TSM/TDM alternatives, as stand alone solutions, do not provide sufficient congestion relief or safety improvements to meet the project need.

The alternatives considered were evaluated in consultation with Pennsylvania, New Jersey, regional and local officials, and the public. The means of coordinating with transportation, regulatory and resource agencies, and municipal officials included coordination through two forums: the Interagency Advisory Committee (IAC) and Special Agency Coordination Meetings (SACM). In addition, public open houses were held in both Lower Makefield and Ewing Townships to present concepts to the public and obtain input on alternatives under consideration. A series of separate coordination meetings were also held with environmental groups, transportation groups, including the Bucks County and Mercer County Transportation Management Associations, and Smart Growth agencies in both states.

Table 14—Summary of Design Options

DESCRIPTION OF ALTERNATIVES AND DESIGN OPTIONS	PROPOSED ACTION
No Build	Considered for comparison to Proposed Action
Transportation Systems Management/ Transportation Demand Management <ul style="list-style-type: none"> • Inside shoulders designed to carry Bus Rapid Transit • Coordination with Bucks County and Mercer County Transportation Management Associations • ITS and incident management recommendations 	Part of Proposed Action, but, as a standalone measure, will not meet purpose and need
I-95/Scudder Falls Bridge Structural Options <ul style="list-style-type: none"> • Bridge rehabilitation (full and partial) with widening, • Bridge replacement 	Bridge replacement
I-95/Scudder Falls Bridge Lane Configuration Options <ul style="list-style-type: none"> • Double-deck (two-level) bridge, • Contra-flow lane (reversible lane for use in peak flow directions), • Collector/distributor (CD) roadway (3-lane northbound CD roadway segregated from I-95 by 6-foot concrete divider) • Standard lane additions (5 lanes northbound/4 lanes southbound on the I-95/Scudder Falls Bridge) 	Standard lane additions
I-95/Scudder Falls Bridge Alignment Options <ul style="list-style-type: none"> • New bridge on centerline alignment, • New bridge on downstream alignment, • New bridge on upstream alignment 	New bridge on upstream alignment
Interchange Design Options <ul style="list-style-type: none"> • Taylorsville Road Interchange <ul style="list-style-type: none"> ◦ Design Option 1: Retains all existing interchange ramps ◦ Design Option 2.: Eliminates eastern southbound off-ramp ◦ Design Option 3.: Eliminates eastern northbound on-ramp ◦ Design Option 4.: Eliminates eastern southbound off-ramp and northbound on-ramp • NJ Route 29 Interchange <ul style="list-style-type: none"> ◦ Design Option 1a: Folded Diamond on NJ Route 29 Southbound (Western) Alignment without a Bypass for NJ Route 29 northbound ◦ Design Option 1b: Folded Diamond on NJ Route 29 Southbound (Western) Alignment with a Bypass for NJ Route 29 northbound ◦ Design Option 1c (Modified): Folded Diamond on NJ Route 29 Southbound (Western) Alignment with Roundabout Intersections and a Bypass for NJ Route 29 northbound ◦ Design Option 2: Folded Diamond on NJ Route 29 Northbound (Eastern) Alignment 	<p align="center">Taylorsville Road Interchange Option 2</p> <p align="center">NJ Route 29 Interchange Design Option 1c (Modified)</p>
Pedestrian/Bicycle Facility Options <ul style="list-style-type: none"> • Pennsylvania landing with direct connection to Delaware Canal towpath • Pennsylvania landing with connection to Canal towpath via sidewalk along Woodside Road • New Jersey landing connection to D&R Canal on west side of NJ 29 Interchange 	<p align="center">Pennsylvania landing with connection to Canal towpath via sidewalk along Woodside Road</p> <p align="center">New Jersey landing connection to D&R Canal on west side of NJ29 Interchange</p>

3.1 Transportation Systems Management/Transportation Demand Management

TSM measures are strategies designed to increase the safety, capacity, and efficiency of the existing transportation system and include measures such as facility design, high-occupancy vehicle lanes, Intelligent Transportation Systems (ITS), and Incident Management (IM). TDM measures are strategies to focus on travel demand and changing driver behaviors and include measures such as ridesharing, increased use of transit, and bike/walk incentives. Under the TSM/TDM alternative, the measures that were considered as part of this assessment include:

- **Intelligent Transportation Systems/Incident Management:** A Conceptual ITS Study was prepared that includes recommendations for ITS implementation and an IM Plan. Implementation of these ITS/IM initiatives will require coordination with PennDOT and NJDOT, which own the majority of highway ROW in the project area. This study identifies initiatives that are planned or underway in Pennsylvania and New Jersey.
- **Park and Ride Facilities:** The Taylorsville Road Interchange area includes a park and ride facility off Woodside Road that is owned by PennDOT and maintained by the DRJTBC. Coordination with the Bucks and Mercer County Transportation Management Associations and large local employers has been performed during the project development process and will continue.
- **Accommodations for Proposed Route 1 Bus Rapid Transit:** The proposed NJDOT Bus Rapid Transit project involves a bus feeder system that would service the Route 1 corridor. A potential bus feeder route has been identified that would include a stop at the Taylorsville Road park and ride lot. Incorporation of 14-foot inside shoulders along I-95 in the project area for possible future use as bus lanes by the proposed Route 1 Bus Rapid Transit Project is proposed to allow buses to bypass congestion on I-95.
- **Pedestrian/Bicycle Access:** Provision of pedestrian/bicycle access in part is a TDM strategy and is addressed further in the *Pedestrian/Bicycle Facility* section, Section 3.2.5.

The TSM/TDM alternative would not provide sufficient traffic relief to ameliorate severe traffic congestion that occurs during peak hours and is projected to worsen in 2030. This alternative also would not address structural and geometric deficiencies of the I-95/Scudder Falls Bridge and adjoining interchanges. The TSM/TDM strategies would not satisfy the purpose and need as a standalone alternative. However, the TSM/TDM measures deemed appropriate will be incorporated as part of the proposed action.

3.2 I-95/Scudder Falls Bridge Design Options

An array of Build alternatives and design options were evaluated for the I-95/Scudder Falls Bridge and approaches, including structural options, options involving variations in the number of lanes for the bridge and the approaches, and alignment options for the river crossing. The I-95/Scudder Falls Bridge in the southbound direction would require three travel lanes and one auxiliary lane between the NJ Route 29 and Taylorsville Road Interchanges in order to achieve LOS D for design year peak hour traffic. In the northbound direction the traffic analysis indicated that three travel lanes would be required for through traffic, and two auxiliary lanes would be required for entering and exiting traffic at the interchanges to achieve LOS D during design year peak periods. All of the options evaluated provided this minimum cross-section for the I-95/Scudder Falls Bridge and the approaches.

The structural options regarding rehabilitation of the existing bridge are discussed in the following section and are presented in Table 15. The options that were considered for the configuration and alignment of the I-95/Scudder Falls Bridge are described in this chapter and are presented in Table 16.

3.2.1 *Structural Options: Bridge Rehabilitation with Widening*

Both full and partial rehabilitation options that would also involve widening of the structure to meet the project purpose and need were considered for the existing I-95/Scudder Falls Bridge. The construction and service life costs that include life cycle costs (including maintenance costs) are presented in Table 15. However, full or partial bridge rehabilitation to meet current AASHTO, PennDOT, and NJDOT criteria would result in costs that approach (or even exceed) those for bridge replacement. Under the PennDOT policies and guidelines, if service life costs (including life cycle costs) for bridge rehabilitation are within 30% of the service life costs for bridge replacement, bridge replacement is recommended. Moreover, although the bridge can be strengthened, rehabilitation does not eliminate concerns associated with the age and previous loading history of the bridge (currently exceeding 48 years in service and expected to remain in service for at least 75 more years) and its non-redundant configuration.

In addition, complete bridge replacement would allow greater flexibility and efficiency and longer spans, thus reducing the number of piers in the Delaware River. The two options evaluated for rehabilitation of the I-95/Scudder Falls Bridge are not considered fiscally prudent and were dismissed from further consideration. All project alternatives carried forward for further consideration include complete replacement of the I-95/Scudder Falls Bridge, and a single bridge structure for this river crossing is assumed as part of the proposed action.

Table 15—Comparison of Bridge Rehabilitation and Replacement Options

Parameters	Bridge Rehabilitation Options		Bridge Replacement (Proposed Action)
	Partial Rehabilitation	Complete Rehabilitation	
Meets Purpose and Need	No	No	Yes
Description	Deck replacement and strengthening of the existing bridge superstructure (two main beams under the concrete deck) and construction of a new parallel bridge to meet the proposed number of lanes and shoulders	Total replacement of the existing bridge superstructure (two main beams under the concrete deck) and construction of a new parallel bridge to meet the proposed number of lanes and shoulders	Total bridge replacement
Service Life Costs for Bridge (2005 dollars)	\$67 million	\$76.5 million	\$71 million
Construction Costs (2005 dollars)	\$58.3 million	\$51.6 million	\$62.9 million

Source: Technical Memorandum No. 26, Alternatives Screening Report, February 2007.

Notes: 1). Service life costs include life cycle costs, such as maintenance.

2). Costs are presented in 2005 dollars, as documented in Technical Memorandum No. 26, Alternative Screening Report. Each design option's and alternative's cost escalation to future years is expected to be fairly uniform and thus would not alter the relative cost differences of the alternatives and design options.

3.2.2 Lane Configuration Options

(1) Double-Deck Bridge

A double-deck bridge across the Delaware River was considered that would carry local traffic from the adjoining interchanges on a lower level and I-95 through traffic on an upper level. This option would cost approximately \$18 million (in 2005 dollars) more than the Standard Lane Addition Design Option. Approach structures would extend 800 feet beyond the bridge, requiring substantially greater displacements of adjoining properties and environmental impacts. A double-deck bridge would pose a higher security risk than a single level bridge. In addition, a double-deck bridge would be more visually intrusive in the environment, as well as to bridge users, than a single level bridge due to its height. For these reasons, the option for a double-deck I-95/Scudder Falls Bridge was dismissed from further consideration.

(2) Contra-Flow Lane

Incorporation of a contra-flow lane on I-95 would employ a movable barrier, which would provide an additional lane in the peak flow direction (five lanes) and one less travel lane in the non-peak flow direction (three lanes). Use of a contra-flow lane would allow one less travel lane to be constructed on the I-95/Scudder Falls Bridge (Table 16). A movable barrier operating system would require barrier machines, operators, lane delineation system, spare barriers, shelter for the machine and other miscellaneous items.

Table 16 presents the service life and construction costs for the contra-flow bridge, which is estimated to cost an additional \$9,000,000 (in 2005 dollars) over bridge replacement with standard lane additions. Service life costs, which sum to approximately \$12 million, include initial purchase of the machines that relocate the movable barriers between the morning and afternoon peak hours, the additional costs associated with the movable barriers, replacement of damaged movable barrier segments over the service life, cost of the machine operators, service and maintenance of the machines, and electronic signing for lane delineations. In addition to the cost differential, a contra-flow lane over such a short length of roadway would not be efficient. Safety would be at issue at the end treatments of the moveable barrier and in the transition areas into and out of the contra-flow lane. For these reasons, the contra-flow lane option was dismissed from further consideration.

(3) Collector/Distributor Roadway

This collector/distributor (CD) roadway would only be provided in the northbound direction over a total length of about 2.4 miles and would segregate northbound mainline traffic from traffic entering and exiting at Taylorsville Road and NJ Route 29. The cross-section for the CD roadway would be wider (20 to 28 feet) than for standard lane additions (see Table 16). The northbound CD roadway ramp would begin, on its western end, approximately 0.8 mile west of Taylorsville Road (across from the rest area in Pennsylvania) and would merge back into the I-95 mainline roughly 1.5 miles east of NJ Route 29 (at the western edge of the Jones Farm property). The physical changes to I-95 with a CD roadway option would extend considerable distances along I-95 beyond the immediate area of the I-95/Scudder Falls Bridge. Therefore, the costs, impacts, and discussion presented for the CD roadway alternative in Table 16 reflect the entire project limits.

Table 16—Comparison of I-95/Scudder Falls Bridge Configuration and Alignment Alternatives

Parameters	Double-Deck Bridge	Contra-Flow Lane	Collector/ Distributor Roadway Option	Standard Lane Additions/Bridge Replacement		
				Upstream (Proposed Action)	Centerline	Downstream
Description	Two-level bridge, with lower level carrying three lanes of local traffic in each direction and upper level carrying three lanes of through traffic in each direction	A movable barrier would be used to provide five lanes in the peak direction and three lanes in the off-peak direction. The movable barrier system would extend over the length of the bridge and about 1,500 feet on each of the approaches to the bridge.	A collector/distributor roadway would segregate northbound I-95 mainline traffic from traffic entering and exiting at Taylorsville Road or at NJ Route 29. The northbound I-95 travel lanes and the CD Roadway would be separated by a 6-foot wide raised divider and the roadway cross-section would be 20 to 28 feet wider than the standard lane additions.	The configuration would consist of five lanes northbound and four lanes southbound on the I-95/Scudder Falls Bridge, but the new, wider bridge would extend further upstream of the existing bridge	The configuration would consist of five lanes northbound and four lanes southbound on the I-95/Scudder Falls Bridge, but the new, wider bridge would be centered on the centerline of the existing bridge	The configuration would consist of five lanes northbound and four lanes southbound on the I-95/Scudder Falls Bridge, but the new, wider bridge would be extend further downstream of the existing bridge
Meets Purpose and Need	Yes	Yes	Yes	Yes	Yes	Yes
Construction Costs (2005 dollars)	Project-wide cost of \$197 million	Project-wide cost of \$188 million which includes \$12 million additional operation costs	Project-wide cost of \$192 million	Project-wide cost of \$179 million	Project-wide cost of \$179 million	Project-wide cost of \$179 million
2030 Peak Hour Traffic Operations	LOS D	LOS D	LOS C northbound LOS D southbound Introduces undesirable weave after two-lane entrance	LOS C northbound LOS D southbound	LOS C northbound LOS D southbound	LOS C northbound LOS D southbound
Property Displacements	New construction would be entirely upstream or downstream of existing bridge, resulting in extensive property and environmental impacts on the approaches. Approach work would extend 800 feet beyond the existing bridge abutments, and impacts would be greater than for standard lane additions	This option would be eight lanes wide (instead of nine lanes for the standard lane additions), so property and environmental impacts would generally be less than for the standard lane additions.	2 residences	1 residence	2 residences	2 residences
Public Property Acquisitions			5 acres, including 2 acres of State Police property and Villa Victoria Academy	2 acres	3 acres	3 acres
Private Property Takings			2 acres, including portions of 12 residential properties	1 acre, including portions of 7 residential properties	1 acre, including portions of 7 residential properties	2 acres, including portions of 9 residential properties
Wetlands			1 acre	1 acre	1 acre	1 acre
Floodplains			Fill within floodway and 11 acres of 100-year floodplain	Fill within floodway and 10 acres of 100-year floodplain	Fill within floodway and 11 acres of 100-year floodplain	Fill within floodway and 11 acres of 100-year floodplain
Increase in Shading on Delaware River			4 acres more than existing bridge	3 acres more than existing bridge	3 acres more than existing bridge	3 acres more than existing bridge
Streams			3 streams (1/3 acre)	3 streams (0.2 acre)	3 streams (0.2 acre)	3 streams (0.3 acre)
Ditches			13 ditches (3 acres)	10 ditches (2 acres)	11 ditches (2 acres)	11 ditches (2 acres)
Preserved Farmlands			1 ½ acres	1 ½ acres	1 ½ acres	1 ½ acres
Historic Resources			4 sites	4 sites	4 sites	4 sites
Increase in Shading on Canals			1/5 acre	1/5 acre	1/5 acre	1/5 acre
Archaeological Resources			5 sites	5 sites	5 sites	5 sites
Construction	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River.	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River.	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River	Construction of a new parallel bridge would require construction of a temporary causeway across the Delaware River
Reasons for Dismissal	Additional costs and impacts (including greater visual intrusion and greater approach work) when compared with the standard lane additions	Safety concerns at transition areas. Operational costs and difficulties with moving the contra-flow barriers four times a day.	Increased costs and environmental impacts, without substantial additional operating benefits, when compared with the standard lane additions	Preferred Alternative	Increased impacts and difficulty with construction staging, when compared to the upstream alignment	Increased impacts when compared to the upstream alignment

Source: Technical Memorandum No. 26, Alternatives Screening Report, February 2007.

Notes:

- 1). Information for all alternatives, as presented above, was based on conceptual design.
- 2). Costs are presented in 2005 dollars, as documented in Technical Memorandum No. 26, Alternative Screening Report. Each design option's and alternative's cost escalation to future years is expected to be fairly uniform and thus would not alter the relative cost differences of the alternatives and design options.

The drawbacks of the CD roadway are related to cost and additional impacts from a wider highway cross-section, as described in Table 16. The CD roadway alternative is estimated to cost approximately \$13 million (in 2005 dollars) more than the standard lane additions. The I-95/Scudder Falls Bridge would be 24 feet wider with the CD roadway alternative (186 feet) than it would be with standard lane additions (162 feet).

In addition to greater impacts on the New Jersey State Police property (2 acres), the CD roadway would affect ½ acre more of Commonwealth/Township property surrounding the park and ride lot and would affect 2 more acres of private property, including land within the Villa Victoria Academy. The CD roadway alternative would also span a greater area of the Delaware Canal in Pennsylvania (increase of 400 square feet) and the D&R Canal in New Jersey (increase of 800 square feet) than standard lane additions.

The levels of service associated with both alternatives are comparable and acceptable, but the CD roadway alternative does not present sufficient additional operational benefits to justify the increase in cost (\$13 million more) and property/environmental impacts, when compared with the standard lane additions alternative. For these reasons, the CD roadway alternative was dismissed from further consideration.

Based on the above analysis, the standard lane additions alternative was advanced as the preferred lane configuration over the Double-Deck Bridge, Contra-Flow Lanes and CD roadway lane configuration alternatives.

3.2.3 I-95/Scudder Falls Bridge Alignment Options

(1) New Bridge on Centerline Alignment

Under this alignment option, the new highway with standard lane additions (five lanes northbound and four lanes southbound on the I-95/Scudder Falls Bridge) would be centered on the centerline of the existing bridge (see Table 16). Compared to the proposed action (upstream alignment), the centerline alignment would involve greater property and environmental impacts and would affect the USACOE flood control structure, without presenting any clear advantages over other alignment options. From a constructability standpoint, the centerline alignment would be the least favorable, as it would involve the greatest overlap with the existing bridge. For these reasons, this option was dismissed from further consideration.

(2) New Bridge on Downstream Alignment

Under the downstream alignment option, the bridge alignment over the Delaware River and the mainline approaches would be shifted downstream, with the new bridge partially overlapping the footprint of the existing bridge (see Table 16). From a constructability standpoint, the downstream alignment option would provide more travel lanes and flexibility

than the centerline alignment during the various phases of construction because a large portion of the new bridge's width could be constructed parallel to the existing bridge without interfering with traffic flow on the existing bridge.

The downstream alignment option would involve the greatest property impacts of the three alignment options, affecting approximately three acres of public land and roughly two acres of private property. The downstream alignment would involve the greatest impacts on streams and would also have the greatest impact on the USACOE flood overflow structure on the D&R Canal south of I-95. Overall, project impacts were deemed to be greater with the downstream alignment, and this option did not present any clear benefits over the other options. For these reasons, the downstream alignment was dismissed from further consideration, and a new bridge on an upstream alignment was selected as part of the proposed action.

3.2.4 NJ Route 29 Interchange Options

Four different design options were evaluated to improve the interchange geometrics and eliminate the existing criss-crossing intersection configurations at the NJ Route 29 Interchange (see Table 17). The existing interchange configuration currently provides connections to NJ Route 175 (Upper River Road) and provides bypasses around the interchange for NJ Route 29 northbound and southbound traffic. These interchange improvements would eliminate the stop-sign control at the southbound I-95 on-ramp and would provide adequate acceleration/deceleration lanes on I-95. Option 1c Modified was selected as the preferred option for the NJ Route 29 Interchange.

Traffic LOS analysis shows that all key locations within the interchange would operate at LOS C or better under all design options. In 2005 dollars, Option 1a's costs (\$18.5 million dollars) are the lowest. Options 1b and 2 are the most costly design options, with costs of \$31.5 million and \$32 million, respectively.

Option 2 would involve greater costs and property and environmental impacts than the other options considered, as shown in Table 17. Option 2 would involve the greatest impact at the edges of the Villa Victoria Academy property, a private school, with the limit of disturbance affecting approximately $\frac{3}{4}$ acre adjacent to a recreation field. Impacts to natural resources and property associated with Options 1a and 1b and the preferred option (Option 1c Modified) are generally comparable, and none of the options would result in property displacements.

Under Option 2, the NJ Route 29 ramps crossing the Canal would be more consolidated with the I-95 mainline, spanning less area of the Canal (by 800 square feet) and resulting in less intrusion outside of the existing highway ROW. However, there would be less spacing between the ramps and the mainline, which has the potential to create a greater obstruction to light on the Canal and towpath below. Elimination of the existing NJ Route 29 bypass under Option 1a would reduce existing proximity impacts to the Canal. Option

1a would result in a roughly 1.5-acre decrease in existing impervious area, with removal of the bypass for NJ Route 29.

Options 1a, 1b, and 2 would introduce traffic signals, which were viewed as undesirable by NJDOT from operations, safety, and energy perspectives. NJDOT's preference is to implement roundabout intersections where appropriate and feasible, particularly along NJ Route 29. Based on input from NJDOT, Options 1a, 1b, and 2 were viewed as having less favorable traffic and safety operations and were therefore dismissed from further consideration. For these reasons, Option 1c (Modified), which replaces signalized intersections with roundabouts, allows free-flow traffic operation, and retains the bypass, was incorporated as part of the proposed action.

Table 17—Comparison of NJ Route 29 Interchange Design Options

Parameters	Design Option 1a Folded Diamond without a Bypass	Design Option 1b Folded Diamond with a Bypass	Design Option 1c & 1c Modified Folded Diamond with Roundabouts (Proposed Action)	Design Option 2 Folded Diamond on NB Alignment
2030 Peak Hour Traffic North of I-95	LOS A	LOS A	LOS A	LOS C
2030 Peak Hour Traffic South of I-95	LOS B	LOS B	LOS A	LOS A
Number of Signalized Intersections	2	2	0	1
Reconstruction of NJ Route 29 Canal Bridge	No	Yes	Yes	No
Estimated Costs (2005\$)	\$18.5 million	\$31.5 million	\$24.5 million	\$32 million
Displacements	0	0	0	0
Canal Area Spanned	Widened I-95 and two new ramps over Canal park	Widened I-95 and two new ramps over Canal park	Widened I-95 and two new ramps over Canal park	Widened I-95 and two new ramps over Canal park
Public Property Acquisitions	0	0	0	0.8 acre
Private Property Takings	0.1 acre at 3 residences	0.1 acre at 3 residences	0.1 acre at 3 residences	0.1 acre at 3 residences
Historic Sites	2	2	2	2
Archaeological Sites	2	2	2	2
Increase in Canal area spanned	0.1 acre	0.1 acre	0.1 acre	0.1 acre
Wetlands	0.8 acre	0.8 acre	0.8 acre	0.9 acre
Streams	0	0	0	1 stream (0.1 acre)
Floodplains	8 acres	7 acres	7 acres	9 acres
Change in Impervious Area vs. Existing	1.5 acre decrease	1 acre increase	1.3 acre increase	0.5 acre increase

Source: Technical Memorandum No. 26, Alternatives Screening Report, February 2007.

Notes:

- 1). Information for all design options, as presented above, was based on conceptual design.
- 2). Costs are presented in 2005 dollars, as documented in Technical Memorandum No. 26, Alternative Screening Report. Each design option's and alternative's cost escalation to future years is expected to be fairly uniform and thus would not alter the relative cost differences of the alternatives and design options.
- 3). Impacts are reported for Design Option 1c. Impacts of Design Option 1c Modified are the same except that Design Option 1c Modified would have slightly lesser impacts to wetlands and would create slightly less new impervious areas.

3.2.5 Pedestrian/Bicycle Facility

Opportunities to provide a connection across the Delaware River between the towpaths within the Delaware Canal State Park and the D&R Canal State Park were evaluated as part of this project. The pedestrian/bicycle facility would be provided on the north side of a new I-95/Scudder Falls Bridge over the Delaware River. Landings at each end of the bridge would be constructed to provide access down to the Delaware Canal towpath in Pennsylvania and the D&R Canal towpath in New Jersey.

Due to conflicts with required highway ramping and NJ Route 29, and the limited space within the interchange area in which to construct the pedestrian/bicycle facility ramping from the grade of its crossing over the river to the grade at the D&R Canal towpath, design studies yielded one feasible option on the New Jersey side. The preferred design option that was advanced for further consideration would extend along the west side of the NJ Route 29 Interchange to connect to the D&R Canal towpath at the Scudder Falls Recreation Area.

3.2.6 No Build Alternative

Under the No Build alternative, the configuration of I-95 would remain unchanged, with two travel lanes in each direction continuing east in the project area from PA Route 332 across the I-95/Scudder Falls Bridge and three travel lanes in each direction extending east of the NJ Route 29 Interchange. This alternative would not address the structural condition and the substandard lane and shoulder conditions of the existing I-95/Scudder Falls Bridge. The bridge is approximately 50 years old, has experienced structural deterioration, and is non-redundant. A non-redundant bridge generally has only two primary load-carrying members, where the failure of one of these members results in catastrophic collapse of the bridge. The design of non-redundant structures is no longer permitted nationwide by the FHWA and state DOTs. The two main beams and pinned hangers (four large steel pins supporting each suspended portion of the bridge) are fracture critical elements, whose failure would result in collapse of the bridge. Redundancy hangers have been installed at all pinned hangers to prevent catastrophic collapse should a hanger fail.

Geometric deficiencies on the bridge include the lack of adequate inside and outside shoulders, with no refuge for drivers to pull over in the event of a vehicle breakdown or other incident. The proximity to the adjoining NJ Route 29 and Taylorsville Road Interchanges and lack of adequate acceleration/deceleration lanes at the I-95 merges contributes to crash rates that are higher than adjoining segments of I-95. At the on-ramp from NJ Route 29 to I-95 southbound, the lack of an acceleration lane requires vehicles to come to a complete stop at a stop sign at the end of the ramp, before merging directly into mainline traffic operating at full speeds on the bridge itself. The geometrics at the adjoining interchanges are substandard, particularly at the NJ Route 29 Interchange. This interchange has a scissors configuration and includes nineteen ramp merges and seven at-grade intersections, and is complex and confusing for drivers. The configuration contributes to a crash incidence at the NJ Route 29 Interchange which is the highest of any single location within the project area.

Moreover, severe congestion (LOS E or F) that currently spans two hours in each peak period in the peak direction on the I-95/Scudder Falls Bridge would worsen (LOS F) in the future year 2030 under the No Build alternative. In 2030, the undesirable operating conditions (LOS E or F) would extend further west along I-95 to the PA Route 332 in Pennsylvania in the northbound A.M. peak hour and would continue to the west of the PA Route 332 Interchange in the southbound P.M. peak.

3.3 Proposed Action

The proposed action that has been developed to meet the project purpose and need incorporates the preferred design options that were selected for each project segment. The proposed action is shown on Figure 9 and incorporates the following project elements:

- Standard Lane Additions – 5 lanes northbound/4 lanes southbound on the I-95/Scudder Falls Bridge
- New Bridge on Upstream Alignment
- Pennsylvania Mainline Inside Widening
- Taylorsville Road Interchange Option 2
- NJ Route 29 Interchange Option 1c (Modified)
- Pedestrian/bicycle facility
- TSM/TDM measures.

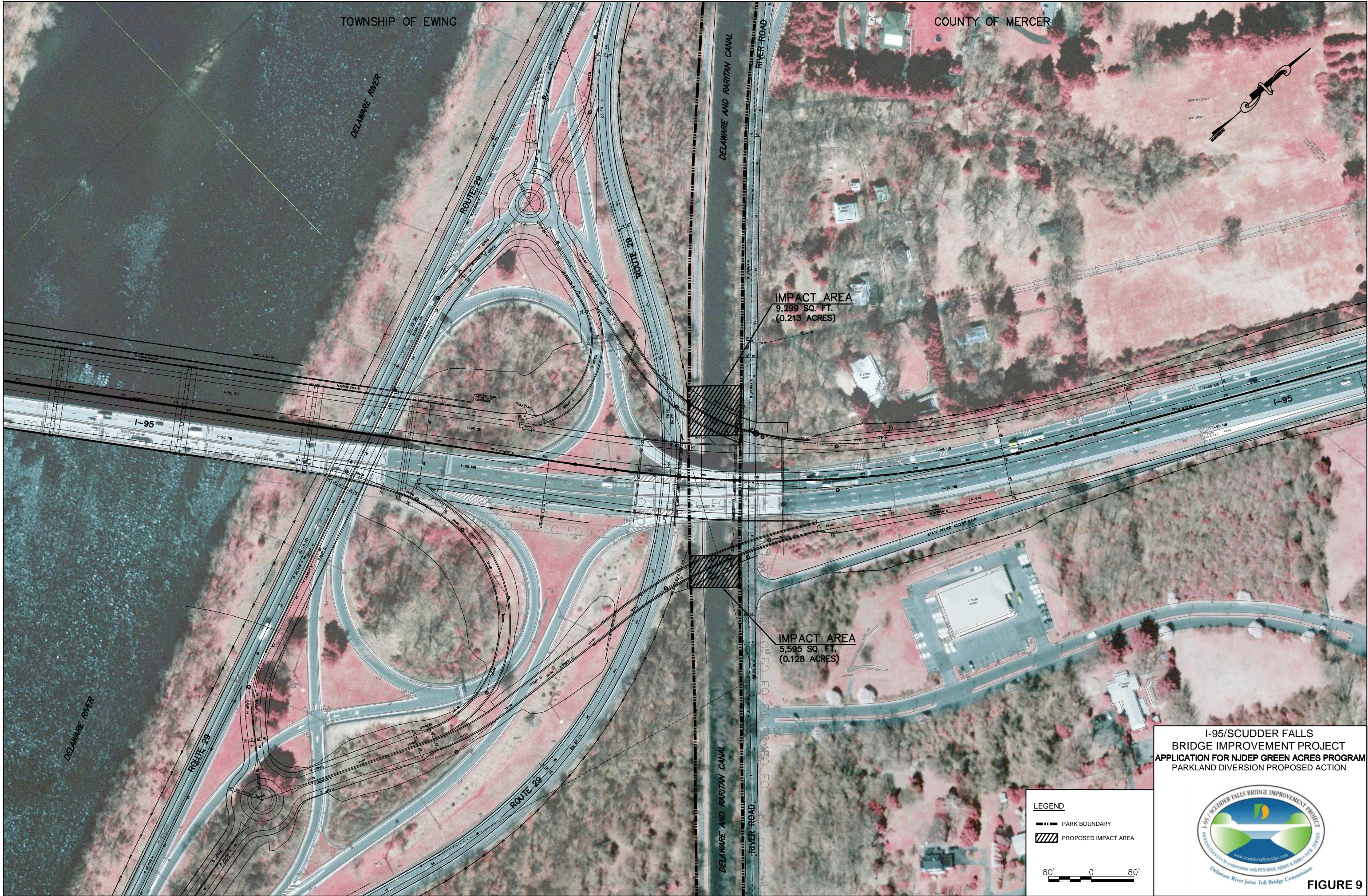
3.3.1 *Standard Lane Additions*

Existing I-95 includes two travel lanes in each direction west of NJ Route 29, and three travel lanes in each direction east of NJ Route 29. The area immediately east of the I-95/Scudder Falls Bridge, which is two lanes in each direction, is a transition area from two lanes to three lanes in each direction.

Under the proposed action with standard lane additions, one travel lane in each direction will be added on the I-95/Scudder Falls Bridge. The project will also add two auxiliary lanes northbound between Taylorsville Road and NJ Route 29 and one auxiliary lane southbound to provide safer and more efficient entry and exit at these closely spaced interchanges, for a total of five lanes northbound and four lanes southbound on the I-95/Scudder Falls Bridge and approaches. One northbound auxiliary lane will be dropped at the NJ Route 29 Interchange, and the second northbound auxiliary lane will be extended east to the Bear Tavern Road Interchange. Full width inside and outside shoulders will be provided in both directions of I-95. The inside shoulder of I-95 throughout the project area will be 14 feet wide to accommodate future planned Route 1 Bus Rapid Transit service during congested conditions. A Pedestrian/Bicycle Facility for accommodating pedestrian and bicycle access across the I-95/Scudder Falls Bridge is also proposed.

3.3.2 *New Bridge on Upstream Alignment*

A new, wider bridge will be constructed upstream of, or north of, the existing I-95/Scudder Falls Bridge over the Delaware River, with the new bridge extending north from the southern edge of the existing bridge. This bridge will incorporate a single bridge structure.



3.3.3 NJ Route 29 Interchange Option 1c (Modified)

The design for the NJ Route 29 Interchange will incorporate a folded diamond interchange with two roundabout intersections at the I-95 ramp termini. This design is preferred by NJDOT and viewed as the best option from safety and traffic operations perspectives. This design will retain the bypasses for NJ Route 29 northbound and southbound through traffic and will allow free-flow traffic through the interchange, as the preferred design does not include any traffic signals or stop sign-controlled intersections. The width of the NJ Route 29 northbound bypass will be reduced to one travel lane plus shoulders to reduce the existing effects on the D&R Canal. The preferred option, Option 1c (Modified) is a variation of the original roundabout option, Option 1c, in that minor design refinements were made to the configurations of the roundabouts and the reduction by one lane of the travel way for the northbound NJ Route 29 bypass.

Option 1c (Modified) would eliminate the existing I-95 northbound on-ramp from NJ Route 175 (Upper River Road). This movement would be accommodated within the NJ Route 29 interchange. This discontinued northbound on-ramp currently provides direct access to I-95 northbound from the adjoining NJ State Police facility. State Police emergency access would be retained via an exclusive-use northbound on-ramp along the same general alignment as the existing northbound on-ramp from NJ Route 175.

3.3.4 New Jersey Mainline Widening

Because of the inadequate median width available, the widening of I-95 in New Jersey between the NJ Route 29 and Bear Tavern Road interchanges will be implemented on the outside (right side) of the existing lanes. There is adequate NJDOT ROW to accomplish the necessary widening. The existing median will be used for the proposed wider left shoulder in each direction of I-95. A concrete glare screen median barrier will be installed between the northbound and southbound directions.

3.3.5 Pedestrian/Bicycle Facility

The proposed action includes a pedestrian/bicycle facility that would provide a connection across the Delaware River to the adjoining towpaths within the canal systems in Pennsylvania and New Jersey.

The preferred design concept for accommodating pedestrians and bicycles on the I-95/Scudder Falls Bridge includes a ten- to twelve-foot wide path across the I-95/Scudder Falls Bridge, leading to a switchback structure that would bring the path down to ground elevation. The Pennsylvania landing would connect to Woodside Road on DRJTBC property, and a 5-foot sidewalk would be provided along Woodside Road to connect the landing and the Delaware Canal towpath. The New Jersey landing would adjoin the west side of the NJ Route 29 Interchange and would connect to the Scudder Falls Recreation Area.

3.3.6 Transportation Systems Management/Transportation Demand Management

The following TSM/TDM measures have been considered as part of the proposed action:

- **Intelligent Transportation Systems/Incident Management:** Implementation of ITS and an IM Plan will require coordination with PennDOT and NJDOT, which own the majority of the ROW. Measures to be considered during final design include:
 - Dynamic Message Signs;
 - Closed Circuit Television Cameras;
 - Incident Detection System;
 - Highway Advisory Radio;
 - Roadway Weather Information System;
 - Freeway Service Patrols; and
 - Installation of fiber optic conduit and cable within the project area.
- **Accommodations for Proposed Route 1 Bus Rapid Transit:** The improvements to the I-95 mainline will include a 14-foot inside shoulder along the entire project area to accommodate the proposed Route 1 Bus Rapid Transit service during periods of congestion on the I-95 travel lanes.
- **Other TSM/TDM Initiatives:** Other TSM/TDM initiatives, such as park and ride improvements will be considered in consultation with PennDOT, NJDOT, and the Bucks County and Mercer County Transportation Management Associations and large area employers.

3.3.7 Cost

With the pedestrian/bicycle facility, the project is estimated to cost approximately \$300 million (2012 dollars).

The DRJTBC is currently evaluating various options for funding the project as part of its \$950 million Capital Program which includes investments to Preserve, Manage, Enhance and Protect its capital infrastructure comprised of seven toll bridges and 13 toll-supported bridges and their accompanying assets which span the Delaware River over a distance of 139 miles. As part of this process, and consistent with a Memorandum of Agreement by the Executive Director of the DRJTBC, the Pennsylvania Secretary of Transportation, and the New Jersey Commissioner of Transportation, the DRJTBC is consulting with representatives of the Governors of the State of New Jersey and the Commonwealth of Pennsylvania to assure sufficient funding to construct this very important enhancement of its capital infrastructure.

3.3.8 Construction

Final design of the proposed project is anticipated to be completed in 2012, with construction initiating in the beginning of 2013. Construction of the project is anticipated to occur over approximately four years. The proposed action will involve typical roadway and bridge construction activities including:

- excavation,
- placement of fill,
- grading,
- paving,
- erection of structural members such as beams and columns,
- pouring of concrete,
- installation of temporary and permanent erosion control devices, and
- installation of highway appurtenances such as signing, guide rail, traffic signals, and pavement markings.

The following sections review the anticipated construction phasing for the I-95 mainline and for construction within the Delaware River. The following addresses proposed construction methods for work within the river and reviews alternative methods considered.

I-95 Mainline Construction Staging

Construction of mainline I-95 work will occur in two phases, each maintaining the current number of travel lanes (three lanes in New Jersey and two lanes in Pennsylvania of traffic in each direction during peak periods. Phase 1 will reconstruct the existing median and outside shoulders and Phase 2 will reconstruct the central portions of the northbound and southbound roadways.

- **Phase 1: Reconstruct Median and Outside Shoulders**
 - Install traffic control measures along mainline for Phase 1. Maintain traffic along active lanes.
 - Install erosion and sedimentation control measures.
 - Reconstruct ditches, install new drainage features, install noise barriers and guiderail.
 - Reconstruct outside shoulders and median.
 - Construct new pavement and bridges.
 - Remove traffic control measures for Phase 1.
- **Phase 2: Reconstruct Central Portions of I-95 Northbound and Southbound Roadways**
 - Install traffic control measures along mainline for Phase 2. Maintain traffic along newly constructed median and on outside lanes and shoulders.
 - Maintain erosion and sedimentation control measures.
 - Install new drainage features.

- Reconstruct traffic lanes and bridges.
- Construct new pavement and bridges.
- Remove traffic control measures for Phase 2.
- **Reconstruction of NJ Route 29 and Other Project Roadways:**
 - Install traffic control measures. Maintain traffic flow.
 - Install erosion and sedimentation control measures.
 - Complete earthwork.
 - Reconstruct ditches, install new drainage features, install noise barriers and guiderail.
 - Construct new pavement and bridges.
 - Install final signing, pavement striping, and traffic signals.
 - Remove traffic control measures.

Temporary construction access for construction activities along affected project roadways, such as I-95 and NJ Route 29, will be performed from these roadways. Temporary access through private properties is not anticipated. Staging areas will be located within the I-95 ROW and within DRJTBC and NJDOT property to the greatest extent practicable.

I-95/Scudder Falls Bridge Construction

A variety of construction equipment is anticipated to be used in the construction of the bridge foundations, including but not limited to bulldozers, pile drivers, augers for possible drilled shaft construction, excavators, cranes, dump trucks, hydraulic rams, and dewatering pumps and hoses. The following reviews the construction methods and staging proposed and reviews alternative methods considered.

Proposed Causeway and Bridge Construction Staging

This project will require two primary phases to construct the new I-95/Scudder Falls Bridge and demolish the existing bridge. The construction of new bridge piers and demolition of existing piers within the Delaware River will occur within cofferdams to allow pier construction to occur in the dry. Seven of the nine existing bridge piers are located within the river, while five of the seven proposed bridge piers will be located within the river.

The first construction phase would construct the upstream, or northern, side of the bridge. The second phase of bridge construction would demolish the existing bridge and construct the downstream, or southern side of the bridge. It is anticipated that construction access within the Delaware River will be provided by use of four stages (two stages for each primary construction phase) of temporary causeways. Each causeway segment would extend across half of the river at a time, extending approximately 400 to 600 feet from either the Pennsylvania or New Jersey shore. To reduce the overall effects on the substrate, river flow, and fish passage, a trestle causeway will be used. Construction from a temporary trestle causeway will involve construction of short spans of approximately 25

feet with pile bents (row of piles connected by pile caps at top to support a load) and progressive construction from shoreline.

- Stage I would extend 550 feet along the upstream side of the bridge and across Park Island from the Pennsylvania side.
- Stage II would extend approximately 500 feet along the upstream side of the bridge from the New Jersey side.
- Stage III would extend approximately 550 feet along the downstream side of the bridge and across Park Island from the Pennsylvania side.
- Stage IV would extend approximately 500 feet along the downstream side of the bridge from the New Jersey side.

Each causeway segment would have a working width of approximately 30 feet. In order to access each proposed bridge pier location, perpendicular extensions (causeway fingers) from the main causeway would be used. The causeway fingers also would be used to access the existing piers for demolition, in cases where the proposed piers do not overlap with the existing piers. Construction of the trestle fingers to reach the bridge pier location will be accomplished from the completed trestle spans.

Each of the two construction phases for bridge construction would maintain a minimum of two lanes of traffic in each direction during peak periods. At the end of Phase 1 (Stages I and II), all traffic would be moved to the newly constructed portion of the new bridge. At the conclusion of Phase 2, and when all approach roadway work is completed, traffic would be moved onto its permanent northbound and southbound sections of the bridge.

- **Phase 1: Construct Northern (Upstream) Portion of Bridge**
 - Install traffic control measures along I-95 for Phase 1. Maintain traffic flow along the existing bridge.
 - Install erosion and sedimentation control measures in river and on land.
 - Erect temporary causeway (Stages I and II) for construction of the new bridge from the causeway.
 - Construct bridge piers from the causeway by dewatering pier area using cofferdam method.
 - Remove cofferdam and stabilize river area in the vicinity of the newly constructed piers.
 - Erect bridge superstructure (beams below the concrete deck) from causeway.
 - Remove causeway, stabilize river area and restore to pre-construction condition.
 - Complete bridge deck, paving, and finish work from the newly constructed bridge.
 - Remove traffic control measures for Phase 1.

Each causeway stage would be erected separately and removed so that only one causeway Stage is in place at any time.

- **Phase 2: Demolish Existing Bridge and Construct Southern (Downstream) Portion of Bridge**
 - Install traffic control measures along I-95 for Phase 2. Maintain traffic flow along the existing bridge.
 - Maintain erosion and sedimentation control measures in river and on land.
 - Erect temporary causeway (Stages III and IV) for demolition of the existing bridge and construction of the new bridge from the causeway.
 - Begin demolition of existing bridge from the causeway and transport unsuitable material to an approved offsite location.
 - Construct bridge piers from the causeway by dewatering pier area using cofferdam method.
 - Remove cofferdam and stabilize river area in the vicinity of the newly constructed piers.
 - Erect bridge superstructure (beams below the concrete deck) from causeway.
 - Complete bridge deck, paving, and finish work from the newly constructed bridge.
 - Remove traffic control measures for Phase 2.

Each causeway stage would be erected separately and removed so that only one causeway stage is in place at any time.

Proposed Construction Methods

The proposed construction will involve use of a temporary trestle causeway for staging and access to the river during construction, and cofferdams to demolish the existing bridge and construct the new bridge piers.

Construction of the new bridge is estimated to be completed in approximately four years, with each stage of causeway construction expected to last approximately one year. Each cofferdam used to construct the proposed five river piers and demolish the existing seven river piers, will be used over a period of about 4 months. It would take three to four weeks to construct each cofferdam. Each cofferdam used to build the proposed bridge piers will be approximately 26 feet by 166 feet in size, and the bridge footings will be emplaced 10 to 15 feet below the existing riverbed in competent sand and gravel or rock.

Approximately 22 to 36 pile bents would be required for each causeway stage. Each pile bent would be driven into the river bottom, and would disturb approximately 10 square feet of river bottom. The 22 to 36 bents installed for each causeway stage correspond to approximately 210 to 340 square feet of river bottom disturbance at any one time. Upon removal of each trestle causeway stage, the bents would be removed to a depth of 3 feet below the river bottom, and the river bottom will be restored to its pre-construction condition. The estimated cost of a trestle causeway will be in excess of \$3 million.

Access to each causeway from land would be via temporary access roads from PA Route 32 (River Road) on the Pennsylvania side of the river, and from NJ Route 29 on the New Jersey side of the river.

The construction sequence of the trestle would be as follows:

- Construct the access roadway to reach the river shoreline,
- Construct a temporary abutment for the first span of the trestle,
- Drive the piles for the first trestle bent and install bent cap,
- Erect the beams and construct the deck for first span,
- Move pile driving equipment to the constructed first span,
- Drive the pile for second trestle bent and install cap,
- Erect beams and construct the deck for second span,
- Move pile driving equipment to second span and continue as before until the appropriate length of the trestle is completed.

The new bridge construction will be constructed from the causeway and causeway fingers.

It is anticipated that once the causeways and cofferdams are completed, all work can be accomplished throughout the year from the causeway, inside the cofferdams, and from the partially constructed bridge. For example, once the cofferdams are constructed, all pier construction can be accomplished inside the cofferdams and from the causeway. The steel erection for the bridge superstructure will be performed by delivering the beams via the existing I-95 bridge (there will be partial closure of the bridge at night) with the cranes placed on the causeway. Once the steel beams are erected, the remaining portions of the bridge, such as the deck, can be constructed from the new structure.

Once the piers have been constructed and the steel beams have been erected, the cofferdams will be removed either by pulling the sheets out of the river bed or by removing the portion of the sheets above the river bed. The causeway can then be removed in a retreating manner.

Demolition of the existing bridge piers also will be accomplished from the causeway and causeway fingers. It is anticipated that the existing bridge will be demolished using various methods. As a first step, timber shielding will be placed between the existing girders, beams, and the edges to protect the workers and prevent debris from falling into the river.

The bridge deck will then be removed by saw cutting the concrete into manageable pieces for loading onto dump trucks. The deck will be removed from the existing bridge in a retreating manner. The beams and girders will be cut into pieces and loaded onto trucks with cranes placed on the existing bridge and on the causeway. The steel will be trucked off to a recycling center.

For the demolition of the existing piers, cofferdams will be installed and demolition will occur from within. These cofferdams will be approximately 15 feet wide by 70 feet long. Access to the existing piers will be via the causeways. The existing piers are clad with stones with a reinforced concrete core. So, the stones will have to be removed first. The concrete core will be demolished by hydraulic ram equipment, which creates a pulsing sensation that causes the existing concrete to crumble. The larger sections will be broken into smaller pieces and perhaps recycled on-site for use by the contractor for embankment and/or backfill material. The existing pier stems will be removed to a depth of two to three feet below the river bed elevation.

The trestle causeway would involve impacts to the river bottom at the footprint of the pile bents, but these would be temporary. For all intents and purposes, the trestle causeway can be completely removed, with the pile bents removed to a depth of 3 feet and the river bottom restored. It is anticipated that natural riverbed sediments will naturally infill this area over time, and the river bottom would be restored to its pre-construction condition.

3.4 Proposed Parkland Impacts

As detailed in Section 3.2, various bridge options were investigated to meet the project purpose and need (see Section 1.2). The Alternatives Analysis resulted in a Preferred Alternative that includes a bridge section with nine travel lanes and shoulders as well as the selection of Option 1c (Modified) for the NJ Route 29 Interchange. The Preferred Alternative has I-95 crossing the Canal perpendicular to its flow, while the Route 29 access ramps traverse the Canal on a skew due to roadway geometries. These crossings minimize parkland impacts while still meeting AASHTO bridge and roadway design criteria.

The bridge section selected will increase shading over the D&R Canal and will require construction of a pier on the east bank of the Canal; however, these impacts occur within the existing NJDOT I-95 ROW. Conversely, the Route 29 access ramps are beyond the existing NJDOT ROW and will require the acquisition of ROW from the D&R Canal State Park. Table 18 provides a summary of impacts to the parkland including direct physical impacts (i.e., bridge piers), aerial crossings, and construction/maintenance easements.

Table 18 – Parkland Impacts

	Bridge Piers	Aerial Crossings	Construction/Maintenance
I-95 within existing ROW	376 SF (0.009 acres)	4,250 SF (0.098 acres)	6,714 SF (0.154 acres)
I-95 outside existing ROW	0.0 acres	0.0 acres	1,137 SF (0.026 acres)
I-95 southbound ramp to Route 29	112 SF (0.003 acres)	3,127 SF (0.072 acres)	5,035 SF (0.116 acres)
Route 29 access ramp to northbound I-95	184 SF (0.004 acres)	2,621 SF (0.060 acres)	2,974 SF (0.068 acres)
Total Area Requiring Parkland Diversion By Category	184 SF (0.004 acres)	5,748 SF (0.132 acres)	9,146 SF (0.210 acres)
Total Area Requiring Parkland Diversion	14,894 SF (0.342 acres)		

As noted on Table 18, the proposed project will impact 0.594 acres of the D&R Canal State Park as a result of aerial crossings, placement of bridge piers, and area required for construction and future maintenance. A portion of these impacts (0.252 acres) do not require a Parkland Diversion since they occur within the existing NJDOT ROW. As such, the Parkland Diversion application indicates that the proposed project will necessitate the acquisition of 0.342 acres of ROW from the D&R Canal State Park.

4.0 PEDESTRIAN/BICYCLE FACILITY

The DRJTBC proposes the construction of a pedestrian/bicycle facility across the Delaware River in association with the I-95/Scudder Falls Bridge Improvement Project. The intent of this facility is to connect the Delaware Canal State Park in Pennsylvania to the D&R Canal State Park in New Jersey.

In New Jersey the facility will be constructed within the NJDOT's Route 29 ROW as well as within an easement the NJDOT obtained for the Route 29/I-95 interchange. Appendix G includes the NJDOT General Property Parcel Maps showing their ROW and associated easements, as well as a drawing with the proposed pedestrian/bicycle facility in plan and profile.

Coordination has been conducted with the D&R Canal State Park and the D&RCC to determine preference for aesthetic treatments on the pedestrian/bicycle facility. Since the structure type will be determined by the Contractor, two potential options exist including concrete and steel. If the structure is constructed of steel, the D&RCC indicated that a black tubular railroad-type of railing should be used. If concrete is the chosen structure type, the D&RCC requested that it be stone-face clad. In addition, when the pedestrian/bicycle facility is at-grade, the D&RCC recommended the use of tinted concrete. The final design of the pedestrian/bicycle facility will be coordinated with the D&R Canal State Park and the D&RCC and a Memorandum of Agreement (MOA) will be executed detailing acceptable materials for construction of the facility.

5.0 COMPENSATION PROPOSAL

In coordination with agencies that have jurisdiction over the Canals, a construction protection plan will be prepared for work along the Delaware Canal in Pennsylvania and the D&R Canal in New Jersey. The plan will set forth specific measures that will protect the Canal prisms, towpaths, and any related features during the construction period. The protection plan will provide measures for minimizing direct impacts to the Canal prisms and towpaths during the removal of the piers of the existing I-95/Scudder Falls Bridge. In addition, to the extent possible, the plan will indicate that construction areas will be located outside the Canal prism and towpath features and will be separated for the safety of towpath users.

The concrete surfaces of the noise barriers, new bridge abutment walls and piers at the D&R Canal will be treated with an aesthetic finish to be agreed upon in coordination with the consulting parties during the final design of the project. The mitigation will include the removal of existing bridge piers from their current location on the back slope of the D&R Canal, and piers for the new bridge will be located further back from the Canal. Further consideration will also be given, during final design, to minimize the footprint of the proposed bridge pier type. Coordination with historic resource and Canal agencies will continue during final design. Mitigation measures for aboveground historic resources have been stipulated in the Programmatic Agreement in accordance with Section 106 requirements. The Programmatic Agreement is included as Appendix D.

The removal of the piers from the D&R Canal will also be staged to minimize impacts and will be carried out in a manner that is sensitive to the materials and design of the earthen ditch and towpath. If it is determined that there may be stone walls that reinforce the prism or towpath present within the area of construction impacts, measures to protect the walls from heavy equipment will be undertaken during construction. To mitigate for the loss of integrity of the D&R Canal, the DRJTBC will make a donation to foster and support the interpretation of historic resources along the D&R Canal. Potential measures to minimize and mitigate for adverse effects have been outlined in the Programmatic Agreement.

6.0 STATEMENT OF VALUE

To determine the value of the Parkland required for the proposed I-95/Scudder Falls Bridge Improvement Project, coordination was initiated with the Township of Ewing Tax Assessor. The Tax Assessor provided information on the value of township property including the Total Ratable Value for 2010, the Equalized Ratio for 2011, and the total township land area. This information was used to provide a cost analysis for land transfers in the township on a per acre basis. The assessment performed determined that the value of land in the Township of Ewing is worth \$327,298 per acre. Since the project requires 0.342 acres of Parkland from the D&R Canal State Park, the value of this land equates to \$111,935.91. See Appendix E for the Statement of Value Calculation.

7.0 LIST OF PREPARERS

Richard L. Rash, P.E., Project Director, AECOM

BS – Civil Engineering – Rutgers University - 1979

More than 30 years of experience as a civil engineer and project manager on transportation and transit projects including project management and civil and structural design for various highway and transportation projects encompassing new and improved interchanges, toll plaza facility improvements, right-of-way acquisition, grading, drainage, paving design, utility relocations, fiber optic system design and construction, microwave and cellular communication systems, and environmental permitting. His experience also includes project planning, project budgeting, and government agency coordination.

Timothy M. Hand, AICP, Planning Department Manager, AECOM USA, Inc.

MS - Environmental Science - Rutgers University, 1995

BS - Biology - College of Mount Saint Vincent, 1986

25 years experience on transportation and site development projects involving the preparation of environmental assessments and impact statements; performing wetland delineations; conducting natural resources surveys; preparing and filing of environmental permit applications at the federal, state, and local level; and providing sound and practical mitigation alternatives including creation and restoration of wetlands.

Matthew Nilsen, Environmental Scientist, AECOM USA, Inc.

MS – Environmental Science – Rutgers University, 2004

BS – Environmental Science – St. John's University, 2001

6 years of experience in ecological evaluations pursuant to NJDEP requirements; Phase II Environmental Assessments; environmental permitting, including freshwater wetland, flood hazard area, and NJPDES permitting; wetland delineations via the three-parameter method; use of Global Positioning Systems; and threatened and endangered species investigations.

APPENDIX A

GREEN ACRES PRE-APPLICATION REQUIREMENTS CHECKLIST

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Major Disposal/Diversion Pre-Application Requirements

- ☒ 1. Description of the proposed disposal/diversion, including:
- ☒ Block(s) and lot(s) information for the parkland proposed for disposal or diversion (*N.J.A.C. 7:36-26.9(d)1i*);
 - ☒ Acreage of the parkland proposed for disposal or diversion (*N.J.A.C. 7:36-26.9(d)1ii*);
 - ☒ Purpose of proposed disposal/diversion, including the intended future use and owner of the parkland proposed for disposal/diversion (*N.J.A.C. 7:36-26.9(d)1iii*);
 - ☒ A detailed description of how the proposed disposal/diversion will fulfill a compelling public need or yield a significant public benefit as defined at *N.J.A.C. 7:36-26.1(d)1* (*N.J.A.C. 7:36-26.9(d)1iv*);
 - ☒ A description of how the parkland is proposed to be disposed or diverted including (*N.J.A.C. 7:36-26.9(d)1v*);
 - ☒ The name of the prospective buyer, lessee or easement grantee;
 - ☒ A description of the type of legal interest to be conveyed, if any;
 - ☒ A description of any conditions or restriction on the intended use of the parkland;
 - ☒ If applicable, a copy of the draft lease or use agreement and statement of total compensation proposed to be received by the applicant for the lease of use agreement (*N.J.A.C. 7:36-26.9(d)1vi*);
 - ☒ If the proposed disposal/diversion involves the construction of a building or infrastructure on parkland, a set of plans and specifications for the construction (*N.J.A.C. 7:36-26.9(d)1vii*);
 - ☒ A general description of the natural features, history and current use of the parkland proposed to be disposed/diverted and of any parkland contiguous to or functionally related to the parkland proposed for disposal/diversion (*N.J.A.C. 7:36-26.9(d)1viii*);
 - ☒ A detailed description of any recreational facilities and/or activities to be affected by the proposed disposal/diversion of parkland and an explanation of how they will be affected (*N.J.A.C. 7:36-26.9(d)1ix*);

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2. Alternatives analysis:

A. Identify each alternative course of action that could be taken to fulfill the compelling public need or yield the significant public benefit to be derived from the project for which the disposal/diversion of parkland is proposed. (N.J.A.C. 7:36-26.9(d)2i) This identification must include all feasible, reasonable and available alternatives, including:

- ☐ All alternatives presented at the scoping hearing
- ☐ Any alternatives suggested by the public at the scoping hearing or in the written comments submitted during the public comment period
- ☐ The alternative of constructing the proposed project on the proposed replacement land (if applicable)
- ☒ A "no build" or "no action" alternative
- ☒ Any alternative involving private lands or other public lands
- ☒ Please also include a description of methods used to identify alternatives

B. For each alternative identified under A above, provide:

- ☒ A detailed description of the environmental impact of the alternative (N.J.A.C. 7:36-26.9(d)2ii(1));
- ☒ A listing of all Department permits to construct or utilize the alternative (N.J.A.C. 7:36-26.9(d)2ii(2));
- ☒ Information on whether the alternative involves any areas mapped as endangered or threatened species habitat, including a review of the Department's Landscape Project Mapping (<http://www.nj.gov/dep/fgw/ensp/landscape/index.htm>) and a response from or evidence that a request for information has been filed with the Department's Natural Heritage Database (c/o Office of Natural Lands Management, P.O. Box 404, Trenton, New Jersey 08625-0404) ((N.J.A.C. 7:36-26.4(d)2ii(3));
- ☒ An analysis of the overall cost of the alternative (N.J.A.C. 7:36-26.9(d)2ii(4));
- ☒ A description of the timetable or schedule necessary to implement the alternative to the proposed disposal or diversion (N.J.A.C. 7:36-26.9(d)2ii(5));
- ☐ If applicable, the estimated land acquisition or lease cost of the alternative (N.J.A.C. 7:36-26.9(d)2ii(6));

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- ☒ Identification of any other zoning, land use, environmental or other constraints associated with the alternative and a description of all attempts undertaken to remove or adapt to such constraints (*N.J.A.C. 7:36-26.9(d)2ii(7)*);
- ☒ An explanation of the reasons for rejecting each alternative (*N.J.A.C. 7:36-26.9(e)*).
- ☒ 3. **Environmental Assessment Report** prepared in accordance with **Attachment I: Environmental Assessment Report Outline** (*N.J.A.C. 7:36-26.9(d)3*)
- ☒ 4. **Land Valuation Forms** using the form found at **Attachment II: Land Valuation Forms** (*N.J.A.C. 7:36-26.9(d)4* and *N.J.A.C. 7:36-26.10(f)*)
- ☒ 5. **Preliminary Compensation Proposal** based on the requirements of *N.J.A.C. 7:36-26.10* and prepared in accordance with **Attachment III: Preliminary Compensation Proposals for Major Disposals or Diversions of Parkland and Attachment II: Value Statement** (*N.J.A.C. 7:36-26.9(d)5*)
- ☒ 6. A description of how the proposed project for which the disposal or diversion of parkland is proposed, and the proposed compensation, will support the State Development and Redevelopment Plan Goals and be consistent with the State Development and Redevelopment Plan's Policy Map and the Statewide Policies. (*N.J.A.C. 7:36 26.9(d)6*)
- ☒ 7. A listing of all permits and approvals required for the project (**Attachment IV: Permit/Approval Checklist**). (*N.J.A.C. 7:36 26.9(d)7*)
- ☐ 8. **Copy of the deed** for the proposed disposal or diversion area and replacement parcel(s). If the replacement parcel is not already owned by the applicant, please include a brief description of how the applicant intends to acquire the replacement parcel. (*N.J.A.C. 7:36 26.7(d)8*)
- ☒ 9. **Maps. (Attachment V: Map requirements; and VI: Sample Reference Map)** (*N.J.A.C. 7:36-26.9(d)9*)
- ☐ 10. **Confirmation of the scoping hearing:**
 - ☐ Proof of publication of the notice of the scoping hearing required under *N.J.A.C. 7:36-26.8(c)1-3* (*N.J.A.C. 7:36-26.8(e)1*);
 - ☐ A copy of the transcript of the scoping hearing (*N.J.A.C. 7:36-26.8(e)2*);
 - ☐ A summary of public comments made at the scoping hearing and/or provided in writing during the public comment period and the applicant's response to the public comments (*N.J.A.C. 7:36-26.8(e)3*);
 - ☐ Copies of written comments submitted as part of the record of the scoping hearing.

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- ☐ 11. **Governing body resolution.** (Attachment VII: Resolution) (*N.J.A.C. 7:36-26.9(d)11*)
- ☒ 12. **Please attach this cover sheet and the following checklists; Attachment II: Land Assessment Form, Attachment III: Preliminary Compensation Proposals for Major Disposals or Diversions of Parkland, Attachment IV: Permit/Approval Checklist and Attachment V: Map Requirements.**
- ☒ 13. **Please also provide electronic copies of items 1 - 3, 5, 6 in Microsoft Word Format and item 9 in .pdf format, on a standard 5.25 inch or Mini CDR compact disk produced to be read by any CDROM.**

NOTES:

- The Green Acres Program will notify the applicant as to whether the applicant may proceed with the final application. (*N.J.A.C. 7:36-26.9(h)*)
- If authorized to proceed, the final application must be submitted to Green Acres 75 days prior to the meeting of the State House Commission. (*N.J.A.C. 7:36-26.11(i)*)
- The final application must be deemed complete for public hearing purposes by Green Acres before the second public hearing on the application is scheduled. (*N.J.A.C. 7:36-26.11(d)*)
- This package is also available at www.state.nj.us/dep/greenacres.

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ATTACHMENT II: LAND VALUATION FORMS

DIVERTED/DISPOSAL PARCEL(S)

Please fill out each section completely. If any section is left blank, the form will not be reviewed. If a section is not applicable to the application please indicate "Not Applicable" or "N/A". A minimum of three comparable sales for the diverted/disposal parcel(s) will need to be provided.

If additional space is needed to adequately describe the parcel please use a separate page.

1. Parcel Information

Block(s)

425

Lot(s)

1

Acreage (by lot)

12

Vacant ☐

Improved* ☒

*If improved please describe all improvements on a separate page.

2. Zoning

Primary permitted uses

R1 - Residential, Single Family Detached

Minimum lot size

18,750 square feet, 125-foot width

3. Interest

Fee ☐

Easement ☒

Fee and easement ☐

Type of easement

Right-of-way

Temporary easement ☐

Permanent easement ☒

4. Environmental Constraints (list individual acreage encumbered by each constraint)

Wetlands

N/A

ac.

C1 Streams

N/A

ac.

Tidelands

N/A

ac.

Steep Slopes

N/A

ac.

Other

N/A

ac.

Other

N/A

ac.

5. Physical Constraints

Legal access

N/A

Landlocked

N/A

6. Value Information

Assessed Value \$74,296.65

Director's Ratio

\$327,298/acre

7. Estimated Market Value

Intended Use

N/A

Highest and best use

N/A

8. Tax Assessor Certification - I hereby certify that the information provided in this Land Valuation Form for both the Diverted/Disposal Parcel(s) is true and accurate.

N/A

Prepared by Tax Assessor (print name)

N/A

Signature

N/A

Date

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9. Comparable Sales

SALE #1

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

SALE #2

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

SALE #3

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

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REPLACEMENT PARCEL(S)

Please fill out each section completely. If any section is left blank, the form will not be reviewed. If a section is not applicable to the application please indicate "Not Applicable" or "N/A". A minimum of three comparable sales for the replacement parcel(s) will need to be provided.

If additional space is needed to adequately describe the parcel please use a separate page.

1. Parcel Information

Block(s) N/A
Lot(s) N/A
Acreage (by lot) N/A
Vacant ☐ Improved* ☐

*If improved please describe all improvements on a separate page.

2. Zoning

Primary permitted uses N/A
Minimum lot size N/A

3. Interest

Fee ☐ Easement ☐ Fee and easement ☐
Type of easement N/A
Temporary easement ☐ Permanent easement ☐

4. Environmental Constraints (list individual acreage encumbered by each constraint)

Wetlands	<u>N/A</u> ac.	C1 Streams	<u>N/A</u> ac.
Tidelands	<u>N/A</u> ac.	Steep Slopes	<u>N/A</u> ac.
Other	<u>N/A</u> ac.	Other	<u>N/A</u> ac.

5. Physical Constraints

Legal access N/A
Landlocked N/A

6. Value Information

Assessed Value N/A Director's Ratio _____

7. Estimated Market Value

Intended Use N/A
Highest and best use N/A

8. Tax Assessor Certification - I hereby certify that the information provided in this Land Valuation Form for both the Diverted/Disposal Parcel(s) is true and accurate.

N/A

Prepared by Tax Assessor (print name)

N/A

Signature

N/A

Date

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9. Comparable Sales

SALE #1

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

SALE #2

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

SALE #3

Date of Sale: N/A Book: N/A Page: N/A
Location: N/A
Block: N/A Lot: N/A
Grantor: N/A
Grantee: N/A
Lot Size: N/A
Sales Price: N/A
Unit Value: N/A
Zoning: N/A
Highest & Best Use: N/A
Verification: N/A

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**ATTACHMENT III: PRELIMINARY COMPENSATION PROPOSALS FOR MAJOR
DISPOSALS OR DIVERSIONS OF PARKLAND**

General Notes:

- As part of the application process, applicants are required to submit a preliminary compensation proposal as part of the pre-application and a final compensation proposal as part of the final application. A preliminary compensation proposal is based on estimates of the value and size of the proposed disposal or diversion and proposed replacement land (if any). As part of the final compensation proposal, the applicant is required to adjust its proposal to take into account the appraised value of the diverted and replacement parcels, the actual surveyed acreage of these lands and any easements or other relevant encumbrances identified through the title search.
- Replacement land is required for certain types of disposals or diversions of parkland, and is generally the method of compensation preferred by the Department. However, in many cases, the applicant may choose between replacement land, monetary compensation or a combination of both. If replacement land is offered, it must be at least equivalent in acreage to the parkland to be disposed of or diverted. If an easement is proposed to be disposed of or diverted from parkland, the ratio of the replacement land to the affected parkland can be 1:1, with either a subsurface easement or fee land as replacement. All other disposals or diversions of parkland are subject to a minimum 2:1 (or higher) replacement land/parkland ratio. However, if the applicant chooses to mix monetary compensation and replacement land, it may offer 1:1 replacement land and make up the difference between the 1:1 land and the minimum 2:1 (or higher) compensation ratio with cash compensation.

This attachment summarizes the requirements of N.J.A.C. 7:36-26.10 and is intended to serve as guidance for the preparation of preliminary and final compensation proposals. Please check the box next to the applicable preliminary compensation proposal category or categories:

☐ **1. Minimum Compensation Ratios for Replacement Land (taken from Table 1 at NJAC 7:36-26.10(g))**

If the applicant chooses to offer replacement land as the method of compensation the following conditions apply:

- The proposed replacement land must be determined to be eligible pursuant to *N.J.A.C. 7:36-26.10(d)2i-iii*.
- If replacement land is offered, it must be at least equivalent in acreage to the parkland to be disposed of or diverted. (*N.J.A.C. 7:36-26.10(d)3*)
- The proposed replacement land shall be of reasonably equivalent or superior quality and have a market value that is equal to or greater than the parkland proposed for disposal or diversion. (*N.J.A.C. 7:36-26.10(d)5 and 6*)
- If the proposed replacement land is inadequate to meet the market value and quality requirements mentioned above, the Department shall require the applicant to supplement its proposal with additional compensation in excess of that which would otherwise be required under Table 1. (*N.J.A.C. 7:36-26.10(d)7*)
- The replacement lands shall be, to the extent possible, located in the same municipality in which the parkland proposed for disposal or diversion is located and shall not consist of land on which streets are shown on a subdivision plan as either

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offered for dedication or dedicated but not constructed. (*N.J.A.C. 7:36-26.10(d)8 and 9*)

- The proposed replacement land shall either be free of contamination by hazardous substances or shall be remediated to the Department's satisfaction prior to its dedication as parkland. (*N.J.A.C. 7:36-26.10(d)10*)
- The applicant is required to provide appraisals, surveys and title work for any proposed replacement land as part of the final application. (*N.J.A.C. 7:36-26.11(b)1, 2 and 3*) All technical reports must be prepared to the Department's specifications. In some circumstances, appraisal waivers may be available under *N.J.A.C. 7:36-26.10(l)*, if the applicant is willing to propose a higher compensation ratio than would otherwise be required.

The minimum acreage of the replacement land to be provided for a specific type of disposal or diversion of parkland shall be determined in accordance with the provisions outlined below or in Table 1 of *N.J.A.C. 7:36-26.10(g)*. (*N.J.A.C. 7:36-26.10(d)4*)

Subsurface easements:

Project Sponsor	Appraisals	Appraisal waiver	Notes:	Rule Citation:
Public	1:1	1:1	Applicant may offer either a surface easement to be used for recreation and conservation purposes or a fee simple interest in land.	<i>N.J.A.C. 7:36-26.10(i)1</i>
Private	2:1	4:1		

Surface easements:

Project Sponsor	Appraisals	Appraisal waiver	Notes:	Rule Citation:
Public	1:1	2:1	Applicant may offer either a surface easement to be used for recreation and conservation purposes or a fee simple interest in land.	<i>N.J.A.C. 7:36-26.10(i)1</i>
Private	4:1	6:1		

Other Diversions and disposals:

Project Sponsor	Appraisals	Appraisal waiver	Notes:	Rule Citation:
Public	2:1	3:1	- Appraisals must be submitted with the final application package, or; - An appraisal waiver must be obtained pursuant to <i>N.J.A.C. 7:36-26.10(l)</i> .	<i>N.J.A.C. 7:36-26.10(j)1i</i>
Private	4:1	6:1		<i>N.J.A.C. 7:36-26.10(j)1ii</i>

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Legalization of past diversions and disposals:

Project Sponsor	Appraisals	Appraisal waiver	Notes:	Rule Citation:
Public	5:1	10:1	- The Department may/can take mitigating circumstances into account when determining appropriate compensation ratios.	<i>N.J.A.C. 7:36-26.10(j)3ii</i>
Private	20:1	N/A	- An appraisal waiver cannot be obtained when legalizing a past "private" diversion or disposal.	<i>N.J.A.C. 7:36-26.10(j)3iv</i>

Please also include the following information in the preliminary compensation proposal when choosing to offer replacement land as compensation:

- Block(s) and lot(s) of any proposed replacement land(s) (*N.J.A.C. 7:36-26.10(d)1iv*); and
- The street address of the proposed replacement land(s), if available (*N.J.A.C. 7:36-26.10(d)1iii*); and
- The size of the proposed replacement land(s) in acres (for replacement land(s) larger than one acre) or square feet (for replacement land(s) smaller than one acre) (*N.J.A.C. 7:36-26.10(d)1iii and iv*); and
- A description of the proposed replacement land(s) (prepared by completing Section II of the Environmental Assessment, **Attachment I**, for each parcel) (*N.J.A.C. 7:36-26.10(d)1i*); and
- A description of the intended recreational and conservation use for the proposed replacement land(s) (*N.J.A.C. 7:36-26.10(d)1ii*); and
- Information sufficient for the Department to verify that the proposed replacement lands are eligible as replacement under *N.J.A.C. 7:36-26.10(d)2i-iii*; and
- A preliminary assessment report, prepared in accordance with the Technical Requirements for Site Remediation, *N.J.A.C. 7:26E*, for each proposed replacement parcel (*N.J.A.C. 7:36-26.9(d)5 and N.J.A.C. 7:36-26.10(d)10*); and

☒ 2. Minimum Compensation Ratios for Monetary Compensation (taken from Table 1 at NJAC 7:36-26.10(g))

If monetary compensation is the chosen method of compensation the following conditions apply:

- No county or municipal open space tax funds levied under *N.J.S.A. 40:12-15.1* through *15.9* or other dedicated recreation and conservation funding sources may be used as monetary compensation. (*N.J.A.C. 7:36-26.10(e)2*)
- The applicant must provide confirmation that any proposed monetary compensation for the disposal or diversion of parkland can be transferred to the Department immediately after approval of the application or deposited into a dedicated account to be used only for purposes consistent with the approval. (*N.J.A.C. 7:36-26.10(e)5i and ii*)
- If the applicant is proposing to provide a combination of monetary compensation and replacement land, the compensation proposal must offer at least a 1:1 ratio of replacement land to land diverted or disposed (*N.J.A.C. 7:36-26.10(d)3*).
- The Department can, at its discretion, require additional compensation to adequately compensate for impacts to surrounding parkland. (*N.J.A.C. 7:36-26.10(j)2iii*)

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- If an applicant is proposing monetary compensation for parkland improvements, the applicant shall not utilize the monies for improvements that were already budgeted and/or approved by the applicant; and must complete the parkland improvements within one year of the date of approval of the application. (*N.J.A.C. 7:36-26.10(k)1i and ii*)
- If an applicant is proposing monetary compensation for land acquisition, the applicant shall, at least 30 days prior to each acquisition of replacement land, submit to the Department all outstanding pre-application and final application requirements pertaining to the replacement land for Department review and approval. In addition all replacement land must be acquired within two years of the date of the approval of the application. (*N.J.A.C. 7:36-26.10(k)2ii and iii*)
- If parkland improvements or land acquisitions, as approved by the State House Commission, are not completed within the time frames specified above, the Department may, upon 30 days' written notice, require that the applicant remit to the Department the full amount of the approved monetary compensation for deposit in the GSPT Fund. (*N.J.A.C. 7:36-26.10(k)3*)

The minimum amount of monetary compensation to be provided for a specific type of disposal or diversion of parkland shall be determined in accordance with the provisions outlined below or in Table 1 of *N.J.A.C. 7:36-26.10(g)*. (*N.J.A.C. 7:36-26.10(e)1*)

Subsurface easements:

Project Sponsor	Parkland improvements	Land acquisition	Notes:	Rule Citation:
Public	2:1*	2:1*	*\$2,500.00 minimum, even if a lesser amount is determined utilizing the listed ratios.	<i>N.J.A.C. 7:36-26.10(i)2</i>
Private	10:1*	10:1*		

Surface easements:

Project Sponsor	Parkland improvements	Land acquisition	Notes:	Rule Citation:
Public	4:1*	4:1*	*\$2,500.00 minimum, even if a lesser amount is determined utilizing the listed ratios.	<i>N.J.A.C. 7:36-26.10(i)2</i>
Private	10:1*	10:1*		

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Other diversions and disposals:

Project Sponsor	Parkland improvements	Land acquisition	Notes:	Rule Citation:
Public	4:1**	4:1**	- The size of parkland to be diverted or disposed must be less than 5 acres and must comprise less than 5% of the total parkland parcel. - **\$5,000.00 minimum, even if a lesser amount is determined utilizing the listed ratios. - If the disposal or diversion is classified as "private" monetary compensation can only be used for land acquisition and not for parkland improvements	<i>N.J.A.C. 7:36-26.10(j)2i</i>
Private	N/A	10:1**		<i>N.J.A.C. 7:36-26.10(j)2ii</i> <i>N.J.A.C. 7:36-26.10(j)1iv</i>

Legalization of past diversions and disposals:

Project Sponsor	Parkland improvements	Land acquisition	Notes:	Rule Citation:
Public	N/A	10:1***	- The Department may/can take mitigating circumstances into account when determining appropriate compensation ratios. - For "public" diversions or disposals, compensation cannot include monetary compensation to be used for parkland improvements. - For "private" diversions or disposals, compensation cannot include monetary compensation to be used for parkland improvements nor can an appraisal waiver be obtained. - ***\$10,000.00 minimum, even if a lesser amount is determined utilizing the listed ratios.	<i>N.J.A.C. 7:36-26.10(j)3ii</i>
Private	N/A	20:1***		<i>N.J.A.C. 7:36-26.10(j)3iii</i> <i>N.J.A.C. 7:36-26.10(j)3iv</i> <i>N.J.A.C. 7:36-26.10(j)3v</i>

At the time of the submittal of the preliminary compensation proposal, please also include in the proposal the following information when choosing to use monies for parkland improvements:

- A detailed description of the type, cost, location and intended use of any proposed parkland improvements (*N.J.A.C. 7:36-26.10(e)3i*);
- Drawings or plans of the parkland improvements (*N.J.A.C. 7:36-26.10(e)3ii*);
- A timetable or schedule for construction and confirmation that the portion of the project being funded by the compensation will be completed within one year of SHC approval of the disposal or diversion (*N.J.A.C. 7:36-26.10(e)3iii* and *N.J.A.C. 7:36-26.10(k)1ii*).

To the extent known at the time of the submittal of the preliminary compensation proposal, please also include in the proposal the following information when choosing to use monies for land acquisition:

- Block(s) and lot(s) of any proposed replacement land(s) (*N.J.A.C. 7:36-26.10(d)1iv*);

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and

- The street address of the proposed replacement land(s), if available (*N.J.A.C. 7:36-26.10(d)1iii*); and
- The size of the proposed replacement land(s) in acres (for replacement land(s) larger than one acre) or square feet (for replacement land(s) smaller than one acre) (*N.J.A.C. 7:36-26.10(d)1iii and iv*); and
- A description of the proposed replacement land(s) (prepared by completing Section II of the Environmental Assessment, **Attachment I**, for each parcel) (*N.J.A.C. 7:36-26.10(d)1i*); and
- A description of the intended recreational and conservation use for the proposed replacement land(s) (*N.J.A.C. 7:36-26.10(d)1ii*); and
- Information sufficient for the Department to verify that the proposed replacement lands are eligible as replacement under *N.J.A.C. 7:36-26.10(d)2i-iii*; and
- A Preliminary Assessment Report, prepared in accordance with the Technical Requirements for Site Remediation, *N.J.A.C. 7:26E*, for each proposed replacement parcel (*N.J.A.C. 7:36-26.9(d)5 and N.J.A.C. 7:36-26.10(d)10*).

☐ **3. Minimum Compensation Ratios for a combination of Replacement Land and Monetary Compensation**

If the applicant chooses to provide compensation through a combination of replacement land and monetary compensation the following conditions apply:

- In no case shall the acreage of the replacement land be less than the acreage of the parkland to be disposed of or diverted. The ratio of the replacement land to the parkland proposed to be disposed of or diverted shall be at least 1:1. (*N.J.A.C. 7:36-26.10(d)3*)
- Additional monetary compensation offered beyond the minimum acreage compensation ratio noted above, must be sufficient to compensate in full for any shortfalls in the market value or quality of the proposed replacement land. (*N.J.A.C. 7:36-26.10(d)7*)
- All conditions outlined above in the "Minimum Compensation Ratios for Replacement Land" and the "Minimum Compensation Ratios for Monetary Compensation" must also be adhered to when combining both replacement land and monies into the preliminary compensation proposal.

☐ **4. Minimum Compensation for a Lease or Use Agreements**

If a lease or use agreement is determined by the Department to be a "Major Diversion under *N.J.A.C. 7:36-26.2(a) and (c)*, the following conditions apply to the lease or use agreement preliminary compensation proposal presented as part of the pre-application package:

- The compensation offered for a lease or use agreement must be determined, by the Department, to be fair and appropriate for the proposed activity. If it is determined to not be fair and appropriate, the Department shall specify the minimum amount of compensation that must be secured. (*N.J.A.C. 7:36-26.10(c)2i*)
- All payments, rentals or other consideration received by the applicant from the lease or agreement shall be used by the applicant for its operating, maintenance or capital

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expenses related to its funded parkland or to its recreation program as a whole.
(*N.J.A.C. 7:36-26.10(c)2ii*)

☐ **5. Minimum Compensation for a Loss of any Recreation or Conservation Facilities**

If a disposal or diversion, determined by the Department to be a "Major Disposal or Diversion" under *N.J.A.C. 7:36-26.2(a) and (c)*, will result in the loss of recreation or conservation facilities the following conditions apply to the preliminary compensation proposal presented as part of the pre-application package:

- The applicant is required to compensate for the loss of recreation or conservation facilities by providing replacement recreation and conservation facilities of reasonably equivalent usefulness, size, quality and location. The replacement facilities shall be in addition to any replacement land or monetary compensation proposed by the applicant. (*N.J.A.C. 7:36-26.10(c)3*)
- In order to determine if the replacement recreation and conservation facilities are of reasonably equivalent usefulness, size, quality and location, the applicant shall submit the information requested in *N.J.A.C. 7:36-26.10(e)3i - iii* with respect to the replacement of any of recreation or conservation facilities. (*N.J.A.C. 7:36-26.10(c)3*)

☒ **6. Minimum Compensation for Tree Replacement**

If a disposal or diversion, determined by the Department to be a "Major Disposal or Diversion" under *N.J.A.C. 7:36-26.2(a) and (c)*, will result in the removal of any tree with a diameter at breast height greater than six inches or the clear cutting of greater than 0.50 acre of trees, the following conditions apply to the preliminary compensation proposal presented as part of the pre-application package:

- The applicant shall include in the preliminary compensation proposal a tree replacement plan prepared pursuant to *N.J.A.C. 7:36-26.10(c)4* or offer monetary compensation at least equal to the costs that would be incurred with respect to such planting of the replacement trees. (*N.J.A.C. 7:36-26.10(c)4*)
- Provide confirmation that any proposed monetary compensation for tree removal will be transferred to the Department immediately after approval of the application for disposal or diversion of parkland or that a tree replacement plan will be implemented within a one year period following approval of the application. (*N.J.A.C. 7:36-26.10(k)1ii*)

Notes:

The Department will use the information in the preliminary compensation proposal and the value statement required under *N.J.A.C. 7:36-26.9(d)4 and N.J.A.C. 7:36-26.9(d)5* to determine the amount of compensation due for the proposed disposal or diversion of parkland. (*N.J.A.C. 7:36-26.9(i) and N.J.A.C. 7:36-26.10(f)1*)

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ATTACHMENT IV: PERMIT/APPROVAL CHECKLIST

This is a listing of any Federal, interstate, State and local approvals or permits required for the proposed project. Please include the application, permit, or docket number, the status of each permit or approval and the name and phone number of the contact at the Federal, interstate, State or local agency responsible for giving approval or permit issuance.

☒ Federal Approvals/Permits: USACE National General Permits NOs. 1, 13, 25, and 33
Kevin Dougherty - (215) 656 - 5733

☐ Federal Consistency Determination: _____

☒ Interstate Approvals/Permits: Delaware River Basin Commission
Steve Walsh - (609) 883 - 9500

☐ County/Municipal Approvals: _____

State Approvals/Permits

☐ CAFRA
Exemption Request: _____
Individual Permit: _____
General Permit: _____
Permit by Rule: _____

☒ D&R Canal Commission Certificate: Ernest Hahn - (609) 397 - 2000

☐ Dam Safety Permit: _____

☒ Freshwater Wetlands
Exemption: Freshwater Wetland Individual Permit
Individual Permit: Charlie Welch - (609) 777 - 0454
Transition Area Waiver: _____
Letter of Interpretation: _____
General Permit (specify #): _____
Open Water Fill Permit: _____

☐ Highlands
Resource Area Determination: _____
Preservation Area Approval: _____
HPAA with Waiver: _____
HPAA Emergency: _____
Pre- Application: _____

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☐ Pinelands Certificate of Filing: _____

☒ Stream Encroachment

Waiver: _____

Permit: _____

Flood Hazard Area Individual Permit

Peter DeMeo - (609) 777 - 0454

☐ Tidal Wetlands (1970) Permit: _____

☐ Tidelands (Riparian) Conveyance: _____

☐ Upland Waterfront Development

Residential: _____

Commercial: _____

☒ Water Quality Certificate: _____

Charlie Welch - (609) 777 - 0454

☐ Waterfront Development Permit

Individual: _____

Commercial: _____

☐ Jurisdictional Determination: _____

☐ Permit Modification (Specify # & type) _____

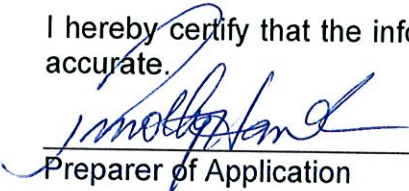
☒ Other: _____

NJPDES General Permit for Stormwater Discharge

Associated with Construction Activity

New Jersey SHPO Project Authorization

I hereby certify that the information provided in this Permit/Approval Checklist is true and accurate.


Preparer of Application

4/5/11
Date

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ATTACHMENT V: MAP REQUIREMENTS

For all Pre-application submissions please submit the following (# of copies):

Location Maps (8½" x 11" in size):

- ☒ USGS and County Road Maps: Showing the proposed disposal/diversion parcel or area and the proposed compensation area (2)

Tax Maps (8½" x 11" or 11" x 17" in size):

- ☒ A) Showing the proposed disposal/diversion parcel(s)/area and any adjacent parkland; depict the entire park boundary and separately depict the proposed disposal/diversion area (2)
- ☐ B) Showing the proposed compensation parcel(s)/area and any adjacent parkland (2)

Aerial Site Maps* (11" x 17" or larger in size):

- ☒ A) A small scale site map showing the proposed disposal/diversion parcel(s) or area; depict the entire park boundary and separately depict the proposed disposal/diversion area (15)
- ☐ B) A small scale site map showing the proposed compensation (parcel(s)/area) and any adjacent parkland (15)

****If the Project is of such size/scale that the Aerial Site Map(s) also show the proposed disposal/diversion in relation to the proposed compensation, you do not need to include a large scale Reference Map requested below. If this is the case, please include 15 copies of the Aerial Site Map instead.****

Reference Map* (Attachment VI) (11" x 17" or larger in size):

- ☐ A large scale site map showing the proposed disposal/diversion in relation to the proposed compensation. Please include aerial imagery. (15)

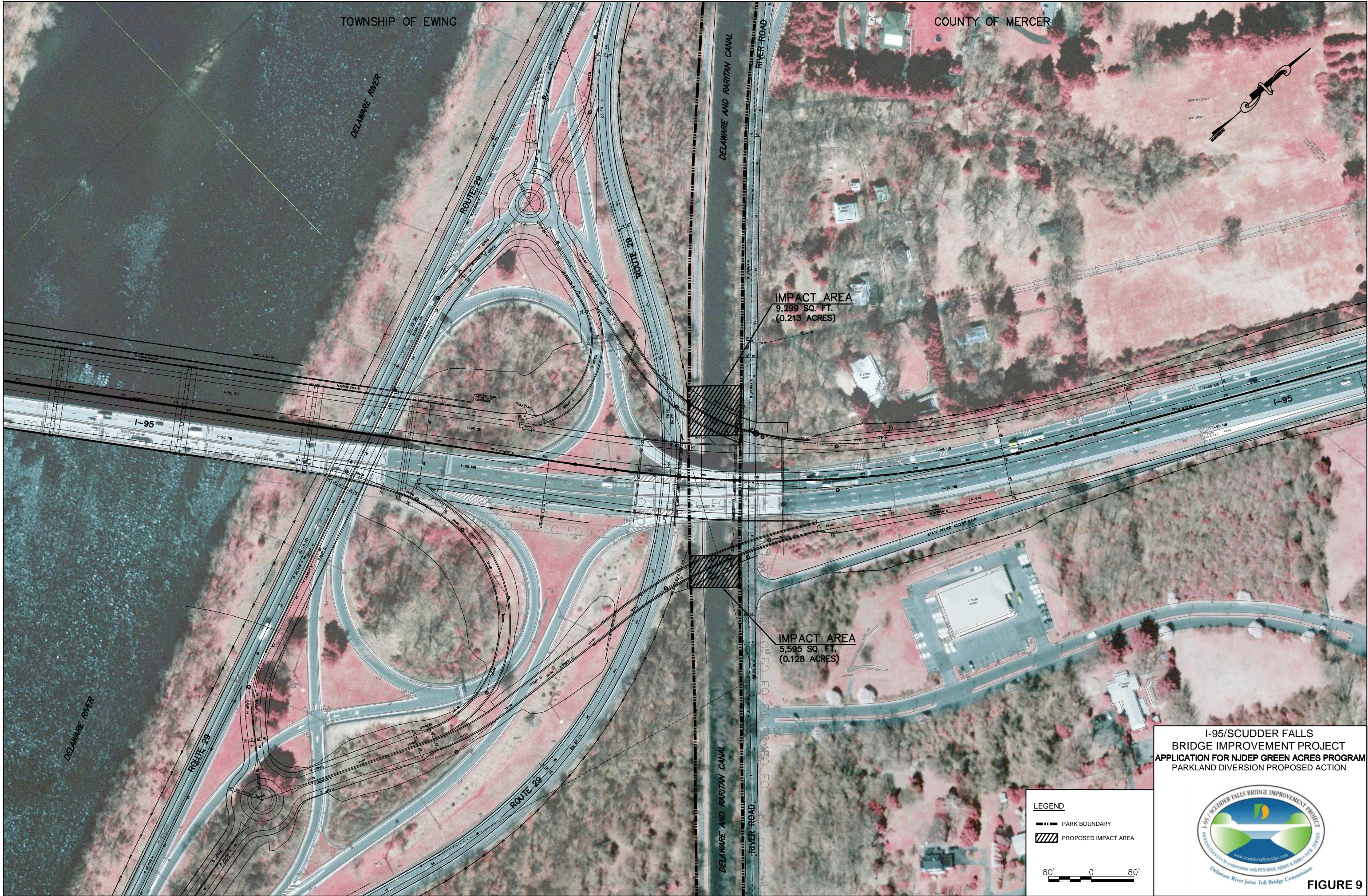
If the proposed disposal or diversion will result in the loss of any development, additionally submit:

Park Facilities Maps:

- ☐ A site plan showing all recreational facilities and identifying those facilities proposed to be removed (15)
- ☐ A site plan showing all proposed replacement recreational facilities (15)

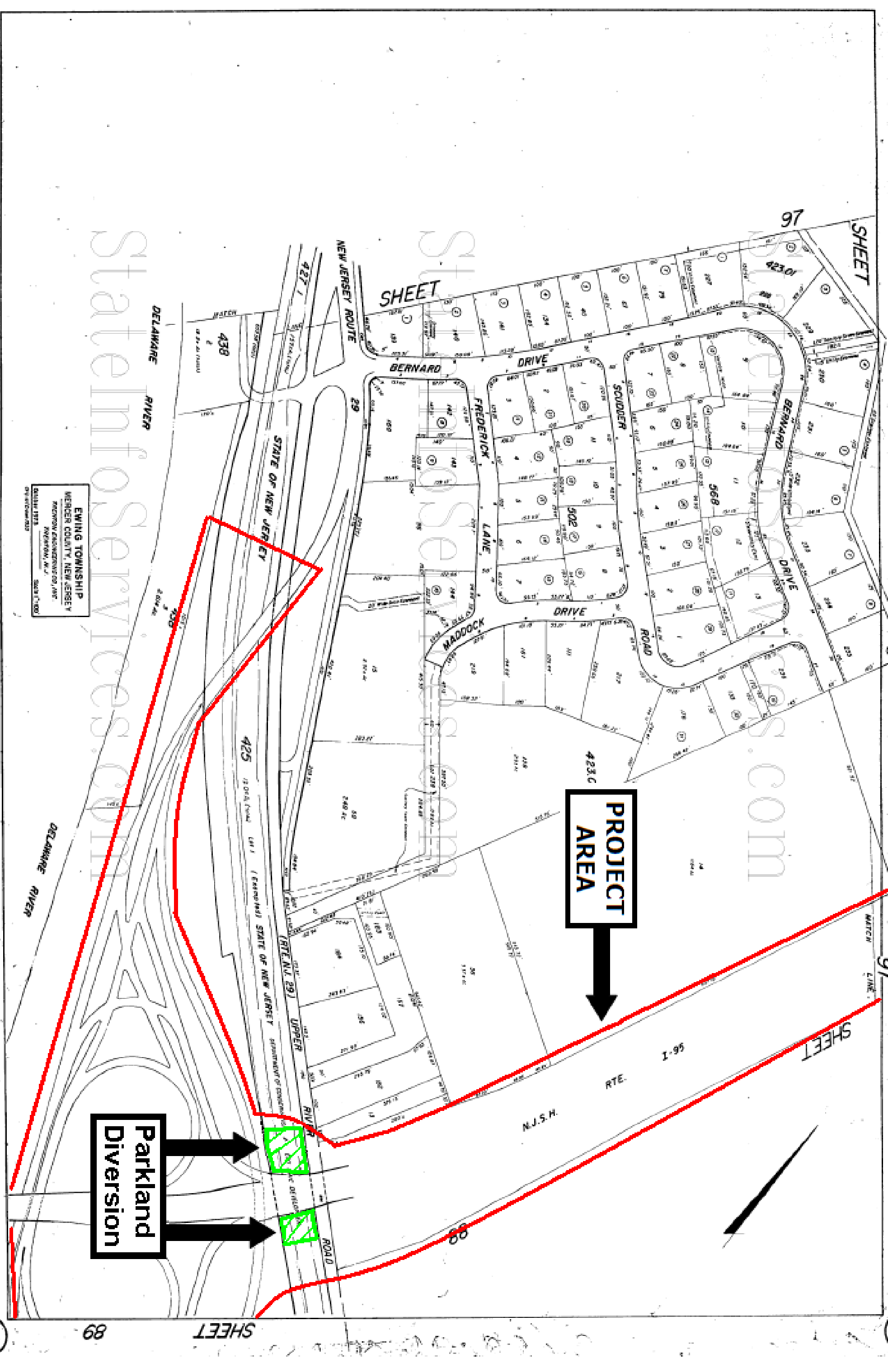
APPENDIX B

AERIAL MAP



APPENDIX C

TAX MAP WITH PROPOSED PARKLAND DIVERSION



SHEET

RIVER

STATE OF NEW JERSEY (D.S.A. (cont.))

425

ROAD N.J. RTE 29

88

SHEET 86

85

I-95

SHEET

PROJECT
AREA

426
1
2000

DELAWARE

N.J. S.H. ROUTE 29

RIVER

2
STATE ROUTE 29
RIVERVIEW DR
FERRY

FERRY

UPPER

WEST
SHEET

EWING TOWNSHIP
MERCER COUNTY, NEW JERSEY
TRANSON ENGINEERING CO., INC.
ROSELAND, N.J.
DATE: 1/27/00
BY: J. L. B.

APPENDIX D

PROGRAMMATIC AGREEMENT

**PROGRAMMATIC AGREEMENT (PA)
AMONG THE FEDERAL HIGHWAY ADMINISTRATION (FHWA),
THE PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICER
(PASHPO), AND
THE NEW JERSEY STATE HISTORIC PRESERVATION OFFICER (NJSHPO)
PURSUANT TO 36 CFR SECTION 800.6(b)(1)
REGARDING THE
I-95/SCUDDER FALLS BRIDGE IMPROVEMENT PROJECT
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA AND
EWING TOWNSHIP, MERCER COUNTY, NEW JERSEY**

WHEREAS, the Delaware River Joint Toll Bridge Commission (DRJTBC) is proposing to construct the I-95/Scudder Falls Bridge Improvement Project (Project) in Lower Makefield Township, Bucks County, Pennsylvania and Ewing Township, Mercer County, New Jersey, described as the Proposed Action in Chapter III, Section D of the Environmental Assessment (EA) entitled "I-95/Scudder Falls Bridge Improvement Project Environmental Assessment" and dated October 2009; and

WHEREAS, the DRJTBC is the Project sponsor and the Federal Highway Administration (FHWA) is serving as the Project lead federal agency pursuant to the National Environmental Policy Act (NEPA, codified as 42 USC 4321 *et seq.*), and is the federal agency responsible for compliance with Section 106 of the National Historic Preservation Act (codified at 16 USC § 470f, and herein "Section 106"); and

WHEREAS the FHWA and the DRJTBC have established the Project's area of potential effect (APE), as defined at 36 CFR Part 800.16(d), as shown in Figure II-4 of the EA (Attachment 1); and

WHEREAS, the FHWA and the DRJTBC, pursuant to 36 CFR Part 800.4(c), have determined in consultation with the PASHPO that the following properties in Pennsylvania are eligible for the National Register of Historic Places (NRHP): Elm Lowne, as described in the Determination of Effect Report, dated September 2008, and the archaeological site 36Bu379, as described in the Phase I Archaeology Report, dated January 2008; and

WHEREAS, the FHWA and the DRJTBC, pursuant to 36 CFR Part 800.4(c), have determined in consultation with the PASHPO that the following property in Pennsylvania is a National Historic Landmark (NHL): the Delaware Canal, as described in the Determination of Effect Report, dated September 2008; and

WHEREAS, pursuant to 36 CFR Part 800.5(a) the FHWA and the DRJTBC have determined in consultation with the PASHPO that the Project will have no adverse effect on Elm Lowne and a conditional no adverse effect on the Delaware Canal, contingent on a review of related Project plans, photographs, architectural drawings, and specifications and their conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties; and

WHEREAS, pursuant to 36 CFR Part 800.5(a), as a result of Phase I studies conducted for the project, the FHWA and the DRJTBC have determined in consultation with the PASHPO that there is an eligible site, 36Bu379, a Phase III data recovery plan will be conducted at Site 36Bu379; and

WHEREAS, pursuant to 36 CFR Part 800.5(a), the FHWA and the DRJTBC in consultation with the PASHPO have determined that archaeological survey will occur in the area of causeway construction across the southern portion of Park Island in the Delaware River to determine the presence of intact cultural resources and the NRHP eligibility of any such resources. If resources are present and are deemed potentially eligible, a Phase III data recovery plan will be implemented at this location if the resources cannot be avoided or preserved in place; and

WHEREAS, the FHWA and the DRJTBC, pursuant to 36 CFR Part 800.4(c), have determined in consultation with the NJSHPO that the following properties in New Jersey are eligible for the NRHP: the Charles S. Maddock House; and the New Jersey State Police Headquarters Historic District (NJSPHQ), as described in the Historic Structures Survey, Determination of Eligibility and Determination of Effect Report, dated September 2008; and

WHEREAS, the FHWA and the DRJTBC, pursuant to 36 CFR Part 800.4(c), have determined in consultation with the NJSHPO that archaeological site 28Me360, as described in the Phase I Archaeology Report, dated January 2008, requires further testing to assess significance of the site; and

WHEREAS, the FHWA and the DRJTBC, pursuant to 36 CFR Part 800.4(c), have determined in consultation with the NJSHPO that the following property in New Jersey was listed in the NRHP on May 11, 1973: the Delaware and Raritan Canal; and

WHEREAS, pursuant to 36 CFR Part 800.5(a) the FHWA and the DRJTBC have determined in consultation with the NJSHPO that the Project will have no adverse effect on the Charles S. Maddock House and the New Jersey State Police Headquarters Historic District (NJSPHQ); and

WHEREAS, pursuant to 36 CFR Part 800.5(a), the FHWA and the DRJTBC have determined in consultation with the NJSHPO that the Project will have an adverse effect on the Delaware and Raritan Canal; and

WHEREAS, pursuant to 36 CFR Part 800.5(a), the FHWA and the DRJTBC in consultation with the NJSHPO have determined that for areas previously inaccessible for archaeological testing that will be affected by the project, including any detention or retention basin(s) is to be located in the southern loop of the NJ Route 29 interchange with I-95, preliminary archaeological investigations will be conducted to determine the presence or absence of intact cultural resources and the NRHP eligibility of any such resources. If resources are present and deemed eligible, a Phase III data recovery plan will be implemented at this location. Further, if piers are placed within or in the immediate vicinity of the Trenton Water Power Channel, preliminary archaeological investigations will be conducted to expose and record construction features including channel profile; and

WHEREAS, pursuant to 36 CFR Part 800.6(a), the FHWA and the DRJTBC have consulted with the NJSHPO to resolve the adverse effect of the Project on historic properties; and

WHEREAS, pursuant to 36 CFR Part 800.6(a), the FHWA and the DRJTBC have determined in consultation with the PASHPO and the NJSHPO that it is necessary to develop protection measures to protect the Delaware Canal and the Delaware and Raritan Canal, respectively during construction activities; and

WHEREAS, pursuant to 36 CFR Part 800.6(a), the FHWA has invited the Advisory Council on Historic Preservation (ACHP) to participate in the Section 106 process for the I-95/Scudder Falls Bridge Improvement Project; and in a response letter dated July 29, 2009, the ACHP has declined to be a signatory to this PA; and

WHEREAS, pursuant to 36 CFR Part 800.6(a), the FHWA has consulted with the PASHPO, NJSHPO, U.S. Army Corps of Engineers (USACE) – Philadelphia District, the Delaware Canal State Park, the Friends of the Delaware Canal, the Elm Lowne Preservation Committee, the Society for Pennsylvania Archaeology, the Lower Makefield Township Board of Supervisors, State Representative Honorable David J. Steil, and the Pennsylvania Archaeological Council in Pennsylvania; and Ewing Township, the Delaware and Raritan Canal Commission (D&RCC), Mercer County, New Jersey Green Acres Program and the Division of Parks and Forestry in New Jersey to resolve the adverse effects of the Project on historic properties; and

WHEREAS, pursuant to 36 CFR Part 800.6(c), the FHWA has also invited the PASHPO, NJSHPO, DRJTBC, the Pennsylvania Department of Transportation (PennDOT), the New Jersey Department of Transportation (NJDOT), and federally recognized Indian Tribes (Tribes) that may attach religious and/or cultural significance to any affected property within the APE pursuant to 36 CFR Part 800.3(f)(2), namely the Absentee-Shawnee Tribe of Oklahoma, the Delaware Nation, and the Shawnee Tribe, to participate in the consultation and to concur in this PA; and

WHEREAS, pursuant to 36 CFR Part 800.6(c), the DRJTBC, PennDOT, and NJDOT have agreed to be concurring parties in this PA; and

WHEREAS, the FHWA has involved, and will continue to involve the public, the Tribes, and historic interest groups, as stipulated under the NEPA of 1969, as amended, and the National Historic Preservation Act (NHPA) as amended [16 U.S.C. § 470], and its implementing regulations (36 CFR Part 800) in a manner consistent with PennDOT's and NJDOT's Public Involvement Procedures and PennDOT's procedures for Native American Coordination and Consultation;

NOW, THEREFORE, the FHWA, the PASHPO, and the NJSHPO agree that upon FHWA's decision to proceed with the Project, FHWA shall ensure that the following stipulations are implemented in order to take into account the adverse effect of the undertaking on historic properties.

STIPULATIONS

All parties to this PA have reviewed the Project with regard to historic resource mitigation, interpretation and acquisition issues, and as a consequence of the same, the DRJTBC agrees to the following stipulations. The FHWA shall ensure that the following stipulations are implemented by the DRJTBC.

- I. Archaeological Resources
 - A. The DRJTBC will undertake geoarchaeological assessment investigations at the southern loop of the NJ Route 29 interchange with I-95 if a detention or retention basin is placed in this loop. Such investigations will be followed by archaeological investigations and/or data recovery investigations if the geoarchaeological assessment indicates such approaches are warranted.
 - B. The DRJTBC will conduct a geomorphological assessment of the area of the causeway construction across the southern end of Park Island in the Delaware River followed by Phase I archaeological testing if warranted. If archaeological resources are identified in this area, Phase II testing will be conducted to evaluate these resources and determine if they are eligible for listing in the NHRP. If eligible archaeological resources are present and cannot be avoided by construction or preserved in place, Phase III data recovery will be conducted.
 - C. The DRJTBC will implement Phase I archaeological testing in an area of high potential in the T2 Terrace in Pennsylvania that is adjacent to and possibly associated with 36Bu379 (see Stipulation I.G) and has not yet been surveyed because access to the property has been limited. If archaeological resources are identified in this area, Phase II testing will be conducted to evaluate these resources and determine if they are eligible for listing in the NRHP. If these resources are determined to be eligible for the NRHP, a Data Recovery Workplan will be prepared. The workplan will include research, fieldwork, analysis, report preparation, and public outreach. The Data Recovery Workplan will be developed by the FHWA and the DRJTBC in consultation with the PASHPO.
 - D. The DRJTBC will implement a Phase II excavation at 28Me360 with the purpose of assessing the NRHP eligibility of the site. If the site is determined eligible and if the FHWA and the DRJTBC in consultation with the NJSHPO determine that a sufficient portion of the site remains to warrant further excavation, a Data Recovery Workplan will be prepared. The workplan will include research, fieldwork, analysis, report preparation, and public outreach. The Data Recovery Workplan will be developed by the FHWA and the DRJTBC in consultation with the NJSHPO.

- E. If, during final design, the NJDOT, in consultation with the NJHPO, determines that the Trenton Water Power Channel will be impacted by the project, FHWA and the DRJTBC will develop a plan for the archaeological recordation of construction features related to the Trenton Water Power Channel. This plan shall be submitted to the NJHPO for review and approval. Such approval will not be unreasonably withheld.
- F. The DRJTBC will undertake preliminary archaeological investigations to record construction features including the channel profile related to the Trenton Water Power Channel under the Scudder Falls Bridge in New Jersey in accordance with the approved plan for archaeological recordation referenced above, if it is determined by the NJHPO during final design that the proposed bridge pier construction will impact the location of the channel.
- G. The DRJTBC will implement a Data Recovery Workplan for 36Bu379 including research, fieldwork, analysis, report preparation, and public outreach, or an alternative mitigation program. The Data Recovery Workplan or alternative mitigation program will be developed by the FHWA and the DRJTBC in consultation with the PASHPO.
- H. If any human remains and grave-associated artifacts are encountered during the archaeological investigations, FHWA will bring this to the attention of the PASHPO and NJSHPO, as appropriate, and any federally recognized Tribes that may attach religious and/or cultural significance to the affected property within 24 hours of the discovery. No activities that might disturb or damage the remains will be conducted until all parties have determined whether excavation is necessary and or/desirable. All procedures will follow the guidance outlined in the National Park Service Publication *National Register Bulletin 41: Guidelines for Evaluating and Registering Cemeteries and Burial Places*, the Native American Graves Protection and Repatriation Act of 1990 (PL 101-601), as appropriate, and the PASHPO's *Policy for the Treatment of Burials and Human Remains* (1993) and/or NJSHPO's *Archaeology and Ethnology Guidelines* (2005), as appropriate.
- I. The DRJTBC or their consultant will prepare reports on the data recovery excavations for review and comment by the FHWA, the PASHPO, and NJSHPO, as appropriate, and any interested federally recognized Tribes. The report shall meet professional standards set forth by the Department of the Interior's *Format Standards for Final Reports of Data Recovery Program* (42 FR 5377-79) and will be consistent with the Bureau for Historic Preservation/Pennsylvania Historical and Museum Commission's *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (July 1991) for reports prepared for the PASHPO. Reports prepared for the NJSHPO will be consistent with *Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources, Guidelines for Preparing Cultural Resources Management Archaeological Report Submitted to the Historic Preservation Office*, and the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation*, September 29, 1983. A draft report will be completed within one year of the conclusion of fieldwork. Any comments provided by the PASHPO and NJSHPO, as appropriate, or

other consulting parties will be considered in the preparation of the final report. A final report will be completed and submitted within one year of the close of the comment period.

- J. All records and materials resulting from the archaeological investigations that are not privately owned will be curated in accordance with 36 CFR § 79 and the curation guidelines developed by the PASHPO (June 2003) or NJSHPO's Archaeology and Ethnology Guidelines (2005), as appropriate. If the DRJTBC has not purchased the Right-of-Way at the time of the Data Recovery excavations, the DRJTBC shall request that the property owner sign a gift agreement donating the artifacts to the State Museum of Pennsylvania or the New Jersey State Museum, as appropriate. In Pennsylvania, all records and all artifacts not privately owned will be curated by the DRJTBC at the PASHPO in Harrisburg, or its designee, following the policies of that institution. The DRJTBC will be responsible for the curation fee of three hundred-fifty dollars (\$350) per cubic foot. In New Jersey, if the site is determined by the NJSHPO to have statewide or national significance, the DRJTBC will curate all records and all artifacts not privately owned to the NJ State Museum, or if the site is determined to have local significance, to an undetermined designee selected in consultation with the NJSHPO, following the policies of the selected institution. The DRJTBC will be responsible for any related fees at the selected institution. If the final repository of the artifacts recovered in New Jersey is determined to be the NJ State Museum, then the DRJTBC will be responsible for the curation fee of three hundred-fifty dollars (\$350) per Hollinger storage box.

II. Historic Structures

A. The Delaware and Raritan Canal and the Delaware Canal

DRJTBC, in consultation with consulting parties, shall develop an appropriate and compatible design for the replacement structure that is sensitive to historic properties in the immediate vicinity, as per the measures outlined in Stipulations II.A.1, II.B, and II.C.

1. Minimization through Design

- a) To minimize visual impacts to the Delaware and Raritan Canal, the DRJTBC will design the piers of the I-95/Scudder Falls Bridge and NJ Route 29 interchange bridges to be the smallest size allowed by engineering design. The piers will be treated with an aesthetic finish to be agreed upon in consultation with the NJSHPO and consulting parties during the final design phase of the Project. Guidelines for the appearance of the aesthetic finish, including any available photographs and specifications, will be provided to the DRJTBC in advance of the preparation of test panel(s). Test panels will be constructed by the contractor, as many times as are reasonable and necessary, for review and approval by representatives of the NJSHPO, D&RCC, and Delaware and Raritan Canal State Park. Such approval will not be unreasonably withheld.

- b) To preserve openness along the Delaware and Raritan Canal under the bridges, the DRJTBC will use pier configurations that will accommodate concerns of openness and are consistent with FHWA and NJDOT design standards.
- c) To minimize impacts to the earthen embankment adjacent to the Delaware and Raritan Canal along Upper River Road beneath the proposed I-95/Scudder Falls Bridge, the DRJTBC will design the Project to consider methods to reduce erosion of the embankment.
- d) To minimize runoff of water into the Delaware and Raritan Canal, the DRJTBC will design the drainage system for the new roadways to divert water flow away from the canal prism to the maximum extent possible.
- e) To minimize effects on the Delaware and Raritan Canal, the proposed action will eliminate public use of the existing ramp from River Road (NJ Route 175) to I-95 northbound. The ramp will be gated for use by the NJ State Police.

2. Interpretation and Acquisitions

To mitigate for adverse effects of the project on the Delaware and Raritan Canal Historic District, including the acquisition of a portion of the National Register listed property, DRJTBC shall deposit \$2 million to a mitigation fund established in the New Jersey Historic Preservation Office to be used to construct an interpretive swing bridge and/or for other interpretation of the Delaware and Raritan Canal. The \$2 million includes the compensation for the acquisition of State Park property, subject to the approval of the State House Commission. The funds shall be deposited prior to the start of construction within the Delaware and Raritan Canal Historic District. The DRJTBC has completed consultation with the NJHPO, the Delaware and Raritan Canal State Park, and Green Acres, and other than as a consequence of unanticipated discoveries as set forth in Section III(B) of the PA, no additional monies shall be required from DRJTBC.

B. Consultation Relative to Design Elements

The DRJTBC will consult with the NJSHPO, PASHPO, D&RCC, Delaware Canal State Park, and the Delaware and Raritan Canal State Park, as applicable, concerning the design of the bridge, noise walls, and pedestrian/bicycle facility along the Delaware Canal in Pennsylvania and the Delaware and Raritan Canal in New Jersey.

C. Construction Protection Plan

To avoid project-related construction damage, the DRJTBC, in consultation with FHWA, the PASHPO, the NJSHPO, the D&RCC, the Delaware Canal State Park and the Delaware and Raritan Canal State Park, will develop for the approval of the PASHPO, NJSHPO, the D&RCC, and the Delaware Canal State Park a construction protection plan for work along the Delaware Canal in Pennsylvania and the Delaware and Raritan Canal in New Jersey prior to any destructive construction activity in the immediate vicinity of the canals. The plan will set forth specific measures that will protect the canal prisms, towpaths, and any related features during the construction period. The construction protection plan will include measures to protect the dry-laid stone wall along the eastern side of the Delaware Canal prism and towpath, immediately north of the existing I-95/Scudder Falls Bridge. The protection plan will provide measures for minimizing direct impacts to the canal prisms and towpaths during the removal of the piers of the existing I-95/Scudder Falls Bridge. In addition, to the extent possible, the plan will indicate that construction areas will be located outside the canal prism and towpath features and will be separated for the safety of towpath users. All areas of known archaeological sensitivity shall be marked on/or referenced in the plans and specifications.

III. Administrative Stipulations

A. Personnel Qualifications

All archaeological work carried out pursuant to this agreement will be by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards for Archaeology* and Historic Preservation and all historic preservation work carried out pursuant to this agreement will be by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards* (61 CFR Appendix A).. All work shall conform with the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation*, and the New Jersey Historic Preservation Office Guidelines and Pennsylvania guidelines.

B. Late Discoveries

If any unanticipated discoveries of archaeological sites or historic properties are encountered during the implementation of this undertaking, DRJTBC shall suspend work in the area of the discovery, and FHWA shall comply with 36 CFR Part 800.13 by consulting with the PASHPO or NJSHPO, as appropriate, and, if applicable, federally recognized Tribes that attach religious and/or cultural significance to the affected property. The FHWA will notify the PASHPO or NJSHPO, as appropriate, and, if applicable, any such federally recognized Tribes within one working day of the

discovery. The FHWA, DRJTBC, the PASHPO or NJSHPO, as appropriate, and, if applicable, any such federally recognized Tribes will meet at the location of the discovery within seventy-two (72) hours of the initial notification to determine appropriate treatment of the discovery prior to the resumption of construction activities within the area of discovery.

C. Review Periods

The review period for all submissions will be thirty (30) calendar days from receipt of submission for review. The review of test panels will be accomplished within an immediate and reasonable response time, not to exceed seven (7) days from the date of notification for review.

D. Amendments

Any party to this PA may propose to FHWA that this agreement be amended, whereupon FHWA shall consult with the other parties to this PA to consider such an amendment. 36 CFR Part 800.6(c)(7) shall govern the execution of any such amendment.

E. Resolving Objections

1. Should any party to this PA object in writing to FHWA regarding any action carried out or proposed with respect to the Project or implementation of this PA, FHWA shall consult with the objecting party to resolve the objection. If after initiating such consultation FHWA determines that the objection cannot be resolved through consultation, FHWA shall forward all documentation relevant to the objection to the ACHP, including FHWA's proposed response to the objection. Within thirty (30) days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:
 - a) Advise FHWA that the ACHP concurs in FHWA's proposed response to the objection, whereupon FHWA shall respond to the objection accordingly;
 - b) Provide FHWA with recommendations, which FHWA shall take into account in reaching a final decision regarding its response to the objection; or
 - c) Notify FHWA that the objection will be referred to comment pursuant to 36 CFR Part 800.7, and proceed to refer the objection and comment. The resulting comment shall be taken into account by FHWA in accordance with 36 CFR Part 800.7(c) (4) and Part 110(1) of NHPA.
2. Should the ACHP not exercise one of the above options within thirty (30) days after receipt of all pertinent documentation, FHWA may assume the ACHP's concurrence in its proposed response to the objection.

3. FHWA shall take into account any ACHP recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection; FHWA's responsibility to carry out all actions under this PA that are not the subjects of the objection shall remain unchanged.

F. Objection Resolution Provision

If the DRJTBC, NJSHPO, and PASHPO or any invited signatory to this PA should object in writing to any measures or their manner of implementation, then FHWA shall notify the parties of this PA and take the objection into account, consulting with the objector and, should the objector so request, with any of the parties to this PA to resolve the objection.

G. Review of Implementation

If the stipulations have not been initiated within five (5) years after the execution of this PA, the parties to this agreement shall review the PA to determine whether revisions are needed. If revisions are needed, the parties to this PA shall consult in accordance with 36 CFR Part 800 to make such revisions.

H. Sunsetting Duration

If the terms of this PA have not been implemented by ten (10) years from the date of the signed PA, this PA shall be considered null and void. In such event, FHWA shall notify the parties to this PA, and if FHWA chooses to continue with the Project, shall re-initiate review of the Project in accordance with 36 CFR Part 800.

I. Termination

1. If FHWA determines that it cannot implement the terms of this PA, or the PASHPO or NJSHPO, as appropriate, or the ACHP determines that the PA is not being properly implemented, FHWA or the PASHPO or NJSHPO, as appropriate, or the ACHP may propose to the other parties to this PA that it be terminated.
2. The party proposing to terminate this PA shall so notify all parties to this PA, explaining the reasons for termination and affording them at least thirty (30) days to consult and seek alternatives to termination. The parties shall then consult.
3. Should such consultation fail, FHWA or the ACHP, or the PASHPO or NJSHPO, as appropriate, may terminate the PA by so notifying all parties in writing.
4. Should this PA be terminated, FHWA shall either:
 - a) Consult in accordance with 36 CFR Part 800.6(a)(1) to develop a new PA; or

- b) Request the comments of the ACHP pursuant to 36 CFR Part 800.7(a)(1). The ACHP shall have forty-five (45) days to respond with comments.
5. FHWA and the ACHP may conclude the Section 106 process with a PA between them if either the PASHPO or NJSHPO, as appropriate, terminates consultation in accordance with 36 CFR Part 800.7(a)(2).

J. Entire Agreement

This PA represents the entire agreement between the signatories and concurring parties to this PA. Other than the occurrence of unanticipated discoveries as referenced in section III(B) of this PA, all known obligations of the DRJTBC and other signatories and concurring parties concerning historic preservation, mitigation, interpretation and acquisition are set forth in this PA.

Execution of this PA by FHWA, the PASHPO and the NJSHPO, and the implementation of its terms, will be evidence that FHWA has taken into account the effects of the Project on historic properties.

By: 
FEDERAL HIGHWAY ADMINISTRATION

Date: 12-30-10

By: _____ Date: _____
PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: _____
NEW JERSEY STATE HISTORIC PRESERVATION OFFICER

b) Request the comments of the ACHP pursuant to 36 CFR Part 800.7(a)(1). The ACHP shall have forty-five (45) days to respond with comments.

5. FHWA and the ACHP may conclude the Section 106 process with a PA between them if either the PASHPO or NJSHPO, as appropriate, terminates consultation in accordance with 36 CFR Part 800.7(a)(2).

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Execution of this PA by FHWA, the PASHPO and the NJSHPO, and the implementation of its terms, will be evidence that FHWA has taken into account the effects of the Project on historic properties.

By: _____
FEDERAL HIGHWAY ADMINISTRATION

Date:

By:  _____
PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICER

Date: 10/18/2010

By: _____
NEW JERSEY STATE HISTORIC PRESERVATION OFFICER

Date:

- b) Request the comments of the ACHP pursuant to 36 CFR Part 800.7(a)(1). The ACHP shall have forty-five (45) days to respond with comments.
- 5. FHWA and the ACHP may conclude the Section 106 process with a PA between them if either the PASHPO or NJSHPO, as appropriate, terminates consultation in accordance with 36 CFR Part 800.7(a)(2).

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This PA represents the entire agreement between the signatories and concurring parties to this PA. Other than the occurrence of unanticipated discoveries as referenced in section III(B) of this PA, all known obligations of the DRJTBC and other signatories and concurring parties concerning historic preservation, mitigation, interpretation and acquisition are set forth in this PA.


Execution of this PA by FHWA, the PASHPO and the NJSHPO, and the implementation of its terms, will be evidence that FHWA has taken into account the effects of the Project on historic properties.

By: _____
FEDERAL HIGHWAY ADMINISTRATION

Date:

By: _____
PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICER

Date:

By:  _____
NEW JERSEY STATE HISTORIC PRESERVATION OFFICER (DEPUTY)

Date:

10/5/10

CONCUR:

By:  Date: 11-4-10
DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION

By: _____ Date: _____
NEW JERSEY DEPARTMENT OF TRANSPORTATION

By: _____ Date: _____
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

CONCUR:

By: _____ Date: _____
DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION

By: *Waelm'Gerbz* Date: *10-15-10*
NEW JERSEY DEPARTMENT OF TRANSPORTATION

By: _____ Date: _____
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

CONCUR:


By: _____ Date: _____
DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION


By: _____ Date: _____
NEW JERSEY DEPARTMENT OF TRANSPORTATION

By:  Date: 10/10/10
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

Legend

Area of Potential Effect (APE)

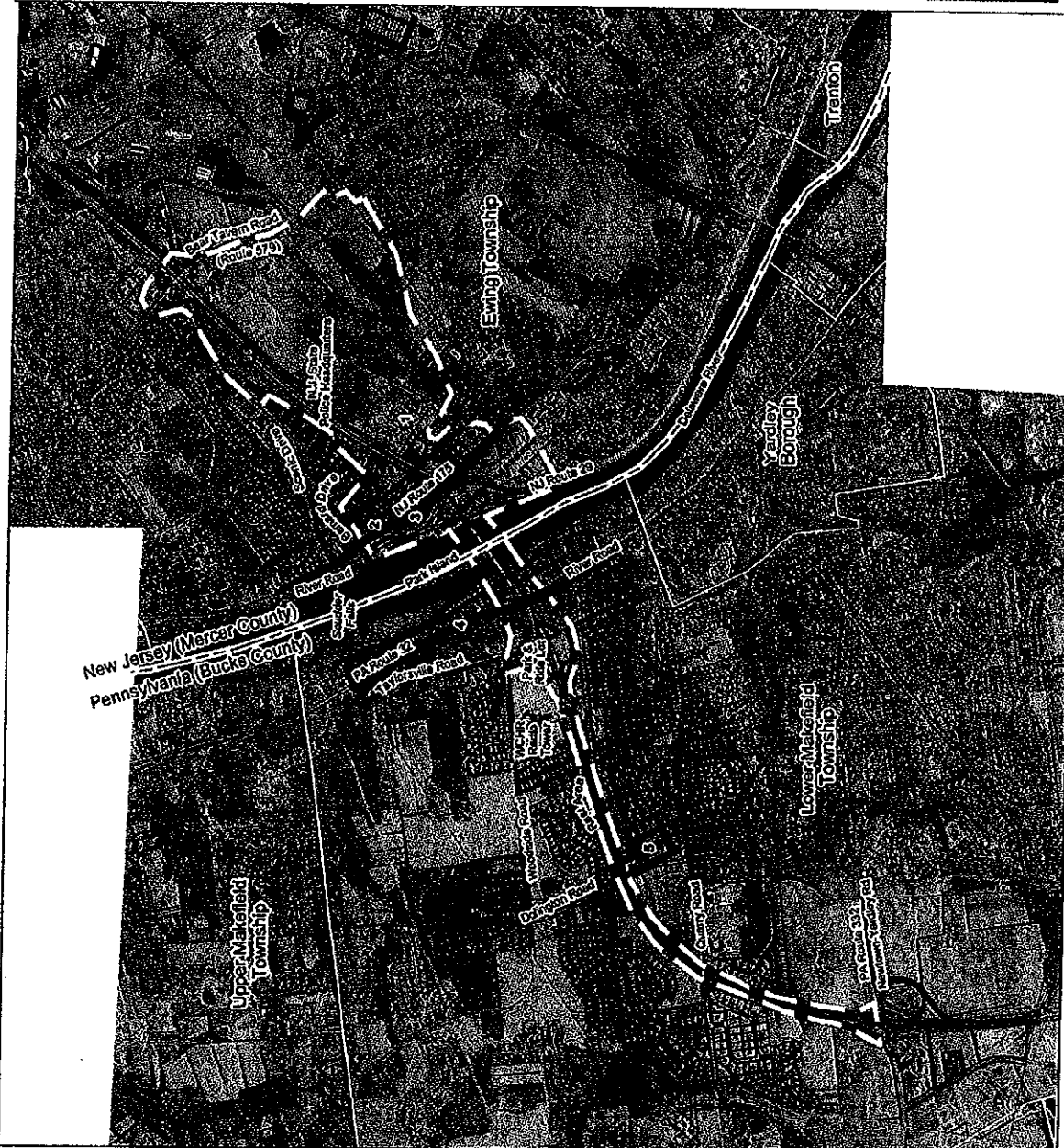
 National Register of Historic Places
Listed or Eligible Historic Resources

 Delaware and Raritan Canal District

1. N.J. State Police Headquarters
2. Charles S. Maddock House
3. Delaware and Raritan Canal
4. Delaware Canal
5. Elm Lowne House



I-85/Scudder Falls
Bridge Improvement Project
Environmental Assessment
Historic Resources Map
Figure II-4



APPENDIX E

STATEMENT OF VALUE CALCULATION

STATEMENT OF VALUE CALCULATION

$$\begin{aligned} 2010 \text{ Assessed Value} / 2011 \text{ Equalization Ratio} &= \text{Equalized Value} \\ 1,832,817,100 / 56.45\% &= 3,246,797,343 \end{aligned}$$

$$\begin{aligned} \text{Equalized Value} / \# \text{ of Acres} &= \text{Value per Acre} \\ 3,246,797,343 / 9,920 &= 327,298 \end{aligned}$$

$$\begin{aligned} \text{Value per Acre} / 0.342 \text{ Acres} &= \text{Value} \\ 327,298 / 0.342 &= \$111,935.91 \end{aligned}$$

Hand, Timothy

From: Jeff Burd [jburd@ewingnj.org]
Sent: Thursday, October 28, 2010 3:15 PM
To: Hand, Timothy
Subject: Ewing Twp info

Hi Tim:

Here's the scoop—

Equalized ratio for 2011 is 56.45%

Total ratable value for 2010 is 1,832,817,100

Give me a shout if you need anything else (within reason!!)

Jeff

APPENDIX F

MEETING MINUTES



June 26, 2008
Delaware & Raritan Canal Field View

Attendees

Ernie Hahn, Executive Director, Delaware & Raritan Canal Commission (D&RCC)
Kevin Koslosky, NJDEP, Green Acres
Colleen Ruzicka, Delaware and Raritan Canal State Park
Tom Carbone, NJDOT
Janet Fittapaldi, NJDOT
Joe Sweger, NJDOT
Kevin Skeels, DRJTBC
Tom Cushman, DMJM Harris
Joe Grilli, HNTB Corporation
Richard Baublitz, A.D. Marble & Company
Barbara Frederick, A.D. Marble & Company

A field meeting was scheduled with Ernie Hahn, Executive Director of the Delaware and Raritan Canal Commission (D&RCC), for June 26, 2008 at 9 AM to review the design options for the I-95/Scudder Falls Bridge Improvement Project. Attendees were to discuss potential impacts to the Delaware and Raritan Canal and related measures for mitigation. The D&RCC has regulatory jurisdiction over potential visual, wetland, storm water, and traffic impacts related to the canal park in an area extending 1,000 feet on either side of the canal. This meeting was attended by representatives of the NJDEP, including the Green Acres program, D&RCC, and Delaware and Raritan Canal State Park.

Review of Design Options and Associated Impacts to the Delaware and Raritan Canal

The attendees met near the I-95 overpass, and Joe Grilli reviewed the preferred alternative and discussed the associated impacts to the Delaware and Raritan Canal. Joe Grilli explained that under the current alternative, the existing NJ Route 29 Bridge over the Delaware and Raritan Canal would not be reconstructed or replaced.

A new, wider bridge would be constructed to the north of the existing I-95 bridge over the Delaware and Raritan Canal, with the new bridge extending north from the southern edge of the existing bridge. The highway would be widened to include five lanes northbound/four lanes southbound on the I-95/Scudder Falls Bridge.

The design for the NJ Route 29 Interchange will incorporate a folded diamond interchange with two roundabout intersections at the I-95 ramp termini. This design will retain the bypasses for NJ Route 29 northbound and southbound through traffic and will allow free-flow traffic through the interchange, as the preferred design does not include any traffic signals or stop sign-controlled

Meeting Minutes

Delaware and Raritan Canal Field View, June 26, 2008

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intersections. The width of the NJ Route 29 northbound bypass would be reduced to one travel lane plus shoulders to reduce existing effects on the Delaware and Raritan Canal. The existing on-ramp from Route 175 to I-95 northbound would not longer be available to public access but would be maintained for state police access only, resulting in a reduction of localized traffic. The new northbound and southbound ramps were designed to be as close to the existing bridge as possible.

Joe Grilli reviewed the proposed location of the existing and proposed mainline bridge piers in proximity to the Delaware and Raritan Canal. The western pier, located within the bank of the prism, would be moved upslope. The eastern pier, located adjacent to the towpath, would need to be reconstructed but would remain in approximately the same location.

Ernie Hahn of the Delaware and Raritan Canal Commission inquired if the location of the piers had been shown as further away from the canal prism and towpath in previous designs. Joe Grilli stated that it was infeasible to increase the span of the bridge and move the eastern pier further away from the towpath because of required structure depths. The plan is to build the eastern pier adjacent to the towpath in approximately the same location as the existing structure.

Ernie Hahn inquired about the status of the proposed bike/ped facility. Joe Grilli stated that a decision on the advancement of the bike/ped facility will be made during final design, when total project costs are refined.

Mitigation Measures

Janet Fittapaldi explained that the Section 106 documentation for New Jersey was being revised to reflect a finding of Adverse Effect on the Delaware and Raritan Canal and to include measures for mitigation for loss of integrity. She also noted that mitigation measures may be required as part of the D&RCC review and the NJHPO Historic Sites Council (HSC) application process.

Potential ideas for mitigation for the loss of integrity under Section 106 were discussed:

To minimize visual impacts, the new piers could be treated with a finish that is aesthetically sensitive to the resource. A veneer of local stone laid in a random ashlar pattern with recessed mortar joints to create the appearance of a dry-laid stone wall, a historic feature found along the canal, was proposed by the D&RCC. Ernie Hahn agreed to provide examples and further information to A.D. Marble & Company staff with regards to the stone veneer treatment of the piers.

Due to concerns over protection of the water supply and impacts to the prism, Ernie Hahn indicated that it is likely that the project should plan for limited ground disturbance to the prism during the removal of the western pier. A potential solution is to cut off the existing pier at the water level.

If it is determined that there may be stone walls in this location that historically reinforced the canal prism or towpath, Ernie Hahn noted they would require protection against heavy equipment during construction to avoid direct impacts. Possible solutions would include geotextile and fill along the towpath or prism.

Meeting Minutes

Delaware and Raritan Canal Field View, June 26, 2008

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Ernie Hahn indicated that public interpretation might be another possible measure for mitigation and that he would soon discuss this idea further with the other relevant agencies (Green Acres, the New Jersey Water Supply Authority, the New Jersey Department of Parks and Forestry, and the New Jersey State Historic Preservation Office (NJHPO)).

Janet Fittapaldi inquired about lighting under the bridge since the new structure would be approximately 1/3 wider overhead. Ernie Hahn indicated that lighting for the bridge would not necessarily be required since the park is closed at night.

Ernie Hahn also stated that run-off into the canal related to the increase in impervious surfaces would be a concern that would need to be addressed.

It was agreed that in addition to the D&RCC, the NJHPO, Green Acres, Parks and Forestry, and the Water Supply Authority should be consulted regarding the development of mitigation measures in order to resolve the concerns of all of the relevant agencies.

Janet Fittapaldi explained that for the purposes of Section 106, general mitigation measures could be developed and included in the forthcoming report. In addition, the related Memorandum of Agreement, which would outline measures for mitigation of loss of integrity under Section 106, could provide more general stipulations and provide for further consultation and development of details related to mitigation during final design.

Plans for diverting park users during construction or staging while the pier adjacent to the towpath is being rebuilt were discussed. Potential options include shielding and shoring to isolate the area of construction.

Ernie Hahn indicated it would be necessary to coordinate with the parks to advertise the closure of the park.

The aesthetically appropriate appearance of the parapet of the new bridge was briefly discussed. Some ideas that were presented included mimicking the existing structure or replicating the appearance of 1930s roadway bridges over the canal. It was acknowledged that the parapet design would need to take into account concerns on both sides of the bridge.

Land Acquisition and Green Acres Review

Kevin Koslosky of Green Acres explained that the agency he represents works as the real estate agent for the DEP application process. He explained that the application process is two part: 1) an initial application to characterize the magnitude of the impacts and 2) a final application that includes more specific details. The initial application process requires public need/benefit documentation, an alternatives analysis (including details of need to impact state lands), and an assessment of environmental impacts (including efforts that have been made to minimize impacts to state lands). It was determined that the Environmental Assessments that were currently being prepared for NEPA compliance could be submitted for the initial application process. Kevin Koslosky stated that he would provide a copy of a checklist for the application process to project team members. Kevin Koslosky noted that as part of the process, the D&RCC must sign off on the project, and the state legislature must approve the transfer of land ownership. In addition there must be an exchange for the land of equal value.

Meeting Minutes

Delaware and Raritan Canal Field View, June 26, 2008

Page 4 of 4

The preferred alternative would result in approximately 1/3 of an acre of new disturbance to existing park lands and diversion from recreation/conservation use. The rest of the improvements would be included within the existing right-of-way. The topic of acquisition via easement or title take was discussed.

Bike/Ped Path

The bike/ped path would require the construction of a retaining wall approximately 200 feet in length parallel to the canal towpath where the bike/ped lane returns to grade resulting in the potential for visual impacts. As requested by Ernie Hahn, preliminary designs showing the location of the retaining wall will be included in the revised Section 106 documentation.

On the southbound side of the proposed improvements, the proposed noise barriers would extend partially along the curve of the southbound on ramp. The noise walls may or may not come over the canal itself. Details of the noise walls and their relationship to the canal will be included in the revised documentation.

Ernie Hahn inquired if the Pennsylvania side was interested in the bike/ped bridge. Joe Grilli replied that there was a general interest with a greater interest among biking enthusiasts.

If these minutes do not accurately reflect what transpired at the meeting, please contact the undersigned promptly. Otherwise, we will assume that you concur with the accuracy of the information presented above.

Barbara Frederick, Senior Architectural Historian, A.D. Marble & Company
Tel. 717-731-9588, Fax 717-731-1170, email: bfrederick@admarble.com

cc: Attendees
George Alexandridis, Delaware River Joint Toll Bridge Commission
Bijan Pashanamaei, DMJM Harris
Richard Baublitz, A.D. Marble & Company
Billy Hattaway, PennDOT Project Manager, Glatting Jackson

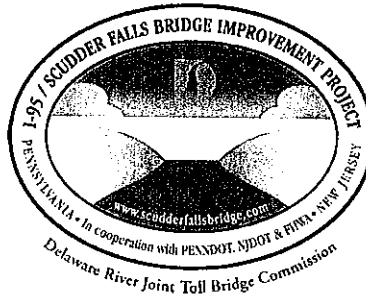
295 Sudder Falls Bridge

June 26, 2008

9:00 Am

<u>Name</u>	<u>Representing</u>	<u>Phone</u>
Tom Cushman	DMPSM Harris	215 735 0832
Barbara Friedrich	AD Marble	717 731 9588
JANET FITTPALDI	NJDOT	609 530 5462
KEVIN SKEGGS	DRJTB	267 790 1048
Kevin Koslosky	NJOEP - Green Acres	609 292-6579
Colleen Ruzicka	DIR Canal St. PK	609-397-2961
ERNE HAHN	DRCL	609 397-2000
JOE SWEGER	NJDOT	609-530-2985
Dick Baublitz	A.D. Marble	717.731-9588
Tom Carbone	NJDOT- DPPD	609-530-2728
Joe Gamm	HNTB	617-542 6900

DRAFT



October 24, 2008

Delaware and Raritan Canal Coordination Meeting

Attendees – see attached meeting sign-in sheet.

1. Introductions were made. The purpose of the meeting is to discuss points that were made in the August 5, 2008 letter to DRJTBC (attached) from the Delaware and Raritan Canal Commission, which letter also represented the views of many of the agencies present at the meeting.
2. Bijan Pashanamaei and Joe Grilli described the project, including a discussion of the temporary earthen causeways and the potential bike/ped path. Questions and answers regarding the project design and environmental review followed.
3. Ernie Hahn expressed concerns about consultation with regards to stream encroachment and wetlands. Bijan and Joe explained that the project team has been working closely with the U.S. Army Corps of Engineers.
4. Ernie inquired if consultation with the U.S. Fish and Wildlife Service had been carried out. Joe noted that coordination has been ongoing and a Biological Assessment pursuant to Section 7 of the federal Endangered Species Act has been prepared by the project team and submitted by FHWA to the National Marine Fisheries Service.
5. Rod Rodriguez from NJDEP, Green Acres inquired if any temporary construction easements would be required across the park. Joe explained this may be necessary in some areas. Rob noted that if any of the impacts require excavation that may be considered a permanent impact if the landscape cannot be restored to the satisfaction of Green Acres.
6. Al Payne inquired how long the towpath would be shut down and River Road closed down to traffic. Joe and Bijan indicated the tow path and River Road would at times be closed temporarily during construction. Construction at River Road might be staged to occur during the night to limit the duration of day-time closings. River Road may be used to detour bike/ped path traffic along the towpath.
7. Ernie stated that the agencies consider the pedestrian bike path another direct impact as part of the overall project. Joe explained that the implementation of the proposed bike/ped path will not be determined until final design when cost reasonableness of this option is better understood.

Michelle Hughes noted that the mitigation for the bike/ped path would need to be included in the Memorandum of Agreement (MOA) for Section 106.

8. The group then proceeded to review the points made in the letter of August 5, 2008. DRJTBC goal is to agree on mitigation to expedite permitting. The eight items in the August 5th letter are reference by number.

#1: Bike and Pedestrian Path.

- DRCC considers this a physical and visual impact to historic district.
- The project team confirmed for the group that the bike/pedestrian facility does touch down on PA tow path (E. Hahn et al not aware of this).
- The project team noted that bike advocacy groups strongly support the new ped/bike path.
- The environmental documents include bike/pedestrian facility.
- It was determined that the mitigation for the impacts associated with the ped/bike path will be included in the MOA. The required (PA and NJ SHPOs, FHWA, DOTs) and concurring signatories to the MOA were discussed.
- Michelle Hughes noted she needed a paper copy of the entire alternatives analysis to determine if the least harmful option was selected. Michelle also noted concerns about the visual effects of noise walls and asked for additional information on their appearance. There was some discussion about the treatment of roadway surfaces and bridge decking to reduce noise levels. Kevin Koslosky and Ernie asked that the noise walls be discussed and coordinated during final design.
- Ernie noted that he would talk to parks and maybe the agencies would change their point of view on this item.

#2: No new piers in the D&R Canal

- Joe reiterated that the project would result in the removal of the existing piers from the canal prism and no new features would be introduced within the prism.

#3: Restriction to use of the Existing Ramp from River Road

- Closure to public use of the existing northbound on-ramp to I-95 is part of the project as proposed. The intent is for the ramp to be gated for exclusive State Police emergency use is acceptable to DRCC.
- Ernie expressed his appreciation that the roadway will be gated.

#4: Aesthetic treatment of pier and retaining walls.

- Dry-laid stone treatment of piers and retaining walls adjacent to the D&R Canal is what DRCC is looking for.
- The project team noted that the proposed structures near the D&R Canal would be NJDOT structures, so NJDOT will have to approve.
- DRCC does not want form liners – SHPO office probably will not approve this. Structures in question are mainline and ramp piers immediately adjacent to the D&R Canal; bike/pedestrian path walls.
- Bijan indicated that the project design does not call for dry-laid stone walls but that form liners or some other treatment of the piers are proposed. Ernie expressed a strong objection to form liners. Michelle Hughes noted that the Historic Sites Council would strongly object to the use of form liners.
- Discussion continued. The specific features that would require treatment would include the two new piers, ramps, and the retaining wall for the bike/ped path. Ernie noted that as

part of the design review process for the DRCC information would be needed as the height and shape of the columns associated with the piers.

- Inquiries about the height of the retaining wall for the bike/ped path along the canal were made. Joe explained using the plans that the retaining wall would be three to five feet in height and approximately 200 feet long adjacent to the D&R Canal.

#5: Roadway Runoff

- Direct drainage into the canal from bridge is concern. DRCC will work with DRJTBC during the SW (?) design.
- Concern was expressed about the location of the scuppers; their location should ensure that run off is not directed into the canal.
- Bijan explained that the storm water management system for the project would meet DEP regulations. Green Acres staff noted that the pipe for the underwater storm basin may be a permanent take or require an easement.

#6: Preserve openness, improve aesthetics

- Ernie asked that the piers be kept as open as possible. Bijan noted that the wall on the south side of the canal may also need to serve as a crash barrier for Route 29.

#7: Erosion concern at embankment along Upper River Road

- Right now this area is open and is not covered in vegetation. Bijan noted that only those areas under the bridge are treated with riprap and that he will look into other designs to prevent erosion in this location. He also explained that the new piers will only be removed below the waterline to the point where they interfere with the new piers.
- Rob inquired if the new piers were to be in the same location as the existing. He stated that if there was a need to remove piers, the Green Acres application would look for a survey of this portion of the property. Parks explained there is a deed but no survey for the state park property and that it would be necessary to overlay impacts over a survey to determine potential impacts.
- Rob noted the survey would need to be conducted to Green Acres standards, although not as part of the pre-application process, and stated he would provide the necessary technical documents. Rob also noted that generally it took approximately one year to complete the process from pre-application to approval. He provided a list of information needed for the pre-application process as well as copies of pre and final applications. He also stated that some sort of compensation (monetary or land replacement) would be needed for compensation.

#8: Mitigation for Adverse Effects and Compensation for Conveyance of State Property

- E. Hahn stated the DRCC is looking for the Commission to manage, design, and construct the swing bridge at Moores Station.
- Ernie explained that this was the most common type of swing bridge along the canal and that D&RCC had been working with NJDOT to construct this structure and that the DOT had conducted a preliminary feasibility study. The replica bridge would replace the need for land swap. Kevin Koslosky explained that it would be difficult, at best, to arrive at the value of the land acquired from the state.
- Barbara Frederick questioned the appropriateness of the proposed bridge construction as mitigation effects to the Delaware & Raritan Canal under Section 106. She stated the proposed construction was located over a mile north and questioned if this would be the best mitigation for loss of integrity to the portion of the canal within the APE. Janet Fittipaldi expressed similar concerns. Ernie stated that he felt the recommendation of the

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constructed swing bridge is appropriate and if DRJTBC has other proposed mitigation, this should be presented.

9. Michelle stated that in order to complete the Historic Sites Council Application process (for properties listed on the New Jersey Register) it would be necessary to submit concept reviews initially and 90% plans and specifications at final review. She suggested getting started with the application process before the MOA is finalized.

10. George Alexandridis noted that the purpose of the meeting is to define what needs to be done in order to release the Environmental Assessment. The DRJTBC recognizes that the NEPA process and the state regulatory processes can't proceed concurrently given the project schedule and are willing to proceed at their own risk, understanding that some additional compliance may be necessary.

11. A discussion ensued as to who would be responsible for the design, construction, and management of the swing bridge.

12. Joe inquired how Green Acres values state lands. Kevin explained that a real estate appraiser would be responsible for this effort and would take into account the recreational and historic values of the property. If a land swap were to occur, the parks would need to agree the trade is useful and would want to manage the newly acquired property.

13. The potential cost of the reconstructed bridge was discussed. George Alexandridis noted that the DRJTBC may support the project if there was a partnering aspect. Scenic Byways of NJDOT and State Parks were noted as a potential project partner. If the DRJTBC was to make a monetary contribution, then the other agencies might assume responsibility for managing the project.

14. Mark Rollo indicated he would talk to the bike/ped staff at NJDOT determine if funding was available for the project.

15. The preparation of a construction protection plan for the remnant stone walls that supported the towpath and prism was discussed.

16. Kevin Koslosky noted that Rob Rodriguez will now be the project contact for Green Acres.

If these meeting notes do not accurately reflect what transpired at the meeting, please contact the undersigned promptly. Otherwise we will assume that you concur with the accuracy of the information presented above.

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cc: Attendees
Tom Carbone, NJ DOT Project Manager
Mary Raulerson, PennDOT District 6-0 Consultant Project Management

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Scudder Falls Bridge Project

10/24/08

DTR Canal Coordination Meeting

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Delaware River
Joint Toll Bridge
Commission

AECOM

"Preserving Our Past, Enhancing Our Future"

MINUTES OF MEETING

Date and Time: Wednesday September 8, 2010 at 2:00 PM

Location: AECOM's Office
516 East State Street
Trenton, New Jersey

Project: Contract No. C-502A-2D, DMC Advanced Engineering Services
I-95/Scudder Falls Bridge Improvement Project

Purpose: **Pre-Application Meeting with NJDEP Green Acres Program**

Attendees:	Robert Rodriguez		NJDEP GAP
	William Doolittle	Deputy Director	TY Lin/Medina
	Kevin Skeels	PM	DRJTBC
	Richard Rash	PM	AECOM
	Timothy Hand	Planning Mgr	AECOM

The pre-application meeting was held to discuss environmental and regulatory issues with the NJDEP Green Acres Program (GAP) for the I-95/Scudder Falls Bridge Improvement Project. A summary of the discussion points are as follows:

1. The meeting began with an introduction of all attendees. Afterwards, Kevin Skeels provided a brief overview of the project noting that it involves replacement of the Scudder Falls Bridge and improvements to its approachways for a distance of 4.4 miles. The project limits extend from the Newton-Yardley Road (PA Route 332) interchange in Lower Makefield Township, Bucks County to the Bear Tavern Road interchange in Ewing Township, Mercer County, New Jersey. Improvements are also proposed for the Taylorsville Road and Route 29 interchanges which are located just beyond the bridge on either side of the river. The existing bridge has 2 lanes of traffic in each direction whereas the proposed project involves adding a travel lane and adequate outside and inside shoulders in each direction with additional lanes to accommodate entry and exit at adjoining interchanges (auxiliary lanes). In total, the new bridge will have 9 travel lanes (5 northbound and 4 southbound).
2. Kevin Skeels noted that the Environmental Assessment/Draft Section 4(f) has been circulated for comment and that Public Hearings were held in January 2010. A comment response document has been prepared and submitted; however, the introduction of tolls on the bridge has resulted in the need to prepare a Supplemental Environmental Assessment to determine traffic impacts associated with this modification. The Supplemental Environmental Assessment should be ready for submission to the FHWA in September 2010 with a Finding of No Significant Impact (FONSI) anticipated by the end of the year. It was noted that the DRJTBC has also decided that the project will include the Pedestrian/Bikeway on the bridge.

3. Regarding the Final Design schedule, Kevin Skeels stated that the DRJTBC has retained AECOM to provide Advanced Engineering and Environmental Services for the Scudder Falls Bridge project in an effort to expedite the permitting process. The DRJTBC anticipates that an engineering firm for the Final Design contract will be selected in mid 2011. With a one-year design phase anticipated, the DRJTBC expects construction to commence in late 2012.
4. Tim Hand gave a summary of the environmental permits and approvals that will be required for the project. Since the project spans both Pennsylvania and New Jersey, the DRJTBC is required to obtain permits from both States as well as other Federal and local jurisdictions. In Pennsylvania, a Joint Permit Application will be submitted to the Pennsylvania Department of Environmental Protection (PADEP) and the U.S. Army Corps of Engineers (USACE) for impacts to wetlands and waterways while the Bucks County Conservation District (BCCD) will issue an Erosion and Sedimentation Permit as well as the NPDES Permit. Applications will be submitted to the New Jersey Department of Environmental Protection (NJDEP) for a Freshwater Wetland Individual Permit, a Flood Hazard Area Permit, an NPDES General Permit for Stormwater Discharge Associated with Construction Activities, and a Green Acres Program (GAP) – Parkland Diversion. The Mercer County Soil Conservation District will need to issue a Soil Erosion and Sediment Control Plan Certification for soil disturbance. A Certificate of Approval will be obtained from the Delaware and Raritan Canal Commission (DRCC) for impacts to the Delaware and Raritan Canal. Finally, the Delaware River Basin Commission has jurisdiction over the project and the DRJTBC will coordinate with them for their approval. It was noted that the Project Team has had Pre-application meetings with many of the regulators including the USACE, PADEP, NJDEP Land Use Regulation Program, DRCC, and the BCCD.
5. Tim Hand also noted that the project area is known habitat for several threatened and endangered species and that the DRJTBC will comply with the applicable timing restrictions in an effort to minimize impact to the species.
6. Regarding Cultural Resources, it was noted that a Programmatic Agreement has been circulated as a result of the Section 106 Consultation and that the GAP has been a participant in the process. The DRJTBC recently met with the Governor's office to finalize the details of the Programmatic Agreement. The proposed mitigation will be divided between the DRCC and the GAP to fund a swing bridge restoration in the Delaware and Raritan Canal State Park in Hopewell as well as other GAP priorities.
7. It was explained that the proposed bicycle/pedestrian bridge would land west of Route 29 and connect to the Delaware and Raritan Canal State Park north of the Route 29 Interchange. In lieu of selling this Green Acres property, Robert Rodriguez indicated that this activity could be achieved through a Maintenance Agreement for the bicycle/pedestrian pathway. Bill Doolittle provided a copy of the NJDOT Route 29 right-of-way plans which shows an easement for the southbound Route 29 ramp over the Delaware and Raritan Canal. It appears that this easement would be sufficient to accommodate the proposed pathway tie-in to the towpath. Robert Rodriguez indicated that the easement language should be reviewed to ascertain if this type of activity would be permitted and requested a copy of the Route 29 right-of-way maps so that research could be conducted. Both Robert Rodriguez and Bill Doolittle will research the easement to determine the easement rights.
8. Robert Rodriguez provided an overview on the GAP application process indicating that there is a Pre-Application submission as well as a Final Application submission. For the Pre-Application submission, he indicated that much of the information in the Environmental Assessment should be sufficient in terms of describing the proposed project and providing the necessary details. Mr. Rodriguez emphasized the need to provide a detailed written description of why the taking is required; he noted that providing a Title Report would be beneficial, he recommended providing a detailed Alternatives Analysis for the impacts; and requested that existing easements be described. A discussion ensued concerning the need for a property appraisal and Mr. Rodriguez suggested that the DRJTBC request a waiver from the need to provide this information. Nevertheless, Mr. Rodriguez indicated that the NJDEP is typically interested in knowing not only the real estate value of the property, but the impacts

to the environment as well as recreational opportunities. On past transportation projects requiring Green Acres Parkland Diversions, Tim Hand indicated that he has contacted the township and obtained an equalized assessed land value which can be used to determine the value of the Green Acres land to be impacted by the improvements. Mr. Rodriguez indicated that this type of assessment would provide an acceptable Real Estate value for the land. Regarding application submissions, Mr. Rodriguez stated that he would need twelve sets of plans and supporting documentation.

9. In terms of the Parkland Diversion application, Robert Rodriguez noted that this project would be processed under the Ogden-Rooney Statute since it involves a diversion of State-owned land. In addition, if the area of conveyance is less than one acre, a Public Hearing is not required. It is estimated that the Green Acres parcels requiring conveyance amount to 15,000 square feet which would preclude the need for a Public Hearing.
10. Robert Rodriguez indicated that his office has an internal meeting on the second Thursday of the month to discuss pending applications. In order for an application to be discussed at this meeting, it is necessary to submit documents to him approximately three weeks prior to the meeting date. Upon approval of the Pre-Application submission, it will be necessary to submit the requirements of the Final Application package so that the project can be included in the next State House Commission meeting. It was stated that the State House Commission meets only 4 times a year and that Final Application materials need to be submitted at least 60 days prior to the meeting date.
11. Robert Rodriguez noted that a resolution from the DRJTBC supporting the Green Acres Parkland Diversion would be required for the Final Application submission.
12. An electronic copy of the Environmental Assessment Comment Resolution document should be provided to the GAP as part of the Pre-Application package.
13. The GAP has assigned this project file number SHC-2008-0004. This file number should be used on all correspondence with the GAP.
14. Regarding the impacts to parkland, Robert Rodriguez indicated that a detailed description should be provided for physical impacts (e.g., bridge piers) as well as aerial easement requirements.
15. When describing the proposed easements, Robert Rodriguez stated that permanent impacts (i.e., structures) should be discussed as well as the need for land associated with future maintenance. It is important to include all potential needs for the property in the easement description.
16. Since I-95 is under the NJDOT's jurisdiction, it will be necessary to include a letter with the Final Application package which demonstrates NJDOT's participation in the project.
17. AECOM will provide NJDOT with a copy of the Pre-Application package for their review prior to the GAP submission.

List of Action Items

Action Item	Responsible Party	Anticipated Completion Date
Review of Route 29 Easement	William Doolittle/Robert Rodriguez	October 2010
Obtain Township Property Evaluation	Timothy Hand	October 2010

The above reflects our understanding of the discussions and decisions made at this meeting. Any corrections or revisions to these minutes should be forwarded to AECOM within 3 business days of receipt of these minutes.

Prepared by:

AECOM

Timothy Hand

Date of Distribution: 10/26/10

cc: All Attendees

APPENDIX G

PEDESTRIAN/BICYCLE FACILITY PLANS

