# ROUTE 52 RECONSTRUCTION PROJECT

**From Route 9 in Somers Point, Atlantic County**
**To Bay Avenue in Ocean City, Cape May County, New Jersey**

# FINAL

## Environmental Impact Statement / Section 4 (f) Evaluation

The proposed project will reconstruct and widen 1.0 km of Route 52, known as MacArthur Boulevard, between Route 9 and the traffic circle in Somers Point; convert the traffic circle to a signalized intersection; and reconstruct 2.2 km of causeway across Great Egg Harbor Bay from the traffic circle to Bay Avenue in Ocean City.

The major environmental issues include filling and shading of tidal wetlands; right-of-way acquisitions including commercial properties and Green Acres land; dredging disturbance; and impacts on resources.

**U.S. DEPARTMENT TRANSPORTATION**

**FEDERAL HIGHWAY ADMINISTRATION**

**AND**

**NEW JERSEY DEPARTMENT OF TRANSPORTATION**

A D Silber 6/11/02

Arthur D. Silber, Director of Project Management — **Date**
**New Jersey Department of Transportation**

Randall Prescott 6/11/02

Randell Prescott, PE, Program Operations, Team Leader — **Date**
**Federal Highway Administration**

The following persons may be contacted for additional information concerning this document:

N.J Department of Transportation
Nicholas Caiazza
Division of Project Management
1035 Parkway Avenue
P.O. Box 600, Trenton, NJ 08625
(609) 530- 2991

Federal Highway Administration
Lourdes Castaneda
Area Engineer
840 Bear Tavern Road
Suite 310, West Trenton, NJ 08628
(609) 637-4237

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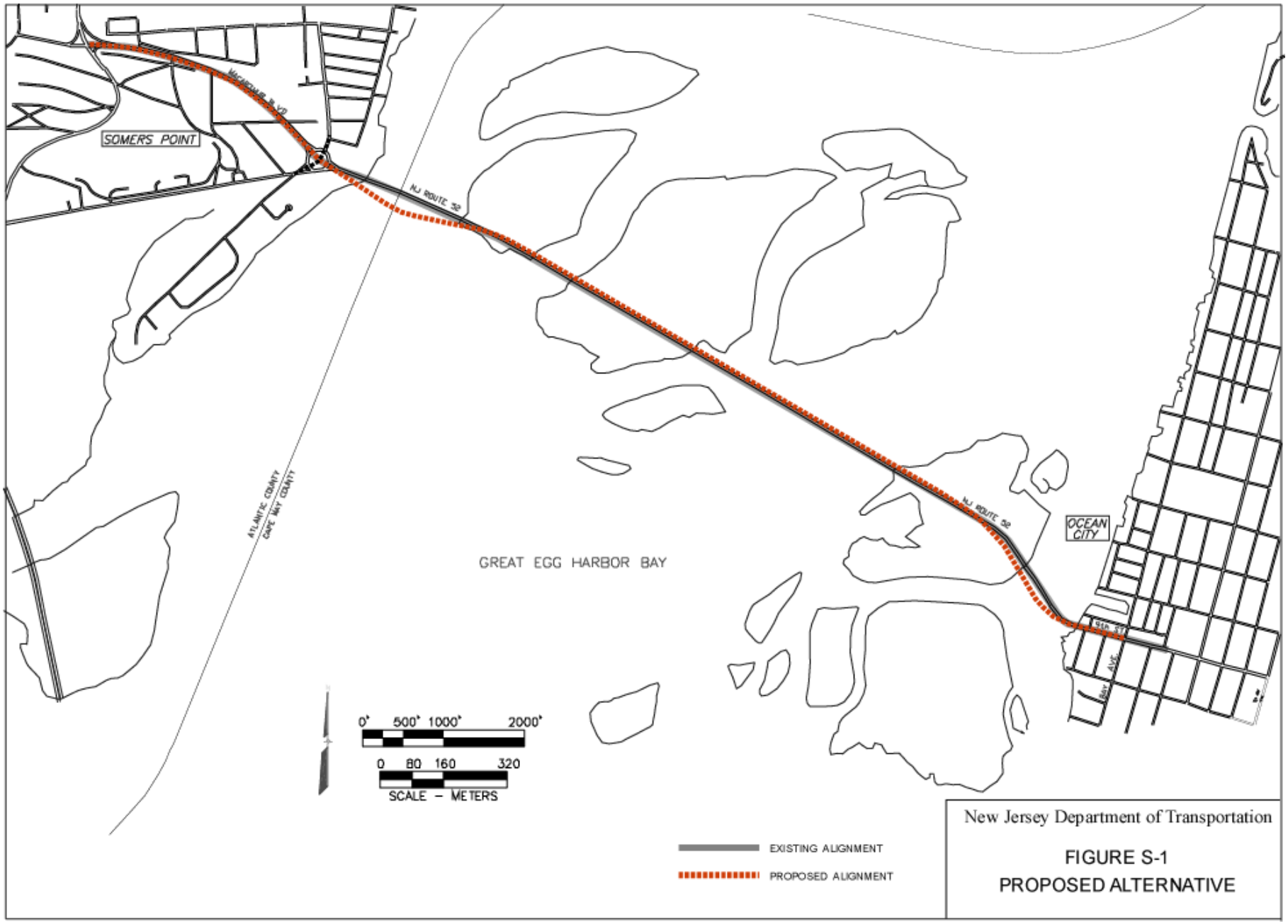
### i. FHWA ACTION: THE PREFERRED ALTERNATIVE – ALTERNATIVE 9

The Route 52 Reconstruction project is approximately 4.5 kilometers (2.8 miles) long from Route 9, in Somers Point, Atlantic County, to Bay Avenue in Ocean City, Cape May County NJ. The section of Route 52 between Route 9 and the existing traffic circle in Somers Point is approximately 1.0 kilometer (0.6 miles) long. The causeway between the existing traffic circle in Somers Point and Ocean City, crossing Great Egg Harbor Bay, is approximately 3.5 km (2.2 miles) in length. (See Figure S-1). The Preferred Alternative (Alternative 9) is on an alignment located approximately 10 meters (33 feet) east of the existing alignment and is comprised of 2 high fixed bridges, both with a proposed 16.8 meter (55 feet) vertical clearance over the relocated Intracoastal Waterway (ICWW) at Beach Thorofare and the Ship Channel near Somers Point. The causeway will be comprised of two 3.6-meter (12.0-foot) wide lanes in each direction, separated by a 1.5-meter (5-foot) inside shoulder on ether side of a center median, a 3.0-meter (10-foot) bicycle-compatible outside shoulder on each side and a continuous 1.8-meter (6.0-foot) sidewalk on the northbound side of the structure. In Somers Point the existing traffic circle is proposed to be replaced with a 4-leg signalized intersection with turning lanes. MacArthur Boulevard would be widened from two lanes to five lanes (two lanes in each direction and a center turn lane) between the Somers Point Circle and Braddock Avenue and from two lanes to three lanes (one lane in each direction and a center turn lane) between Braddock Avenue and Route 9.

### ii. OTHER MAJOR GOVERNMENTAL ACTIONS

No other major action is proposed by any other governmental agency in this general geographic area.


SOMERS POINT
NJ ROUTE 52
NJ ROUTE 52
OCEAN CITY
ATLANTIC COUNTY
CAPE MAY COUNTY
GREAT EGG HARBOR BAY
0' 500' 1000' 2000'
0 80 160 320
SCALE – METERS
EXISTING ALIGNMENT
PROPOSED ALIGNMENT
New Jersey Department of Transportation
FIGURE S-1
PROPOSED ALTERNATIVE

## iii. SUMMARY OF ALTERNATIVES

### iii.1 Conceptual Alternatives Evaluated

The following eleven alternatives, ten build alternatives plus the No Build alternative and five variations were proposed and examined:

1) Causeway on embankment, offset to the east side, with one high level fixed bridge over a relocated ICWW / Ship Channel through Rainbow Channel.
2) Causeway on continuous structure, offset to the west side, with one high level fixed bridge over a relocated ICWW / Ship Channel through Rainbow Channel.
3) Causeway on embankment, offset to the east side, with slightly raised bascule bridges at both existing channels.
4) Causeway on continuous structure, offset to the west side, with slightly raised bascule bridges at both existing channels.
5) Continuous structure offset to the west side of the causeway, with moderately high bascule bridges over slightly realigned channels. Variations 5A, 5B, and 5C were also examined.
   5A) The channels are realigned further from the shore, through tidal wetlands in the case of the ICWW, to provide sufficient space to raise the bascule bridges to a height where the required openings are reduced to only 7% of the present number of openings.
   5B) The ICWW is realigned without impacting tidal wetlands, but the profile is raised sufficiently to reduce the openings to only 7% of the present number. This creates minor property impacts on 9$^{th}$ Street in Ocean City. Ship Channel is realigned sufficiently to permit a high fixed bridge.
   5C) Both the ICWW and Ship Channel are realigned to permit high fixed bridges. The approach profiles are increased from 4% to 5% to limit the property impacts.
6) Causeway rehabilitated in place on the existing alignment, with the four existing bridges replaced-in-kind.
7) Continuous structure on relocated alignment distantly offset to the west, with high-level fixed bridges over existing channels.

8) Causeway on continuous structure, offset to the west side, with high level fixed bridges over existing channels.
9) High fixed bridges over slightly realigned channels with three intermediate causeway options on the island between Elbow Thorofare and Rainbow Channel: 1) all structure, 2) embankment with edge walls, and 3) embankment with side slopes.
   9A) High fixed bridge over realigned Ship Channel and high bascule bridge over the existing ICWW channel with the same options for the intermediate causeway.
10) Tunnel between the Somers Point traffic circle and 9th Street north of West Avenue.
11) No Build.

### iii.2 Rejected Alternatives

Of the ten Build Alternatives (some with variations) that were initially developed and analyzed, Alternatives 1, 2, 3, 4, 6, 7, 8 and 10 either did not meet the purpose and need criteria, or would result in extensive social, economic or environmental impacts, and therefore were removed from further evaluation during the initial screening process.

### iii.3 Alternatives Selected For Detailed Analysis

Five alternatives, 5A, 5B, 5C, 9 and 9A with 3 variations were considered for additional detailed environmental evaluation in the Draft Environmental Impact Statement (DEIS). During this study, it was found that Alternatives 5A, 5B and 5C had greater impact on wetlands, public open space and other environmental areas as compared to Alternatives 9 and 9A.

Both Alternatives 9 and 9A were evaluated for three causeway options on the island between Elbow Thorofare and Rainbow Channel. Under the first option, the causeway would be completely on structure. Under the second option, the causeway would be on embankment bordered by edge walls. Under the third option, the causeway would be on embankment with side slopes down to existing grade. The causeway option completely on structure would result in the least wetland impact and the shortest construction time. Since Alternative 9 proposes dredging in the ICWW, concerns have been raised regarding the impact of dredging on the channel bottom (benthic) habitat. Studies performed indicated that this impact would be

minimal and temporary. In addition, compared to Alternative 9, Alternative 9A would result in a higher construction cost, increased permanent impacts to open waters and benthic habitat and higher impact to traffic (particularly during peak summer travel days). Therefore Alternative 9 option 1 (causeway on continuous elevated structure) was selected as the Preferred Alternative since it fully met the purpose and needs for this project with minimal environmental impacts.

The project also includes the conversion of the Somers Point traffic circle into a 4-legged signalized intersection with turn lanes in order to improve traffic operations and increase safety. In addition Mac Arthur Boulevard will be widened from two lanes to five lanes (two lanes in each direction and a center turn lane) between the Somers Point Circle and Braddock Avenue and from two lanes to three lanes (one lane in each direction and a center turn lane) between Braddock Avenue and Route 9.

### iv. SUMMARY OF BENEFICIAL AND ADVERSE IMPACTS OF THE PREFERRED ALTERNATIVE

Route 52 is a designated emergency evacuation route and a part of the Coastal Evacuation System, as well as an Urban Principal Arterial in the National Highway System. The Preferred Alternative will maintain and improve this important roadway, satisfying the purpose and needs of this action, as described subsequently in this document.

Alternative 9 is proposed to be built over the existing causeway embankment, thereby avoiding extensive impacts on tidal wetlands and public open space, and retaining fairly easy access to the tidal wetland islands for recreational fishing. However, this alternative suffers from the following adverse impacts:

- Some of Ocean City's open space inventory has to be acquired for right-of-way.
- One or more business displacements and proximity impacts to several businesses will occur in Somers Point and Ocean City.
- There will be the loss of the historic World War Memorial Bridge.
- It requires the realignment of Ship Channel, and requires dredging to realign the channel in the ICWW.

- The views from two (2) historic architectural sites eligible for listing on the National Register of Historic Places will be affected by the project's higher profile across the causeway.
- There will be some filling of wetlands and pile installation in wetlands.
- There will be some shading of tidal wetland grasses.
- There will be some reduction in access for fishermen and other recreational users.
- Soil erosion and siltation in sensitive environments may occur during construction
- It will have a temporary impact on shellfish, migratory pathways and wintering areas.
- There will be a permanent loss of some parking spaces along MacArthur Boulevard.

### v. AREAS OF CONTROVERSY

Upon review of the DEIS, some agencies expressed an opinion that Alternative 9A should be proposed as the Preferred Alternative. After additional studies and coordination with the National Marine Fisheries Service (NMFS), the U.S. Army Corps of Engineers (USACOE) and other agencies, the Federal Highway Administration (FHWA) concluded that Alternative 9 remains as the Preferred Alternative for the reasons stated in iii-3 above.

### vi. OTHER UNRESOLVED ISSUES

All comments and issues that have been raised by the public, the cooperating agencies and other government agencies have been addressed and incorporated into this document. There are no significant unresolved and outstanding issues.

### vii. FEDERAL AND STATE ACTIONS REQUIRED FOR THIS PROJECT

The following Federal and State actions are required to implement this project:

1. Compliance with Federal Executive Order 11988, Floodplain Management;
2. Compliance with Federal Executive Order 11990, Protection of Wetlands;
3. Section 106 Coordination, pursuant to the National Historic Preservation Act;
4. U.S. Department of Transportation (USDOT), Section 4(f) Determination;

5. U.S. Coast Guard (USCG), Section 9 Permit;
6. USACOE, Section 404 and Section 10 Permits;
7. Compliance with new planning regulations issued under the 1991 Intermodal Transportation Efficiency Act (1991); namely, USDOT's Statewide Planning; Metropolitan Planning Final Rules (23 CFR Part 450/49 CFR Part 613);
8. NJ Department of Environmental Protection (NJDEP), Water Quality Certificate;
9. NJDEP, CAFRA Permit;
10. NJDEP, Waterfront Development Permit;
11. Compliance with the Magnuson-Stevens Fishery Conservation and Management Act. P.L. 94-265, as amended in 1996
12. Compliance with the Endangered Species Act of 1973.
13. NJDEP, Tidal Wetland Permit; and
14. NJDEP, Tidelands Grant.

The USACOE, the USCG, and the U.S. Fish and Wildlife Service (USFWS) have agreed to be Cooperating Agencies for this project. Cooperating Agencies have jurisdiction by law or special expertise in specific environmental issues to be addressed in an environmental impact statement (EIS), and as such provide information and environmental analysis at the early stages of EIS development. This insures compliance with all procedures involving those agencies and avoids unnecessary duplication of effort.

# 1. PURPOSE AND NEED FOR ACTION

## 1.1 OVERVIEW

The New Jersey Department of Transportation (NJDOT) and the Federal Highway Administration (FHWA) propose to reconstruct approximately 4.5 kilometers (2.8 miles) of NJ Route 52(1) between Somers Point, Atlantic County and Ocean City, Cape May County, New Jersey. The project area extends from the intersection of Route 52 with Route 9 in Somers Point over Great Egg Harbor Bay to the intersection of 9th Street with Bay Avenue in Ocean City. (See Figure S-1: Proposed Alternative) The purpose of the proposed project is to reconstruct an important but deteriorated section of the National Highway System in order to provide efficient vehicular and marine traffic flow as well as to improve safety.

This Final Environmental Impact Statement (FEIS)/Section 4(f) evaluation has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) and Section 4(f) of the United States Department of Transportation Act. It has been prepared to identify and measure the social, economic, and environmental impacts associated with the proposed project. This FEIS presents:

- Summary of information from the Draft Environmental Impact Statement (DEIS) that has not changed.
- Changes in the project that have occurred since the DEIS was circulated.
- Description of the Preferred Alternative.
- The social, economic and environmental consequences if the Preferred Alternative is implemented.
- A description of appropriate mitigation for each of the identified adverse impacts that may result from the Preferred Alternative.
- Comments received from circulation of the DEIS and public hearing and the responses to all substantive comments.

The FEIS is an independent document, but avoids repetition of material from the DEIS by incorporating the DEIS by reference. Its format parallels that of the DEIS. Each major section of the FEIS briefly summarizes the important information contained in the corresponding section of

the DEIS, references the section of the DEIS that provides more detailed information, and discusses any noteworthy changes that have occurred since the draft was circulated. The FEIS affords the reader a complete overview of the project and its impacts on the human and ecological environment.

The FEIS has been prepared by the FHWA and the NJDOT, with the cooperation of the U.S. Army Corps of Engineers (USACOE), the U.S. Coast Guard (USCG), and the U.S. Fish and Wildlife Service (USFWS).

This section gives a brief history of the project, its description and project setting, and establishes the purpose and need for the project. For details, please refer to Section 1 of the DEIS.

## 1.2 PROJECT HISTORY

The existing Route 52 causeway between Route 9 in Somers Point and the resort town of Ocean City was constructed in 1933. This causeway spans Great Egg Harbor Bay and crosses the Rainbow Islands as well as four water thorofares: Ship Channel, Elbow Thorofare, Rainbow Channel, and Beach Thorofare. Beach Thorofare, located off the Ocean City waterfront, is part of the Intracoastal Waterway (ICWW) and is managed by the USCG. (See Figure S-1: Proposed Alternative)

Ocean City has been a summer resort since 1880. A trolley service ran between Ocean City and Somers Point from about 1910, but the service was abandoned when a fire in 1946 consumed portions of the trolley trestles. Adjacent to the trolley trestles and offset to the west, a wooden bridge was built in 1912. It was replaced by the existing concrete causeway in 1933. The S-shaped alignment of the causeway at its 9$^{th}$ Street entrance into Ocean City was adopted to avoid conflict with old trolley operations on 8$^{th}$ Street.

The causeway includes four concrete bridges. Bascule bridges, also called drawbridges, span the two designated navigational channels in Great Egg Harbor Bay, Ship Channel and Beach Thorofare. Taller boats or vessels must utilize one or the other of these passages to navigate across Great Egg Harbor Bay. The remaining two bridges are low concrete trestle bridges that cannot accommodate passage of the taller boats or vessels.

The Route 52 causeway has been maintained by rehabilitation as needed. However, recent inspections show substantial cracking and spalling on all four bridges with severe deterioration of the bridge decks. Therefore, permanent replacement or reconstruction of all Route 52 causeway bridges is needed.

The increasing popularity of Ocean City as a summer resort has led to substantial increases in vehicular traffic along the Route 52 causeway. Also, use of the ICWW for recreational sailing has increased, resulting in more frequent openings of the Beach Thorofare bascule bridge particularly during late spring and summer. The combination of increased bridge openings and increased traffic volumes is the source of significant vehicular congestion along the causeway and the access roads. In addition, the congestion and bridge openings potentially hamper emergency vehicle access to and from Ocean City.

NJDOT began the planning for permanent improvement of Route 52 in 1992 with the development of a preliminary set of alternative concepts. Studies were conducted to determine the feasibility of relocating the ICWW into Rainbow Channel where a fixed-span bridge of sufficient height could be constructed that would allow passage of tall vessels but would not change the location of the touchdown areas in either Somers Point or Ocean City. The findings of these studies resulted in the development of the first two of the alternatives for the project. These alternatives were presented in a partnering workshop, in May 1996, to the representatives of interested federal, state, and county agencies as well as representatives of the cities of Somers Point and Ocean City. As a result of discussions and comments received at this workshop, additional alternatives were developed. A draft report comparing these initial alternative concepts was prepared in June 1996.

In July 1997, NJDOT authorized preparation of various Technical Environmental Studies (TESs) and an Environmental Impact Study (EIS) for the Route 52 reconstruction project. A traffic study and TESs for Noise, Air Quality, Hazardous Waste, Socioeconomics and Land Use, Natural Ecosystems, Historic Architecture and Archaeology were prepared.

In a second partnering workshop conducted in December 1997, eight alternatives were proposed for discussion and comments. Two new alternatives were added after the workshop discussions, while four alternatives, deemed not feasible, were dropped from further consideration. Six

alternatives (along with three causeway options for two of the alternatives) were assessed in the TES and DEIS documents.

The formal scoping process for this project was instituted by NJDOT in 1997 to obtain input from the various NJDOT divisions involved. Also a Public Partnering Meeting was held that year. Based on input form this coordination process, as well as the findings of the technical studies, a draft Selection of Alternatives Report was prepared and submitted to the FHWA for review in 1998. The report recommended that three alternatives with three bridge combinations all on viaduct be considered on alignment 5 and that two alternatives, numbered 9 and 9A, with bridges on the existing alignment be considered. Alternatives 9 and 9A were to include three different causeway options. The report recommended that Alternatives 5A, 5B, 5C, 9, 9A plus the No Build Alternative be analyzed in detail during the preparation of the DEIS. Based on the above-mentioned detailed analysis and input from the public and federal and cooperating agencies, Alternative 9 option 1 was selected as the preferred alternative and is presented as such in the FEIS.

## 1.3 PROJECT DESCRIPTION

The Route 52 reconstruction project area extends from the intersection of Route 52 with Route 9 in Somers Point over Great Egg Harbor Bay to the intersection of Route 52 (9$^{th}$ Street) with Bay Avenue in Ocean City. This is a distance of approximately 4.5 kilometers (2.8 miles). The project entails:

- Replacement of the causeway with its four bridges over Great Egg Harbor Bay, [approximately 3.5 kilometers (2.2 miles)].
- Construction of standard width driving lanes and shoulders for the length of the causeway.
- Construction of a sidewalk along one side of the causeway and bicycle-compatible shoulders along both.
- Replacement of the Somers Point traffic circle with a signalized intersection that includes turning lanes.

- Widening of Route 52 (MacArthur Boulevard) in Somers Point from Shore Road to US Route 9 from two lanes to up to four lanes plus a center turning lane [approximately 1.0 kilometers (0.6 miles)].

The two bascule bridges are to be replaced with fixed-span structures. The primary factor in the selection of the bridge type(s) is the need to improve vehicular and marine traffic flow within the project area.

## 1.4 PROJECT SETTING

The project area extends along Route 52 from Somers Point on the New Jersey mainland over Great Egg Harbor Bay to the barrier island community of Ocean City. Both Ocean City and Somers Point are small, established coastal communities with year-round populations of 18,000 and 12,000, respectively. During July and August, the population of Ocean City, a major summer resort area, grows to as much as 200,000 persons.

Great Egg Harbor Bay is a shallow, tidally influenced bay composed of large expanses of open water and scattered wetland islands. In the vicinity of the Route 52 causeway these wetland islands are separated by a series of channels: Ship Channel, Elbow Thorofare, Rainbow Thorofare, Rainbow Channel, and Beach Thorofare. The ICWW is aligned through Beach Thorofare.

### 1.4.1 Infrastructure

Between US Route 9 and the Somers Point traffic circle, Route 52 (MacArthur Boulevard) is a two-lane arterial street with uncontrolled access to abutting properties. Beyond Somers Point, Route 52 crosses four channels located between the low-lying Rainbow Islands of Great Egg Harbor Bay. The causeway consists of four travel lanes, with no paved shoulders. Adjacent to both sides of the causeway there exists a generally flat area of compacted sandy, which is up to 18 meters (60 feet) wide on the east side. This embankment provides access to the bay waters for fishing and other recreational purposes. The Ocean City Information Center is located on the west side of Route 52, immediately north of the existing Beach Thorofare bridge. Within Ocean City Route 52 becomes 9$^{th}$ Street. The project extends to the intersection of 9$^{th}$ Street and Bay

Avenue. Throughout the causeway and in Somers Point, Route 52 does not provide bicycle or pedestrian facilities. Sidewalks are provided in Ocean City along the entire length of 9th Street.

The causeway segments over both Elbow Thorofare and Rainbow Channel are low, concrete, fixed-trestle structures. These spans provide a 1.2-meter (4-foot) vertical clearance over the Mean High Water (MHW) level. The Ship Channel bridge, known as the World War Memorial Bridge, and the Beach Thorofare bridge each have a single leaf bascule span (with a 4.3-meter, or 14-foot, vertical clearance when closed). When open these bridges accommodate through passage for boats of all heights.

Most of the Route 52 causeway over Great Egg Harbor Bay is relatively level. During very high tides, storm winds cause waves to wash onto the causeway, which forces the causeway to be shut down. The area of Ocean City between Bay Avenue and the beginning of the causeway is lower than the causeway. This area is frequently blocked by floodwater during heavy rains and storms. Route 52 is designated as an emergency evacuation route between Ocean City and the mainland. It is also the shortest route to the regional medical facility, Shore Memorial Hospital, in Somers Point.

Route 52 is the principal access route into Ocean City. There are three other approaches available to Ocean City: County Route 623 from Garden State Parkway Interchange 25, Route 152 / County Route 619 from Somers Point and County Route 619 over Corson's Inlet. These alternate routes are two lane highways with limited capacity (See Figure 1.4-1: Alternative Routes to Ocean City in the DEIS). There is currently no rail, air, water taxi, or ferry access between Somers Point and Ocean City.

### 1.4.2 Vehicular Traffic

Ocean City and Somers Point are small, resort communities. Traffic in these towns consists of trips made by local, year-round residents as well as tourists. Tourist traffic peaks during the summer months when the area population swells by over 1000 percent.

The two primary routes used into Ocean City are Roosevelt Boulevard (34th Street Bridge) from the west and Route 52 causeway from Somers Point. Two additional routes, County Route 619

from the north and County Route 619 from the south also provide access to the city. Route 52 is the most direct route for visitors coming from areas north of the site, including northern New Jersey and New York.

Traffic exiting the Garden State Parkway at Interchange 30 in Somers Point travels to Route 52 along Laurel Drive -- a local two-lane roadway. Route 52 begins at the intersection of US Route 9 as MacArthur Boulevard.

The junction of Route 52, Shore Road, and Mays Landing Road is the Somers Point traffic circle. Large number of vehicles at this junction and weaving movements create traffic congestion which result in the circle to be a bottleneck to traffic flow along Route 52 and is the source of a higher than average number of traffic accidents. Traffic volumes are expected to increase at this location by the design year for this project (2024) and therefore the existing traffic circle cannot safely and effectively manage the current and future traffic needs. The limited capacity of the circle also hampers evacuation efforts from Ocean City during flooding situations.

Bascule bridge openings are an additional source of hindering traffic flow entering or leaving Ocean City. These bridge openings also affect the ability of emergency vehicles to respond in a timely manner, since the connection between Ocean City and the regional hospital, Shore Memorial Hospital in Somers Point, is most directly served by Route 52.

### 1.4.3 Marine Traffic

Vessel heights and bridge data (1991-1994) indicate 2,590 openings on average per year for the bridge over the ICWW at Beach Thorofare and 658 openings on average per year at the Ship Channel bridge near Somers Point. The height of most boats passing through these two waterways exceeded the existing 4.3-meter (14-foot) clearances at high tide. Most common boat heights ranged from 7.9 meters (26 feet) to 11.0 meters (36 feet). However, some vessels were over 27.4 meters (90 feet) in height.

Currently, bridge openings for the ICWW are scheduled every half-hour during the summer. Each opening is estimated to cause an average of eight to nine minutes of delay to motorists

crossing the Route 52 causeway. Most openings occur during the summer months. On a typical summer Sunday, there are 22 openings at the Beach Thorofare bridge. Openings over the Ship Channel are less frequent and are coordinated with openings at the ICWW to minimize interruptions of traffic. Data for the Ship Channel Bridge indicated that during the peak summer months of 1993, over 27% of the vessels exceeded 10.7 meters (35 feet), but all were less than 16.8 meters (55 feet) in height. The 1993 data for the Beach Thorofare bridge over ICWW was used as base to project future vessel traffic and the number of openings that would occur given different bridge heights. (This data is corroborated by more recent data collected in the summer of 2001.) See tabulation below.

| Vertical Clearance Over ICWW | Projected Number of Annual Openings Required | Percent of Total Passing Without Bridge Opening |
|---|---|---|
| 4.3 m (14 ft.) | 2,787 | 0 % |
| 6.1m (20 ft.) | 2,690 | 3.5 % |
| 7.6m (25 ft.) | 2,373 | 14.9 % |
| 9.1m (30 ft.) | 2,102 | 24.6 % |
| 10.7m (35 ft.) | 1,009 | 63.8 % |
| 12.2m (40 ft.) | 677 | 75.7 % |
| 13.7m (45 ft.) | 197 | 92.9 % |
| 15.2m (50 ft.) | 73 | 97.4 % |
| 16.8m (55 ft.) | 38 | 98.6 % |

The above tabulation indicates that 93% of the vessels passing at the ICWW would clear the bridge if it is raised to 13.7 meters (45 feet), and 98.6% would clear the bridge if the bridge clearance were raised to 16.8 meters (55 feet).

The USCG vertical and horizontal guidelines for proposed fixed bridges across the New Jersey ICWW call for 19.8 meters (65 feet) as the desirable vertical clearance above MHW and 45.7 meters (150 feet) as the desirable horizontal clearance. Several different alternative bridge alignment studies were performed to provide 19.8 meters (65 feet) vertical clearance. They all resulted in significant impacts to private property and businesses in Ocean City or additional impacts to wetlands and additional dredging in the Great Egg Harbor Bay with attendant ecological consequences. In addition, based on the vessel height survey data obtained at Beach Thorofare and a survey conducted in the Summer of 2000 of marinas that service and operate

boats in Beach Thorofare, over 98.6% of the vessels passing through this location can pass below a height of 16.8 meters (55 feet). Based on this data, the NJDOT has requested a waiver of the 19.8 meters (65 feet) vertical clearance and 45.7 meters (150 feet) horizontal clearance requirement.

### 1.4.4 Natural Ecosystems

Route 52 passes over Great Egg Harbor Bay, a shallow, tidally influenced bay that is composed of large expanses of open water and scattered islands. Virtually the entire area of low-lying islands on which the present causeway embankments are located is classified as tidal marsh wetlands. The island surfaces are covered predominately with cordgrass *(Spartina alterniflora)*. Several small watercourses are present on these islands. In addition:

- In the vicinity of the project, the bay area is classified as a commercially valuable hard clam shellfish resource, which is the most widely distributed shellfish species in New Jersey. These shellfish beds are classified as "seasonal", indicating that harvesting is prohibited except seasonally and under specific conditions.
- Past studies indicated good water quality conditions, with low nutrient levels and average to high dissolved oxygen.
- Two areas of submerged aquatic vegetation are within the project area. One is at the northwest edge of the island that contains the site of the Ocean City Information Center and the other is in Rainbow Channel east of the causeway.
- Great Egg Harbor Bay provides a fish migratory pathway for diadromous and anadromous fish to reach seasonal spawning areas. Rainbow Channel is reported to be an important migratory pathway. The project area supports an array of commercial and recreational fish including weakfish, striped bass, black seabass, Atlantic croaker, bluefish, and summer flounder.
- Cowpens Island near Ocean City and west of the causeway has been identified as a heron rookery that supports nesting colonies of yellow-crowned night herons and little blue herons.

### 1.4.5 Human Environment

Ocean City is a tourist-based community located on a barrier island in the extreme northern part of Cape May County, New Jersey. The city incorporates 8.0 square miles, which includes eight miles of beachfront, 2.5 miles of boardwalk, over 100 miles of municipal roads and alleys, nearly 550 commercial establishments, over 1,300 hotel/motel rooms, and close to 16,000 housing units. The permanent population of Ocean City is around 18,000. The seasonal population approaches as much as 200,000 during the busy summer months of July and August. During the tourist season (May 1 to October 31) beach and boardwalk usage dramatically increases as 75,000 to 100,000 people use the beach during the day and over 60,000 visitors congregate on the boardwalk during the evening hours. Also, Ocean City sponsors many special events at which attendance often exceeds 50,000 per event.

Route 52 enters Ocean City along 9$^{th}$ Street, which is bordered on both sides by commercial establishments of various sorts. The point of entry is flanked on both sides by condominiums that front the bay. With some exceptions, residential buildings line the waterfront east and west of 9$^{th}$ Street.

Somers Point is also a tourist community, but to a lesser degree. In contrast with Ocean City, there are fewer summer residents than year-round residents. Most businesses located around and near the Somers Point traffic circle, located at the northern end of the Route 52 causeway, are heavily dependent on visiting tourists. These businesses primarily include several restaurants and liquors stores. All of these benefit from the fact that Ocean City is a "dry" community, where law prohibits alcoholic beverage sales.

The current population of 12,000 represents the number of year-round residents. Like Ocean City, there is a seasonal swing in the population. The difference consists of both summer residents as well as tourists. However, the average summertime population is estimated by officials to be only slightly higher than the year-round population.

The commercial center of Somers Point is east of the traffic circle. Shore Road feeds traffic from the circle into the downtown commercial district. The city also provides a golf course and a medium-sized waterfront park as recreational amenities. These are located near the downtown commercial district.

## 1.5 PURPOSE AND NEED

### 1.5.1 General

The residents of Somers Point and Ocean City, and all users of the existing Route 52 roadway between US Route 9 in Somers Point and Bay Street in Ocean City, are adversely affected by the current condition of Route 52. The need for permanent reconstruction is summarized below:

- The four causeway structures are badly deteriorated.
- Substandard horizontal and vertical curves on the present causeway cannot support acceptable speed limits.
- The Somers Point traffic circle and the two-lane section of MacArthur Boulevard leading to US Route 9 (milepost 2.20 to 2.74) are bottlenecks to vehicular flow and the movement of emergency vehicles.
- Frequent delays to vehicular and marine traffic results from the numerous bridge openings during the late spring and summer peak tourist season. These delays significantly contribute to serious traffic congestion and rear-end accidents and are a hindrance to the timely movement of emergency vehicles between Ocean City and the regional medical facility in Somers Point.
- Route 52 is a designated emergency evacuation route and a part of the Coastal Evacuation System. The current elevation of the causeway lends itself to frequent closures due to high tides and wave runup during severe storms.

The general purpose of the project is based on the needs described above. The purpose is to:

- Reconstruct or replace severely deteriorated structures supporting Route 52 between Somers Point and Ocean City.
- Improve the safety of Route 52 as a primary access route between Route 9 and Ocean City.
- Improve marine and vehicular traffic flow, including that of emergency vehicles.
- Improve safety and the function of the causeway as an emergency evacuation route.
- Maintain access to Recreational Areas.

### 1.5.2 Detailed Purpose and Needs

The primary need of the project is to rehabilitate and improve the safety and operation of Route 52 as a primary access route into Ocean City. Historically, Route 52 is the most heavily used access point into Ocean City during the tourist season. In addition, Route 52 feeds the economic heart of both communities. As such, a large percentage of the economy of both Somers Point and Ocean City is dependent on the continued use of Route 52 as its principal access.

Shore Memorial Hospital is the regional hospital for the area. The most direct link between Ocean City and Shore Memorial Hospital is via Route 52 across Great Egg Harbor Bay. The use of any of the alternative routes, such as Roosevelt Boulevard (34$^{th}$ Street) or the Ocean City-Longport Bridge, would increase the travel time for emergency vehicles by a minimum of 15 to 30 minutes.

Route 52 is a designated Coastal Evacuation Route and, therefore, must be maintained as an emergency egress from Ocean City to the mainland. During severe storms, the existing Route 52 causeway often is impassible due to heavy wave action and runup. To maintain the effectiveness of Route 52 as a coastal evacuation route, the height of the causeway should be raised a minimum of 0.3 meters (1 foot) above the 100-year flood level – an elevation of 3.2 meters (10.5 feet).

The four existing structures that carry Route 52 across Great Egg Harbor Bay are severely deteriorated and should be replaced or reconstructed. The substructures of all the bridges exhibit substantial cracking and spalling and the bridge decks are severely deteriorated.

NJDOT expects the recently completed rehabilitation project to extend the useful life of the Route 52 structures another six to eight years.

Ship Channel and Beach Thorofare (ICWW Channel) are each spanned by a bascule bridge (drawbridge). The openings that are needed to pass marine traffic adversely affect vehicular traffic flow. The duration of a typical bridge opening is eight to nine minutes. During the peak summer season, twenty-two bridge openings are required on a daily basis. The effect of the openings is motorist delay and decreased roadway efficiency. In addition, bascule bridges are

more expensive to operate than a fixed-span structure and the mechanical systems require constant maintenance.

The present Route 52 causeway has narrow 3.0-meter (10-foot) travel lanes, unpaved shoulders, and no median separation of traffic. To improve the safety and efficiency of the roadway, the Route 52 causeway should be widened to meet current design standards. Shoulder areas should be included as emergency pull-off areas, to provide lateral stability, and serve as storm-water collection areas**.** The design should provide at a minimum: four 3.6-meter (12-foot) travel lanes; 1.5-meter (5-foot) inside shoulders; 3.0-meter (10-foot) outside shoulders; and a median barrier to separate the opposing directions of travel.

Improvements to both the vertical and horizontal geometry are needed along the Route 52 causeway. Long segments of Route 52 are relatively flat with less then 0.5 percent highway profile. The result is poor drainage. Grades along Route 52 should be 0.5 percent or greater to meet current design standards and provide adequate drainage.

The existing vertical curve on the Route 52 causeway near Beach Thorofare (ICWW Channel) allows a safely driven speed of 48 km/h (30 mph). To meet current design standards, a vertical curve for the design speed (posted speed plus five mph) of 64 km/h (40 mph) is required.

Likewise, the horizontal curve on the Route 52 approach into Ocean City can only be safely driven at a speed of 32 km/h (20 mph). A design curve of 64 km/h (40 mph) is required.

MacArthur Boulevard (Route 52), between Route 9 and the Somers Point traffic circle, now provides a single travel lane in each direction and a paved shoulder on either side of the road. Access to these travel lanes is uncontrolled and does not conform to NJDOT access standards. This roadway section lacks sufficient capacity to accommodate the large volume of traffic currently using Route 52. To carry the peak season traffic volumes and function effectively as a continuation of the coastal evacuation route, MacArthur Boulevard must be widened to accommodate two 3.6-meter (12-foot) travel lanes in each direction plus shoulders on both sides of the roadway.

An unusually high number of accidents occur at the Somers Point traffic circle. The traffic circle has an inside diameter of 60 meters (200 feet) and provides two travel lanes. There are short

distances between the intersections of the four approach roads at the circle. Currently motorists entering the circle must merge with other vehicles, drive around the circle to their selected exit point, then maneuver through the traffic to exit. The short distances and the relatively high traffic volumes are difficult and create an unsafe situation. A signalized intersection is warranted at this location given the peak season traffic volumes.

### 1.5.3 Project Goals

Based on the project purpose and needs, the environmental considerations, and design parameters discussed herein, the following goals have been developed for the project. These goals are generally consistent with the goals developed during the partnering meetings held between NJDOT, FHWA, the cooperating agencies, and other interested state and federal agencies and local government representatives. There has been a general recognition among the agencies that with a complex project, such as this one, it may not be possible to identify an alternative that fully meets all of these goals. It is intended that these goals shall be met to the greatest extent possible. Selection of the Preferred Alternative involved tradeoffs among the project goals.

1. Reconstruct or replace all the four deteriorated causeway structures.
2. Increase the safety and efficiency of traffic through the causeway by modernizing the roadway geometry to current design standards.
3. Improve traffic flow and safety on MacArthur Boulevard from Route 9 through the Somers Point Circle.
4. Improve the function of the causeway as a primary evacuation route from Ocean City to Route 9 by raising the elevation above flood level.
5. Maintain or improve the flow of marine traffic under the structures spanning the Ship Channel and the ICWW by maintaining adequate horizontal and vertical clearances for these channels.
6. Avoid or minimize any shift in the alignment of the existing navigational channels.
7. Make the facility bicycle/pedestrian accessible.
8. Maintain recreational access to the islands traversed by the causeway.

9. Avoid or minimize social, environmental and economic impacts to communities on both ends of the causeway.
10. Avoid or minimize impacts to historic and cultural resources, including takings from Green Acres open space land.
11. Avoid or minimize impacts to fish, wildlife, and other ecological resources of the open waters as well as the wetlands.
12. Avoid or minimize impact to water quality of the bay.

### 1.5.4 State Development and Redevelopment Plan (SDRP) – Consistency Analysis

The proposed project has been deemed consistent with the SDRP because it falls within the category of system preservation.

The project can also be viewed as consistent with State Plan policies as follows:

- Statewide Public Investment Priorities Policy 1 advocates that highest priority be given to infrastructure projects that mitigate life-threatening situations and emergent threats to public health and safety. This applies to the causeway replacement as well as the Somers Point traffic circle elimination.

- Since the project also contains a drainage component, it relates to Statewide Transportation Policy 7, which states that preservation and maintenance of the existing transportation network is the highest transportation priority.

- Since the proposed design of the bridges includes the installation of a sidewalk on one side and bicycle paths along the connecting islands, the project also addresses the objectives outlined in Statewide Transportation Policy 11, which emphasizes the movement of people through such alternative travel modes as bicycle and pedestrian.

- Route 52 provides access to Ocean City, a major summer seaside resort. The project therefore supports Statewide Transportation Policy 19, which calls for the promotion of

travel and tourism by making appropriate transportation investments that consider seasonal demands.

- Since the circle elimination falls within the category of Congestion Management-Highway Operational Improvements, it is consistent with Statewide Transportation Policy 12, which advocates efficient utilization of capacity and management of the existing transportation system.

- The project is in keeping with a general policy direction the Department has taken in recent years to eliminate traffic circles because of their inability to handle New Jersey's increasing traffic volumes in a safe and efficient manner.

- The project is located in an area delineated on the State Plan Resource Planning and Management Map as the Metropolitan Planning Area (PA 1), closely adjacent to Planning Area 5 (Environmentally Sensitive), where the Causeway is located. The Transportation Policy Objective for this Planning Area urges capitalization on the high-density settlement patterns that encourage the use of public transit systems and alternative modes of transportation to improve travel among major population centers, employment centers, and transportation terminals. While the circle elimination does not directly relate to this policy, it does not appear to conflict with the Planning Area intent to guide new development and redevelopment into compact patterns.

In addition, New Jersey First: A Transportation Vision for the 21st Century, pledges to eliminate all bridge deficiencies in its national highways and reduce the backlog of all other state bridge deficiencies by 50 percent by the year 2010.

# 2. ALTERNATIVE SOLUTIONS CONSIDERED

## 2.1 INTRODUCTION

Prior to the DEIS, ten Build Alternatives plus variations and a No Build option were considered and evaluated for constructibility, initial cost, life cycle cost, and environmental impacts.

Eight of the ten Build Alternatives were removed from further study because they failed to meet important environmental or feasibility goals. Two Build Alternatives plus variations of each were selected for detailed environmental evaluation. After this detailed evaluation, Alternative 9-1 was selected as the Preferred Alternative.

In addition to studying the build alternatives, a Congestion Management Study (CMS) was done to determine the feasibility of implementing non-structural measures to handle future traffic growth along the Route 52 corridor rather than the improvements and increased capacity proposed under the Build Alternatives. The results of this study indicated that non-structural measures alone would not be effective on this route.

## 2.2 PRINCIPAL CONSIDERATIONS

The following considerations played an important role in developing the conceptual alternatives to be analyzed:

1) The preservation of the World War Memorial Bridge, the bascule bridge over Ship Channel, must be considered and addressed.
2) The impacts to existing businesses and other properties in Somers Point and Ocean City must be minimized.
3) Realignment of the ICWW or the dredging of a new channel could have an impact on shellfish beds, fisheries, other aquatic habitats, and water quality. Any activity of this type, if permitted, would require mitigation, such as the seeding of new shellfish beds or creation of artificial reefs as fish habitats.

4) Appropriate methods for the disposal of dredged material and mitigation of impacts generated by dredging must be identified.
5) Mitigation methods for any impacts on existing tidal marshes (wetlands) that cannot be avoided must be identified and investigated for feasibility.
6) Access to recreational fishing areas along the existing Route 52 Right-of-Way (ROW) should be maintained where possible.
7) Use of the tidal marsh islands in Green Acres areas for constructing embankments or structures would require approval from the New Jersey State House Commission. In addition, Ocean City would be required to provide replacement open space acreage in at least the same amount as the area of open space acreage impacted. This acreage must be dedicated for open space, recreation and conservation purposes.
8) Any wetland areas filled by new embankments or constructed on would have to be replaced by twice the acreage of wetland impacted.
9) Six commercial properties in Somers Point and six commercial properties in Ocean City are reported as most likely to contain hazardous waste (primarily buried tanks).

## 2.3 DESIGN CRITERIA

Route 52 is classified by NJDOT as a principal arterial highway. All safety and design criteria associated with the proposed alignment are in accordance with the NJDOT standards for bridge and highway design. The design criteria include elements such as clearances, gradients, design speed vertical and horizontal alignments and lane widths. For detailed description see section 2.3 in the DEIS.

For a high level fixed-span bridge over ICWW or Ship channel, it is desirable to achieve a 19.8-meter (65-foot) minimum vertical clearance above MHW as required by USCG guidelines. However, NJDOT has requested a waiver and proposed a 16.8 meters (55 feet) vertical clearance to avoid significant impacts to private property and businesses in Ocean City and additional impacts to wetlands and dredging in the Great Egg Harbor Bay with attendant ecological consequences the higher vertical clearance would impose. The 16.8 meters (55 feet) vertical clearance would allow 99 percent of the vessels to pass through Beach Thorofare and Ship

Channel based upon bridge opening data collected for the years 1991-1994 and supplemented by data collected in the summer months of 2001.

The relocated ICWW would have a depth of at least 3.6 meters (12.0 feet) below Mean Low Water (MLW) and 2.7 meters (9.0 feet) below MLW for Ship Channel. Bottom width of 30 meters (100 feet) would be for both navigational channels with side slopes where necessary of 1 vertical: 3 horizontal. The bottom of superstructure on causeway viaducts is to be at minimum of 0.3 meters (1 foot) above the 100-year flood level.

The proposed alignment will accommodate the projected traffic volume of 42,500 vehicles per hour (vph) in both directions in summer of 2024. Throughout the length of the causeway, from the Somers Point traffic circle to Ninth Street in Ocean City, the roadway will be comprised of two 3.6-meter (12.0-foot) wide lanes in each direction, with bicycle-compatible shoulders and a sidewalk on the northbound side of structure.

In Somers Point, the traffic circle will be replaced with a four-legged signalized intersection, and MacArthur Boulevard will be widened to four 3.6-meter (12.0-foot) wide lanes with two lanes in each direction. The roadway will be widened from two lanes to five lanes (two lanes in each direction and a center turn lane) between the Somers Point Circle and Braddock Avenue and from two lanes to three lanes (one lane in each direction and a center turn lane) between Braddock Avenue and Route 9. A (10-foot) paved shoulder and a 1.8-meter (6-foot) sidewalk will be provided on each side for the entire MacArthur Boulevard length.

## 2.4 ALTERNATIVES CONSIDERED BUT REJECTED IN THE DEIS

Ten Build Alternatives plus four variations were initially developed and evaluated for consideration and study. Of these, two alternatives plus variations were considered for additional environmental evaluation. The alternatives that were removed from further evaluation because they did not meet project needs and/or had major environmental impacts were:

- Alternatives 1 and 2, involving high, fixed-span bridges;

- Alternatives 3 and 4, involving moderately raised bascule bridges over the existing channels;
- Alternative 6, rehabilitation of the existing causeway;
- Alternative 7, involving high fixed-span bridges over the existing channels far to the west of the existing causeway;
- Alternative 8, involving high fixed spans over the existing channels; and
- Alternative 10, a cut and cover tunnel.

## 2.5 ALTERNATIVES SELECTED FOR DETAILED ENVIRONMENTAL EVALUATION IN THE DEIS

The following alternatives were included in the environmental evaluation as well as the No Build Alternative. These alternatives have been analyzed in greater detail in the DEIS and presented to the public as viable options.

**Alternatives 5A, 5B, and 5C**

These alignments are approximately 170 meters (570 feet) west of the existing causeway and provide either two new high bascule bridges, two high fixed-span bridges, or one of each over realigned channels. These alternatives were proposed for further environmental evaluation because they essentially meet the goals of the project with respect to the "elimination" of bridge openings. The proposed bascule bridges would be high enough to reduce substantially the number of bridge openings to approximately one or two openings a day during the peak season. However, alternative 5A does require dredging through wetlands but alternatives 5B and 5C involve no filling (or excavation) of tidal wetlands and they have only minimal impact on properties along 9$^{th}$ Street in Ocean City and in Somers Point.

**Alternatives 9 and 9A**

Alternative 9, involving an alignment on the existing embankment east of the existing alignment, and with high fixed bridges at both realigned channels, was proposed for further environmental evaluation because it met the purpose and need of the project to eliminate bridge openings, had minimal impact to properties along 9$^{th}$ Street in Ocean City and made maximum use of the

existing wide embankment. It is the least costly of the alternatives considered and it was deemed the most suitable alignment, with the least overall impacts. This alignment is proposed to be approximately 10 meters (33 feet) east of the existing alignment. However, the exact offset from the existing alignment will be decided during the detailed design after further geotechnical evaluations.

Alternative 9A is a variation of Alternative 9, with a high bascule bridge over the ICWW instead of a high fixed bridge. Alternative 9A does not require realignment or dredging in the ICWW. Alternative 9A would require one or two bridge openings per day during the tourist season and up to 9 openings during selected summer holiday weekends. The profile and the touchdown points in Ocean City and Somers Point are the same as for Alternative 9.

In the DEIS, three variations were considered for these alternatives for the causeway portion of the island between Elbow Thorofare and Rainbow Channel, including:

Option 1) Continuous structure (no embankment)
Option 2) Embankment retained between edge walls
Option 3) Embankment with side slopes

Options (1) and (2) greatly minimize direct filling of tidal wetlands, while Option (3) involves filling 1.4 hectares (3.4 acres) of tidal wetlands in a narrow strip adjacent to the existing embankment.

Alternative 9 requires realignment of the channel in Beach Thorofare for the ICWW. This is necessary because the bridge must be high enough to meet the 55-foot clearance requirement while maintaining a gradient from the top of the structure into Ocean City of five percent or less. Shifting the touchdown point of the approach further to the south in Ocean City is not feasible, as it would severely impact local businesses. Therefore, it would be necessary to move the high point of the structure further to the north in order to maintain the required clearance without increasing the gradient. This requires realignment of the channel beneath and approaching the structure. This realignment would require some dredging.

**No Build Alternative**

The No Build Alternative would involve no new construction for the existing bridges and causeway, other than the periodic maintenance required to keep them in good repair. The No Build Alternative is further considered so as to provide a baseline for comparison of the Build Alternatives considered.

**The Preferred Alternative**

Alternatives 5A, 5B and 5C were disqualified from further consideration primarily because the construction of the common new alignment and ramps to recreational areas would result in greater impacts to relatively pristine wetlands and aquatic habitat.

In the DEIS, Alternative 9 with Causeway Option 1 (Alternative 9-1), was identified as the Preferred Alternative. Alternative 9-1 was selected on the basis of the increased cost of operating and maintaining a bascule bridge and the queuing delays in roadway traffic during bridge openings required with Alternative 9A. Subsequent to the issuance of the DEIS, several of the cooperating agencies took exception to the selection of Alternative 9-1 on the basis of the need for dredging and the resultant environmental impacts, and advocated the selection of Alternative 9A-1 as the Preferred Alternative.

As a result of additional analysis of potential impacts and NJDOT meetings with FHWA and the Cooperating and other federal agencies, it was determined that Alternative 9-1 would remain the Preferred Alternative.

## 2.6 DESCRIPTION AND COMPARISON OF ALTERNATIVES 9 AND 9A

The alignment of Alternatives 9 and 9A generally follow along the layout of the existing causeway with the centerline of the proposed roadway typically offset 10 meters (30 feet) to the east of the centerline of the existing roadway. The offset between the existing and the proposed alignment may vary slightly based upon more in-depth geotechnical evaluation, which will be done during the detailed design phase. For additional details see Table 2.1 and plans in Appendix D.

The preferred causeway option for Alternatives 9 and 9A for the portion of the project that traverses the island between Elbow Thorofare and Rainbow Channel is Causeway Option 1, Continuous Structure (no embankment).

### 2.6.1 Plan and Profile

- A 4-leg signalized intersection with turning lanes would replace the Somers Point traffic circle, and MacArthur Boulevard would be widened from two lanes to three lanes between Route 9 and Braddock Avenue (one lane in each direction and a center turn lane); and from two lanes to five lanes (two lanes in each direction and a center turn lane) between Braddock Avenue and the Somers Point Circle (see Somers Point Access Plan in Appendix D).

- Under Alternatives 9 and 9A, the profile gradients are kept at 5 percent maximum at the vertical curves over the ICWW and Ship Channel. Under 9, the ICWW channel is realigned 65 meters (215 feet) further away from the shore to achieve a vertical clearance of 16.8 meters (55 feet), for a high fixed bridge. Under 9A, the ICWW channel is not realigned at all, and the vertical clearance of the proposed high bascule bridge is 13.7 meters (45 feet). Under both Alternatives 9 and 9A, Ship Channel is realigned to a point 95 meters (310 feet) further away from shore to achieve a vertical clearance of 16.8 meters (55 feet) and permit a high fixed bridge over that channel.

### 2.6.2 Effects on Vehicular and Marine Traffic

- The delays of vehicular traffic due to bridge openings would be eliminated (Alternative 9), or drastically reduced (Alternative 9A).

- The delays to marine traffic waiting for scheduled bridge openings would be eliminated (Alternative 9), or drastically reduced (Alternative 9A).

- Travel on the route will be safer because of wider lanes, a median barrier separating opposing lanes of traffic, and paved shoulders.

- Under Alternative 9, vessels over 16.8 meters (55 feet) in height would no longer be able to pass. That represents approximately 1 percent of the total number of vessels observed based on 1993 and 2001 bridge openings data and a survey of local marinas conducted in 2000.

- Under Alternative 9A, vessels under 13.7 meters (45 feet) in height would be able to pass without opening the bridge. That represents approximately 93 percent of the total number of vessels observed based on 1993 and 2001 bridge openings data and a survey of local marinas conducted in 2000. All heights could pass if the bridge were open.

- Congestion and accidents at the Somers Point traffic circle and MacArthur Boulevard would be significantly reduced.

### 2.6.3 Construction Feasibility

- Piles or caissons can be driven down into the compact sands that can be used to support structures. Precast cylinder piles would require the use of timber matting to protect wetland vegetation when piles are being driven in those areas and, in open water locations turbidity curtains would be provided around each pier driving area. During construction, vibration-monitoring equipment would be utilized to monitor impact to the adjacent existing structures.

- The use of precast pier caps is viewed as an economical and rapid method for erection of the piers.

- A proposed span of approximately 27 meters (90 feet) will achieve minimum costs per linear meter when using precast box beams or precast bulb tees.

- Precast concrete beams and pier caps will allow construction to continue through most or all of the winter without interruption. Such construction has the added benefit that it can be opened to traffic during the winter season even without the cast-in-place wearing course concrete in place.

- The use of precast concrete components during construction will permit the most rapid completion of the new structures. It also can produce an aesthetically pleasing structural finish. The use of precast box beams would be particularly "clean looking" when viewed from boats passing below structures.

### 2.6.4 Maintenance of Traffic

- The first stage of work would involve reconstructing the Somers Point traffic circle. This should be done in the non-tourist season when traffic can be reduced to one lane in each direction to facilitate maintenance of traffic.

- The realigned channels for the ICWW and Ship Channel, and the high level bridges must be in place before the existing bascule bridges can be removed and marine traffic rerouted.

- Construction stages for the causeway reconstruction would be:
  1) Build new northbound half on the east side, including northbound and southbound structures that do not overlap existing Route 52.
  2) Build the southbound half and then the northbound half of the fixed span bridges to the traffic circle at Somers Point and to 9th Street at Ocean City in the off-season using staged construction. Divert traffic from the southbound half of the fixed bridge to the new northbound half that, without sidewalks in place, is able to handle four lanes of traffic.
  3) Dredge for ICWW realignment except at the existing facility.
  4) Build new southbound half over the current Route 52 roadbed, including the remaining portions of the southbound structures.
  5) Direct southbound traffic onto the southbound roadway, complete the installation of the median barrier and construct the sidewalk adjacent to the northbound roadway.

### 2.6.5 Estimated Cost of Construction

The year 2004 estimated costs (in $1000) for Alternatives 9-1 and 9A-1 are:

| Item | 9-1 | 9A-1 |
|---|---|---|
| Dredging | $266 | $0 |
| Roadway & Misc. | $27,215 | $27,215 |
| Structures | $117,337 | $128,925 |
| Demolition | $8,100 | $8,100 |
| CONSTRUCTION TOTAL | $152,918 | $164,240 |
| Contingencies & Escalation | $16,386 | $21,386 |
| Utility Relocation | $1,700 | $1,700 |
| ROW Cost | $794 | $794 |
| TOTAL* | $171,798 | $188,120 |

- Total does not include MacArthur Boulevard widening, which is common to both alternatives.

Table 2.1

**COMPARISON OF ALTERNATIVES 9 AND 9A**
NJ Route 52(1) Causeway between Somers Point, Atlantic County
And Ocean City, Cape May County

| ISSUES | | ALTERNATIVE | |
|---|---|---|---|
| | | 9-1 | 9A-1 |
| Description | Causeway Structure Type | On Continuous Structure | On Continuous Structure |
| | Alignment | Generally Parallel to and 8 Meters (26 feet) East of Existing Alignment * | |
| | Profile Gradient | 5% | |
| | ICWW Channel Span | Fixed Span Bridge | Bascule Bridge |
| | ICWW Realignment | 65m* (215 ft) | None |
| | Ship Channel Span | Fixed Span Bridge | |
| | Ship Channel Realignment | 95 m (310 ft)* (Channel Marker Shift - No Dredging) | |
| Cost (X $1,000,000) Note: Does not include ROW costs, utility relocation costs, or costs for MacArthur Blvd. | Construction | $153 | $164 |
| | Life Cycle** | $171 | $188 |
| Vertical Clearances Meters (Feet) | Ship Channel | 16.8 m (55 ft) | 13.7 m (45 ft) |
| | ICWW | 16.8 m (55 ft) | 13.7 m (45 ft) |
| | % of Marine Traffic Passing without Opening | 99% | 93% |
| Touchdown Locations | Ocean City | Approx. 55 meters (180 feet) south of Pleasure Avenue | |
| | Somers Point | Approx. 60 meters (200 feet) south of the traffic circle | |

* Approximate distances

** Life cycle cost is based on an 80 - year project life. The value of money is discounted at an annual rate of 6%. The cost includes initial construction cost, the cost of wetland mitigation, and maintenance and repair costs.

# 3. AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

## 3.1 TRAFFIC AND TRANSPORTATION

### 3.1.1 Existing Roadway Network and Traffic Study Area

Route 52 operates as a major north/south arterial extending from Route 9 in Somers Point to Bay Avenue in Ocean City. Between Route 9 and the Somers Point traffic circle, it is called MacArthur Boulevard. South of the circle, Route 52 continues as a causeway across the bay area and the barrier islands, into the Ocean City, where it continues southward as 9th Street.

The traffic study area for the project consisted of the major signalized intersections along Route 52, including the key intersections at US Route 9, Bay Avenue and West Avenue, as well as the Goll Avenue / CR 585 intersection and the Somers Point traffic circle.

During August 1996, traffic data with count periods, speed, and delay were collected along Route 52 in Somers Point and Ocean City. This included movement and vehicle classification at five intersections. The count data indicated that Friday evening and Saturday mid-afternoon/evening represented peak periods. On Fridays, traffic volumes peaked between 4:00 and 7:00 PM, while traffic volumes peaked on Saturdays between 10:00 AM and 12:00 PM and between 3:30 and 5:30 PM.

An analysis of accidents between January 1, 1991 and December 31, 1995, revealed that the total number of accidents in the study area was 320. The total number of accidents at the traffic circle was 174, which accounts for 54% of all motor vehicle accidents along Route 52. This is attributed to the high traffic volumes entering the traffic circle from Shore Road and Mays Landing Road attempting to weave through the Route 52 traffic in the relatively short weaving lengths available. 91% of accidents at the circle, were same direction rear-end, same direction sideswipe and angle collisions.

### 3.1.2 Projected Traffic Volumes

Two future analysis years 2004 and 2024 were selected for the study. The 2004 analysis year represents the expected midpoint of construction while 2024 represents a point 20 years into the future. Using the 1996 volumes as base, it was projected that the future traffic volumes would be increased by eight percent by 2004 and 32 percent by 2024. These increases represent approximately a one percent increase per year. The volume increases take into account both background traffic growth and volume projections due to new developments in the study area. The following 2024 peak hour volumes have been projected on the causeway between the traffic circle and Bay Avenue:

| | **Northbound** | **Southbound** | **Two-Way** |
|---|---|---|---|
| Weekday PM peak | 1975 vph | 1590 vph | 3565 vph |
| Weekend PM Peak | 1995 vph | 1980 vph | 3975 vph |

These volumes are well within the capacity of a 4-lane facility but greatly exceed the capacity of the current 2-lane roadway.

### 3.1.3 No Build Alternative Level of Service

Based on the projected traffic volumes, the study area intersections are expected to operate at Level of Service (LOS) F during peak hours under the 2024 No Build conditions. For details, please refer to Section 3.1.7 of the DEIS.

### 3.1.4 Build Alternative

It is not expected that traffic will be diverted or generated by the reconstruction project so that projected traffic volumes will be the same for the Build and No Build alternatives. The Preferred Alternative (Alternative 9-1) will include a High Fixed Span bridge over the Ship Channel as well as the ICWW at Beach Thorofare. This alternative will provide uninterrupted traffic flow over the waterways since no bridge openings will be required.

### 3.1.5 Build Level of Service – Traffic Circle

Four MacArthur Boulevard/Somers Point traffic circle options were originally analyzed to determine optimum configuration for the Somers Point traffic circle and widening of MacArthur Boulevard. These included keeping the circle but metering the approaches and replacing the circle with a 4-legged intersection. MacArthur Boulevard options included the no build option (existing two lanes), adding a center turning lane and widening to four lanes with center turning lane. The analysis indicated that considering the entire corridor the option that proposed four lanes plus a center turning lane for MacArthur Boulevard and a 4-legged intersection with signals for replacing the Somers Point Traffic Circle would provide the best configuration and therefore was selected as the preferred option. Traffic simulation results for this option did not show any significant queues, spillbacks, or congestion. This option would generally increase the accessibility of the area by all pedestrians. For details, please refer to DEIS Section 3.1.9.

In response to public comments, the right turn movement from CR 559 (Mays Landing Road) onto southbound Route 52 in Somers Point at the proposed four-legged intersection was studied further. Four different configurations of the right turn at this location were studied. It was determined that a Single Free Right Turn Lane Eastbound, with yield condition was the most desirable. This configuration would provide LOS A with safe ingress to Circle Liquor. For details, please refer to section 3.1.4.3 in the DEIS.

### 3.1.6 Build Level of Service at Intersections

The Build Level of Service analysis is based on the assumption that the Preferred Alternative for the causeway (Alternative 9-1) would be implemented, the Somers Point traffic circle would be replaced by a signalized intersection, and the MacArthur Boulevard would be widened to four lanes plus a center turning lane. The resulting conditions are then compared with the No Build Alternative, using the traffic simulation model NETSIM.

There is not much difference in the operating levels of service in Ocean City between the No Build and Build conditions since no significant widening or improvements are proposed there. The signalized intersection of 9th Street and Bay Avenue does increase in LOS from D to C (except the southbound approach that continues to operate at LOS D).

For Somers Point, LOS is improved at the intersections with Route 9, Shore Road, and C.R. 585 at Goll Avenue. These improvements are due to roadway widening, intersection modifications, re-channelization of approach roads, and signal timing modifications. For details, please refer to DEIS Section 3.1.10.

All of the approaches at the Somers Point traffic circle, except the northbound approach, are greatly improved by conversion to a four-legged intersection. The northbound and westbound approaches at Goll Avenue will be greatly improved because of the removal of the restriction caused by the traffic circle.

On the basis of these results, a Build Alternative with high fixed bridges over the waterways, a four-legged intersection at Shore Road and four lanes on MacArthur Boulevard represents an improvement capable of handling future traffic with little or no impact.

### 3.1.7 Additional Study of Route 52/Route 9 Intersection

In response to public comments the intersection of northbound Route 52 and Route 9 was re-evaluated to determine the impact of proposed improvements on queue lengths for northbound traffic. The analysis indicated that with Improved Geometry and Improved Signal Timing there will be a significant reduction in queue length on the northbound approach and much improved Level of Service, as compared to the No Build with projected year 2024 traffic volumes. For complete results of the analysis see Table 3.1-22 in the DEIS.

### 3.1.8 Additional Study – MacArthur Blvd.

In response to comments received at the Public Hearing and Information Center held to solicit comments on the DEIS (November 15, 2000 at the Jordan Road School in Somers Point NJ) additional studies were made to address issues that were raised by concerned local citizens. The results of these studies were presented to Somers Point local officials. The following issues were studied:

A. Alternate widening schemes for MacArthur Boulevard
B. Safe pedestrian crossing of the Boulevard

#### 3.1.8.1 Alternate Widening Schemes for MacArthur Boulevard

The study of alternative widening schemes for MacArthur Boulevard consisted of traffic analysis and simulation using the SYNCHRO/SIMTRAFFIC computer model. The model determined Level of Service and Delay for the signalized and unsignalized intersections in the project area and provided a visual simulation of traffic operations and queues for the project corridor. The results provided a comparison of the traffic operations for different widening schemes to assist in determining a preferred widening scheme.

The study included the following three widening schemes for Route 52 between Route 9 and Route 585:

1. Five Lanes (Two Lanes each direction plus Center Left Turn Lane)
2. Three Lanes (One Lane each direction plus Center Turn Lane)
3. Two Lanes (One Lane Each Direction)

A variation of the 3 Lane Alternative was also studied. This involved 3 Lanes between Route 9 and Braddock Avenue and 5 Lanes between Braddock Avenue and Route 585 (See MacArthur Blvd Access plan – Modified 3 Lane configuration in Appendix D).

For all the alternatives, the analysis assumed Full Build Geometrics and Signalization for the Route 52/Route 9 and Route 52/Route 585 intersections. The analysis also assumed signalization of the Route 52/Braddock Drive intersection. Unsignalized conditions were assumed for the Route 52/Sixth Ave, Route 52/Par Drive, Route 52/Braddock Ave, and Route 585/Goll Avenue intersections.

Traffic analysis was performed using traffic growth projections of about one percent per year as provided by NJDOT Bureau of Mobility Strategy (BMS). Using actual traffic data collected along Route 52 during August of 1996 as a base, these projections take into account the background traffic growth and volumes due to new developments and natural growth in the project area. Actual recorded traffic counts obtained from the New Jersey Highway Authority at Exit 30 on the Garden State Parkway for the years 1992 through 2000 has shown a consistent increase in traffic volumes at the average rate of 3.2% in both directions at this location. In addition the annual growth rate projected by the Garden State Authority is 2.6 % on the parkway segment between Exits 29 and 36. Traffic for side streets between Route 9 and Route 585 was estimated. Analysis was performed for Weekday and Weekend Peak Hours for 2024 and 2004 Design Years for the three alternatives.

The SYNCHRO/SIMTRAFFIC program analyzes and simulates signalized and unsignalized intersections and can provide for the coordination of signals along an arterial. The program provides Level of Service and Delay for the intersections based on methods of the Highway Capacity Manual (HCM), 2000 Revision. The program also provides a simulation that provides a visual representation of traffic operations and permits viewing of traffic conditions, queuing and the relationship between intersections. The Level of Service and Delay ranges used by the program are shown in Tables 1 and 2, and the results of the analysis are shown in Table 2.

Table 3.1. Level of Service and Delay (Seconds) for Signalized and Unsignalized Intersections

| Level of Service | Signalized Intersections Control Delay Per Vehicle (Seconds) | Unsignalized Intersections Control Delay Per Vehicle (Seconds) |
|---|---|---|
| **A** | <10 | <10 |
| **B** | >10 and <20 | >10 and <15 |
| **C** | >20 and <35 | >15 and <25 |
| **D** | >35 and <55 | >25 and <35 |
| **E** | >55 and <80 | >35 and <50 |
| **F** | >80 | >50 |

Table 3.2. Summary of Level of Service and Delay for Three Alternatives

| | Weekday | | | | | | Weekend | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 Lane | | 3 Lane | | 2 Lane | | 5 Lane | | 3 Lane | | 2 Lane | |
| | LOS | delay | LOS | delay | LOS | delay | LOS | delay | LOS | delay | LOS | delay |
| **2024 SIGNALIZED** | | | | | | | | | | | | |
| **Rt 52/Rt 9** | C | 23.5 | C | 23.5 | C | 23.5 | D | 39.1 | D | 39.1 | D | 39.1 |
| **Rt 52/Braddock Dr** | A | 5.3 | B | 12.2 | C | 32.0 | A | 5.2 | B | 13.9 | D | 36.9 |
| **Rt 52/Rt 585** | D | 41.7 | D | 40.2 | D | 40.1 | D | 44.7 | D | 43.0 | D | 41.8 |
| UNSIGNALIZED** | | | | | | | | | | | | |
| **Rt 52/Sixth Ave** | F | 196.1 | F | 679.9 | F | 784.5 | F | 130.2 | F | 683.4 | F | 683.4 |
| **Rt 52/Par Dr** | F | 91.4 | F | 317.0 | F | 317.0 | F | 140.8 | F | 345.8 | F | 345.8 |
| **Rt 52/Braddock Ave** | F | * | F | * | F | * | F | * | F | * | F | * |
| **Rt 585/Goll Ave** | F | * | F | * | F | * | F | 342.0 | F | 342.0 | F | 342.0 |
| **2004 SIGNALIZED** | | | | | | | | | | | | |
| **Rt 52/Rt 9** | B | 18.2 | B | 18.2 | B | 18.2 | C | 22.3 | C | 22.3 | C | 22.3 |
| **Rt 52/Braddock Dr** | A | 5.3 | A | 8.2 | B | 10.4 | A | 5.9 | A | 8.8 | B | 12.9 |
| **Rt 52/Rt 585** | C | 34.6 | C | 34.1 | C | 34.0 | C | 33.0 | C | 32.6 | C | 32.4 |
| UNSIGNALIZED** | | | | | | | | | | | | |
| **Rt 52/Sixth Ave** | F | 62.6 | F | 208.2 | F | 208.2 | F | 51.5 | F | 229.9 | F | 229.9 |
| **Rt 52/Par Dr** | E | 40.9 | F | 83.6 | F | 83.6 | F | 56.8 | F | 196.2 | F | 196.2 |
| **Rt 52/Braddock Ave** | F | * | * | * | F | * | F | * | F | * | F | * |
| **Rt 585/Goll Ave** | F | 939.5 | F | 939.5 | F | 939.5 | F | 81.5 | F | 81.5 | F | 81.5 |

*Delay is beyond limit of model. **Level of Service and Delay for Minor Movement

The variation of the 3 Lane alternative with 5 Lanes between Braddock Avenue and Route 585 that was studied did not exhibit significantly different traffic operation from the 3 Lane version as the southbound Route 52 queue continued to back up north of Braddock Drive. However, this 3-lane variation provided some improvement to storage capacity south of Braddock Drive.

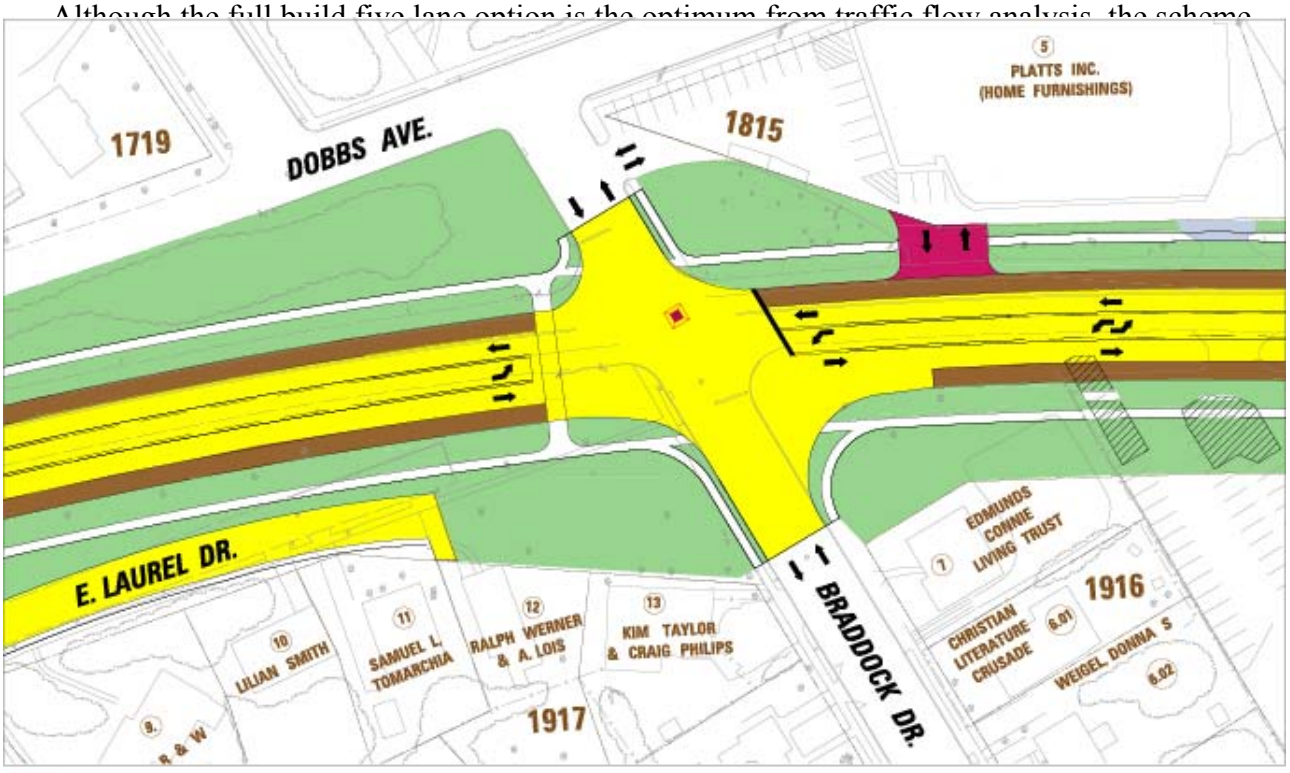
As shown in Table 2, the three project signalized intersections will operate at satisfactory Levels of Service under 2024 and 2004, Weekday and Weekend traffic volumes for all three alternatives. The Route 52/Route 9, Route 52/Route 585, and Route 585/Goll Ave intersections show virtually no difference in Level of Service and Delay between the alternatives. The Route 52/Braddock Drive intersection operates best under the 5 Lane Alternative, slightly worse with the 3 Lane Alternative and slightly worse with the 2 Lane Alternative. The SIMTRAFFIC simulation shows good operations under all conditions and scenarios for the Route 52/Route 9 and Route 52/Braddock Drive intersections. The Route 585/Goll Avenue intersection operates poorly under all conditions. The simulation shows significant queuing under all conditions and scenarios on the westbound Route 585 approach at Goll Avenue and at Route 52 and on the Goll Avenue northbound approach to Route 585. There is also significant queuing on the southbound Route 52 approach with 2024 and 2004 traffic volumes and 2 or 3 Lane Alternatives. This queue backs up under these alternatives beyond Braddock Drive. Under the 5 Lane Alternative, there is minimal queuing on the southbound Route 52 approach since the extra lanes provide more storage area for the intersection queues.

The three unsignalized intersections, located in the section between Route 9 and Route 585, operate at Level of Service F for all side street movements for all traffic conditions and lane arrangement alternatives. Under the 5 Lane Alternative, however, delays to side street traffic at these locations is significantly lower than under the 2 or 3 Lane Alternatives and capacity is significantly higher under the 5 Lane Alternative. The simulation shows that at the Sixth Ave and Par Drive intersections with MacArthur Blvd. there are delays under the 5 Lane Alternative, but sufficient gaps will exists to allow turns into MacArthur Blvd. Under the 2 or 3 Lane Alternatives (at these intersections), there are virtually no gaps and traffic cannot turn into MacArthur Blvd. At the Braddock Ave intersection, under the 5 Lane Alternative for 2004 traffic volumes there is some capacity for entering MacArthur Blvd. and very limited capacity

for 2024 traffic volumes. Under the 2 or 3 Lane Alternative for 2004 and 2024 conditions, there are virtually no gaps and traffic cannot enter MacArthur Blvd. from Braddock Ave.

In conclusion, the 5 Lane Alternative has acceptable traffic operations under all traffic conditions at the signalized intersections and significantly better traffic operations at the unsignalized intersections than the 2 or 3 Lane Alternatives. Under the 5 Lane Alternative there is some capacity for side street access to Route 52 between Route 9 and Route 585, while there is virtually no capacity and no gaps for traffic from the side streets under the 2 or 3 Lane Alternative. Queuing is acceptable on Route 52 under the 5 Lane Alternative, whereas there are extremely long queues southbound on Route 52 under the 2 or 3 Lane Alternatives. The Route 585/Goll Avenue intersection has poor traffic operations as an unsignalized intersection under all alternatives.

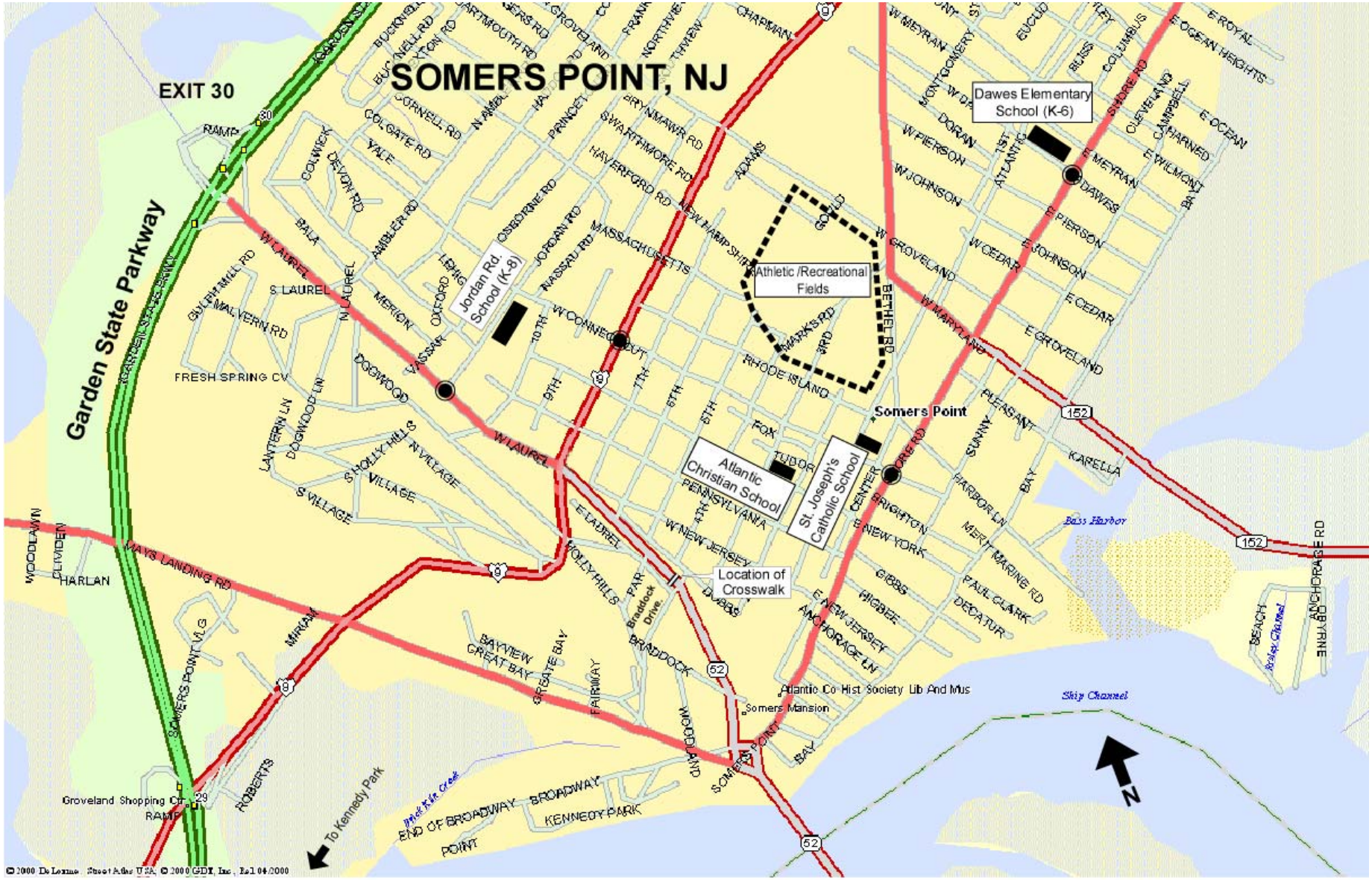
Although the full build five lane option is the optimum from traffic flow analysis, the scheme




Traffic Signal

**Figure 3.1A**

**MacArthur Blvd. Modified 3 Lane Configuration**
**Proposed Crosswalk at Braddock Drive**




School Crossing Guard

**FIG. 3.1B**

Location of Schools and Athletic Fields in Somers Point

3.1.8.2 Safe Pedestrian Crossing of the Boulevard

A safe crossing of MacArthur Boulevard was a major concern for local citizens especially for those residing west of the boulevard. These residents requested a safe access to local schools and recreation areas located east of the boulevard (see Figure 3.1A and Figure 3.1B).

In order to provide a signalized crosswalk at a location between the present traffic circle and the intersection of MacArthur Blvd and Route 9, a Traffic Signal Warrant Analysis was conducted to assess the need for a Traffic Control Signal at the intersection of Braddock Drive and MacArthur Blvd. The analysis was based in part on a traffic count Earth Tech performed on Braddock Drive for a twenty four (24) hour period on February 21, 2001 (See Table 3). Based on extrapolated peak summer volumes, two warrants were met. Warrant 1 – Condition B item C and Warrant 2 (As prescribed in the Manual on Uniform Traffic Control Devices (MUTCD) 2000 published by FHWA).

**Warrant 1 - Condition B**

| Condition B - Interruption of Continuous Traffic | | | | | | | |
|---|---|---|---|---|---|---|---|
| Number of lanes for moving traffic on each approach | | Vehicles per hour on major street (total of both approaches) | | | Vehicles per hour on higher-volume minor-street approach (one direction only) | | |
| Major Street | Minor Street | 100%[a] | 80%[b] | 70%[c] | 100%[a] | 80%[b] | 70%[c] |
| 1..... | 1..... | 750 | 600 | 525 | 75 | 60 | 53 |
| 2 or more... | 1..... | 900 | 720 | 630 | 75 | 60 | 53 |
| 2 or more... | 2 or more ... | 900 | 720 | 630 | 100 | 80 | 70 |
| 1..... | 2 or more .... | 750 | 600 | 525 | 100 | 80 | 70 |

[a] Basic minimum hourly volume.
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures.
[c] May be used when the major street speed exceeds 70 km/h (40 mph) or in an isolated community with a population of less than 10,000.

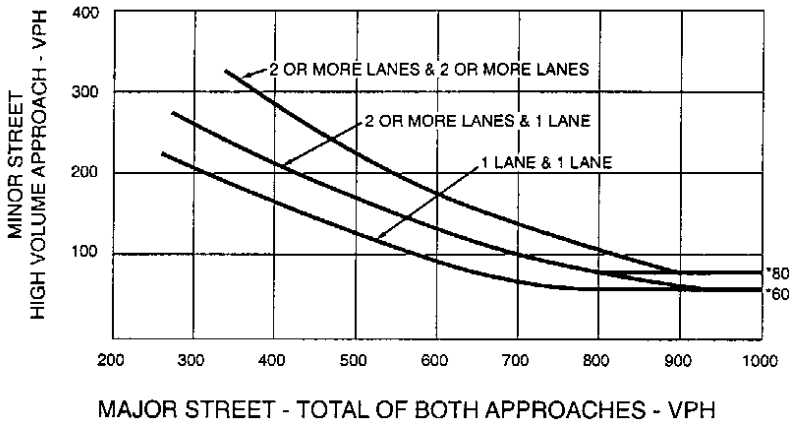
## Table 3.3

**ATR Count on Braddock Drive at the intersection of MacArtur Blvd.**
**Frbruary 21, 2001**

| Time | Measured Volume | Factor for summer Volume | 2001 Summer Volume | Projected Volumes | | |
|---|---|---|---|---|---|---|
| | | | | 2002 | 2003 | 2004 |
| 12:00 AM | 2 | 1.61 | 3 | 3 | 3 | 3 |
| 1:00 AM | 0 | 1.61 | 0 | 0 | 0 | 0 |
| 2:00 AM | 3 | 1.61 | 5 | 5 | 5 | 5 |
| 3:00 AM | 2 | 1.61 | 3 | 3 | 3 | 3 |
| 4:00 AM | 1 | 1.61 | 2 | 2 | 2 | 2 |
| 5:00 AM | 1 | 1.61 | 2 | 2 | 2 | 2 |
| 6:00 AM | 12 | 1.61 | 19 | 20 | 20 | 20 |
| 7:00 AM | 20 | 1.61 | 32 | 33 | 33 | 33 |
| 8:00 AM | 21 | 1.61 | 34 | 34 | 34 | 35 |
| 9:00 AM | 16 | 1.61 | 26 | 26 | 26 | 27 |
| **10:00 AM** | **36** | **1.61** | **58** | **59** | **59** | **60** |
| **11:00 AM** | **34** | **1.61** | **55** | **55** | **56** | **56** |
| **12:00 PM** | **35** | **1.61** | **56** | **57** | **57** | **58** |
| **1:00 PM** | **36** | **1.61** | **58** | **59** | **59** | **60** |
| **2:00 PM** | **34** | **1.61** | **55** | **55** | **56** | **56** |
| **3:00 PM** | **39** | **1.61** | **63** | **63** | **64** | **65** |
| **4:00 PM** | **58** | **1.61** | **93** | **94** | **95** | **96** |
| **5:00 PM** | **66** | **1.61** | **106** | **107** | **108** | **109** |
| 6:00 PM | 27 | 1.61 | 43 | 44 | 44 | 45 |
| 7:00 PM | 21 | 1.61 | 34 | 34 | 34 | 35 |
| 8:00 PM | 8 | 1.61 | 13 | 13 | 13 | 13 |
| 9:00 PM | 8 | 1.61 | 13 | 13 | 13 | 13 |
| 10:00 PM | 13 | 1.61 | 21 | 21 | 21 | 22 |
| 11:00 PM | 10 | 1.61 | 16 | 16 | 16 | 17 |
| **24 hour volume** | **503** | | **810** | **818** | **826** | **834** |

Warrant 2 – Four hour Vehicular Volume will be met in 2004, it is projected that over 1780 vph on the major street and 60 vph in any 4 hour period on the minor street. (See table 3).

## Warrant 2 – Four Hour Vehicular Volume (70% Factor)



Given the design speed of 40 mph for MacArthur Blvd. Warrant 1- Condition B (70% column) is met for 8 hours of an average summer season day. As stated in the Traffic Technical Environmental Study for the Route 52 project, 1650 vehicles/hr travel on the major road (MacArthur Blvd) during the summer period. That is over three times the required minimum of 525 vehicles per hour on major street. For the minor street approach (Braddock Drive - Table 3).

Based on the analysis, it was concluded that under current conditions the intersection of Braddock Dr. and MacArthur Blvd. meets Warrant 1- Condition B (70% column) and it also meets Warrant 2 under 2004 projected conditions. Furthermore, the traffic volumes on Route 52 are significantly higher than the volumes required to meet the main street portion of the either Warrant 1B or Warrant 2 (1650 vph vs. 525-630 vph).

Also, as indicated in the Alternative Lane Arrangement Study, each of the unsignalized intersections along MacArthur Blvd. between Rt. 9 and the Somers Point Circle result in LOS F. The projected high traffic volumes on MacArthur Blvd. will reduce the gaps in through traffic to the point where there will be no left turning capacity from the minor streets.

The installation of a signal and a crosswalk at Braddock Dr. intersection will allow such access without impacting corridor operations and provide a safe pedestrian crossing to destinations east of the boulevard.

### 3.1.9 Impact on Accidents

It is anticipated that there will be a significant decrease in the number of accidents resulting from the proposed improvements. The removal of the Somers Point Traffic Circle is expected to sharply reduce accidents at that intersection. A reduction of over 50% is anticipated. The principal safety improvements along the causeway that are expected to reduce accidents are the widening of lanes from 10 feet to 12 feet, the provision of a concrete median divider, and the addition of shoulders to handle breakdowns without endangering through traffic. Based on published FHWA studies, a 20% reduction in accidents is anticipated. The widening of MacArthur Boulevard is also expected to provide safer driving conditions.

### 3.1.10 Transportation System Management

Structural improvements as proposed under the various Build Alternatives are, in many instances, not the only way to handle projected increases in traffic. Some transportation system management alternatives that have been considered are:

- Alternate modes of transportation, such as light rail or increased bus usage.
- High occupancy vehicle (HOV) lanes where travel is restricted to vehicles carrying at least two, and sometimes three, persons.
- Congestion tolls, where toll amounts are increased during historical peak travel periods.
- Diversion to other points of access. This usually requires some strategy, like variable message signs (VMS) to be in any way effective.

Most such strategies apply more properly to routes where the predominant traffic is home-to-work and are not as effective when applied to resort destination traffic, which is the predominant component of traffic between Somers Point and Ocean City during the peak travel months. Analysis of these strategies indicated that none of them is viable for the project. For details, please refer to Section 3.1.13 of the DEIS.

### 3.1.11 Congestion Management Study

A congestion management study (CMS) was prepared for the portion of Route 52 between Route 9 and the Somers Point traffic circle. Its purpose was to examine whether any alternative traffic management technique could be feasibly implemented which would eliminate the need for increasing the capacity of MacArthur Boulevard and the traffic circle.

The study concluded that, because of the limited length of highway involved and the predominately recreational character of its peak traffic periods, no feasible alternative exists.

### 3.1.12 Pedestrian and Bicycle Access

The present conditions provide virtually no pedestrian and bicycle usage between Somers Point and Ocean City. There are no existing shoulders or sidewalks. Pedestrian/bicyclist crossing is unsafe. The existing long causeway has four lanes of traffic between parapets. Given the visual appeal of its setting, Route 52 would make a very desirable route for bicyclists, joggers, in-line skaters, recreational fishermen and others, if it were safe to engage in these activities. The Preferred Alternative proposes 3-meter (10-foot) wide shoulders in both directions and a sidewalk on the north side of the causeway. Although these facilities, will provide safety to pedestrians the long steep bridge grades of 4 and 5% will make it difficult for the elderly, infirm and the handicapped. To the extent that it is feasible, provision of handicapped accessibility to recreation areas along the causeway will be provided.

### 3.1.13 Safety Issues Under Existing Conditions (No Build Alternative)

In addition to pedestrian and bicyclist safety, there are several other safety considerations under the existing conditions (the No Build alternative):

- The width of travel lanes, currently only 3.0 meters (10 feet) wide;
- The lack of paved shoulders to accommodate breakdowns;
- The lack of adequate sight distance on substandard vertical curves;
- A substandard horizontal curve on the bridge over the ICWW;
- The potential for accidents because of the deficiencies in the geometry of the Somers Point traffic circle;
- The lack of separation between the northbound and southbound directions of travel; and
- The potential blockage of emergency vehicles when the existing bascule bridges open to allow ships to pass.

There is another general safety concern involving the ability of residents of Ocean City to evacuate safely during a major storm event threatening that barrier island community. The elevation of the existing causeway is so low that, during major storms, waves can lap up onto the roadway and make driving hazardous.

If an evacuation of Ocean City were to be necessary, Route 52 would be converted to three lanes northbound, with one lane southbound for emergency and authorized vehicles. This additional capacity, along with simultaneous use of the 34th Street and the Ocean City-Longport bridges, would be needed to evacuate a peak summer population of 150,000 in less than eight hours. The existing Somers Point traffic circle and the continuing single northbound lane on MacArthur Boulevard represent bottlenecks that could prevent timely evacuation to safer areas.

### 3.1.14 Safety Issues Addressed in Proposed Build Alternative

The Preferred Alternative proposes the following Geometric and Safety Improvements:

1) The substandard horizontal curve with a radius of 105 meters (350 feet) located where Route 52 enters Ocean City at 9th Street will be increased to a radius of at least 245 meters (800 feet), which will accommodate a 64 km/h (40 mph) design speed.
2) The vertical curve over Beach Thorofare is adequate for a safe speed of only 48 km/h (30 mph). It will be lengthened to provide adequate stopping sight distance at a 64 km/h (40 mph) design speed.
3) The four 3.0-meter (10-foot) wide lanes will be widened to standard 3.6-meter (12-foot) wide lanes.
4) Breakdown shoulders 3.0 meters (10 feet) wide will be provided in both directions.
5) A concrete median barrier will separate opposing northbound and southbound traffic movements.

Peak Hour Capacity Improvements and Removal of Impediments to Emergency Access and Evacuation

1) The Somers Point traffic circle will be replaced with a 4-leg signalized intersection having separate turning lanes.
2) Route 52 (MacArthur Boulevard) between the circle and Route 9 will be widened from two lanes to four lanes with a center turning lane, all within the existing right-of-way.
3) The two low bascule bridges, which currently are opened twice an hour to let ships pass

during the tourist season, will be replaced either by high fixed span structures or high bascule bridges that will be opened only once or, at most, twice a day.

4) Embankments will be raised to at least 0.3 meters (1 foot) above the 100-year flood level. Structures will be designed to have the bottom of the superstructure at least 0.3 meters (1-foot) above the 100-year flood level.

Pedestrian and Bicycle Safety

1) Shoulders 3.0 meters (10 feet) wide will be available in each direction for joint use by bicyclists.
2) A sidewalk 1.8 meters (6.0 feet) wide, adequate for wheelchairs to pass, will be available on one side of Route 52 separated from the shoulder by a continuous concrete barrier.
3) Benches could be provided approximately 70 meters (230 feet) on center along the 4% or 5% approach gradients proposed on bridges over the ICWW and Ship Channel.

## 3.2 AIR QUALITY

### 3.2.1 Introduction/Methodology

The Air Quality TES was prepared pursuant to requirements set forth by the FHWA and the US Environmental Protection Agency (EPA). The air quality analysis was performed to determine the maximum one-hour and eight-hour carbon monoxide (CO) concentrations at locations near the project caused by vehicle traffic. Concentrations of CO were determined using EPA-approved models and were compared to the National Ambient Air Quality Standards (NAAQS) for construction and design year periods (2004 and 2024). The primary and secondary CO NAAQS are 35 parts per million (ppm) over a 1-hour period and 9 ppm over an 8-hour period, not to be exceeded more than once per year.

Primary constituents of motor vehicle emissions include CO, hydrocarbons, and nitrogen oxides. Of these pollutants, the EPA and the NJDOT focus on CO as the primary pollutant of concern when evaluating potential air quality impacts from motor vehicle exhaust. Increased concentrations of CO can be expected at congested intersections where long delays are common during peak traffic periods.

Carbon monoxide concentrations at a receiver near a roadway are comprised of two components: local and background concentrations. The local, microscale CO concentrations in the project area were estimated using the USEPA's line source atmospheric dispersion model CAL3QHC, with input from the EPA's emission factor model MOBILE 5a-H.

Background concentration is defined as the concentration at a receiver that is the result of emissions outside the local vicinity. Monitoring data on existing or background CO concentrations is not available for the project area; therefore, the NJDOT recommended using background values of 3.0 ppm for a one-hour averaging period and 2.1 ppm for an eight-hour averaging period for this analysis.

The MOBILE 5a-H composite emission factors were obtained from a table for South New Jersey

published by the NJ Department of Environmental Protection. The factors for the year 2010 were used in the analysis of 2024 traffic conditions. Since emission factors in the table decrease over time, using year 2010 emission factors with the 2024 traffic conditions was conservative.

CAL3QHC provides a conservative estimate of air quality impacts from motor vehicle emissions. The model results from CAL3QHC are added to the background concentrations to determine the total one-hour and eight-hour CO concentrations at a receiver near the roadway. These total values are then compared to the NAAQS for CO to determine whether the receiver would experience air quality impacts.

### 3.2.2 Existing Conditions

The existing conditions and the 2004 and 2024 No Build and Build conditions were evaluated at the Route 52/CR 585 (Shore Road) intersection in Somers Point and Route 52 ($9^{th}$ St)/Bay Avenue intersection in Ocean City. The project area was evaluated for the presence of potential sensitive receivers, including residences, schools, nursing homes, parks, sidewalks, recreation areas, and hospitals. See Table 3.2-1 in the DEIS for a summary of the maximum 1-hour and 8-hour CO concentrations (including background CO levels) predicted at these intersections.

MOBILE 5a-H Modeling

The DEIS indicated that conformity with the 1-hour ozone standard was not required since it was revoked. However, this rule has been reinstated as of January 2001, and therefore the long Range Plan and Transportation Improvement Program have been re-addressed to insure conformity.

Emission calculations with MOBILE 5a-H for the 70% centralized / 30% decentralized were made and compared to the original criteria used in the DEIS of 92% centralized / 8% decentralized Inspection and Maintenance (I&M) program. It was observed that the differences between the original and the revised criteria sets are not large enough to merit remodeling. Nevertheless, the emission calculations with MOBILE 5a-H for the 70% centralized / 30% decentralized I&M distribution were performed, and the results for the Year 2004 (in

grams/vehicle-mile) compared to the 92% centralized / 8% decentralized are summarized below:

| Speed | ***92%/8%*** | ***70%/30%*** |
|---|---|---|
| Idle | 249 | 255.9 |
| 20 mph | 22.12 | 22.69 |
| 27 mph | 15.55 | 15.96 |
| 33 mph | 12.14 | 12.46 |
| 40 mph | 9.48 | 9.48 |

The CO emissions for 70/30 versus 92/8 I&M increased by 3% or less, and therefore have an insignificant effect on the predicted CO impact for the Route 52 study.

### 3.2.3 Impacts

Alternative 9 would involve improvements to Route 52 and replacement of the Somers Point traffic circle with a signalized intersection. The predicted maximum CO concentrations at the Route 52/SR 585 (Shore Rd) intersection (Somers Point) for this alternative under all analyzed years are lower than the corresponding predicted maximum concentrations under the No Build Alternative. The lower concentrations under the Build Alternative are due to improved traffic flow at the intersection. The predicted maximum CO concentrations for the existing conditions, and for the Build Alternative for year 2004 and year 2024 at the Route 52 ($9^{th}$ St)/Bay Avenue intersection are the same because no modifications are proposed at this signalized intersection. Also, the projected traffic volumes do not change between the No Build and the preferred alternative.

The Route 52(1) Causeway project between the City of Somers Point, Atlantic County and Ocean City, Cap May County is included in the approved 1998-2002 STIP. This project is located in a CO attainment area. The results of the CO analysis suggest that the CO levels will be below the NAAQS of 35 ppm for a one-hour averaging time and 9 ppm for an eight-hour averaging time.

### 3.2.4 Mitigation

Predicted maximum one-hour and eight-hour CO concentrations at the Route 52/CR 585 (Mays Landing Road) intersection in Somers Point and the Route 52 (9th St)/Bay Avenue intersection in Ocean City under any Build Alternative would not exceed state and federal ambient air quality standards in the construction year (2004) nor the design year (2024). Consequently, the proposed improvements under the preferred alternative will have no significant impact on air quality, therefore no mitigation measures are warranted.

## 3.3 NOISE

### 3.3.1 Introduction/Methodology

The magnitude of noise is typically described by its sound pressure. A logarithmic scale is used to relate sound pressure to some common reference level, usually the decibel (dB). Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency-weighted scales (A, B, C, and D). The A-weighted scale is used almost exclusively to describe traffic noise because its quantities correlate well with the subjective response of people to the magnitude of a sound level. Sound levels measured using an A-weighted decibel scale are typically shown as 'dBA' and are expressed as dBA Leq(h) in this section The hourly average sound level (Leq(h)), or equivalent sound level, is the level of constant sound that in an hour would contain the same acoustic energy as the time-varying sound. In other words, the fluctuating sound levels of traffic noise are represented in terms of equivalent steady noise levels with the same energy content.

The FHWA has developed noise abatement criteria (NAC) and procedures to be used in the planning and design of highways. (A summary of the FHWA NAC for various land uses is presented in Table 3.3-1 in the DEIS). These criteria are used to determine whether highway noise levels are compatible with various land uses. This also includes thresholds of noise interference above which noise will begin to intrude on the noise environment for the corresponding land use.

All land uses evaluated in this report belong in Category B (land area include residences, a historic residence, motels, hotels, and playgrounds) and Category C (land area include commercial properties such as shops and restaurants.) The following table provides the FHWA noise abatement criteria for Category B and C land areas:

| Activity Category | Threshold of Noise Interference (dBA)[1] | | Noise Abatement Criteria (dBA)[2] | |
|---|---|---|---|---|
| | $L_{10}$ | Leq | $L_{10}$ | Leq |
| B | 58 | 55 | 70 exterior | 67 exterior |
| C | 63 | 60 | 75 exterior | 72 exterior |

1. Source: FHWA Report "A Field Review of the Highway Traffic Noise Impact Identification and Mitigation Decision making Processes."
2. $L_{10}$ = Hourly A-weighted noise levels exceeded 10 percent of the time. Leq = Hourly A-weighted average noise level. Source: Title 23 of the Code of Federal Regulations (CFR) Part 772.

Title 23 CFR Part 772.11(a) states, "In determining and abating traffic noise impacts, primary consideration is to be given to exterior areas. Abatement will usually be necessary only where frequent human use occurs and lowered noise levels would be of benefit."

Traffic noise impacts occur when either; a) the predicted traffic noise levels approach or exceed the FHWA NAC for the applicable Activity Category, or b) when the predicted traffic noise levels substantially exceed the existing noise levels. Noise abatement measures must be considered for receivers impacted under either case. The NJDOT guidelines state that noise levels within one decibel of the FHWA NAC are considered as 'approaching' the criteria. The guidelines define a 'substantial increase' as a 10-decibel increase over existing levels.

Leq or $L_{10}$ noise levels were performed using the FHWA Highway Traffic Noise Prediction model and the Stamina 2.0/Optima Prediction Model for the following cases: existing conditions, future 2024 No Build conditions, and future 2024 build conditions with each of the four project Build Alternatives. These (Design Year) noise levels were compared to existing (pre-construction) noise levels and NAC levels to determine the traffic noise impacts.

### 3.3.2 Existing Conditions

Existing noise levels in the project study area were measured by the NJDOT (NJDOT, 1996). Two locations were monitored for 24-hour periods during the weekday, including the Somers

Mansion historic site near the Route 52 traffic circle in Somers Point and 41 Revere Place in Ocean City. The maximum peak hourly noise levels were 65 dBA Leq. and 62 dBA Leq, respectively. There were no measurement periods at either location that approached or exceeded the FHWA NAC of 67 dBA Leq for Category B receivers. However, both sites had hourly average noise levels above the Threshold of Noise Interference. Existing noise contours from the Noise TES indicate 12 residences and one motel in Somers Point and four residences in Ocean City where noise levels currently approach or exceed the FHWA NAC for Category B receivers.

### 3.3.3 Impacts

The projected 2024 noise contours that were developed for the proposed widening of MacArthur Boulevard indicate that the noise levels are predicted to approach or exceed the FHWA NAC for 24 residences and one motel. Sixteen of these residences and the motel have the same or lesser predicted impacts than those modeled under the Future No Build Conditions. The eight other residences are all on the southeastern side of the road, the direction in which the widening is proposed to occur. At the Somers Mansion, the noise level is predicted to increase by about 2 dBA Leq.

Alternatives 9 consist of a causeway reconstructed along the existing alignment with high fixed bridges and slightly realigned waterways. The projected 2024 noise contours for Alternative 9-1 in Somers Point are included in the Noise TES. There are two motels and one site on the National Register of Historic Places (Somers Mansion) where the noise levels are predicted to approach or exceed the FHWA NAC. The predicted noise levels at the two motels are the same or less when compared to the modeled noise levels for the future No Build conditions.

The projected 2024 noise contours for Alternatives 9 and 9A in Ocean City are included in the Noise TES. There are 21 residences in the project area in Ocean City where the noise levels are predicted to approach or exceed the FHWA NAC under these alternatives. The traffic along Bay Avenue is the dominant noise source for these impacted residences. There is no increase in the noise levels when compared to the future No Build conditions.

### 3.3.4 Mitigation

When predicted noise levels approach or exceed the FHWA NAC, or when there are substantial increases in predicted noise levels over existing noise levels, noise abatement measures are evaluated. Since Ocean City residences are already impacted by traffic on Bay Avenue, which is not part of the proposed project, noise mitigation was not considered for Ocean City residences. Noise mitigation is considered for impacted receivers in Somers Point and along MacArthur Boulevard as discussed below.

The FHWA and NJDOT recognize five methods of potential noise mitigation to reduce traffic noise levels.

a. Traffic Management Strategies - This includes implementing alternative traffic routing schemes, restricting certain vehicle classes or times of operations, and limiting speeds. However, these restrictions would be contrary to the project objectives, and therefore cannot be viable options for noise mitigation.

b. Roadway Alignment Alterations

   Various roadway alignments were considered for the project in the early stages of the planning process; however, the area outlying the roadway is highly developed, and therefore no opportunities for significant alteration of the preferred alternative presented in this report would be feasible or reasonable. Accordingly, this strategy could not be implemented.

c. Property Acquisition

   Few undeveloped or scarcely developed areas exist along the proposed alternatives where effective buffer zones could be acquired. Additionally, this treatment would not alleviate the noise impacts to existing receivers since the land separating the receivers from the proposed highway alignment already exists and fails to reduce noise levels sufficiently. Acquisition of this land, therefore, would do nothing to increase its noise attenuation capabilities.

d. Sound Proofing

Noise insulation of public use facilities and buildings can be considered for facilities affected by noise impacts; however, no such impacts occur within the limits of this project.

e. Noise Barriers

The noise models in this study predict there will be seven areas that have Category B noise impacts. The construction of noise barriers was found to be feasible in only two of these areas and not feasible in the other five. The areas in which it was not feasible to construct a noise barrier include:

(1) East of MacArthur Boulevard between Sixth Street and Route 9;
(2) East of MacArthur Boulevard and south of Braddock Drive;
(3) West of MacArthur Boulevard south of Par Drive;
(4) Somers Mansion; and
(5) Eastern quadrant of the Route 52/Mays Landing Rd intersection.

The two areas where it may be feasible to construct a noise barrier are:

- Residences with direct access to Laurel Drive, north of Village Drive; and
- Residences with direct access to Dobbs Avenue between Fourth and Sixth Streets.

For these residences, noise barriers are predicted to provide a reduction in noise level of at least 5 dBA Leq (h). However, a more detailed study will be conducted to ascertain the practicality of a noise wall in these locations. In response to public inquiry, additional evaluation was done of a proposed noise wall between East Laurel Drive and MacArthur Boulevard. It was ascertained that a noise wall at this location would limit sight distances on MacArthur Boulevard and therefore, it was determined that additional greenery should be planted to serve as a physical separation and mitigate the visual effects.

## 3.4 NATURAL ECOSYSTEMS

### 3.4.1 Introduction/Methodology

A Natural Ecosystems TES was conducted to identify and assess potential impacts on natural resources and the ecosystem associated with the alternatives under consideration for reconstruction of Route 52. The methodology for the TES involved three major tasks: inventory/data collection, field reconnaissance, and assessment of potential impacts. Available information regarding existing conditions was assembled and reviewed to describe the study area relative to geology and soils/hydrogeology, water quality, wetlands and floodplains, aquatic ecology, and terrestrial habitats. The study area extends approximately 45 meters (150 feet) on either side of the existing Route 52 corridor and the alternative alignments, from the intersection of Route 9 and MacArthur Boulevard in Somers Point to the intersection with Bay Avenue in Ocean City.

A field investigation was conducted to evaluate wetland areas and terrestrial and aquatic communities. The wetland boundary adjacent to the existing Route 52 corridor between Somers Point and Ocean City was delineated. Available geological and geotechnical data were reviewed, and based on these data, a work plan for the preliminary subsurface exploration program was prepared, and the investigation was conducted.

Surface water bodies, channels and sewer outfalls within the study area were identified by reviewing aerial photographs, Somers Point and Ocean City sanitary and storm sewer diagrams, and by on-site inspection during the field investigation. Available existing water quality data for Great Egg Harbor Bay was obtained. The NJDEP files were reviewed, and the New Jersey American Water Company was contacted to identify water supply wells in the study area. A review of available information on shellfisheries and fisheries was also performed. Existing shellfisheries and fisheries information was supplemented with a survey/interviews of operators of commercial fishing vessels and marinas.

### 3.4.2 Soils and Geology/Hydrology

Route 52 crosses the Coastal Plain of New Jersey, which is underlain by a wedge of unconsolidated sedimentary deposits of Late Cretaceous, Tertiary and Quaternary age that thicken seaward from a thin veneer at the Fall Line near Philadelphia, PA, to 1800 meters thick beneath the mouth of Delaware Bay. The sediments consist of clay, silt, sand, and gravel, of both marine and non-marine origin. These sediments lie unconformably on consolidated rocks of pre-Cretaceous age (Precambrian and lower Paleozoic rocks) similar to those exposed at the Fall Line. The consolidated pre-Cretaceous rocks underlie the study area at a depth of approximately 1460 meters (4,800 feet). From the shores of Great Egg Harbor Bay at Somers Point to Route 9, there are four soil types located in the study area, and from Somers Point through Ocean City, there are three additional soil types located within the project boundaries. Soil types located within the study area are listed in Table 3.4-1 in the DEIS.

The construction of the preferred alternative will cause disturbance of subsurface materials by excavations and the deep foundations. The cuts in organic rich tidal marsh deposits may result in release of entrained methane gas and odors; however, these releases are not expected to result in significant geologic impacts. In some places, where sulfur is present, reaction of the excavated marsh materials may prevent growth of vegetation in these areas. Short-term dewatering may occur during construction where it would depress locally the water table for a short period, and induce flow toward the excavation. This impact would be temporary and would not extend beyond project boundaries. Installation of deep foundation elements such as piles may result in vibratory impacts and possibly minor short-term settlement of adjacent loose sand materials and will not result in significant geologic impacts.

Disturbance of soil materials may increase the potential for short-term erosion and sedimentation, including turbidity in adjacent surface waters. Construction activities will be conducted pursuant to an approved soil erosion and sediment control plan and, therefore, are not expected to result in significant impacts. It will include procedures such as:

- taking precautions to minimize spillage and tracking of sand and silt on the road surface and

promptly clean them up should they occur;

- completing shorter sections of the project at one time, thereby limiting the amount of ground surface exposed at one time;
- using silt fences, hay bales and stabilized entrances to construction sites, as necessary, for control of erosion and sedimentation;
- placing mulch or suitable ground cover immediately after a slope is graded;
- sodding or seeding of slopes simultaneously with roadbed construction; and using turbidity curtains, where practicable, for construction operations.

New channel dredging, excavating soil below the 100-year floodplain, and filling tidal areas may slightly alter currents, and future erosion and deposition rates and patterns, especially during flooding. These changes are minor compared to ongoing natural changes that occur in the coastal area, and are not expected to have a significant geologic impact.

Global warming and sea level rise appears to be active geologic processes. The potential impact of these processes on the derivation of design flood elevations, and the potential for significant changes in sea level during the design life of the structure to impact the operation and maintenance of the structure will be evaluated during design.

### 3.4.3 Groundwater

The two major aquifers in the study area are the shallower, unconfined portion of the Kirkwood-Cohansey Aquifer System and the confined "Atlantic City 800-foot Sand" in the lower Kirkwood Formation. Groundwater from the western side of Great Egg Harbor Bay ultimately discharges to either the Great Egg Harbor Bay or the Atlantic Ocean. Shallow groundwater within the barrier island flows to the west or the east depending upon which side of the groundwater divide it was located. Deeper groundwater flow patterns are most likely towards the Atlantic Ocean. Groundwater in the study area is classified as Class II-A. The primary designated use for Class II-A groundwater is potable water and conversion to potable water. Class II-A secondary designated uses include agricultural water and industrial water. The groundwater quality associated with the deeper aquifer is generally good.

The USEPA has determined that the New Jersey Coastal Plain Aquifer System is a sole or principal drinking water source that, if contaminated, would create a significant hazard to public health. Based on the information presented below, it is clear that the project will not contaminate the sole source aquifer through its recharge zone, and will not create a significant hazard to public health. The proposed project is consistent with the Safe Drinking Water Act (SDWA).

The shallow aquifer in this area is the Cohansey Sand, which is used as a water supply source on the mainland, including the Somers Point area. Deep foundations, i.e. piers or piles, for the highway structure will penetrate the sands and clays in the upper portions of this hydrogeologic unit; however, the water quality and water quantity effects of any penetrations through the sands and clays in the shallow aquifer system are expected to be negligible. The Cohansey Sand is generally considered an unconfined aquifer recharged primarily by precipitation and surface water runoff. The potential effect of increased runoff and reduced recharge on groundwater levels will be local and insignificant relative to the regional aquifer system. It is anticipated that the portion of the Cohansey Sand in the vicinity of the project naturally discharges primarily to the coastal waters. Recharge water impacted by the highway runoff could potentially impact water quality in shallow wells located close enough to the highway structure; however, the significance of the potential impacts in areas close to the shoreline are mitigated by the problem of saltwater intrusion for shallow wells installed in this unit in the coastal area.

The deeper regional aquifer in the area is the "800-foot Sand" in the Kirkwood Formation, which is the major water supply source for Ocean City. The depth of this regional aquifer and its overlying confining layers are well below the anticipated depth (and any impacts) of the piers and piles. The installation of shallow and deep foundations is not expected to result in significant impacts to water yield or quality in the "800-foot Sand" aquifer. The principal recharge area for the underlying "800-foot Sand" aquifer is located far inland. Given the thickness of the clay units overlying the deep aquifer, surface water runoff from the project area will not impact water quality of this aquifer.

Filling, excavating, and pile driving associated with the project will have no impact on the

subsurface groundwater quality. Piles driven into the subsurface will remain well above the primary aquifer ["800-foot Sand"] and its overlying confining layer. Filling and excavation activities would be limited to the onshore or embankment activities and confined to the surficial environment. Dewatering that may need to be done during the construction of the roadway would lower the water table and induce flows toward the excavations. These effects will be temporary and limited to the immediate area where construction activities are taking place.

During construction and at the completion of this project, there will be no significant new pathways created for the highway runoff to the deeper aquifers. Stormwater runoff mitigation efforts taken into consideration for the surface water quality impacts will further reduce any potential for groundwater impacts. The final highway design will include a drainage system that will improve water quality and channel runoff to pipes that will discharge into water bodies.

The potential for impacts on potable water supply wells in Somers Point is greater than in Ocean City because of the nature of the aquifers (i.e., relatively shallower and unconfined in Somers Point, and deep and confined in Ocean City); however, the project is not expected to alter groundwater recharge enough to significantly impact the quantity or quality of local public potable water supplies. Any wells within the final right-of-way will be properly sealed during project construction. Sealed wells will be replaced with new ones if they are needed.

If it is determined that excavated soil or groundwater is contaminated during initial-design investigative efforts, the contaminated material shall be properly characterized. Any remedial action required will be negotiated and settled with the property owner during the right-of-way acquisition process. If the remediation is to be conducted by the Department's contractor, then a specification will be developed to address these concerns and included in the bid document, in accordance with the NJDOT Procedures Manual.

### 3.4.4 Surface Water

Based on a review of area maps, existing information, and site inspection, the only waterway within the project boundaries is Great Egg Harbor Bay and associated tidal waterways and wetlands. Great Egg Harbor Bay is a shallow, tidally influenced bay composed of large expanses of open water and scattered wetland islands that discharges into the Atlantic Ocean. Great Egg Harbor Bay is classified as a Class SE1 water. Class SE1 waters are saline estuarine waters with salinity concentrations greater than 3.5 parts per thousand at mean high tide and designated uses for shellfish harvesting; maintenance, migration and propagation of the natural and established biota; primary and secondary contact recreation; and any other reasonable uses. The general water quality of Great Egg Harbor Bay remains relatively good. There are a few parameters for which the water quality is slightly reduced due to extensive urban development and industrial activity: pH, dissolved oxygen, and fecal/total coliform.

Fishing and boating are important recreational activities along the New Jersey coastal beaches from Sandy Hook south to Cape May. Considerable recreational fishing occurs in Great Egg Harbor Bay. Some anglers park their vehicles on unpaved areas adjacent to Route 52 on the islands to fish at Rainbow Channel and Elbow Thorofare. Boaters and recreational fishermen in boats also congregate near the Route 52 bridges over Rainbow Channel and Elbow Thorofare.

Potential impacts to surface water quality relate mainly to nonpoint source stormwater runoff impacts. In addition, short term water quality impacts to Great Egg Harbor Bay can occur resulting from construction-related soil erosion that can increase turbidity and suspended solids, lower dissolved oxygen, and alter pH values. The most significant long-term impact to surface water quality associated with this project, however, will likely be sand and silt in stormwater runoff reaching Great Egg Harbor Bay and tidal wetlands.

Although the preferred alternative will result in an overall increase in impervious area and runoff, the number of vehicles traveling on the Route 52 causeway between Ocean City and Somers Point is not likely to increase significantly faster than it would on the existing facility. Therefore, the total mass load of pollutants would not increase significantly (i.e., greater runoff

volume but lower concentration of pollutants). The preferred alternative will result in a wider, more efficient roadway, allowing more unrestricted flow of traffic along Route 52 and over the bridges; reducing conditions such as stopping, idling, and delays; and resulting in less time for traffic to deposit pollutants. Additionally, the ratio of cumulative impervious roadway surface to total watershed area for the receiving waters (dilution ratio) is sufficient to protect aquatic life.

Water quality impacts due to soil erosion and sedimentation will be minimized through implementation of a sediment and erosion control plan. Construction techniques, such as prefabrication, also can significantly reduce on-site construction duration and subsequent erosion and sedimentation concerns. Furthermore, pretreatment methods identified as "conditionally acceptable" will be implemented. For this project, several of these pretreatment methods may be utilized as indicated in Table 3.4-2 in the DEIS. The preferred alternative will fully comply with the Coastal Zone Management Act (CZMA) for New Jersey, which requires that federally funded projects be consistent with the policies of the state coastal zone management programs.

*Ocean City*

There are several stormwater catch basins that exist in the vicinity of the study area in Ocean City. These drains collect stormwater from streets adjacent to Route 52 as it enters Ocean City and deliver the water directly into Great Egg Harbor Bay. The proposed approach and roadway for Route 52 into Ocean City on 9$^{th}$ Street will remain within the existing curb lines and will not increase the impervious area. The existing trunk line under the roadway is adequate for the proposed condition and will be maintained. New inlets are proposed in this area. There is insufficient room to incorporate any of the conditionally approved pretreatment methods into this existing system. To improve the water quality, manufactured oil/grit separators are proposed on all new inlet connections.

*Causeway between Somers Point and Ocean City*

There are presently no drain systems or retention areas for runoff for the existing Route 52 bridges and causeway. Existing scuppers on the structures discharge directly into Great Egg Harbor Bay. On the east side of the causeway where it traverses the marsh islands, there are existing, wide, sandy embankment areas that provide onsite infiltration.

The low point in the profile of the preferred alternative occurs within, or close to, the limits of the tidal marsh islands bordering the causeway. Point discharge from a large pipe at the low point carrying sediment-laden runoff could concentrate the deposition of sediments on the marsh surface and have a negative impact on the vegetation. Accordingly, the runoff from the elevated structures would be dispersed through a series of scuppers that discharge directly into open water. For the preferred alternative, where the causeway structure passes over the marsh islands, the runoff would be routed through leader pipes into scour basins that detain the flow of the runoff, enhance the water quality, and minimize the potential for erosion.

Construction activities can also result in impacts to surface water. The jetting of water during pile driving invariably creates a great deal of turbidity around piles being driven in open water locations. Even the pile driving operation itself tends to create some turbidity, but to a much lesser degree. Mitigation measures will be implemented to minimize impacts during construction due to turbidity (e.g., the use of turbidity curtains). See Aquatic Ecology Section 3.4.7.

Surface water quality can also be affected by dredging, which would be required at the ICWW under Alternative 9-1. Dredging causes an increase in turbidity, which can adversely affect aquatic resources such as submerged vegetation, shellfish, and finfish habitat. Although the initial dredging may result in temporary impacts to surface water, it is not anticipated that periodic maintenance dredging will be required. High flow rates indicate that the velocity of the water surging through the channel will be sufficient to keep the channel clean. For proposed methods to mitigate such impacts from dredging, see the Aquatic Ecology Section 3.4.7.

*MacArthur Boulevard: Somers Point Traffic Circle to Route 9*

An existing stormwater outfall drains the area in the vicinity of the Somers Point traffic circle and discharges into the beach area beneath the World War Memorial Bridge. Most of the runoff north of the traffic circle is routed through a piping system, which is discharged north of Braddock Avenue to a channel flowing through an extensive area of tidal wetlands south of Mays Landing Road. Storm runoff from a small area near the Route 9 intersection is collected in a piping system that drains into an existing detention/infiltration basin between the west curb line of MacArthur Boulevard and the east curb line of Laurel Drive.

A preliminary watershed analysis of the MacArthur Boulevard area revealed the net increase in impervious area would be 1.00 hectare (2.46 acres). Existing flows indicate that the existing drainage system in MacArthur Boulevard is already undersized based on current NJDOT standards. The flows were also estimated for "post-construction" and are expected to further burden the system. Much of the existing drainage system, which is old and undersized, will be replaced with a new system of catch basins and piping capable of handling the flow of a 10-year frequency storm. The proposed drainage system for MacArthur Boulevard will consist of piping along the west curb line, which will route runoff to an underground detention/infiltration piping system (i.e., a grid of pipes with perforations in the bottom). This system will be located under a parking lot near the low point on MacArthur Boulevard in the vicinity of Braddock Avenue and will be designed to detain storm runoff until it infiltrates into the ground underneath. It is important that the elevation of the bottom of the detention/infiltration piping system is sufficiently above the water table to promote infiltration. An observation well will be required prior to final design to verify the groundwater elevation.

A significant drainage area exists to the east of MacArthur Boulevard; however, the runoff from this area is collected in an existing piping system and does not contribute to the MacArthur Boulevard drainage system or underground detention/infiltration system. The flow from the east is piped under MacArthur Boulevard at the low point where it will be combined with the discharge from the MacArthur Boulevard drainage system and discharge through an existing outfall. Based on current design standards, the existing outfall is already undersized for the

prevailing conditions and should be upgraded. Due to the detention capacities built into the proposed drainage design, the post-construction flows are anticipated to be less than, or equal to, the pre-construction flows.

The existing detention/infiltration basin near Route 9 between Laurel Drive and MacArthur Boulevard is a deep open ditch that will be modified and utilized to collect the flow from the northwest corner of the project. Existing pipes will be modified slightly so that all of the flow from the northwest will be routed into the new detention/infiltration basin prior to entering the MacArthur Boulevard piping system. Flow leaving this basin will ultimately be routed through the detention/infiltration piping system. The basin will remain between the west curb line of MacArthur Boulevard and the new east curb line of Laurel Drive.

The Somers Point drainage system will be replaced to accommodate the flow from the drainage area surrounding the proposed four-legged intersection. The flow from the roadway between will be collected in a new piping system along the west curb line, which will be routed through an oil/grit separator prior to discharge at the abutment of the new bridge. Runoff rainwater from the southwest quadrant of the new intersection will be detained in a depression in the traffic island prior to entering the piping system. A separate piping system in the eastern portion of the intersection will be provided to accommodate the flow from the northeast and southeast quadrants of the intersection. This flow will be discharged into a vegetated swale on the east side of the north approach of the bridge over Ship Channel prior to being discharged into Great Egg Harbor Bay.

The proposed drainage system for MacArthur Boulevard, including the upgraded piping system and new pretreatment facilities, will be a significant improvement over the existing system from the Route 9 intersection to the Somers Point traffic circle. Currently, none of the runoff is pretreated prior to discharge into Great Egg Harbor Bay. In contrast, the proposed drainage system provides for pretreatment of all runoff (other than from bridges directly over waterways) through the use of detention/infiltration facilities, oil/grit separators, and/or grassed swales.

### 3.4.5 Wetlands and Open Waters

The existing Route 52 bridge between Somers Point and Ocean City crosses over Great Egg Harbor Bay and three islands located in the bay. With the exception of the fill area associated primarily with Route 52 and an old trolley bed, these islands are entirely tidal wetlands. There are several other islands in the vicinity of where Route 52 currently crosses Great Egg Harbor Bay, and these islands are also entirely tidal wetlands. The USFWS (National Wetland Inventory (NWI) Map, Ocean City, New Jersey) primarily classifies these islands as estuarine, intertidal, emergent wetlands. The tidal wetland islands are generally completely vegetated with herbaceous vegetation with the exception of the unvegetated intertidal channels that cut through the island.

There are no wetlands located along the shore where Route 52 currently enters Ocean City or where the preferred alternative for Route 52 would enter Ocean City. The USFWS NWI map identified the shore area along Ocean City in the vicinity of the study area as estuarine, sub-tidal, open water.

A section of the shoreline immediately adjacent to where Route 52 enters Somers Point meets the USACOE wetland criteria. The wetland area is small [approximately 0.10 hectares (0.25 acres) in size]. With the exception of this area, there are no wetlands located along the shore where Route 52 currently enters Somers Point or where the preferred alternative for Route 52 would enter Somers Point. The USFWS NWI map classifies the Somers Point shore where Route 52 enters Somers Point as estuarine, intertidal, flat (substrate generally non-vegetated and consists of either mud, sand, organic material, cobbles/gravel). Although the USFWS classifies this area as a wetland, it is not a USACOE jurisdictional wetland since the area is not vegetated. However, the area may be considered as a special aquatic site by the USACOE, and the area is subject to regulations pertaining to the discharge of dredge and fill material into waters of the United States.

Review of the New Jersey Fresh Water Wetlands Maps indicated that, with the exception of a small area on the first island north of Ocean City on Route 52, there are no mapped freshwater

wetlands located within the study area boundaries. This wetland was classified as a freshwater palustrine emergent persistent wetland with saturated conditions. However, the field inspection confirmed that this wetland is not a freshwater wetland, but rather, a continuation of the estuarine intertidal emergent persistent marsh.

Wetland impacts associated with the preferred alternative are related to the driving of pilings into the tidal marsh, shading, the encroachment of embankment fill, and providing access to the Information Center and otherwise enhancing recreational access. The wetlands along the north bank of the ICWW that may be impacted as the result of the realignment of the ICWW will be protected by a fender system. In addition, sheeting approximately 76 meter (250 feet) long will be provided to further prevent sloughing. (See Figure 3.4-1). Also, a small tidal wetland area would be removed west of the existing causeway where the proposed highway enters into Somers Point. In most cases, the wetlands to be affected are stands of salt marsh cordgrass that exist throughout much of the remaining islands in the vicinity of the study area.

The preferred alternative involves a causeway reconstructed largely over the existing embankment, with fixed bridges over slightly realigned waterways. Building the entire causeway supported on a viaduct-type structure involves the least impact to wetlands. The wetland impacts that are associated with the preferred alternative are primarily located immediately adjacent to the existing causeway. These wetlands act as a pollution filter for man-made debris, and they remove or partially remove and absorb sediments and chemicals generated from the road. These islands act as secondary treatment for any surface water runoff from Route 52. They further reduce nutrient and chemical levels through absorption and capture sediment in their vegetation. In this capacity they essentially act to help preserve other wetlands found within the tidal marsh. They have relatively little direct value in terms of fish and shellfish habitat, waterfowl, or other wildlife habitat. Shading created by the causeway over wetlands may inhibit the growth or displace the native wetland vegetation.

The construction of the preferred alternative will also have adverse effect to open waters.

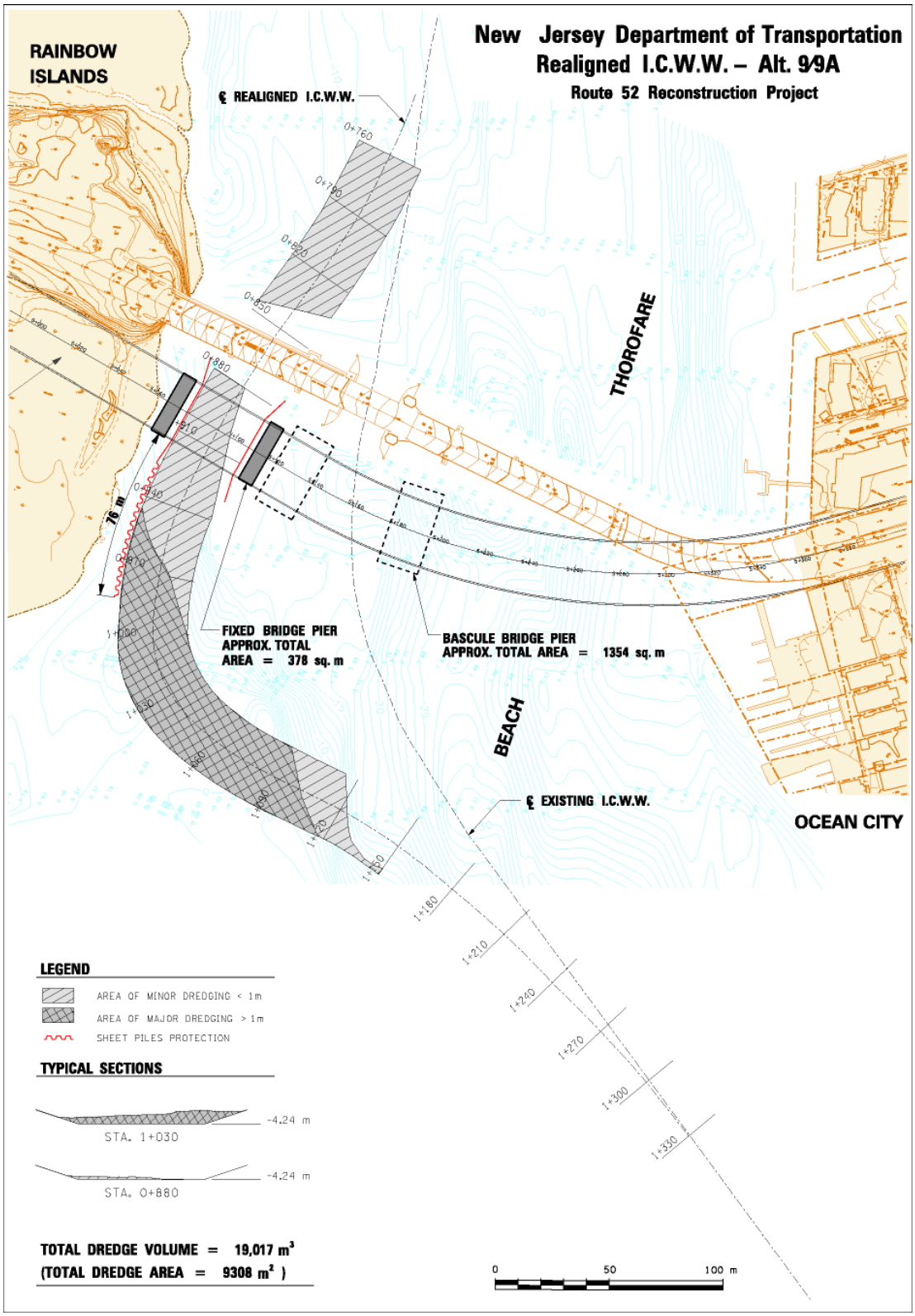

New Jersey Department of Transportation
Realigned I.C.W.W. – Alt. 9/9A
Route 52 Reconstruction Project
RAINBOW ISLANDS
℄ REALIGNED I.C.W.W.
THOROFARE
BEACH
℄ EXISTING I.C.W.W.
OCEAN CITY
76 m
FIXED BRIDGE PIER
APPROX. TOTAL
AREA = 378 sq. m
BASCULE BRIDGE PIER
APPROX. TOTAL AREA = 1354 sq. m
LEGEND
AREA OF MINOR DREDGING < 1m
AREA OF MAJOR DREDGING > 1m
SHEET PILES PROTECTION
TYPICAL SECTIONS
-4.24 m
STA. 1+030
-4.24 m
STA. 0+880
TOTAL DREDGE VOLUME = 19,017 m³
(TOTAL DREDGE AREA = 9308 m² )
0
50
100 m

FIG. 3.4-1

The placement of piles or piers for the high fixed bridges and the installation of sheet piling to protect the wetlands along the north bank of Beach Thorofare from erosion will result in 0.16 hectares (0.39 acres) of direct open waters impact (For Alternative 9A, the impact to open water would be 0.26 hectares (0.62 acres) due to the larger piers required for a bascule bridge). However, some of the impact will be offset by the removal of the existing structure with its piles and piers.

Tables 3.4-3 and 3.4-4 in the DEIS summarize the impacts to wetlands, due to dredging and filling, and also the shading impacts for the entire wetlands areas beneath the structure. The total of 2.09 acres of shading impact and 0.23 acres of direct wetland impacts associated with the preferred alternative are small when compared to the size of the project, considering that the entire project is being constructed within a large wetland/aquatic habitat. Methods to mitigate wetland impacts include the implementation of sedimentation and erosion control plans and, to the maximum extent possible, avoidance of work or staging conducted within the wetland. The following specific mitigation measures are proposed:

- use the maximum structural span lengths economically feasible to minimize the number of piers;
- use pile foundations, rather than excavated pier foundations, so that construction disturbance is limited to the penetration of the piles themselves;
- use meadow mats, or approved equivalent, during construction in wetland areas to minimize temporary impacts, and restore wetlands, where disturbance does occur; and
- implement soil erosion control measures to minimize the deposition of eroded soils in wetlands.

After the wetland impacts have been reduced as much as practicable, adequate wetland mitigation will be provided. The USACOE and the NJDEP normally require wetland mitigation in the ratio of two acres created for each acre impacted. Potential wetland mitigation areas have been identified on the island between Beach Thorofare and Rainbow Channel east of the causeway and in the area of the existing Information Center. Under the preferred alternative, the existing Information Center will be relocated to Ocean City and the vacant lot will be expanded to include a larger parking facility for recreational access (See Figure 3.4-2).

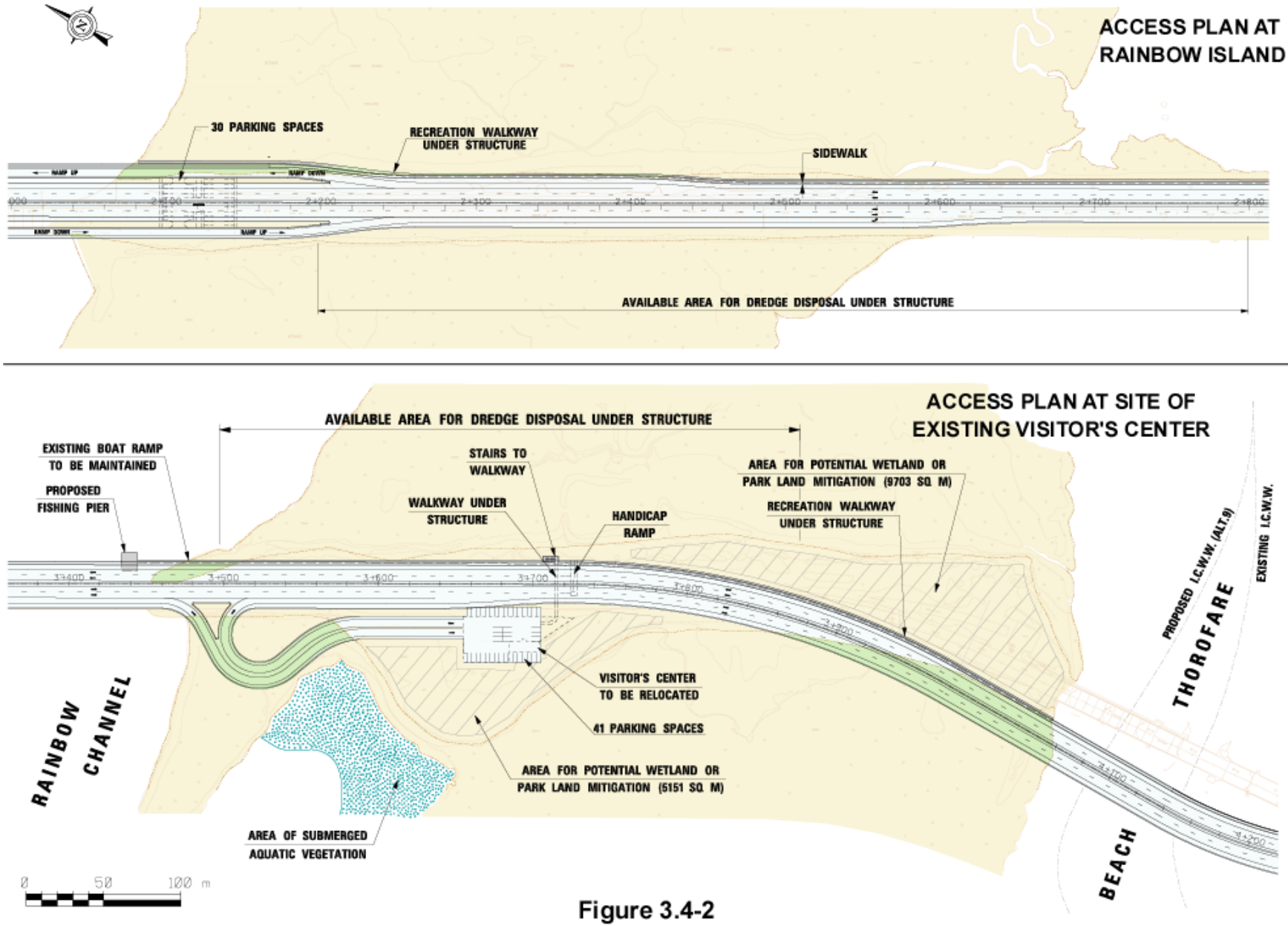

ACCESS PLAN AT
RAINBOW ISLAND
30 PARKING SPACES
RECREATION WALKWAY
UNDER STRUCTURE
SIDEWALK
AVAILABLE AREA FOR DREDGE DISPOSAL UNDER STRUCTURE
ACCESS PLAN AT SITE OF
EXISTING VISITOR'S CENTER
AVAILABLE AREA FOR DREDGE DISPOSAL UNDER STRUCTURE
EXISTING BOAT RAMP
TO BE MAINTAINED
PROPOSED
FISHING PIER
STAIRS TO
WALKWAY
WALKWAY UNDER
STRUCTURE
HANDICAP
RAMP
AREA FOR POTENTIAL WETLAND OR
PARK LAND MITIGATION (9703 SQ. M)
RECREATION WALKWAY
UNDER STRUCTURE
PROPOSED I.C.W.W. (ALT.9)
EXISTING I.C.W.W.
THOROFARE
RAINBOW
CHANNEL
VISITOR'S CENTER
TO BE RELOCATED
41 PARKING SPACES
AREA FOR POTENTIAL WETLAND OR
PARK LAND MITIGATION (5151 SQ. M)
AREA OF SUBMERGED
AQUATIC VEGETATION
BEACH
0
50
100 m

Figure 3.4-2

### 3.4.6 Floodplains

The Federal Emergency Management Agency (FEMA) flood insurance rate maps (FIRM) for Somers Point and Ocean City were reviewed to determine the relationship of the project to the 100-year coastal flood elevations. The City of Ocean City, Floodplain Management Plan (September 1997) was also reviewed. The height of the 100-year flood is 2.93 meters (9.62 feet 1988 NGVD) above mean sea level (MSL) for the cities of Ocean City and Somers Point. The entire study area within Ocean City is located within the 100-year flood (Zone A), and the entire barrier bar island is subject to flooding during a 100-year storm event. Some areas in Somers Point within the project boundaries are located within the 100-year floodplain. The 100-year flood boundary adjacent to Great Egg Harbor Bay does not extend to the Somers Point traffic circle. However, the majority of the area between Broadway and Mays Landing Road, located west of the Somers Point traffic circle, are within the 100-year flood boundary (Zone A5); this area extends northeast up to MacArthur Boulevard, northwest of the Somers Point traffic circle. The area of the Somers Point traffic circle and proceeding north approximately 400 meters (1,300 feet) along MacArthur Boulevard is zoned as Zone B. Zone B designates areas between the 100-year flood and the 500-year flood or areas subject to 100-year flooding with average depths less than 30 centimeter (one foot).

Subsequent studies have revealed that within Great Egg Harbor Bay during a 100-year storm, waves with a minimum height of 1 meter (3 feet) above the 100-year stillwater flood elevation, would propagate across the entire length of the harbor. Further, the entire city of Ocean City would be subject to minimum 1 meter (3 foot) high waves, above the 100-year stillwater flood elevation, propagating across the island. Some portions of the island immediately east of the study area would be subjected to wave heights in excess of 1.5 meters (5 feet) greater than the 100-year stillwater flood elevation. The preferred alternative will be constructed within the 100-year floodplain; The bottom of elevated structure will be at least 0.3 meters (1 foot) above the 100-year flood elevation. In general, filling activities within the floodplain will be related to the placement of piles used to support the structures and fill at either end of the proposed highway where the road will tie into the existing infrastructure.

The proposed floodplain crossing does not constitute a significant risk to life and property.

Furthermore, construction staging will not interrupt service by emergency vehicles or eliminate evacuation routes during flood events, since there are alternate routes, which could be used in case of an emergency. The completed project will enhance emergency access and evacuation capacity during a storm.

To comply with Executive Order 11988, entitled "Floodplain Management," the project must be designed to avoid floodplain impacts when practicable, and to adequately mitigate unavoidable impacts. To comply with these requirements, construction in the floodplain, especially filling, has been minimized as much as practicable. The preferred alternative involves a continuous structure rather than fill, minimizing impacts to floodplains.

### 3.4.7 Aquatic Ecology

At the northern end of Great Egg Harbor Bay, in the vicinity of the existing Route 52 causeway, wetland islands are separated by a series of channels. Tidal shallows, comprising a sand or mud substrate, exist between the islands from either shoreline. These sandy and muddy shallows are more extensive along the northern and eastern portion of the bay in the area influenced by the Great Egg Harbor Inlet. Silt and sediment are naturally deposited in this portion of the bay as the tidal rush slows. These waters and substrate can potentially provide habitat for submerged aquatic vegetation (SAV), shellfish, and finfish.

Submerged Aquatic Vegetation

SAV is an important ecological resource in bay ecosystems for several reasons. The grasses provide food and shelter to a variety of animals. They are eaten directly by waterfowl and small mammals and they provide detritus to fish, snails and amphipods. SAV beds are also primary nursery grounds to crabs and many fish species and are responsible for the absorption of nutrients in the water column, while producing oxygen through photosynthesis. Dense SAV beds also dampen wave energy assisting in the control of erosion and turbidity.

Great Egg Harbor Bay supports limited areas of SAV. In fact, submerged vegetation is most prevalent in coastal areas north of the study area. Two areas of SAV, which have not been

delineated as to species, are mapped in the vicinity of the study area. One mapped patch of vegetation is located northwest of the Ocean City Information Center and west of the existing causeway on the opposite side of a marsh island. The second area is located east of the existing alignment in Rainbow Channel between two islands. The approximate distance of the dredging operation from these two SAV beds is 500m and 1,500m, respectively.

No areas of SAV were observed in the vicinity of the existing causeway during field investigations in October 1997. Submerged shallow water areas directly adjacent to the causeway appeared to have a sandy or mud bottom barren of vegetation.

Long term impacts to SAV could result from the placement of fill materials and/or the placement of piers or piles to support the structure, which could permanently affect the soils and substrate conditions and exclude colonization of those areas by SAV. However, the preferred alternative will not be routed through the known areas of SAV, and no construction-related activity will take place in any SAV area.

Shellfish

The location of the existing Route 52 study area includes shellfish habitat classified as "Approved Area" with the exception of sections within the ICWW and the Ship Channel, which have a "Seasonal Area" classification. The "Seasonal Areas" are approved for the harvesting of shellfish only from November 1st through April 30th and are so designated typically due to the reduction of oxygen levels near the bay bottom adjacent to the urban areas during the warmer months. Bottom habitat is important to other marine organisms in addition to shellfish. These organisms do not have a strong commercial value themselves, but they are a vital food source for fish and crustaceans that are commercially important. These organisms, which live either on or within the bottom substrata (sediments, debris, macrophytes, filamentous algae, etc.) for at least part of their life cycle, are known as benthos. The most common groups of benthos include insects, clams, snails, worms, and crustaceans.

Shellfish habitat will be temporarily affected by construction activities, which will generate suspended sediments, create turbidity and lower oxygen levels in the immediate project vicinity.

In addition, dredging to realign the ICWW will temporarily disrupt limited areas of shellfish and benthic habitat, but will not cause a change in the substrate composition. It is not anticipated that periodic maintenance dredging will be required. Therefore, these impacts are temporary, and it is anticipated that shellfish beds would become re-established after construction and/or dredging disturbances end, and that benthic organisms would also recolonize the affected areas. These impacts are not considered significant, since the total area of impact is very small relative to the total extent of shellfish beds in Great Egg Harbor Bay. Where viable, turbidity barriers will be employed during construction in order to minimize impact caused by the resuspension of sediments. These barriers should be positioned around the area of disturbance to minimize suspended particle drift during tidal fluctuation.

Long term impacts to the benthic substrate and shellfish beds are possible from the placement of piers or piles to support structures. Both would permanently affect the benthic substrate and exclude colonization by shellfish of those areas occupied by the piles. These piers will provide a beneficial impact by increasing habitat for juvenile fish species and encrusting shellfish like the blue mussel. The removal of portions of the existing causeway bridges including numerous pilings that would represent a navigational hazard can produce minor temporary impact to finfish habitat through displacement.

To mitigate for the loss of bottom habitat in the footprint of support structures, transplanting shellfish has been considered. In an attempt to investigate the possibility of mitigating for loss of shellfish habitat by transplanting, several experts in the field of aquaculture or shellfish research were contacted to determine their professional opinion of the success and or failures associated with shellfish transplants. In general, experts are unaware of any precedent that involved the seeding or transplantation of clams to areas where they were not already successful. Most have had poor success in growing clams where they were not already established. Apparently, the key to success in the maintenance of shellfish areas is the balance or control of predation at all levels of development.

Finfish Habitat and Migratory Pathways

The study area supports an array of commercial and recreational finfish, which use the estuaries for spawning in April and May and continue to feed in the bay until the fall migration back to the

ocean. Great Egg Harbor Bay serves as a wintering area for several finfish species and other commercially important species including winter flounder, striped bass, and blue claw crabs. These species are expected to utilize Great Egg Harbor Bay, including the study area, during the winter months. In addition, marine turtles typically utilize New Jersey waters for periods ranging from May through November. Table 3.4-5 in the DEIS presents a list of species that are expected to be present near the study area.

Short term impacts to wintering grounds and utilization of the study area by these finfish, crabs, and marine turtles are possible during construction due to sediment resuspension, increased turbidity, and lowered oxygen levels. However, wintering areas for crabs and fish should not experience permanent adverse effects. Short-term impacts may also result from the proposed dredging.

Short term impacts to finfish migratory pathways are possible during construction of support structures and dredging for channel realignments. Turbidity caused by resuspension of sediments could act as a temporary barrier to finfish passage. Similarly, turbidity and sediment deposition will temporarily displace wintering finfish species and crabs. Temporary impacts could also result from the use of turbidity barriers, sheet piles, cofferdams, and similar structures that could physically inhibit the movement of fish through an area. These impacts are temporary, and it is anticipated that alternative pathways would be used during construction and that the finfish migratory pathways would be re-established after construction disturbances end.

The removal of portions of the existing structure, including the existing piers, may produce minor temporary impacts to finfish habitat through displacement. During final design, a decision will be made whether to leave the existing pilings in place below customary navigational draft depths. However, the construction of new pilings/support structures will provide additional habitat for finfish and some species of encrusting shellfish like the blue mussel. It is expected that concrete pilings function similarly to artificial reefs and that fixed and shaded artificial structures would provide significant habitat for many species of larval fish.

In order to mitigate the temporary impediments to migratory finfish pathways, construction

techniques that interfere with the movement of fish along finfish migratory pathways should be avoided. Construction techniques that create a physical or biological barrier to the movement of fish along finfish migratory pathways should not be employed, unless acceptable mitigating measures are used. The following mitigation measures are proposed:

- implement a phased approach to the construction effort to limit impacts to discrete sections of the highway at any one time, so as not to create a continuous barrier along the entire length of the project;
- if practicable, use turbidity barriers (silt or sediment curtains) around pier bents and to confine dredging operations so as to limit the areas where turbidity could become a problem, but keep as much of the waterway section unobstructed as possible at all times;
- to the extent possible, recycle construction materials from the demolition of the four existing causeway bridges into artificial reefs to create habitat in mitigation for habitat lost in pile areas;
- if explosives are required for demolition of the existing bridge, detonate small initial warning charges prior to blasting in order to scare off any marine life in the immediate area; and
  use demolition containment techniques to minimize the scattering of debris.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (the Act) as amended in 1996 strengthened the ability of the NMFS and the eight regional fishery management councils to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is known as the essential fish habitat (EFH) and is defined by the Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The Act requires the regional fishery management council to identify EFH for all managed species, to specify actions to conserve and enhance EFH, and to minimize adverse effects on EFH. Fish may change habitats with changes in life history stage, seasonal and geographic distributions, abundance, and interactions with other species. The *Guide to Essential Fish Habitats in the Northeastern United States* provides a geographic species list of EFH

designations and was utilized to determine the species and life stages (i.e., eggs, larvae, juveniles, adults) of fish, shellfish, and mollusks for which EFH has been designated in the vicinity of the Route 52 project. The EFH Assessment for the Route 52 project is provided in Appendix A of this report, and the conclusions are summarized below.

A number of construction and long-term issues associated with the proposed Route 52 modifications were identified and may have impacts to EFH in Great Egg Harbor Bay, including impacts to surface water, wetlands, and aquatic resources. Pile-driving and construction-associated dredging may increase sediment input into the bay. However, due to water velocity in the area, maintenance dredging is not anticipated. An increase in impervious area associated with road upgrades is mitigated through the proposed use of oil/grit separators, an improved detention/infiltration system and a new stormwater piping system, improving the stormwater treatment in the area of road improvement.

Dredging associated with the realignment of the ICWW will affect shellfish and benthic habitat. Since these activities are expected to be associated only with construction activities, it is anticipated that affected benthic areas will recolonize with time. The required dredging will be done in compliance with the Biological Opinion issued by NMFS on November 26, 1996, as discussed in detail in Section 3.4.9. The phased construction approach will allow finfish to avoid construction operations. Though bottom habitat decreases with piling installation, these same pilings and the existing causeway materials (anticipated to be used in the artificial reef program) will provide additional fishery habitat. Also, federally managed species in the area of dredging are already adapted to pre- and post-dredge depths; therefore, impacts to these species due to depth change are not anticipated.

The NMFS provided habitat conservation recommendations upon review of the EFH Assessment in a letter dated January 18, 2002 (copy attached in Appendix C). The recommendations included proposed seasonal restrictions for dredging as follows:

- For the protection of the early life stages of winter flounder (*Pseudopleuronectes americanus*), a seasonal restriction on dredging from January 1st until May 31st of any year would minimize impacts on this species.
- Female blue crabs (*Callinectes sapidus*) form overwintering aggregates in the project area.

These crabs burrow into the sediment, become lethargic, and are vulnerable to dredging activities. For the protection of this resource, we recommend a seasonal restriction from December 1st through March 31st.

NJDOT intends to abide by these restriction and will determine if it is practicable for the construction contractor to perform all dredging needed in one season in compliance with this restriction and any other that may apply (e.g., during the summer boating season). During the design phase of the project, if it is found that it is not practicable to complete the required dredging in one season with all applicable time restrictions in place, NJDOT will re-establish consultation with the NMFS to resolve the issue.

Based on the scope and nature of impacts expected from the project and the proposed seasonal time restrictions and other mitigation measures, it was determined that there will be minimal adverse individual or cumulative effects on EFH in the project area.

Removal of the Existing Causeway

NJDOT will remove some or all of the existing Route 52 structures/causeway once the highway and bridges have been reconstructed. The bridges and concrete pavements would generate a large quantity of debris, which poses disposal concerns. Consideration has been given to incorporation of recyclable construction materials and portions of demolition materials into the artificial reef program sponsored by the NJDEP. These efforts will help to minimize impacts involving the disposal of construction materials and would mitigate habitat loss within the project area through the creation or enhancement of new, offsite marine habitats. Disposal of materials as artificial reefs is subject to State and Federal approval. The NJDEP has indicated willingness to incorporate these materials into the artificial reef program as long as the material meets the following conditions:

- the material consists of concrete, steel or rock;
- there is no wood or other floatable debris;
- the material is inspected by NJDEP personnel;
- the material is placed in either the Great Egg or Ocean City reef sites, each located approximately 7 miles from the Great Egg Inlet; and

- deployment at sea is observed by NJDEP personnel.

The removal of the existing granular embankment material should be performed prior to the demolition of the four existing structures so that the material can be hauled off by truck. Very likely, it can be used as beach replenishment material in Ocean City, or as select granular fill for other construction projects. During these earth-moving operations, it will be important to install and maintain approved soil erosion control devices.

### 3.4.8 Terrestrial Ecology

The majority of the land within the project boundaries in both Somers Point and Ocean City is highly developed with a mixture of commercial and residential use. The project corridor does not pass through any wildlife refuges, forests, or game management areas. There are no undeveloped areas representative of quality terrestrial wildlife habitat located within the project boundaries. There will be no significant impacts to terrestrial ecology due to the preferred alternative; therefore, no mitigation is proposed.

### 3.4.9 Threatened and Endangered Species

With the exception of an occasional transient bald eagle *(Haliaeetus leucocephalus*) or peregrine falcon (*Falco peregrinus*), the USFWS stated that no other federally listed or proposed threatened or endangered species under USFWS jurisdiction are known to occur within the vicinity of the proposed project. The NMFS reported that various federally threatened or endangered sea turtles may occupy the inshore and coastal waters of New Jersey. The New Jersey Natural Heritage Program (NJNHP) identified two wildlife species listed as endangered in New Jersey that could possibly be found within the project site, including the piping plover (*Charadrius melodus*) and the least tern *(Sterna antillarum*). One species of vascular plant, the seaside evening primrose (*Oenothera humifusa*), is a New Jersey endangered species and was identified as potentially being found within the project boundaries. The NJNHP also reported two wildlife species listed as threatened in New Jersey that are on or in the immediate vicinity of the project site: the little blue heron *(Egretta caerulea*) and the yellow-crowned night heron

(*Nyctanassa violacea*).

Based on the detailed analysis presented in the Natural Ecosystems TES, the preferred alternative will have no significant impacts on wildlife species listed as endangered (piping plover and least tern) or threatened (little blue heron and yellow-crowned night heron) in New Jersey. Life histories for threatened and endangered species identified as potentially present in the area were reviewed to determine if the project activities would impact species survival or critical habitats. With the possible exception of a small area of open beach west of and adjacent to the Route 52 bridge along the Somers Point/Great Egg Harbor Bay shore line, there is no potential quality piping plover or least tern habitat located within the study area. This beach area is small, approximately 1025 square meters (0.5 acre) above the mean high tide, and is isolated from other natural habitats that the piping plovers or least terns would use for brood-rearing and feeding. Little blue herons and yellow-crowned night herons occur on Cowpens Island in a mixed species heron colony. Little blue herons may use the dense cordgrass to stalk prey and may also utilize the mudflat and open areas along the channels between the islands. Additionally, yellow-crowned night herons may utilize the islands adjacent to Route 52 as foraging habitat. However, these areas do not represent high quality breeding habitat for yellow crowned night herons due to the limited extent of shrub vegetation. There will be plenty of foraging habitat left after the minor loss from this project.

The seaside evening primrose grows on dry sands, primarily on the upper zones of beaches and sand dunes. There is no high quality beach/sand dune habitat located within the study area. The only beach area is the small isolated beach located on the west side of Route 52 as it enters Somers Point. Therefore, the preferred alternative will not have an impact on the seaside evening primrose.

The preferred alternative will have no significant impacts on the loggerhead sea turtle (*Caretta caretta*), a federal threatened species, the federal endangered species Kemp's Ridley (*Lepidochelys kempii*), the green sea turtles (*Chelonia mydas*), or the federal listed endangered leatherback sea turtle (*Dermochelys coriacea*), which may occupy the coastal waters of New Jersey from late spring to mid-fall. Decline in Kemp's Ridley sea turtle is related primarily to over harvesting of both eggs and adults and drowning when inadvertently caught in shrimp nets.

The presence of this species in the study area would be extremely limited and restricted to possible use of the Great Egg Harbor Bay for foraging. The greatest cause of decline in green turtle populations is commercial harvest for eggs and food and development of beachfront nesting habitat. The use of Great Egg Harbor Bay by these turtles would consist of possible foraging and resting habitat. However, the habitats in the study area are not critical habitats. The decline in the leatherback sea turtle populations is related to over harvesting of eggs and adults. Their presence in the study area would be rare and the habitats in the vicinity of the study area are not critical habitats. Loggerhead sea turtle populations along U.S. coasts have been affected by increased development and human use of coastal beaches and drowning related to incidental capture in shrimp trawling nets. It is possible that loggerheads could be found feeding in the aquatic habitats in Great Egg Harbor Bay. The habitats in the vicinity of the study area are not critical habitats for any of these turtle species, and no long-term impacts are anticipated. However, the potential exists for a temporary disturbance to foraging sea turtles due to sediment disturbances resulting from construction activities.

The realignment of the ICWW under the preferred alternative will require dredging in Beach Thorofare and will be done in full compliance with the Biological Opinion issued on November 26, 1996, by the NMFS. This act, issued to the USACOE for Dredging Activities within the Philadelphia District under the authority of Section (7) (a) (2) of the Endangered Species Act (ESA), lists species under the jurisdiction of the NMFS that may be affected by proposed dredging activities. These include the shortnose sturgeon, loggerhead sea turtle, Kemp's Ridley sea turtle, green sea turtle, leatherback sea turtle, northern right whale, and humpback whale.

If blasting is required to remove the old bridge piers, NJDOT will coordinate with the Protected Resources Division of the NMFS during the design phase of the project. Endangered sea turtles may be present in the project area from June 1st to November 30th, and the NMFS recommends blasting outside of this time frame.

Use of a turbidity barrier for construction operations in Great Egg Harbor Bay is recommended to minimize temporary impacts due to sediment disturbances to foraging sea turtles. As no significant adverse impacts to threatened and endangered bird species have been identified, no other mitigation is proposed.

Based on the above discussion, there will be minimal or no adverse effect to federally listed threatened or endangered species in the project area or its immediate vicinity. The USFWS concluded in its letter of November 22, 1996, that no further consultation pursuant to Section 7 of the Endangered Species Act is required by the service. The NMFS, in its letter of January 18, 2002, stated that if dredging activities comply with their Biological Opinion of November 26, 1996, as modified on May 25, 1999, that included all dredging activities in the Philadelphia Army Corps of Engineers' District, then further consultation with NMFS under Section 7 of the Endangered Species Act will not be necessary. In Section 3.14 (Environmental Mitigation), page III-106, we have committed to full compliance with the above cited NMFS Biological Opinion. This concludes the Section 7 Consultation.

## 3.5 CULTURAL RESOURCES

### 3.5.1 Introduction

Cultural resources studies of the project area were done to locate and evaluate any existing, significant architectural or archaeological resources, as defined by the criteria for inclusion on the National Register of Historic Places, that could be affected by the construction of the proposed alternatives for the Route 52 causeway between Somers Point and Ocean City. Areas of Potential Effect (APE) for the surveys were developed for both the Somers Point and Ocean City portions of the project study through consultation with NJDOT cultural resources staff and representatives of the New Jersey State Historic Preservation Office (NJSHPO).

### 3.5.2 Archaeological Resources

A review of available documentation was performed to identify any archaeological resources that have already been recorded either within or in the general vicinity of the Route 52 project APE. This background research did not identify any previously documented archaeological sites within the proposed project area. A detailed, systematic field inspection and archaeological survey of the Route 52 project APE was conducted in the fall of 1997 and consisted of subsurface test excavations and pedestrian surveys. All areas within the APE were examined with the primary objective of locating archaeological sites and collecting data that would assist in assessing the integrity of any archaeological resources contained in the Route 52 project APE. Few artifacts were recovered from the excavations and pedestrian surveys in Somers Point, Rainbow Islands, and Ocean City, other than various examples of modern debris, such as asphalt, styrofoam, caulk, cardboard, machine-manufactured bottle glass, plastic, shoe fragments and ceramic shards. An underwater survey was also conducted to locate potential archaeological deposits within area of the Route 52 Causeway replacement. Both sites identified by the underwater archaeological survey were concluded to be of modern origin due to their distinctive signatures and profiles.

Based on the results of the Phase I Archaeological study, it has been concluded that no undisturbed or significant prehistoric or historic archaeological resources are contained within the limits of the proposed Route 52 project APE. Therefore, no mitigation measures are warranted.

### 3.5.3 Historic Architecture Resources

#### 3.5.3.1 Introduction/Methodology

An historic architectural survey was conducted in portions of the City of Somers Point and Ocean City. A significant part of the APE – Historic Architecture for Somers Point has been previously addressed in an historical architectural survey conducted in 1995 for a previous NJDOT project referred to as the Route 52/Somers Point Circle Project. Since this survey was relatively recent, this portion of the APE was not resurveyed. Additional areas deemed to be within the Route 52 APE were, however, surveyed for historic architectural properties.

To be eligible for inclusion in the National Register of Historic Places, historic properties must possess "the quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) that are associated with the lives of persons significant in our past; or
(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components lack individual distinction; or
(d) that have yielded, or may be likely to yield, information important in prehistory or history."

Historic properties determined to be eligible for the National Register (or listed on the National Register) were assessed for effects by the proposed project by application of the Criteria of Effect and Adverse Effect. Adverse effect(s) are not limited to properties that will be physically

destroyed or damaged by the proposed project and include:

(a) An undertaking has an effect on an historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register.

(b) An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.
   1) Physical destruction, damage, or alteration of all or part of the property;
   2) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
   3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
   4) Neglect of a property resulting in its deterioration or destruction; and
   5) Transfer, lease, or sale of the property.

(c) Effects of an undertaking that would otherwise be found to be adverse may be considered as not being adverse for the purpose of these regulations:
   1) When the historic property is of value only for its potential contribution to archaeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of appropriate research, and as such is conducted with applicable professional standards and guidelines;
   2) When the undertaking is limited to the rehabilitation of buildings and structures and is conducted in a manner that preserves the historical and architectural value of affected historic property through conformance with the Secretary's "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings";
   3) When the undertaking is limited to the transfer, lease, or sale of an historic property, and adequate restrictions or conditions are included to ensure preservation of the property's significant historic features.

### 3.5.3.2 Somers Point

Six historic resources within the present project area were noted during the 1995 survey, and three of them are eligible for or are listed on the National Register of Historic Places, including the World War Memorial Bridge, the Somers Mansion, and the Bay Front Historic District. Additional survey done for the Reconstruction of Route 52 found no additional properties that met the 50-year age criterion. In addition the areas along the south side of the Bay Front, the traffic circle, and MacArthur Boulevard were surveyed. These areas consist of mid-to-late twentieth century residential and commercial development, with the exception of the aforementioned Bay Front Historic District. Anticipated impacts to historic properties in Somers Point are summarized in Table 3.5-1 in the DEIS.

World War Memorial Bridge: The preferred alternative would remove the eligible World War Memorial Bridge. According to Criterion (b)(1) for the Criteria of Effect and Adverse Effect, this action would cause an adverse effect to the eligible World War Memorial Bridge. Mitigation for the World War Memorial Bridge could include one or more of a combination of different options, including recordation to standards set by the Historic American Engineering Record (HAER), attempt to reuse or market parts of the bridge structure, and interpretative displays and/or educational materials to be produced as a supplement to the HAER recordation. Retaining the World War Memorial Bridge in its present location to avoid adverse effects to the Bay Front Historic District is not a reasonable alternative. The bridge is structurally deficient and requires major rehabilitation work. Furthermore, the extent of the work required on the bridge would likely alter its basic appearance and it would lose its historical character.

Somers Mansion: According to Criterion (b)(3) of the Criteria of Effects and Adverse Effects, the preferred alternative would introduce new visual and audible elements that differ from the historic resource's present setting. The proposed high bridges would be fundamentally different from the existing structure. The preferred alternative would minimally alter the historic character and setting at the Somers Mansion, which is approximately 213 meters (700 feet) from the proposed bridges. However, the Somers Mansion's eligibility relates primarily to Eligibility Criterion (a), Patterns of History. This historic site is not eligible for the National Register

because of its setting, which is now much smaller than it was originally. Consequently, the removal of the World War Memorial Bridge and the construction of new bridges would cause no adverse effects to the Somers Mansion.

Bay Front Historic District: According to Criterion (b)(3) of the Criteria of Effects and Adverse Effects, the preferred alternative would introduce new visual and audible elements that differ from the historic resource's present setting. The proposed high bridges would be fundamentally different from the existing structure. The preferred alternative would alter the historic character and setting at the Bay Front Historic District, which comes up to the water's edge and approximately 152 meters (500 feet) from the proposed bridges. The Bay Front Historic District is eligible under Eligibility Criterion (a) because of its importance in the development of Somers Point and New Jersey as a resort area. It is also eligible under Eligibility Criterion (b) because it is a cohesive group of buildings built in the style and types that were popular between 1890 and 1935. Its orientation on the bayfront was essential in attracting tourists. Since the bayfront alignment is so important to this district, the preferred alternative would cause adverse effects to the Bay Front Historic District. Mitigation for the Bay Front Historic District could include design treatments for the new bridge(s) that reduce visual impact, and add aesthetically pleasing landscaping treatments. See Section 3.5.4, "Section 106 Coordination".

#### 3.5.3.3 Ocean City

The survey of historic buildings for Ocean City was designed to locate and identify all significant historic properties contained within the APE. Since Ocean City's streets are densely built up, a careful street-by-street APE was drawn to include only those areas where effects would be likely. Current plans do not indicate that any historic properties in Ocean City will be taken, isolated, or otherwise physically altered as a result of this project. A total of three historic properties in the Ocean City portion of the project APE were recommended as eligible for listing on the National Register of Historic Places, including the Dockside Cafe/Marina, the Tabernacle Baptist Church, and the Bayside Center. All of these resources are significant under Eligibility Criterion (c).

Inventory No. 16 Dockside Cafe/Marina: According to Criterion (b)(3) of the Criteria of Effects

and Adverse Effects, the preferred alternative would introduce new visual and audible elements that differ from the historic resource's present setting. The proposed structures would be higher than the existing crossing with different bridge designs. The preferred alternative would alter the historic character and setting at Inventory No. 16, which is at the bay's edge and is approximately 140 meters (460 feet) from the proposed ICWW bridge crossing. Demolition of the existing crossing and construction of the preferred alternative would cause adverse effects to Inventory No. 16. Possible mitigation options could include design treatments for the new bridge(s) that reduce visual impact, and add aesthetically pleasing landscaping. See Section 3.5.4, "Section 106 Coordination".

Inventory No. 79 Tabernacle Baptist Church: Inventory No. 79 at the corner of West Avenue is approximately 457 meters (1,500 feet) from the bay and approximately 520 meters (1,706 feet) away from the proposed bridge structures. The preferred alternative might be seen in the background from Inventory No. 79; however, the location of the Tabernacle Baptist Church behind other streets and buildings largely shields it from visual, noise, or other impacts. According to the Criteria of Effects, the preferred alternative would not alter characteristics of the property that may qualify the property for inclusion in the National Register and, consequently, would have no adverse effects on Inventory No. 79.

Inventory No. 83 Bayside Center: According to Criterion (b)(3) of the Criteria of Effects and Adverse Effects, the preferred alternative would introduce new visual and audible elements that differ from the historic resource's present setting. The proposed structures would be higher than the existing crossing, with different bridge designs, and could potentially alter the historic character and setting at Inventory No. 83, which is at bay's edge. However, the property is located some distance away at approximately 457 meters (1,500 feet). Although the preferred alternative would be seen and traffic would possibly be heard from the Bayside Center, it is sufficiently remote so as not to change those characteristics that make the Bayside Center eligible for National Register listing. Due to the relatively distant location of this historic resource from the proposed bridge crossings, the preferred alternative would cause no adverse effects to Inventory No. 83.

### 3.5.4 Section 106 Coordination

Section 106 coordination for the Route 52 Project has consisted of consultation among technical staff at the NJDOT, FHWA, NJSHPO, and the public through three means: 1) partnering workshops, 2) project-specific site meetings and public meetings, and 3) on-going coordination, both verbal and written. The coordination meetings are summarized in Section 4.0.

These consultations were pursuant to regulations in order to determine the APE of the project. A Memorandum of Agreement (MOA) between FHWA, NJDOT, and NJSHPO (see Appendix B) specifies that the replacement of the Route 52 Causeway shall be implemented in accordance with stipulations outlined in the MOA and signed on January 28, 2002 in order to take into account the effect of the proposed undertaking on historic properties. These stipulations include the following:

- Ensure the proper documentation to HAER standards prior to the demolition of any elements of the bridge over Ship Channel.
- Produce an interpretive display as a supplement to the HAER recordation to be placed at the acquired Gulf Gasoline Station in Somers Point adjacent to one of the historic resources. A duplicate version could possibly be displayed at the Ocean City Visitor's Center.
- Develop materials used to produce the cultural resource survey reports and the HAER documentation.
- Continue review of offers from potential recipients to ensure that the integrity of the bridge will be maintained at the new location.
- Develop design review process to ensure the replacement bridge reflects the project area setting and history.
- Ensure that all stipulations are executed in accordance with all appropriate guidelines and regulations.

## 3.6 SOCIOECONOMICS AND LAND USE

### 3.6.1 Methodology and Existing Conditions

A Socioeconomics and Land Use TES was conducted to evaluate the social, economic and land use impacts associated with the alternative under consideration for reconstruction of Route 52.

The methodology used in the evaluation involved three major tasks:

1. Inventory/data collection of population, land use, zoning, and the economy provided by numerous Federal, state, regional, county and local agencies covering the project area
2. Field survey depicting existing condition land use and zoning for the businesses, residential development, open space, and community facilities within the primary impact area
3. Assessment of potential impacts on socioeconomics and land use with particular emphasis on cohesive communities, displacement of residences, accessibility to community facilities, business displacement and associated impacts to business activities and employment, local economy, construction, land use and zoning, and regional community plans and growth.

In Somers Point, the community facilities within or in close proximity to the primary impact area include the boat launch facilities, bait and fishing tackle shops (Dolfin Dock), and the public beach on Bay Avenue; the Somers Mansion Historic Site on the Somers Point traffic circle; the Atlantic County Historical Society on Shore Road behind the Somers Mansion; and the Kids Point Pre-school on MacArthur Boulevard. The nearest hospital and Somers Point City Fire Department facility are located outside of the primary impact area. Land use within the primary impact area in Somers Point is generally consistent with current zoning, with properties on either side of Route 52 and the Somers Point traffic circle being commercial and/or historic commercial. Most of the area beyond those properties is residential use (single-family structures). According to the Somers Point Planning and Zoning Office, there are no proposed/planned development projects within the primary impact area.

In Ocean City, the community facilities within or in close proximity to the primary impact area include the islands in Great Egg Harbor Bay over which Route 52 passes (specifically, the Ocean City Information Center on the first island outside of Ocean City) and the Macedonia United Methodist Church at the intersection of Simpson Avenue and 10th Street. There are no pedestrian or bicyclist facilities on the Route 52 causeway over the islands in Great Egg Harbor Bay. However, the causeway is used by recreational fishermen to access Elbow Thorofare and Rainbow Channel for fishing.

The nearest hospital (in Somers Point) and Ocean City Fire Department facility are located outside of the primary impact area. Route 52 is the most direct link between Ocean City and the Shore Memorial Regional Hospital. Route 52 is also the primary route for fire-fighting vehicles and EMS vehicles coming from Somers Point and Longport in support of emergencies in Ocean City. Route 52 is a designated emergency evacuation route and a part of the Coastal Evacuation System. During severe storms, evacuation from Ocean City to the mainland may be needed, depending on the severity of storm event.

Land use within the primary impact area in Ocean City is generally consistent with current zoning, and is of mixed-use character, primarily consisting of residential and commercial/office uses, with some public and quasi-public land uses and private undeveloped land. With the exception of two condominium complexes on either side of Route 52 as it enters Ocean City, all of the properties abutting 9th Street have a commercial or office land use. Most of the remaining area is residential use (single family or two-family structures). Environmentally sensitive lands encompass parkland and open space, including Section 4(f) properties. In Ocean City, these areas include the islands in Great Egg Harbor Bay over which Route 52 passes, which also includes the Ocean City Information Center on the first island outside of Ocean City.

### 3.6.2 Somers Point

#### 3.6.2.1 Social Impacts

Impacts on Community Cohesion

Cohesive communities are self-contained areas in which residents share common population characteristics such as age, racial composition, income, and housing. Potential impacts on community cohesion from a highway project include changes in a community's physical boundaries, access to services, or its socioeconomic character. They can include direct or indirect impacts on the community due to construction or increased traffic, or potential impacts on the stability of the community due to the proximity of the highway.

The preferred Alternative 9-1 does not propose any changes to the physical boundaries of the community and will not result in any loss of access to services or impact the socioeconomic character of Somers Point. The touchdown point of the new road would be a new four-way intersection with traffic lights and pedestrian crossings built in the area of the present Somers Point traffic circle. This would not adversely affect community cohesion, as the traffic circle is currently a busy, two-lane traffic circle inaccessible by pedestrians.

There will be minor, short-term impacts during construction, and some vehicles may elect to use alternate routes to and from Ocean City and the businesses on Bay Avenue and MacArthur Boulevard. To mitigate potential construction-related impacts, construction activities adjacent to the existing traveled way should be minimized during the busy summer tourist season.

In response to comments by local residents a study was made to assess the feasibility of using Mays Landing Road as a main connecting route between the Garden State Parkway and Ocean City, thus eliminating the need to alter MacArthur Boulevard. It was concluded that this bypass corridor would involve a grade-separated interchange to connect to Garden State Parkway. Also, there would be a significant impact on the community since large areas of land and property would need to be acquired adjacent to the existing Country Club, the Golf Course and many

Town Houses to accommodate the widening of the road.

Residential Displacement and Community Facilities Impacts

With the proposed Alternative 9-1 no residential households will be displaced, and no minority, elderly, or low-income groups will be affected. One residential property (SP-41, at the intersection of Braddock Drive and MacArthur Boulevard) may be impacted during construction. The preferred alternative will have an impact on the open space properties in Great Egg Harbor Bay. Refer to the plans entitled "Green Acres Impacts" and "Plans, Profiles and Typical Sections" for Alternatives 9/9A in Appendix A of the DEIS.

*Recreational Fishing Access*

Currently, recreational fishermen are able to access the shores of all of the tidal marsh islands along the causeway from the low-level shoulders adjacent to Route 52 where they customarily park their vehicles.

The preferred alternative ensures angler access to the most popular fishing spots along the Route 52 causeway. A ramp from the northbound and southbound direction will provide access to the Island situated between the Rainbow Channel and Elbow Thorofare. A parking facility that will accommodate up to 30 vehicles is proposed underneath the structure. On the island situated between Beach Thorofare and Rainbow Channel, a new fishing pier is proposed at the south bank of Rainbow Channel. An enlarged parking facility to accommodate up to 41 vehicles is proposed at the site of the current Visitor's Center, which will be relocated to Ocean City. A path underneath the structure will connect the east and west sides of that island. The preferred alternative also proposes a pedestrian ramp (ADA compliant) and a stair tower on the south bank of Rainbow Channel opposite the site of the existing Visitor's Information Center. This stair tower is proposed to allow for pedestrian access from the structure's sidewalk to this location. Access to the south bank of Elbow Thorofare is available to pedestrians through the use of the structure's sidewalk, which ramps down to ground level at that location. (See Figures 3.6-1 and 3.6-2).

To provide additional access to fishermen, the existing boat ramp on the south bank of Rainbow Channel will be enhanced, and the piles of the existing roadway structure will be cut off below the water to remain as a habitat for fish to the extent compatible with navigational needs. However, due to safety reasons, the preferred alternative will not provide access to the island situated between Elbow Thorofare and Ship Channel.

*Somers Point Mansion*

The preferred alternative does not take any portion of the Somers Mansion property, and it is not anticipated that there will be any significant adverse impacts to the Somers Mansion property. During construction, there may be some inconvenience to people wishing to access the Somers Mansion.

*MacArthur Boulevard*

The preferred alternative will ultimately improve the traffic flow on MacArthur Boulevard and in Somers Point by decreasing the amount of traffic that backs up into adjacent roads. This will improve access to Shore Memorial Hospital by emergency vehicles coming from Ocean City, Beesleys Point and other areas to the south, and areas of Somers Point to the south. During construction, there may be some inconvenience to people wishing to access the Kids Point Pre-school on MacArthur Boulevard

Environmental Justice Considerations

The Environmental Justice directive (72 FR 18377) adopted in 1997, USDOT by an Executive Order promotes the principles of environmental justice. Planning and programming activities that have the potential to have a disproportionately high and adverse effect on human health or the environment must include consideration of the effects on minority populations and low-income populations as defined in the FHWA Environmental Justice Order signed on December 2, 1998.

In Somers Point, the proposed preferred alternative is in an area where it is not inhabited predominantly by minority or low-income populations. Therefore, the proposed improvements will not have a disproportionately high impact on minority or low-income populations. For details, see Section 3.6.3 of the DEIS.

#### 3.6.2.2 Economic Analysis

The existing economic conditions were analyzed with respect to business disruption/displacement; local fiscal resources; recreational fishing, commercial shellfishing, and crabbing; and construction-related economic impacts. The contribution of recreational fishing to the local economies of the coastal communities of Somers Point and Ocean City is addressed in the Socioeconomics and Land Use TES. General information is available regarding the value of recreational fishing in New Jersey, but no specific information is available regarding the contribution of recreational fishing to the local economies of the coastal communities of Somers Point and Ocean City.

Business Displacement/Disruption

The Somers Point economy is primarily based on tourism. Key employers, in addition to the local businesses that cater to local people and to tourists, are the hospital and government institutions.

There will be some short term impacts to businesses around the Somers Point traffic circle, radiating streets, and along MacArthur Boulevard during construction (Refer to Table 3.6-1 in the DEIS). These include the temporary loss of parking spaces during the installation of the proposed detention/infiltration piping system. (A permanent drainage easement will be necessary for the parking lot area immediately above the detention/infiltration piping system). Confining most of the construction work to the off season can alleviate these impacts. Long term effects on accessibility that could occur after the traffic circle is replaced by a four-way, signalized intersection; will be mitigated with the use of left turn lanes. The Gulf station in the southeast

quadrant of the traffic circle will be acquired due to the lack of safe and adequate access in and out of that station as a result of the proposed project. Also the horizontal alignment improvement proposed for the preferred alternative requires that the NJDOT parking area south of the circle be eliminated and a strip of the Circle Liquors parking area be acquired, eliminating five of the present parking spaces.

Highway access to business along MacArthur Boulevard will be modified as per the New Jersey State Highway Access Code. Final impacts will be determined upon implementation of the preferred alternative.

Local Fiscal Resources

The primary local fiscal impact of a transportation improvement project is through tax revenue losses due to right-of-way acquisition of taxable property. However, if a transportation improvement project improves access to certain areas of a municipality, it may encourage the redevelopment of some parcels and increase business activity within the municipality.

Based on current (1998) tax rates, approximately $14,000 in annual revenue would be lost in Somers Point. There would also be a loss of sales tax revenue by the county, state and federal governments unless the displaced business was to be relocated and continue in business.

Only one entire property will be taken for the proposed project: the Gulf Station on the Somers Point traffic circle. In 1997, it had an assessed valuation of $223,400. The taking of this property will result in an annual loss of approximately $13,550.00 based on 1998 property tax revenues. This amount would have a minuscule impact on the property tax revenues of the city, as it represents approximately 0.08% of the total taxes collected in 1998. In addition, the loss of tax revenue for the county, state, and Federal governments from the sale of gasoline by the station. may be offset by increased sales at other gasoline stations in the area; however, it cannot replace the loss of property taxes to the City of Somers Point.

Approximately 2500 square meters (3000 square yards) of property will need to be acquired

from the Circle Liquors Store. However, this acquisition may be partially compensated for granting to the property over 1000 square meters (1200 square yards) of area adjoining the property at another location. Also, new parking configuration will result in a net gain of 13 parking spaces for the store. Less than 500 square meters (600 square yards) of property will also need to be taken from the State of New Jersey. Minor takings will also be acquired from the Pearl Restaurant and Bar [~150 square meters (~180 square yards)] and the Point Partners, LLC [~7 square meters (~8 square yards)]. The taking of the area of the Pearl Restaurant will be more than compensated for granting 175 square meters (210 square yards) at another location adjoining the property. This will result in a net increase of their property. The loss in tax revenue generated has not been determined at this time.

Recreational Fishing, Commercial Shellfishing, and Crabbing

Contacts were made with the NMFS, New Jersey Sea Grant, the NJDEP, and the New Jersey Marine Sciences Consortium, and a review of a variety of reports was conducted in an effort to obtain relevant socioeconomic data on recreational and commercial fishing. In addition, a survey was conducted to obtain additional information regarding commercial shellfishing and crabbing in Great Egg Harbor Bay, and informal personal interviews were conducted with recreational fishermen and commercial shellfishermen. The responses to the survey and personal interviews revealed that most people believe the disturbance caused by the relocation and construction of a new causeway would be temporary, and that an improved roadway would increase their access to Somers Point or Ocean City. There was a strong desire for a new roadway, with little concern over issues regarding detrimental impacts to the Bay.

Clearly, recreational fishing plays an important role in the State's economy. In 1991, about 950,000 people spent more than $630 million fishing in New Jersey's waters, generating more than $44 million in state sales tax, resulting $400 million in earnings, and supporting 16,750 jobs. According to a 1996 study, over one million anglers went fishing in New Jersey during 1996 and spent over $1,025,230,000 for goods and services. The economic impact of these expenditures totaled nearly $2,029,864,000, improving the economy and generating sales and income taxes that benefited government agency programs. Coastal communities depend upon

fishing to support local economies, and in many small communities, angler expenditures are central to economic health and growth. Recreational fishermen incur certain costs, which can include expenditures at sporting goods or specialty fishing stores, bait shops, lodging expenditures, travel expenditures, and boat fees. The economic effects of angler expenditures ripple throughout local, state and national economies, sustaining existing jobs and creating new jobs.

No specific information is available on the contribution of recreational fishing to the economy of Somers Point and Ocean City. It is apparent from field observations and discussions with community members that many local residents are active recreational anglers, and that tourists visit the Somers Point and Ocean City area, at least in part, due to the marine recreation fishing opportunities available. A number of anglers fish along the Route 52 causeway either from shore or in boats, although there are also many other locations in the vicinity that are used by anglers. Similarly, no specific information is available on the contribution of commercial shellfishing to the economy of Somers Point and Ocean City.

It is also difficult to quantify the economic value of the recreation fishing, commercial shellfishing, and crabbing along the Route 52 causeway. If recreational fishermen were prevented from fishing along the Route 52 causeway, they would likely go to one of the many nearby fishing locations. The proposed alternative insures angler access to the most popular fishing spots along the Route 52 causeway, as discussed in detail in Section 3.6.2.1.

Construction-Related Economic Impacts

Construction-related economic impacts can be both positive and negative. The negative economic impacts generally relate to losses to businesses near the construction zone that may experience a temporary loss of customers during construction because of decreased accessibility. Construction related employment is a positive economic impact that results from a proposed project. It is estimated that the Route 52 causeway project would generate approximately 200 to 250 jobs, creating a positive economic benefit in the local area for approximately four years. There will be additional economic benefits from the sale of materials and supplies and the associated multiplier effect. (For a lists the businesses that would be adversely affected by construction activities, see Table 3.6-1 in the DEIS.)

During construction, there will be minor short-term impacts to businesses around the Somers Point traffic circle and on all of the radiating streets. Businesses around the traffic circle dependent on visibility to drive-by traffic may be adversely affected due to the decline in traffic accessibility. Approximately 20 businesses in Somers Point (mostly stores, restaurants and motels) may lose some patronage because of diminished access to them during construction in the immediate vicinity of their businesses.

### 3.6.2.3 Land Use Impacts

Impacts were assessed in terms of compatibility with existing land use and zoning; effects on proposed development; the potential for induced development; compliance with the Farmland Protection Policy Act; and compatibility with community and regional plans (i.e., land use or transportation plans): impacts on environmentally sensitive lands (i.e., parkland and open space, including Section 4 (f) properties) are addressed in Section 4.0.

Compatibility with Existing Land Use and Zoning

The preferred alternative (Alternative 9-1) is compatible with the existing land use and zoning in Somers Point and will not have an impact on proposed development in the city. There is no new development proposed for the primary impact area. Also, the preferred alternative will not have a

significant potential to induce development because this project involves the replacement of an existing facility and there is little open area that can be developed in Somers Point. Although some previously developed properties could be redeveloped, the type and size of development would be determined by the zoning code, and would not be directly affected by the project.

Farmland Protection Policy Act Compliance

The preferred alternative is in compliance with the Farmland Protection Policy Act, which requires identifying and taking into account adverse effects of federally funded projects on the preservation of farmland. Although most of the soils in the Somers Point area are considered to be Statewide Important Farmland Soils, the present development and use of the area precludes its use for farming.

The soil type of the islands in Great Egg Harbor Bay is TM, Tidal Marsh. This soil type is not classified as prime farmland, farmland of statewide importance, or as farmland of local importance. Areas of tidal marsh soils would be considered unique farmlands if they were being used for special crops. Since the soils on the islands are not being used for special crops, they are not considered unique farmland. Therefore, the preferred alternative will have no adverse impacts on federal farmland or the preservation of farmland in either Somers Point or Ocean City.

Compatibility with Community and Regional Plans

The preferred alternative (Alternative 9-1) is compatible with the 1989 Master Plan for the City of Somers Point. Which calls for a "safe and efficient movement of vehicles and pedestrians."

Other plans include the Comprehensive Plan for Cape May County, New Jersey (Cape May County Planning Board, 1996); the Cape May County Transportation Plan (Cape May County Planning Board, 1994); and the SJTPO 2015 Regional Transportation Plan (SJTPO, 1995) and Plan Update (DRAFT). The preferred alternative is consistent with these plans. With regard to the Cape May County Transportation Plan, the preferred alternative is consistent with two of the

plan objectives (address traffic safety and reduce congestion). The plan indicated that the NJ Route 52 causeway is a congestion problem, and the preferred alternative will alleviate this situation by eliminating bridge openings and the delays to vehicles.

### 3.6.3 Ocean City

#### 3.6.3.1 Social Impacts

Impacts on Community Cohesion

The preferred alternative will not affect community cohesion, as there will be no changes in the physical boundaries of the community, access to services, or in the socioeconomic character of Ocean City. However, the raised highway would block the existing access to and from Palen Avenue since the touchdown point of the preferred alternative would be at the Pleasure Avenue intersection where a one-way through street from Palen Avenue to Pleasure Avenue would be constructed. This one-way through street would not significantly affect community cohesion. Ninth Street is currently a divided road in this area, preventing vehicles exiting Palen Avenue from making left turns onto 9th Street and preventing northbound vehicles on 9th Street from making left turns to enter Palen Avenue. Similarly, the raised highway would block direct access between 9th Street and the condominium on the east side of 9th Street. Access to this condominium by vehicles would by way of Bay Avenue, Revere Place, and the alley currently connecting Revere Place and 9th Street. During construction of the preferred alternative there will be a minor short-term impact and some vehicles may elect to use alternate routes to and from Ocean City.

Residential Displacement and Community Facilities Impacts

No residential households will be displaced, and no minority, elderly, or low-income groups will be affected by the preferred alternative. The touchdown point of the reconstructed road would be at the Pleasure Avenue intersection. The raised highway would block Palen Avenue, where a new one-way through street between Palen Avenue and Pleasure Avenue would be constructed

(extending from Palen Avenue to Pleasure Avenue, parallel to 9th Street) as discussed above. The existing sidewalks along 9th Street from Palen Avenue to Pleasure Avenue and along the east side of 9th Street will be retained, so there will be no impacts to pedestrians. In addition, the preferred alternative will have an impact on open space at the islands in Great Egg Harbor Bay. Refer to the plans entitled "Green Acres Impacts" and "Plans, Profiles and Typical Sections" for Alternatives 9/9A in Appendix A of the DEIS.

*Recreational Fishing Access*

The preferred alternative ensures angler access to the most popular fishing spots along the Route 52 causeway, as discussed in detail in Section 3.6.2.1. Access from the parking areas to key fishing locations, especially near the abutments of the existing structures over Rainbow Channel and Elbow Thorofare, would be over paths or boardwalks designed to minimize damage to the wetland surface.

Boaters and recreational fishermen in boats also congregate near the Route 52 bridges over Rainbow Channel and Elbow Thorofare. The preferred alternative would not affect boaters and recreational fishermen near the Route 52 bridges over Rainbow Channel and Elbow Thorofare All the areas in the vicinity of the reconstructed highway would be useable by boaters. During the construction period boaters will not be able to come as close to the Route 52 bridges as they had in the past, but this will be a short-term impact, lasting only while construction of the new bridges is taking place. Also, when the old bridges are removed it will affect only one channel at a time.

*Ocean City Information Center*

The proposed alternative will affect the existing access to the Ocean City Information Center located adjacent to the southbound lanes of the causeway on the last island before entering Ocean City. The Information Center will not be accessible from the northbound lanes, and will not be visible from the elevated roadway. Due to these effects, in consultation with Ocean City representatives, it has been decided to relocate the Information Center to the city itself. NJDOT

will acquire the existing Information Center from Ocean City at the fair market price and provide any necessary relocation assistance as required by law. Ocean City will be responsible for the actual relocation. The city officials have indicated that they believe that there are a few suitable locations for the relocation.

*Pedestrian and Bicyclist Facilities*

The proposed alternatives will incorporate pedestrian and bicyclist facilities to link Somers Point and Ocean City. A continuous 2.0 meter (6.5 foot) wide walkway, separated from the shoulder by a continuous concrete barrier, will be provided along the easterly side of the new structure. Additionally, benches will be provided approximately 70 meters (270 feet) on center along 4% or 5% approach gradients proposed on bridges over the ICWW and Ship Channel. The 3.0 meter (10 foot) wide right shoulder will be designed to accommodate bicycles and will be continuous between Somers Point and Ocean City.

*Emergency Access*

Route 52 is the most direct link between Ocean City and Shore Memorial Hospital in Somers Point, the regional hospital for the area. Bridge openings affect the ability of emergency vehicles to respond in a timely manner. Route 52 is a designated emergency evacuation route and part of the Coastal Evacuation System. During severe storms, evacuation from Ocean City to the mainland may be needed. The vertical alignment of the preferred alternative is above the 100-year flood elevation; therefore, it will alleviate flooding issues (See detail of Alternative 9 in Appendix D). Also, the preferred alternative eliminates bascule bridges, providing continuous and uninterrupted traffic flow during an emergency.

*Dredged Material Disposal Facility*

The proposed alignment would result in the loss of the existing dredged material disposal facility operated by the City of Ocean City. This facility is within the right-of-way for Route 52 directly across Route 52 from the Information Center. The overall impact due to loss of this dredged material disposal facility is limited, since this lot is already full to almost its capacity and the City of Ocean City has other approved/permitted facilities that it can use for dredged material disposal.

Environmental Justice Considerations

Environmental Justice Considerations were also identified for Ocean City in accordance with Executive Order (E.O.) 12898, as described in Section 3.6.2.1. In Ocean City, the preferred alternatives will not have a disproportionately high adverse impacts on minority populations or low-income populations. Although there are residential areas within the primary impact area, they are not low income or minority neighborhoods. The largest minority and/or low income residential area is between West and Bay Avenues from First Street to 8th Street. For details, see Section 3.6.3 of the DEIS.

### 3.6.3.2 Economic Analysis

The methodology for the economic analysis is discussed in Section 3.6.2.2.

Business Displacement/Disruption

Tourism is the basis of the Ocean City economy. Beside businesses that cater to tourists, other key employers are government and financial institutions. The businesses along 9th Street include: gasoline service stations, tourism related businesses, financial institutions, retail establishments, along with a few business offices.

Under the preferred alternative, the touchdown point of the reconstructed road would be at the Pleasure Avenue intersection. The raised highway will block direct access to Palen Avenue where a new one-way through street between Palen Avenue and Pleasure Avenue will be constructed. Two seasonally operated business properties would need to be acquired to construct the new one-way through street, including Beach Bums Limited and Dockside Cafe and Marina Speed Boat Rentals. The Bud's Outboard Marine and the Mobil Service Station would need ramps for access. The access to businesses along Palen Avenue would also change as a result of a new one-way through street. However, the one-way through street is not expected to result in a significant adverse impact, as 9th Street is currently a divided road at the intersection with Palen Avenue, preventing vehicles exiting Palen Avenue from making left turns onto 9th Street and preventing northbound vehicles on 9th Street from taking left turns to enter Palen Avenue.

Local Fiscal Resources

Based on current (1998) tax rates, approximately $6,000 in annual revenue would be lost in Ocean City. There would also be a loss of sales tax revenue by the county, state and federal governments unless the displaced businesses were to be relocated and continue in business.

Three entire properties will likely be acquired for the proposed project: Beach Bums Limited at the corner of 9th and Palen Avenue, Dockside Cafe and Marina Speed Boat Rentals at the corner of 9th and Pleasure Avenue, and a small privately owned parcel on the first island outside of Ocean City. That parcel has an assessed value of $200 and was assessed $3.40 in property taxes in 1998. In 1997, Beach Bums Limited had an assessed value of $332,500, and the two lots occupied by Dockside Cafe and Marina Speed Boat Rentals had a total assessed value of $244,300. Based on current (1998) tax rate, the removal of these properties would result in a loss of approximately $10,000 in annual tax revenue to Ocean City. However, this loss would have a minimal impact on the property tax revenues for the city, as it represents less than 0.02% of the total taxes collected of $57.076,490 in 1998. In addition, Beach Bums Limited and Dockside Cafe and Marina Speed Boat Rentals also generate tax revenue for the county, state, and Federal governments from the sale and/or rental of merchandise. If these businesses would relocate elsewhere in Ocean City, there may be no loss of sales taxes; however, it will not replace the loss of property taxes to the City of Ocean City.

Recreational Fishing, Commercial Shellfishing, and Crabbing

The economic impacts on recreational fishing, commercial shellfishing, and crabbing are discussed in Section 3.6.2.2.

Construction-Related Economic Impacts

The methodology for evaluating construction-related economic impacts is discussed in Section 3.6.2.2. Table 3.6-1 in the DEIS lists the businesses in Ocean City that would be adversely affected by construction activities and briefly describes the nature and extent of the impact.

There will be minor short-term impacts during construction along 9th Street to the intersection with Bay Avenue. Some vehicles will likely use alternate routes to and from Ocean City during construction. To the extent that this occurs, businesses along 9th Street dependent on visibility to drive-by traffic (particularly service stations), both within and beyond the primary impact area may be adversely affected due to the decline in drive-by traffic.

Approximately eight businesses in Ocean City would very likely lose some patronage because of diminished access to them during staged construction on the Beach Thorofare bridge and the reconstruction of 9th Street between the bridge and Pleasure Avenue. However, access to each will be required to be maintained while construction is taking place.

### 3.6.3.3 Land Use Impacts

The methodology for the assessment of land use impacts is discussed in Section 3.6.2.3.

Compatibility with Existing Land Use and Zoning

The preferred alternative (Alternative 9-1) is compatible with the existing land use and zoning in Ocean City and will not have an impact on proposed development in Ocean City. There is no

new development proposed for the primary impact area.

Potential for Induced Development

The preferred alternative will not have a significant potential to induce development because this project involves the replacement of an existing facility and because there is little open area that can be developed in Ocean City. Although some previously developed properties could be redeveloped, the type and size of development would be determined by the zoning code, and would not be directly affected by the project. The City of Ocean City has indicated that current zoning has a negative impact on the investment and economic growth in the central area (3rd Street to 15th Street) of the city. The City is interested in triggering proper development, but maintaining the neighborhood charm. Better access to and traffic flow on 9th Street may help trigger proper development in this area.

Farmland Protection Policy Act Compliance

The preferred alternative is in compliance with the Farmland Protection Policy Act, as discussed in Section 3.6.2.3. The preferred alternative will have no adverse impacts on federal farmland or the preservation of farmland in either Somers Point or Ocean City.

Compatibility with Community and Regional Plans

The preferred alternative (Alternative 9-1) is compatible with the 1988 Master Plan for the City of Ocean City where Objective No. 13 is "to promote the conservation of open space through protection of wetlands, stream corridors, and valuable natural resources, and prevent degradation of the environment." In a similar vein, land use and development Principle No. 3 states "protection of natural and environmental resources, including floodplains, wetlands, marsh and aquifer recharge areas, and areas suitable for public and quasi-public recreational activities." The preferred alternative is consistent with other relevant plans, as discussed in Section 3.6.2.3.

### 3.6.4 Mitigation

To mitigate potential construction-related impacts in both Somers Point and Ocean City, construction activities along the traveled way should be minimized during the busy summer tourist season.

Somers Point

To mitigate the effects of the removal of the World War Memorial Bridge and the loss of recreational access to fishermen, a low-level timber recreation/fishing pier and a parking lot would be built at the site of the World War Memorial Bridge, with a small monument displaying a commemorative plaque. The parking lot would be located on the site of the Gulf Station currently east of the Somers Point traffic circle, and the recreation/fishing pier located immediately east of the abutment of the new bridge. This would enhance recreational fishing opportunities in the area.

The right hand turn lanes proposed for the intersection replacing the traffic circle might interfere with pedestrian crossings. However, mitigation of this issue will be addressed during final design. Additionally, On MacArthur a signal-controlled crosswalk is proposed at Braddock Avenue. This will provide a safe crossing to pedestrian destine to schools and recreation areas on the east side of the Boulevard.

The loss of sales and fuel taxes resulting from acquisition of the Gulf Station may be offset by increased sales at other gasoline stations in the area.

Ocean City

*Parkland*

One of the possible parkland mitigation areas has been identified on the island between Beach Thorofare and Rainbow Channel east of the causeway and in the area of the existing Information Center (See Figure 3.4-2).

*Angler Access*

Several measures are planned to mitigate the impacts to recreational fishing access, as discussed in Section 3.6.2.1. Under the preferred alternative, recreational fisherman will be able to access the shores of most of the tidal marsh islands along the causeway. The proposed alternative provides a recreation/fishing pier and parking lot at the site of the World War Memorial Bridge, as well as access ramps, walkways, and parking facilities at the existing Ocean City Visitor's Center and Rainbow Island.

The new embankments on the island between Elbow Thorofare and Rainbow Channel would be low enough to add a diamond interchange onto the embankment at the north end of the middle tidal marsh island. This interchange would comprise exit and entrance ramps down to grade from both the northbound and southbound lanes to a proposed 30-vehicle parking area located under the elevated structure. Once the Visitor's Center is relocated to Ocean City, an enlarged parking facility is proposed for that site to accommodate up to 41 vehicles. Walkways and pedestrian ramps are proposed to provide access from the sidewalk of the elevated structure to this location. (See Figures 3.4-2, 3.6-1, and 3.6-2).

*Visitor's Information Center*

Construction of the preferred alternative would affect the existing access to the Ocean City Information Center located adjacent to the southbound lanes of the causeway on the last island before entering Ocean City. Under the preferred alternative, the existing Information Center would be razed and a new Information Center would be constructed in Ocean City. The existing parking area would be expanded for recreational users, with recreational walkways extending to the ends of the island.

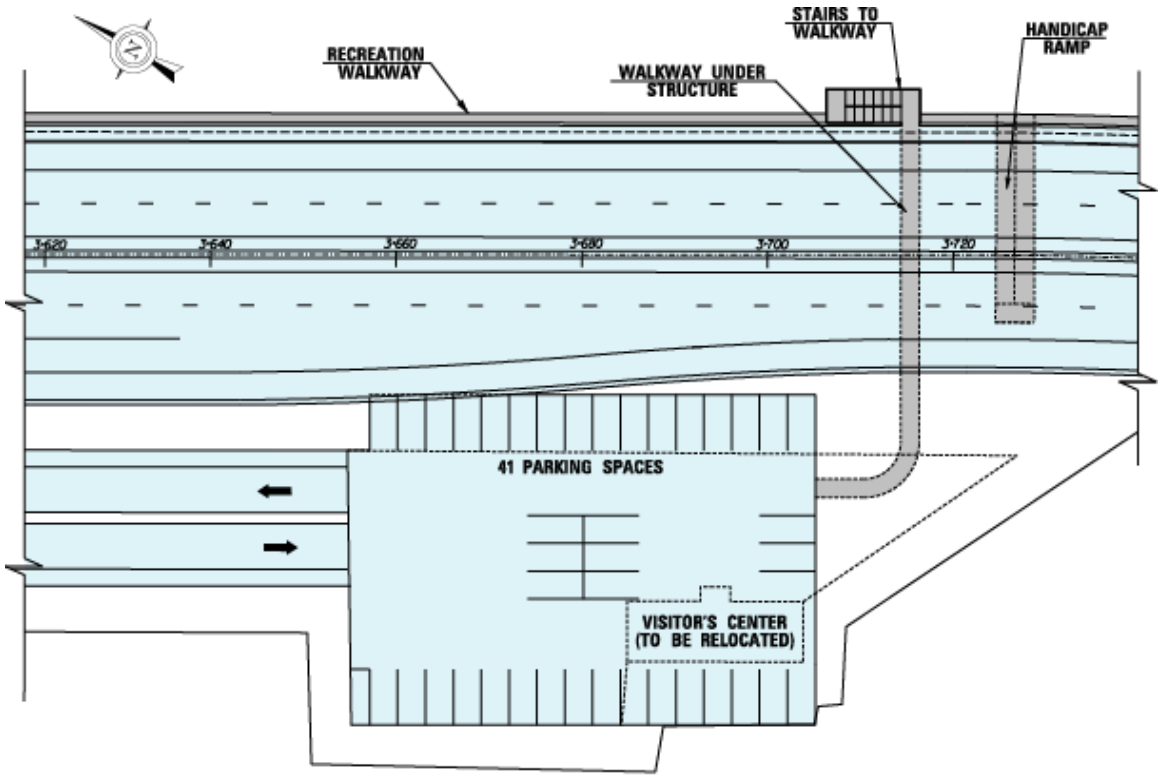



**Figure 3.6-1**

**Detail of Parking Facilities**
**At Present Visitor's Center Location**

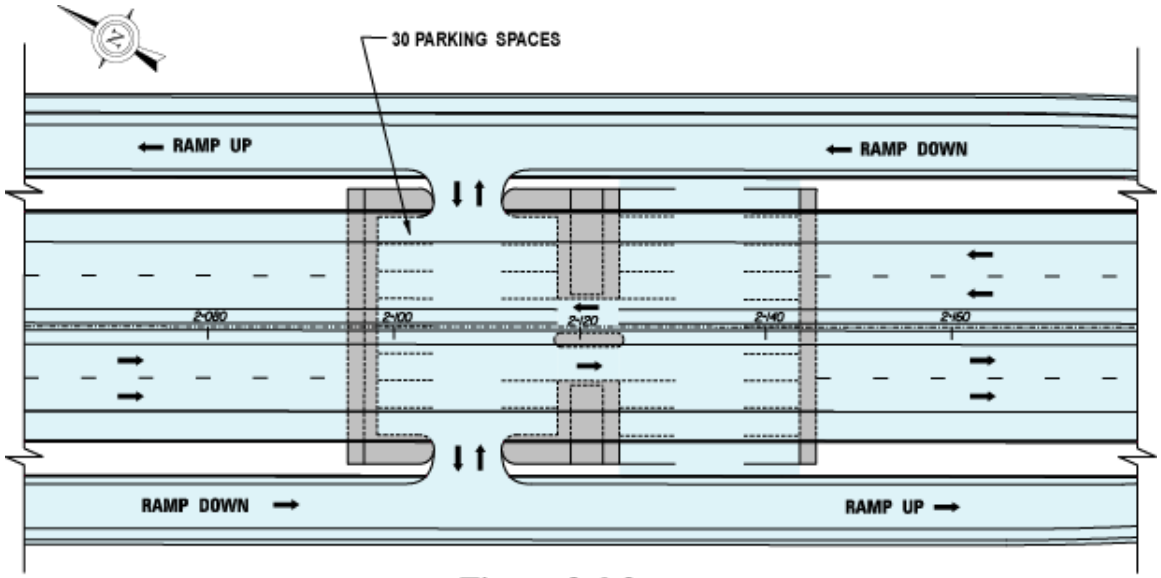



**Figure 3.6-2**

**Detail of Parking Facilities**
**On Rainbow Island**

## 3.7 VISUAL ENVIRONMENT

### 3.7.1 Introduction

The visual environment is an essential aspect to be evaluated. Satisfaction with the aesthetic appeal of their surroundings is an important issue for citizens, since it affects their pride in their community. There are several distinct perspectives that may be impacted visually by the proposed project:

- On or around MacArthur Boulevard,
- The approach through Somers Point,
- The view of the causeway from the mainland,
- Travelling on the causeway,
- The view of the causeway from the bay, and
- The areas outlying the entrance into Ocean City.

### 3.7.2 Existing Conditions

Along the east side of MacArthur Boulevard, there is a very nicely landscaped area. In addition, there is a well-landscaped area in the interior of the Somers Point traffic circle.

The existing causeway appears to be in visual repose with the flat landscape of the tidal marsh islands. For the travelling motorist, the large expanse of islands covered with vigorous cordgrass visible just a few feet below the causeway, and showing above the water, afford a variety of pleasurable visual experiences. For the boater, the low trestles over Rainbow channel and Elbow Thorofare are seen as obstructions. The rising viaducts at each end with relatively short spans and a forest of pilings are generally considered unattractive to those passing below.

### 3.7.3 Impacts

Under the preferred alternative, the appearance of the MacArthur Boulevard right-of-way will change significantly. The landscaped area along the east side of MacArthur Boulevard would be eliminated when that section of roadway is expanded from two lanes to either three or four lanes with an intermediate turning lane. Vegetation that screens residences on Laurel Drive, south of Route 9, and Dobbs Avenue from MacArthur Boulevard may be removed or reduced when MacArthur Boulevard is widened. Noise analyses indicate that barrier walls will be required on both the west and east sides separating the MacArthur Boulevard traffic from the adjacent parallel residential streets, Laurel Avenue and Dobbs Avenue. The appearance of these wall treatments will be important visual considerations.

Replacement of the traffic circle in Somers Point with a four-way, signalized intersection will involve the removal of the island and trees within the traffic circle. However, it will also add open land to the roadside lawns of properties such as the Somers Point Mansion. This will create opportunities for new landscaping that could more effectively screen the properties from traffic and shade the sidewalks in that area than the present traffic circle.

The proposed structures over Ship Channel and Beach Thorofare will be significantly higher than the existing structures and will be much more visually imposing when viewed from nearby on the mainland. However, because of the longer spans used in these structures and the great width of the bay, they will not appear to be excessively high proportionately. The alignment of the preferred alternative will be only slightly offset from the current alignment of the existing causeway, and will continue to cross over the middle Rainbow Island, but will be at higher elevations. The causeway between the high bridge structures will be entirely on structural viaduct. The view of the Route 52 causeway and bridges from areas along the waterfront will change when the causeway and bridges are replaced. However, this change is not considered a negative impact in most locations.

For the travelling motorists, their view of the adjacent low-lying tidal marshes on either side will be diminished but, due to the higher elevation, they will be afforded much more expansive views of the harbor waters.

For boaters, the viaduct over Elbow Thorofare and Rainbow Channel will be less obtrusive than the existing structures. Large spans, a much smaller number of large diameter piles supporting them, and the use of precast concrete components will present a much cleaner architectural appearance for those passing below.

The view of the Route 52 causeway and bridges from the Crab Trap Restaurant gazebo on Great Egg Harbor Bay will change when the causeway and bridges are replaced.

Reconstruction of Route 52 as it enters Ocean City will affect the divided roadway and landscaped area in this location, which was recently constructed by Ocean City to enhance the appearance of the "gateway" into the city. The view along 9th Street towards the bridge and along Palen Avenue towards 9th Street will change for residents and businesses. This is due to the highway entering Ocean City at a higher elevation. The approach roadway level will not meet the pavement of 9th Street until south of the Pleasure Avenue intersection. Direct access to 9th Street from Palen Avenue will be rerouted via a new one-way through street between Palen Avenue and Pleasure Avenue.

### 3.7.4 Mitigation

The following measures will be incorporated into the design of the project to mitigate the adverse visual effects:

- New landscape plantings will replace vegetation removed during the widening of MacArthur Boulevard adjacent to East Laurel Drive and Dobbs Avenue.
- The use of clean architectural precast concrete shapes will be considered for structures over waterways. The use of continuous box beams or precast bulb tees might further enhance this effect.

- The design of noise barrier walls along MacArthur Boulevard will include a distinctive architectural treatment, and this design will be presented to local citizens at a subsequent public meeting.
- Any of the existing Route 52 embankments that are left in place will be landscaped in a manner that will make them appear to blend visually with the marsh surrounding them.
- The divided roadway and landscaped "gateway" area entering Ocean City will be replaced.
- Use the longest spans that are economically feasible, which will minimize the visual clutter that piles usually introduce.
- Employ landscaping at the bridge touchdown areas in Ocean City and Somers Point.

## 3.8 HAZARDOUS WASTE

### 3.8.1 Introduction/Methodology

A Hazardous Waste TES was conducted to evaluate the potential presence of subsurface hazardous materials contamination along the Route 52 corridor from the intersection with Route 9 in Somers Point over Great Egg Harbor Bay to Ocean City at the intersection of 9th Street and Bay Avenue.

The study methodology involved defining the Study Area, identifying relevant properties within the Study Area, collecting property-specific and area data, conducting an historical data review and records review, conducting a site inspection of each property in search of visible signs of contamination, and ranking the properties relative to their potential for contamination. No sampling of potential asbestos-containing materials (ACM) was conducted as part of the this study. Structures constructed before 1980 are likely to have one or more building materials that contain asbestos.

The Study Area consists of a corridor centered around the existing right-of-way for Route 52, including land above mean high tide within 75 meters (about 250 feet) of that right-of-way. The relevant properties within the Study Area (referred to as Class A sites) are those sites that have or had an industrial or commercial primary use, or on which a significant discharge of a hazardous substance is known or reported to have occurred. They include relevant sites that are subject to the New Jersey Industrial Site Recovery Act (ISRA), as well as public buildings, houses of worship, marinas, and any residential site that contains more than four dwelling units.

An historical data review was conducted to identify, to the extent possible, the land use history of all relevant sites in the Study Area. Databases that identify sites of environmental concern were reviewed using a computerized search of databases of public agencies to determine if any sites in the Study Area were listed or if any listed facility was nearby the project corridor. In and near the corridor, the records of most interest relate to buried tanks and spills. Underground storage tanks (USTs) usually contain gasoline, fuel oil, or other chemicals and can contaminate

soil or groundwater if they leak. UST registration information (number, capacity, contents, and age of tank) was obtained from the NJDEP Bureau of USTs for the sites within the Study Area.

A general field reconnaissance of the Study Area was conducted in September and December of 1997, along with a more in depth site reconnaissance of each of the Class A properties. In addition, efforts were made to interview people associated with each site regarding its historic and current use (e.g., past and current owners, tenants, property managers, and neighbors).

Based on the information collected, each Class A site was assigned a relative risk ranking of low concern or high concern.

Low Concern: No visible or recorded environmental concern, or a low potential for contamination to impact the right-of-way. Properties that did not exhibit a potential environmental concern during the historical use check or field reconnaissance were classified as exhibiting a low potential for concern. Based on the review of available information, there was no reason to suspect a problem or concern with hazardous materials/contamination at these sites. Risk factors indicative of potential for concern include the following:

- Potential for presence of soil, groundwater, or surface water contamination on the property.
- Permitted or unpermitted use, storage, transportation, discharge, or disposal of hazardous materials, including fuel and chemical storage facilities/tanks.
- Unclassified fill on the property.

Properties located outside of the right-of-way and the planned construction corridor that will not be directly affected by construction, even if they exhibit no more than one of the risk factors listed, were also classified as exhibiting a low level of concern if available information suggested that the potential to impact the right-of-way was low.

High Concern: High potential for, or verified presence of, contamination within or abutting the right-of-way. Properties that encompass a portion of the existing or proposed right-of-way, or

are adjacent to it and may be directly affected by roadway construction, and exhibit one or more of the environmental risk factors listed below, were classified as exhibiting a high potential for concern.

- High potential for, or verified presence of, soil, groundwater, or surface water contamination on the property.
- Permitted or unpermitted use, storage, transportation, discharge, or disposal of hazardous materials, including fuel and chemical storage facilities/tanks.
- Unclassified fill on the property.
- High potential for surface or subsurface migration of contamination to the property from adjoining properties for which evidence was found of a concern.

These properties may have recorded or visible environmental concerns, including evidence of use of hazardous materials either in current operations or as a release in prior operations, which could adversely impact roadway construction or ownership.

### 3.8.2 Existing Conditions

A total of 49 Class A sites were identified in the Study Area (33 in Somers Point and 16 in Ocean City), and a total of 67 registered USTs were identified (25 tanks at five sites in Somers Point and 42 tanks at five sites in Ocean City). In Somers Point, 16 active registered USTs were identified, and in Ocean City, 20 active registered USTs were identified. The potential for unregistered tanks was identified at three sites in Somers Point and four sites in Ocean City. In Ocean City, a number of former gasoline/service stations were present along 9$^{th}$ Street (some dating back to before 1937), but not all of them could be associated with a specific parcel. Therefore, it is possible that other unidentified USTs are still present along the Route 52 corridor.

### 3.8.3 Impacts

Based on the information collected, each Class A site was assigned a relative risk ranking of low concern or high concern. Of the 49 Class A sites evaluated, 12 sites were ranked high concern, and 37 sites were ranked low concern. In Somers Point, 6 sites were ranked high concern, and 27 sites were ranked low concern. In Ocean City, 6 sites were ranked high concern, and 10 were ranked low concern. Each Class A site, its risk ranking, and the rationale for the ranking are summarized on Table 3.8-1 in the DEIS.

### 3.8.4 Mitigation

For sites with a ranking of low concern, the need for additional work is a low priority, and no further NJDOT involvement is considered necessary at this time.

For sites with a ranking of high concern, the need for additional investigative work is a high priority, and further NJDOT involvement is necessary. This may include analysis of soil samples where necessary, during the design phase of the project. During construction, any excavated contaminated material will be disposed of properly or reused on the project in strict compliance with an approved soil re-use plan.

If the demolition of any structures is required, an assessment of the potential ACM should be made prior to beginning the demolition activities. If any ACM exists, specifications for the removal of such material will be incorporated into the contract plans.

## 3.9 CONSTRUCTION IMPACTS AND MITIGATION

### 3.9.1 Air Quality

Air quality impacts that arise during construction consist of construction equipment exhausts and dust generated by the movement of equipment over exposed earth. Emissions from construction equipment, which are negligible in relation to the total vehicular emissions in the project area, do not represent a significant air quality impact. However, dust generation and its ensuing dispersal by the wind can be a problem, especially in developed areas.

Mitigation measures that can be implemented during construction to ensure dust generation is kept to a minimum include the application of water or dust retardant chemicals (e.g., calcium chloride) to heavily traveled portions of the construction area. Temporary construction driveways can also be used in heavily traveled areas. These practices will be used during the proposed Route 52 reconstruction, especially in the zones near populated areas.

### 3.9.2 Noise

Depending on the phase of construction and the type of equipment used, the noise impacts will vary. At distances of 15-30 meters (50-100 feet), noise levels generated by construction activities can range from 70 to 97 dBA. The majority of the areas where residences or other sensitive receptors are located will be at distances greater than 30 meters (100 feet) from the construction zone for the proposed project. The notable exceptions will be the areas surrounding MacArthur Boulevard, the traffic circle in Somers Point, and the areas around the touchdown area in Ocean City. Construction noise levels for residences and other noise sensitive areas adjacent to Route 52 could be as high as 90 dBA Leq during the noisiest phases of construction.

Specific mitigation measures will be determined during the final design phase of the proposed project. At a minimum, the following measures will be taken:

- Construction equipment powered by an internal combustion engine will be equipped with a

properly maintained muffler.

- Air powered equipment will meet current USEPA noise emission standards. This equipment will be fitted with pneumatic exhaust silencers.
- Stationary equipment powered by an internal combustion engine will not be operated within 45 meters (150 feet) of noise sensitive sites without portable noise barriers placed between the equipment and the noise sensitive sites, including residential buildings, motels, hotels, schools, churches, hospitals, nursing homes, libraries, and public recreation areas. Portable noise barriers will be constructed of plywood or tongue and groove boards with a noise absorbent treatment on the interior surface, facing the equipment.
- Powered construction equipment will not be operated before 8:00 a.m. or after 6:00 p.m. within 45 meters (150 feet) of a noise sensitive area.
- Construction operations shall be restricted such that the contractor may only perform noisy operations during specific daylight hours.

The early construction of proposed permanent noise walls along MacArthur Boulevard to mitigate construction noise impacts will be evaluated during final project design.

### 3.9.3 Erosion and Sedimentation

Some portions of land will be stripped of vegetation and pavement during the reconstruction of Route 52. Accordingly, erosion may occur, and sediment may be generated close to the construction site. These activities may increase subsequent sediment deposition in area waterways, thereby increasing turbidity. By reducing sunlight penetration, such turbidity levels reduce the photosynthetic activity of algae and submerged aquatic plants, and thereby may reduce dissolved oxygen concentrations. Past field measurements show that the level of dissolved oxygen in Great Egg Harbor Bay has sometimes been below the NJDEP dissolved oxygen water quality standard. Therefore, sedimentation during construction could have an adverse impact on the water quality of the Bay.

To prevent adverse water quality impacts during construction, controls will be used to reduce the amount of erosion and sedimentation. Erosion controls include completion of shorter sections of

roadway at one time to limit ground surface exposure time, placement of mulch or other suitable ground cover immediately after an area is graded, as well as sodding and seeding the slopes simultaneously with roadbed construction. Along the causeway, an effective control method is the installation of silt fences just outside the limits of work. During final design, a detailed Soil Erosion and Sediment Control Plan will be developed for the proposed Route 52 reconstruction.

### 3.9.4 Excavation, Dredging, Disposal and Borrow Areas

The preferred alternative will require dredging of the ICWW. Shifting channel marker buoys for relocating Ship Channel, within the channel where it is currently located, will also be required; however, no dredging is necessary.

The volume of dredging required to achieve a realigned ICWW channel 100 meters (328 feet) wide and 3.6 meters (12 feet) below MLW is estimated to be 19,000 cubic meters (25,000 cubic yards). The dredging volume is relatively small since Beach Thorofare has relatively deep water.

A critical concern is disposing of the dredged material in an environmentally sound manner. Dredged material can be dried out in a 6,000 square meter (65,000 square foot) triangular area directly east of the existing causeway on the island directly north of Beach Thorofare. There are several options to dispose of the dredge material. One place for dredge disposal material is the Cape May County landfill. Dredged material could also be acceptable for use as beach replenishment material or could be sold as structural fill material. The dredge material could be disposed of under the viaduct on the island between Beach Thorofare and Rainbow Channel and the island between Rainbow Channel and Elbow Thorofare (see Figure 3.4-2).

During construction, the dredged spoil material will probably be pumped onto the existing causeway embankments. In some cases, this would only be temporary until it can be dried out and then removed. To minimize turbidity, the discharge could be made inside an impervious dike with filtered drainage outlets to prevent the escape of fines. Increased turbidity in the waters of the Bay could result from pile driving in open water sites and during dredging. In both cases, the work sites will be surrounded by turbidity curtains or barriers, if practicable, to contain

siltation.

### 3.9.5 Maintenance Dredging

The 30-year maintenance dredging cycle cited in the DEIS was based on an extremely conservative rate of deposition of 6 mm/year. This would result in the accumulation of 7 inches of material over a 30-year period, necessitating dredging. This is highly unlikely based on the findings of a sedimentation study of the Great Egg Harbor Bay conducted in 1993 by Rutgers University[1] and a "Feasibility Study for the Physical Relocation of the Intracoastal Waterway and Ship Channel", which is listed as a supporting document in the DEIS. These findings show:

- The natural sedimentation rates in the Great Egg Harbor Bay are very low because of the lack of sediment entering the system.
- The general rate of sedimentation in the Bay is 4-6mm/yr. Accumulation of material at this rate is about the same as the observed rate of rise of sea level in this area.
- The rate of sedimentation is related to vertical accumulation and does not account for the horizontal displacements that can transfer sediment along certain directions and produce local shoaling.
- Sediments circulate through the Bay in a counterclockwise direction. Relatively large material enters the bay on the flood tide, is transported through the existing Ship and Rainbow Channels, and is deposited in the interior of the bay. Smaller diameter particles are transported through the Beach Thorofare on the ebb tide. This material tends to be transported out of the Great Egg Harbor Bay by ebb flow. The speed of the ebb tide is high enough to prevent deposition and accumulation of this material. Thus, no maintenance dredging has been required for the ICWW in the bay area.
- The minor dredging of the ICWW associated with Alternative 9-1 will affect the flow speeds within the channel; however, the flow speed will remain sufficient for the sediments to stay in motion and flow out of the channel.

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[1] Psuty, N., Guo, Q., Suk, N.S. (1993). Sediments and Sedimentation in the Proposed Intercoastal Waterway Channels, Great Egg Harbor Bay, NJ. Rutgers – The State University of New Jersey

- The ICWW will remain self-cleaning with or without the proposed dredging. Under existing conditions, particles as large as 1 mm are induced to move through the Beach Thorofare. After dredging, the flow will still be strong enough to keep particles of 0.9-mm size in suspension. The average sediment size observed in the Bay area is less than 0.5 mm. The grain size of sediment in Beach Thorofare ranges between 0.2 mm to 0.4 mm.
- Very little movement of the islands in Great Egg Harbor Bay was observed during the period 1940 to 1991.

In summary, no vertical accumulation is expected in the dredged channel due to the swift flow velocity. Over time, the contours of the dredged channel may be expected to round off due to the action of water against the cut slopes of the channel. However, the channel does not provide a natural environment for shoaling. Any small net deposition would be counteracted by the rise in sea level, resulting in no change in channel depth. The existing sedimentation rate in the ICWW is only about 3-4 mm/year and is not expected to rise significantly due to dredging. A sedimentation rate of up to 5 mm/year is completely offset by an equivalent rise in sea level. Consequently, no maintenance dredging will be required for Alternative 9-1.

## 3.10 INDIRECT AND CUMULATIVE IMPACTS

### 3.10.1 Introduction

The Code of Federal Regulations (40 CFR Chapter V § 1508.8) defines "Effects" and states that "Effects include: Direct Effects, which are caused by the action and occur at the same time and place". Further, Section 1508.8 states that, in this context, the terms "effects" and "impacts" are synonymous. The direct effects, or impacts, of the project on environmental resources are analyzed in detail for each affected resource in the preceding subsections.

Section 1508.8 also states that effects include: "Indirect effects, which are caused by the actions and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the patter of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

This section also states: "Effects include ecological …, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect of cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial."

Section 1508.7 defines "Cumulative Impact" as: "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

### 3.10.2 Indirect Effects

The indirect impacts of a transportation improvement project are generally seen in induced growth and sprawl as a result of changes in traffic patterns. These in turn can change patterns of land use with related effects on air, water and other natural resources, including ecosystems.

The Route 52 Reconstruction project will not materially change traffic patterns, and does not have the potential of inducing growth. The primary objective of this project is the replacement of an existing facility. The new causeway facility will be improved, compared to the deteriorated and obsolete existing facility, because it will include improved horizontal and vertical geometry, will raise the facility above flood levels and will bring the facility up to modern standards. However, the replacement is not intended, nor designed, to increase the ability of the facility to accommodate more vehicles. Moreover, changes to MacArthur Boulevard, including improvements to the intersection of MacArthur Boulevard and Route 9 and the replacement of the Somers Point traffic circle with a four-legged intersection, will also not increase capacity beyond the immediate limits of the improvement.

Both the City of Somers Point and Ocean City are already highly developed areas and the project is not expected to contribute to any increase in growth. While it is expected that these changes will make traffic flow more smoothly and reduce the number of accidents, (refer to Section 3.1) it is not anticipated that they will create a change in traffic volume. This is due to the fact that the flow is constrained at both ends of the project limits. Specifically, Laurel Drive, to the north of the project limit, will remain only one lane in each direction from Route 9 to the Garden State Parkway and 9$^{th}$ Street will remain unchanged from the project limit at Bay Avenue into Ocean City. Accordingly, the traffic volume is not expected to change appreciably.

Because the project is expected to smooth traffic flow and improve levels of service at the intersections it will have indirect, albeit positive, effect on traffic congestion, traffic safety, local air quality, groundwater quality, noise levels and energy consumption. Specifically, as there will be improvements to the traffic flow, it is expected that traffic congestion will reduce and traffic safety will be improved. Since the project will also reduce the vehicle delay time, air quality, groundwater quality, noise levels and energy consumption will all be reduced, since vehicles will not spend as much time idling or moving at slow speeds in the project area.

Initially, it was proposed that MacArthur Boulevard be reconstructed as a five-lane facility with two lanes in each direction and a center turning lane. The existing facility comprises only one

lane in each direction. However, at the Public Hearing held on November 15, 2000, and in subsequent correspondence from elected officials of Somers Point, concerns were expressed that such a substantial widening of MacArthur Boulevard might create a barrier between the residents of the town on the west side and facilities to the east. It might also pose a potential safety hazard to pedestrians. Accordingly, modifications to the proposed layout of MacArthur Boulevard were incorporated such that the portion of MacArthur Boulevard traversing the residential zone would be only three lanes wide (one lane in each direction plus a center turning lane) while the length through the commercial area would be widened to five lanes. In addition, to aid pedestrians wishing to cross MacArthur Boulevard, a traffic signal and a crosswalk were added at the intersection with Braddock Drive. This improvement maintains community cohesion and provides a safer crossing of MacArthur Boulevard.

The project involves the acquisition of the Gulf Service Station in Somers Point, the Beach Bums Limited beach equipment retail and rental store in Ocean City, and a boat storage area for the Dockside Café and Marina Speed Boat Rentals in Ocean City. These commercial displacements are relatively minor, and it is anticipated that they will easily be reabsorbed into the business community with no discernable changes to the economic vitality of the area, nor to the prevailing land use patterns.

### 3.10.3 Cumulative Impacts

To restate, cumulative impacts are impacts that result from the incremental consequences of an action (the project) when added to other past and reasonably foreseeable future actions. The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even indirect impacts, but nevertheless when added to other actions may eventually lead to a measurable environmental change.

The major natural resources that are within the area of potential effects of the project include parts of Somers Point, Ocean City, the Great Egg Harbor Bay, and the barrier islands in the bay. Subsection 1.2 "Project History" of this report recounts the major past activities that have given the present shape to the human communities in the two cities connected by the Route 52 causeway. The ecosystem of Great Egg Harbor Bay has been formed over time by geological forces. The resulting ecosystem is described in detail in Section 3.4 of this report. This ecosystem is vulnerable to incremental effects. However, the Route 52 Reconstruction project, being the replacement of an existing transportation infrastructure, will not cause any major discernible shift or change in the current state of human and natural resources described above. The direct and indirect impacts of the project have been detailed in previous sections.

At this time, there are no other activities or projects that are ongoing or contemplated in this geographical area, within the life cycle of this project, that could result in additional impacts to the resources affected by the project, resulting in cumulative effects of any significance. Extensive coordination has been done with the public, the City of Somers Point Planning and Zoning, the City of Ocean City Planning Department, the Atlantic County Economic Development Corporation and the Department of Public Works, the Cape May County Planning Department and the Department of Public Works, the South Jersey Transportation Planning Organization, and State and federal agencies having jurisdiction in the area. None of the above contacts have identified any projects that could have additive, countervailing, or synergistic effects on the natural systems that will be affected by the proposed project.

## 3.11 ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

The preferred alternative will result in the following unavoidable adverse effects:

- 3.21 hectares (7.93 acres) of Ocean City's open space inventory (Green Acres) has to be acquired for right-of-way.
- 0.85 hectares (2.09 acres) of shading impact and 0.09 hectares (0.23 acres) of direct impact to wetlands due to fill and piles
- 0.16 hectares (0.39 acres) of direct open waters impact due to placement of piles and piers.
- One or more business displacements and proximity impacts to several businesses.
- Loss of the World War Memorial Bridge.
- The views from two (2) historic architectural sites eligible for listing on the National Register of Historic Places will be affected by project's higher profile across the causeway.
- There will be some filling of wetlands and pile installation in wetlands.
- There will be some shading of tidal wetland grasses.
- Reduced access for fishermen and other recreational users.
- Probably soil erosion and siltation during construction operations in sensitive environments.
- Disruption and/or loss of habitat for finfish and shellfish.
- Permanent loss of some parking spaces along MacArthur Boulevard.
- More incidents during which the FHWA Noise Abatement Criteria are exceeded.
- At least 19,000 cubic meters (25,000 cubic yards) of material will have to be dredged to realign Ship Channel and the ICWW, creating turbidity in the open water of the bay.
- The deposition of sediment due to soil erosion during roadway and structure construction will adversely affect aquatic life in the Great Egg Harbor Bay. This impact will be mitigated through the use of proper erosion controls.
- Local shellfish populations will be reduced as a result of at least 0.07 hectares (0.17 acres) of habitat destruction.

## 3.12 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Reconstruction of Route 52 will result in some negative short-term impacts to the environment during construction. These include dust, additional exhaust emissions, additional noise, visual impacts, and some sedimentation and erosion. Gains to be realized immediately or soon after completion of the proposed reconstruction include:

- Delay and congestion due to bridge openings will be significantly reduced or eliminated.
- Delays and rates of accidents at the Somers Point traffic circle will be significantly reduced.
- The elimination of the traffic circle and widening of portions of MacArthur Boulevard to four lanes will eliminate bottlenecks to timely evacuation should an emergency arise.
- Travel in the corridor will become safer because of: the widening to 3.6 meter (12 foot) travel lanes, addition of 3.0 meter (10 foot) paved breakdown shoulders, the addition of a median barrier separating the two directions of travel, and the elimination of substandard horizontal and vertical geometrics.
- The causeway will be high enough to avoid flood waters coming over it in very severe storms; allowing it to function more effectively as an emergency evacuation route.
- The causeway connecting Somers Point and Ocean City will be opened up to safe access by bicyclists and pedestrians.
- Reconstruction of the causeway as a new facility with a long design life will eliminate the continual need to close lanes in the off-season for repairs to the structurally deficient structures now in place.

Traded off against the above gains are the following long-term losses associated with the preferred alternative:

- Loss of the World War Memorial Bridge.
- Displacement of one business in Somers Point.

- Adversely affecting the settings of two historic architecture sites eligible for inclusion on the National Register of Historic Places.
- Raising noise levels to approach or exceed the FHWA Noise Abatement Criteria at one motel and five residences compared to the noise levels associated with the future No Build condition.

## 3.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

In addition to the long-term environmental losses noted above, the proposed project would involve the following irreversible and irretrievable commitment of resources:

- Construction of the proposed project would result in the use of valuable energy resources.
- Construction of the proposed project would require between 800 and 1,000 person years of direct labor. Also committed to the project would be the actual construction materials and the public fiscal resources.

## 3.14 ENVIRONMENTAL MITIGATION

The following is a summary of mitigation measures discussed in this document:

| Topic | Commitment |
|---|---|
| *Traffic and Transportation* | |
| Geometric and Safety Improvements | • A horizontal curve with a radius of at least 245 meters (800 feet) will be provided where Route 52 enters Ocean City at 9th Street.<br>• The vertical curve over Beach Thorofare will be lengthened to provide adequate stopping sight distance at a 64 km/h (40 mph) design speed.<br>• 3.6 meter (12 foot) wide lanes with 3.0 meter (10 foot) wide shoulders in both directions will be used throughout the entire project.<br>• A concrete median barrier will separate opposing northbound and southbound traffic movements.<br>• The Somers Point traffic circle will be replaced with a 4-leg signalized intersection having separate turning lanes.<br>• MacArthur Boulevard will be widened to five lanes (two lanes in each direction plus a center turning lane) between the traffic circle and Braddock Drive and to three lanes (one lane in each direction plus a center turning lane) between Braddock Drive and Route 9. |
| Emergency Access and Evacuation | • High fixed span structures will replace the current bascule bridges.<br>• Structures will be designed to have the bottom of the superstructure at least 0.3 meters (1-foot) above the 100-year flood level. |
| Pedestrian and Bicycle Safety | • Shoulders 3.0 meters (10 feet) wide will be available in each direction for joint use by bicyclists.<br>• A 1.8 meter (6.0 feet) wide sidewalk will be available on one side of Route 52 separated from the shoulder by a continuous concrete barrier.<br>• Benches will be provided approximately 70 meters (230 feet) on center along the 4% or 5% approach gradients proposed on bridges over the ICWW and Ship Channel.<br>• A signal-controlled crosswalk will be provided on MacArthur Boulevard at Braddock Avenue. |
| ***Noise*** | |
| Noise Sensitive Receivers in Somers Point and along MacArthur Boulevard | • During final design, a detailed study will determine the feasibility of noise barriers to be placed along MacArthur Boulevard for residences with direct access to Laurel Drive (north of Village Drive) and residences with direct access to Dobbs Avenue between Fourth and Sixth Streets.<br>• Greenery and plantings will be provided between East Laurel Drive and MacArthur Boulevard to serve as a physical separation and mitigate the visual effects. |

| Topic | Commitment |
|---|---|
| | ***Natural Ecosystems*** |
| Soils and Geology/Hydrology | • Construction activities will be conducted pursuant to an approved soil erosion and sediment control plan.<br>• Precautions will be taken to minimize spillage and tracking of sand and silt on the road surface.<br>• Construction staging will be utilized, thereby limiting the amount of ground surface exposed at one time.<br>• Silt fences, hay bales and stabilized entrances to construction sites will be used, as necessary, for control of erosion and sedimentation.<br>• Mulch or suitable ground cover will be placed immediately after a slope is graded.<br>• Slopes will be sodded or seeded simultaneously with roadbed construction.<br>• Turbidity curtains will be used, where practicable, for construction operations. |
| Groundwater | • Any wells within the final right-of-way will be properly sealed during project construction. Sealed wells will be replaced with new ones if they are needed.<br>• If it is determined that excavated soil or groundwater is contaminated during initial-design investigative efforts, the contaminated material shall be properly characterized. |
| Stormwater | *General*<br>• A storm drainage system will be designed to improve water quality and minimize impacts to surface water and groundwater.<br>• A comprehensive sediment and erosion control plan will be implemented to minimize construction-related impacts.<br>• Construction techniques (e.g., prefabrication) will be implemented, where possible, to reduce on-site construction duration and erosion and sedimentation concerns.<br>• Pretreatment methods identified as "conditionally acceptable" will be implemented, where possible.<br><br>*Ocean City*<br>• Integrate into existing drainage system and install manufactured oil/grit separators on all new inlet connections.<br><br>*Causeway between Somers Point and Ocean City*<br>• Design all stormwater discharge systems to either discharge small volumes frequently through scuppers over open water, or through scuppers and leaders to scour basins in the tidal marsh surface.<br>• Take precautions during construction to minimize spillage and tracking of sand and silt on the road surface and promptly clean them up should they occur. |

| Topic | Commitment |
|---|---|
| | • Use straw bale barriers, silt fences, and stabilized entrances to construction sites, as necessary, to control erosion and sedimentation during construction.<br>• Use a temporary turbidity barrier for construction operations, where appropriate.<br>• Prohibit or restrict the use of jetting during pile driving operations.<br>• Dewater impounded dredge material properly in order to prevent the release of sediments into the bay.<br><br>*MacArthur Boulevard: Somers Point Circle to Route 9*<br>• Remove and replace the existing detention/infiltration basin near the Route 9 intersection between Laurel Drive and MacArthur Boulevard.<br>• Replace the existing drainage system with a new system of catch basins and piping located along the west curb line of MacArthur Boulevard.<br>• Provide an underground detention/infiltration piping system at the low point in MacArthur Boulevard near Braddock Avenue.<br>• Replace the existing drainage system under Somers Point Traffic Circle with a new drainage system of catch basins and piping.<br>• Utilize a vegetated detention basin in the southwest quadrant of the four-legged intersection proposed to replace the traffic circle.<br>• Use a vegetated swale located directly east of the north approach of the bridge over Ship Channel, discharging into Great Egg Harbor Bay.<br>• Integrate oil/grit separators in the new drainage system to improve water quality. |
| Wetlands | • Implement soil erosion control measures to minimize the deposition of eroded soils in wetlands.<br>• Provide a fender system and sheeting to protect the wetlands and to further prevent sloughing along the north bank of the ICWW that may be impacted as the result of the realignment of the ICWW.<br>• Avoid work or staging conducted within the wetland to the maximum extent possible.<br>• Use the maximum structural span lengths economically feasible, probably 27 meters (90 feet), to minimize the number of piers.<br>• Use pile foundations, rather than excavated pier foundations, so that construction disturbance is limited to the penetration of the piles themselves.<br>• Use meadow mats (30 cm X 30 cm timbers lashed together), or approved equivalent, during construction in wetland areas to minimize temporary impacts, and restore wetlands where disturbance does occur. |
| Aquatic Ecology | • Construction techniques that interfere with the movement of fish along finfish migratory pathways should be avoided.<br>• Construction techniques that create a physical or biological barrier to the movement of fish along finfish migratory pathways should not be employed, unless acceptable mitigating measures are used. |

| Topic | Commitment |
|---|---|
| | • Implement a phased approach to the construction effort to limit impacts to discrete sections of the highway at any one time, so as not to create a continuous barrier along the entire length of the project.<br>• If practicable, use turbidity barriers (silt or sediment curtains) around pier bents and to confine dredging operations so as to limit the areas where turbidity could become a problem, but keep as much of the waterway section unobstructed as possible at all times.<br>• To the extent possible, recycle construction materials from the demolition of the four existing causeway bridges into artificial reefs to create habitat in mitigation for habitat lost in pile areas.<br>• Warning charges will be detonated to scare off any marine life in the immediate area should blasting be required.<br>• Use demolition containment techniques to minimize the scattering of debris.<br>• Comply with time restrictions for dredging and blasting. |
| Threatened and Endangered Species | • Dredging in Beach Thorofare will be done in full compliance with the Biological Opinion issued on November 26, 1996, by the NMFS.<br>• Comply with time restrictions for blasting to protect sea turtles.<br>• Use a turbidity barrier for construction operations in Great Egg Harbor Bay to minimize temporary impacts due to sediment disturbances to foraging sea turtles. |
| ***Cultural Resources*** | |
| Somers Point - World War Memorial Bridge | • Mitigation options could include (a) recordation to standards set by the Historic American Engineering Record (HAER), (b) attempt to reuse or market parts of the bridge structure, and (c) interpretative displays and/or educational materials to be produced as a supplement to the HAER recordation. |
| Somers Point - Bay Front Historic District and<br>Ocean City - Inventory No. 16 (Dockside Café/ Marina) | • Design treatments for the new bridge(s) that reduce visual impact and add aesthetically pleasing landscaping treatments will be considered. |
| ***Socioeconomics and Land Use*** | |
| Somers Point and Ocean City – Construction Impacts | • Construction activities along the traveled way will be minimized during the busy summer tourist season. |
| Somers Point and Ocean City - Recreational Fishing Access | • A low-level timber recreation/fishing pier and a parking lot will be built at the site of the World War Memorial Bridge. The parking lot will accommodate about 50 vehicles and will be located on the site of the Gulf Station currently east of the Somers Point traffic circle. The recreation/fishing pier will be located immediately east of the abutment of the new bridge. |

| Topic | Commitment |
|---|---|
| | • Exit and entrance ramps down to grade from both the northbound and southbound lanes of the structure will provide access to a proposed 30-vehicle parking area located under the elevated structure on the island situated between the Rainbow Channel and Elbow Thorofare. In addition, a walkway underneath and along the new structure will provide access to the north and south parts of the island.<br>• On the island situated between Beach Thorofare and Rainbow Channel, a new fishing pier will be provided at the south bank of Rainbow Channel.<br>• An enlarged parking facility to accommodate up to 41 vehicles will be provided at the site of the current Visitor's Center. A path underneath the structure will connect the parking lot to the recreational areas. In addition, a walkway underneath and along the new structure will provide access to the north and south parts of the island.<br>• A pedestrian ramp (ADA compliant) and a stair tower will be provided on the south bank of Rainbow Channel opposite the site of the existing Visitor's Information Center.<br>• The existing boat ramp on the south bank of Rainbow Channel will be enhanced.<br>• The piles of a portion of the existing roadway structure will be cut off below the water to remain as a habitat for fish concentration. |
| Ocean City – Parkland | • Possible parkland mitigation areas have been identified on the island between Beach Thorofare and Rainbow Channel east of the causeway and in the area of the existing Information Center. |
| Ocean City – Visitor's Information Center | • The existing Information Center will be razed, and a new Information Center will be constructed in Ocean City. The existing parking area will be expanded for recreational users with walkways extending to the ends of the island. |
| ***Visual Resources*** | |
| Visual Effects | • New landscape plantings will replace vegetation removed during the widening of MacArthur Boulevard adjacent to East Laurel Drive and Dobbs Avenue.<br>• During final design, a determination will be made to enhance architectural aesthetics using precast concrete shapes for structures over waterways.<br>• If noise barrier walls are utilized along MacArthur Boulevard, the walls will receive a distinctive architectural treatment.<br>• Any of the existing Route 52 embankments that are left in place will be landscaped in a manner to blend visually with the surrounding marsh.<br>• The divided roadway and landscaped "gateway" area entering Ocean City will be replaced and enhanced.<br>• The use of the long spans along the causeway will enhance its aesthetics.<br>• Landscaping will be provided at the bridge touchdown areas in Ocean City and Somers Point. |

| Topic | Commitment |
|---|---|
| ***Hazardous Waste*** | |
| Properties of High Concern | • Additional investigative work will be required and may include analysis of soil samples during the design phase of the project. If any contaminated material is excavated, it will be disposed of properly or reused on the project in strict compliance with an approved soil re-use plan. |
| Asbestos Containing Material | • If the demolition of any structures is required, an assessment of the potential ACM will be made prior to beginning the demolition activities. If any ACM exists, specifications for the removal of such material will be incorporated into the contract plans. |
| ***Construction Impacts*** | |
| Excavation, Dredging, and Disposal | • Dredged material will dried out in a 6,000 square meter (65,000 square foot) triangular area directly east of the existing causeway on the island directly north of Beach Thorofare.<br>• Disposal of dredged material will be under the viaduct on the island between Beach Thorofare and Rainbow Channel and the island between Rainbow Channel and Elbow Thorofare or landfills in Cape May County. In addition, a determination will be made to use dredged material as beach replenishment material or structural fill material. |

# 4. SECTION 4(F) EVALUATION

## 4.1 INTRODUCTION

This Section 4(f) Evaluation has been prepared pursuant to federal regulations contained in 23 CFR Part 771.135 which implements Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, 49 U.S.C. 303 and 23 U.S.C. 138. This act requires that a Section 4(f) Evaluation be prepared for any federally funded highway project that uses property from a significant publicly owned park, recreation area, wildlife and waterfowl refuge, or land from an historic site of National, State, or local significance as determined by the officials having jurisdiction over the park recreation area, refuge, or historic site. The Section 4(f) evaluation must demonstrate that the following conditions have been met:

1. There is no feasible and prudent alternative to the use of that land; and

2. The action includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.

Historic sites under Section 4(f) include any archaeological sites that are considered eligible for inclusion on, or are already on, the National Register of Historic Places and which warrant preservation in place, including those discovered during construction. The term "use" occurs when the land from a Section 4(f) site is acquired for a transportation project and there is an occupancy of land that is adverse, in terms of the statute's preservationist purposes, or the proximity impacts of the transportation project on the Section 4(f) site, without acquisition of land, are so great that the purpose for which the Section 4(f) site exists are substantially impaired. The latter is termed "constructive use" and can include, amongst other things, an increase in noise level that affects enjoyment of the resource, impairment of the aesthetics of the resource's setting, a restriction of access to the resource, the effects of construction vibration, and interference with access to a wildlife or waterfowl refuge that would affect its ecological functions.

This Section 4(f) evaluation is based on portions of the Historic Architecture Technical Environmental Study, Volumes I through IV.

## 4.2 DESCRIPTION OF SECTION 4(F) RESOURCES

### 4.2.1 Parkland and Open Space

The Green Acres Program serves as an agent for the NJDEP, to manage the acquisition of land when it becomes part of the system of state parks, forests, natural areas, and wildlife areas. Green Acres works with the NJDEP's divisions of Parks and Forestry, Fish and Wildlife, and the New Jersey Natural Lands Trust to determine which lands should be preserved. Green Acres does not own the land it acquires; instead land is assigned to the divisions for management.

#### 4.2.1.1 Kennedy Park

In Somers Point, Kennedy Park is the only parkland/open space in the Green Acres program potentially affected by the proposed project. It is located along the shore of the bay in Somers Point approximately 600 meters (2,000 feet) west of the Route 52 causeway. The causeway and the World War Memorial Bridge can be clearly viewed from the southeast corner of the park. The park, approximately 4.2 hectares (10.5 acres) in area, is a quiet place with lawns and trees and mostly passive activities.

#### 4.2.1.2 Tidal Marsh Islands

In Ocean City, the Route 52 causeway passes over three tidal marsh islands (the Rainbow Islands) in Great Egg Harbor Bay. The portions of these islands that are outside of the highway right-of-way, along with other islands in Great Egg Harbor Bay (including the fill area supporting the Ocean City Information Center) are part of Ocean City's open space inventory and are Green Acres encumbered. Open space areas on the three islands measure approximately 101 hectares (250 acres). These islands, which are inundated at high tide, are covered with cordgrass *(Spartina alterniflora)* and include some meandering water channels. Recreational fishermen

can be found along the shores of the islands fishing in Rainbow Channel or Elbow Thorofare. The islands also provide nesting habitats for birds and small animals and therefore are being considered a 4(f) areas. Refer to Section 3.4 Natural Ecosystems.

### 4.2.2 Cultural Resources Sites

#### 4.2.2.1 Archaeological

No significant prehistoric or historic archaeological sites were discovered during the field surveys performed for this project.

#### 4.2.2.2 Historic Bridges

Of the four structures constructed, circa 1933, over the four channels crossed by the causeway, only the World War Memorial Bridge over Ship Channel has been found eligible for inclusion in the National Register of Historic Places. The others were evaluated and found to be not eligible because they were judged either not to be distinctive in design or they had been significantly altered by past rehabilitation work. Refer to Section 3.5 Cultural Resources.

The bascule bridge over Ship Channel and the viaduct approaches to it constitute the eligible structures. The structures are badly deteriorated, especially the approaches, and they are beyond the point where they can be rehabilitated. Also, there are only 12 meters (40 feet) between existing parapets. In order to meet current safety standards, the reconstructed causeway structures would have to be widened to 24 meters (80 feet) plus a 1.8 meter (6.0 foot) sidewalk on one side.

#### 4.2.2.3 Historic Architecture

In a prior study in 1995, two additional sites in Somers Point were found to be listed on, or eligible for listing, on the National Register of Historic Places. These included the Somers

Mansion (listed on the National Register on December 18, 1970), and the Bay Front Historic District (eligible for the National Register).

In a study conducted for this project it was revealed that three sites in Ocean City within the Area of Potential Effects are eligible for inclusion in the National Register of Historic Places. (See Figure 3.5-4). They are the Dockside Café/Marina, Bayside Center, and Tabernacle Baptist Church.

## 4.3 ALTERNATIVES ANALYSIS

Ten Build Alternatives plus four variations were developed and evaluated, in addition to the No Build Alternative. Several of these alternatives neither minimized nor avoided Section 4(f) resources. Others avoided or minimized Section 4(f) impacts; however, they had to be rejected for other overriding considerations. The remaining Build Alternatives that were ultimately selected for detailed environmental consideration all have some impacts to parkland and cultural resources. Refer to Table 4.3-1 and Figure 4.3-1.

### 4.3.1 Alternatives That Neither Minimize Nor Avoid Section 4(f) Impacts

Initially, alternatives involving a causeway with a centrally located high fixed span bridge were considered. Alternative 1 proposed a causeway on embankment, on an alignment offset to the east of the existing Route 52 alignment, with a high level fixed bridge over centrally located waterways. Alternative 2 was very similar, except the alignment was to be offset to the west of the existing alignment. These alternatives were rejected in the early stages because they involved dredging in high value clam habitats and they would have required relocating the ICWW into the Rainbow Channel.

To avoid these significant dredging problems, alternatives utilizing the existing channels were considered. These alternatives were on alignments reasonably close to the existing Route 52 alignment. Alternatives 3 and 4 both involved the construction of moderately raised bascule bridges over the existing channels. In Alternative 3, the causeway traversing the Rainbow

Islands was to be on embankment, with an alignment to the east of existing. In Alternative 4, the causeway was to be entirely on structure, offset to the west of existing. Both were rejected in the early stages because they did not sufficiently reduce the number of bridge openings and they had very high long-term bridge operation and maintenance costs.

An alternative with smooth horizontal and vertical alignment and significant ease of construction feasibility was also considered. Alternative 8 proposed high level fixed bridges over both of the existing channels, with the causeway entirely on structure and an alignment offset significantly to the west of existing. Alternative 8 was also rejected early because it required the acquisition of 10 commercial properties and would create profound visual impacts to downtown Ocean City.

The alternatives discussed here had overriding "fatal flaws" and did not meet the project purpose and need.

### 4.3.2 Alternatives That Avoid or Minimize Section 4(f) Impacts

Several alternatives that either avoided or minimized Section 4(f) impacts were proposed. Please refer to Table 4.3-1 and Figure 4.3-1.

The No Build Alternative (Alternative 11) involves retaining the existing causeway and bridges, and providing continual repair work necessary to keep the facility functional. Rehabilitation of specific portions of the roadway, bridges, and pilings would be conducted, as necessary. Clearly, retaining the existing causeway and bridges would avoid any impacts to the Rainbow Islands parkland and open space, the World War Memorial Bridge (eligible for the National Register of Historic Places), and the settings of the Bayside Historic District in Somers Point and the Dockside Café/Marina in Ocean City. However, the causeway bridges are badly deteriorated, and continued repair and rehabilitation will not preserve the structural integrity of the causeway and bridges, and will continue to present a safety hazard. The No Build Alternative is not viable since this proposal functions under the assumption that the World War Memorial Bridge could be maintained in safe condition while preserving all or most of its historic characteristics.

## Table 4.3-1
## SUMMARY OF SECTION 4(f) IMPACTS

| | Alternative | Description | Area of Parkland Taken | Parkland Access Effects (Islands) | Effects to World War Memorial Bridge | Effects to Bayside Center | Effects to Dockside Café / Marina |
|---|---|---|---|---|---|---|---|
| Alternatives with minimum 4(f) impacts (considered, but rejected) | 11 | No Build | None | None | Short-term: None Long-term: eventual replacement needed | None | None |
| | 6 | Rehabilitation | None | None | No effect | None | None |
| | 6 Modified | Rehabilitation with widened causeway portion | Minor | None | Adverse effect to approach spans | None | None |
| | 7 | Aligned distantly to the West | Minor | Vehicular access eliminated | Adverse effect | Visual effect | Visual effect |
| | 10 | Tunnel | None | Vehicular access eliminated | Adverse effect | Visual effect | Visual effect |
| Alternatives considered for further evaluation | 5A | 2 bascule bridges with causeway on continuous structure; alignment offset to the west | 4.12 Hectares (10.18 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |
| | 5B | 1 bascule bridge and 1 fixed bridge with causeway on continuous structure; alignment offset to the west | 3.65 Hectares (9.02 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |
| | 5C | 2 fixed bridges with causeway on continuous structure; alignment offset to the west | 3.65 Hectares (9.02 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |
| | 9/9A-1 | 2 fixed bridges (9) or 1 bascule bridge and 1 fixed bridge (9A) with causeway on continuous structure; alignment near existing | 4.33 Hectares (10.70 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |
| | 9/9A-2 | 2 fixed bridges (9) or 1 bascule bridge and 1 fixed bridge (9A) with Rainbow Island portion on embankment with edge walls; alignment near existing | 4.33 Hectares (10.70 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |
| | 9/9A-3 | 2 fixed bridges (9) or 1 bascule bridge and 1 fixed bridge (9A) with Rainbow Island portion on embankment with side slopes; alignment near existing | 6.22 Hectares (15.37 Acres) | Modified, but maintained | Adverse effect | Visual effect | Visual effect |

Note: The first three rejected alternatives (11, 6, and 6 Modified) do not meet the project purpose and needs. All the other alternatives do, but the rejected alternatives 7 and 10 have unacceptably high socioeconomic impacts. Additionally, alternative 10 has exorbitant life-cycle costs.

Further, the No Build Alternative conflicts with the purpose and need for this project because of the following shortcomings:

- it does not widen lanes, add shoulders nor provide a median barrier – all of which would improve traffic safety;
- it does not raise the level of the causeway to prevent it from becoming impassable during severe storms, which could also impede evacuation during an emergency; and
- it does not eliminate, nor significantly reduce, the delays to motorists and emergency vehicles as a result of frequent bascule bridge openings during the tourist season.

Build Alternative 7, which would have almost no physical impacts to cultural resources and parklands, was considered. This alternative proposed a new causeway, entirely on structure, offset distantly to the west of the existing alignment with high level fixed bridges over the existing channels. However, the World War Memorial Bridge would ultimately be removed, and vehicular access to the parklands would be eliminated. This alternative was rejected for further consideration due to the severe socioeconomic impacts it will impose on both residences and businesses, and its significant alteration of prevailing traffic patterns.

Alternative 6 involves rehabilitation of the existing causeway exactly as it is. The World War Memorial Bridge would be rehabilitated following the guidelines of the Department of the Interior, and the other three bridges would be reconstructed. Although this alternative would have no impact on Section 4(f) properties, it retains the low level bascule bridges, and the facility remains subject to flooding. Therefore, this alternative does not meet the purpose and need of the project, and consequently, was rejected. A variation of Alternative 6 (6 Modified) would involve widening the entire causeway from the existing 3.0 meter (10 foot) wide lanes to standard 3.6 meter (12 foot) wide lanes with shoulders and sidewalk over most of the causeway, except for the World War Memorial Bridge over the Ship Channel. The profile would remain the same. This rehabilitation alternative avoids most of the visual impacts to the settings of the Bayside Historic District in Somers Point and the Dockside Café/Marina in Ocean City. Although this alternative may slightly alter the setting near the Somers Mansion, there would be no anticipated adverse impacts to the Somers Mansion because its setting does not contribute to its eligibility. However, to the extent that additional right of way would be required to widen

the lanes, minor impacts would occur to the open spaces of the Rainbow Islands. These impacts would be limited to the area acquired for the right of way.

Alternative 6 Modified would also not meet the purpose and need of this project, except that it would widen lanes over a part of the length. Also, the abrupt transition from a width of 24 meters (80 feet) to 12 meters (40 feet) over Ship Channel would introduce an unacceptable safety hazard. Maintaining traffic during construction would be extremely difficult due to the restricted width of the existing causeway. Furthermore, the approaches to the World War Memorial Bridge are so badly deteriorated that they would have to be replaced. Accordingly, the World War Memorial Bridge could not be rehabilitated without a 4(f) use. On the basis of these facts, this alternative was rejected.

Alternative 10 proposed that a tunnel be built from MacArthur Boulevard in Somers Point to 9th Street in Ocean City along an alignment substantially west of the existing Route 52 alignment. This alternative would have essentially no physical effects on parklands or cultural resources, with the exception of the World War Memorial Bridge, which would be removed. However, vehicular access to the recreational areas would be eliminated and, in addition, this alternative would have extremely serious construction phase impacts on tidal wetlands and shellfish habitat. Moreover, it would have significantly higher construction costs and would also affect many of the businesses in Ocean City and Somers Point. It was therefore rejected.

### 4.3.3 Alternatives Selected for Detailed Environmental Evaluation

The Build Alternatives addressed in this Section 4(f) analysis include the following: Alternatives 5A, 5B, and 5C, and Alternatives 9 and 9A. The proposed structures for these alternatives would be higher that the existing crossing, with different bridge designs. For all of the Build Alternatives, the proposed high fixed bridges would be approximately 40 feet higher than the existing World War Memorial Bridge.

#### 4.3.3.1 Parkland and Open Space

There are no anticipated physical impacts to Kennedy Park under any of the Build Alternatives. Indirect impacts include the modification of the visual environment for visitors and the appearance of the causeway and bridges as seen from Kennedy Park. The long viewing distances from Kennedy Park will tend to minimize the impact of the higher profile. Moreover, the more gradual vertical alignment employed in the proposed viaducts, compared with the sharp existing vertical curve, may tend to result in a more aesthetically pleasing experience for the viewer.

Each of the five Build Alternatives impacts the open space of Ocean City's Green Acre areas. In each alternative, the elevated viaducts proposed have to be constructed above the tidal wetland islands. Also, one of the three options under Alternative 9 and 9A involves construction on standard embankments with side slopes that fill existing wetlands/open space areas. The impacts are of three kinds:

1) Acquisition of 12.2 meter (40 foot) right-of-way in addition to the existing 24 meter (80 foot) right-of-way;
2) filling of open space areas on the island between Elbow Thorofare and Rainbow Channel by the side slopes of embankment sections (Alternatives 9 and 9A, option 3); and,
3) under Alternative 5A, dredging a new ICWW channel through the wetland/open space areas adjacent to Beach Thorofare.

Table 4.3-1 summarizes the direct impacts on Section 4(f) open space and cultural resources in Ocean City by the various Build Alternatives (Refer also to Figure 4.3-1). In addition, Table 4.3-2 provides details to indicate how individual properties will be affected by each of the Build Alternatives selected for detailed environmental analysis. All of the Build Alternatives involve alteration of the existing access to the Ocean City Information Center. Possible mitigation measures are identified in Section 4.4.1. Under the various Build Alternatives, it would be possible to mitigate/offset these impacts by enhancing recreational use of the parklands of the Rainbow Islands. This would be accomplished by constructing a new access to the recreational

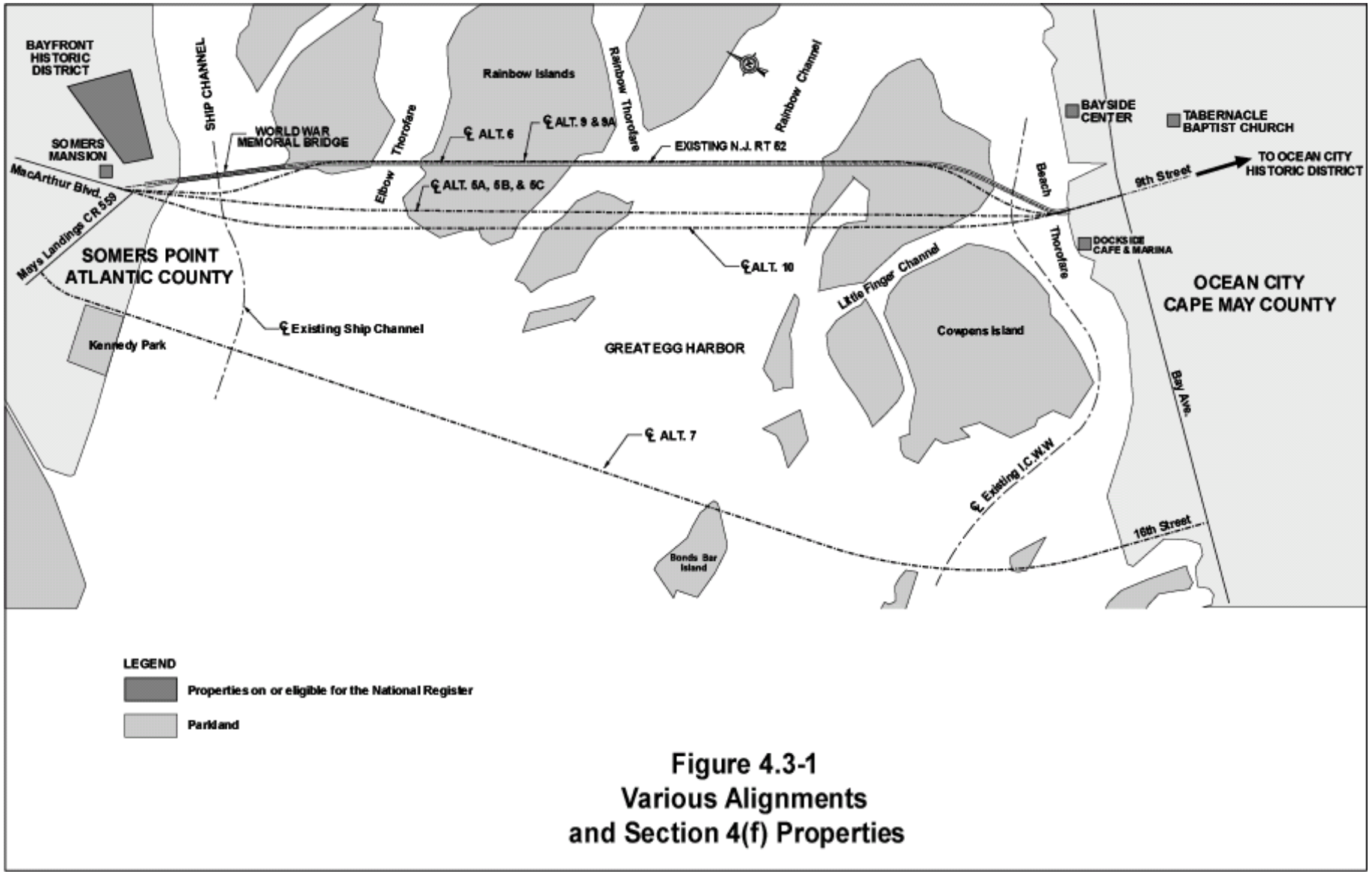


**Figure 4.3-1**
**Various Alignments**
**and Section 4(f) Properties**

areas on that island, by providing a designated parking area for fishermen on the island between Elbow Thorofare and Rainbow Channel. This effort would be relatively easier under Alternatives 9 and 9A than under Alternatives 5A, 5B, or 5C. It is noteworthy that some of the quantities in Table 4.3-1 include impacts that result directly from the encroachment on 4(f) lands in order to provide access to recreational areas on the Rainbow Islands. While the acquisition of Section 4(f) open space for right-of-way represents a diversion of use, the maintenance of access for recreation is a significant mitigation factor.

Alternatives 5A, 5B and 5C will alter views to the west of the upland open space areas. The proposed viaducts in some areas will be as low as four meters from the wetland surface. Of Alternatives 5A, 5B, and 5C, Alternative 5A will adversely impact the most area due to the additional impact associated with the ICWW channel realignment. Under Alternatives 5A, 5B, and 5C the existing right-of-way would also be needed to mitigate wetland impacts, and the area may not be adequate for both.

Under Alternatives 9 and 9A, the visual impact will be confined to small areas near Ship Channel and Beach Thorofare where the proposed viaducts will be very high above the wetland surface. Alternatives 9 and 9A will impact more Section 4(f) area than Alternative 5A, 5B and 5C, since they would require more extensive property acquisition. It should be possible to partially mitigate/offset these impacts associated with Alternatives 9 and 9A by transferring ownership of the existing right-of-way along the islands to Ocean City as open space.

Under Alternatives 9 or 9A, direct filling of wetland/open space areas can be minimized, by adopting either Option 1 (continuous structure) or Option 2 (embankment with edge walls), rather than Option 3 (embankment with side slopes). Impacts would be greater under Option 3, where the edge of the embankment will extend into the island beyond the existing right-of-way.

Table 4.3-2

# IMPACTS TO SECTION 4(f) LANDS IN OCEAN CITY

Route 52(1) Causeway Between
Somers Point, Atlantic County and Ocean City, Cape May County

| BLOCK | LOT | SQ. METERS (ACRES) | DESCRIPTION | IMPACTS FROM VARIOUS ALTERNATIVES, AREA IN SQUARE METERS (ACRES) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 5 | | 9 | | | 9A | | | 11 No Build |
| | | | | A | B & C | 1 | 2 | 3 | 1 | 2 | 3 | |
| 1750 | 1 | 4,046.8 (1.00) | Majority of parcel is a tidal wetland. Access from Route 52. | 0 | 0 | 844 (0.21) | 844 (0.21) | 844 (0.21) | 844 (0.21) | 844 (0.21) | 844 (0.21) | 0 |
| 1750 | 2 | 141,640.5 (35.00) | Majority of parcel is a tidal wetland. Access from Route 52. | 14,592 (3.61) | 14,592 (3.61) | 1,891 (0.47) | 1,891/ 2,921* (0.47 / 0.72) | 8,634 (2.13) | 1,891 (0.47) | 1,891/ 2,921* (0.47 / 0.72) | 8,634 (2.13) | 0 |
| 1750 | 4 | 53,823.4 (13.30) | Entire parcel is a tidal wetland. No access from Route 52. | 7,332 (1.81) | 7,332 (1.81) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1750 | 16 | 158,151.8 (39.08) | Majority of parcel is a tidal wetland. Access from Route 52. The Ocean City Information Center is located on this parcel. | 19,276 (4.76) | 14,588 (3.60) | 14,051 (3.47) | 14,051 (3.47) | 14,051 (3.47) | 14,051 (3.47) | 14,051 (3.47) | 14,051 (3.47) | 0 |
| 850 | 1 | 186,560.8 (46.10) | Majority of parcel is a tidal wetland. Access from Route 52. | 0 | 0 | 3,757 (0.93) | 3,757 (0.93) | 3,757 (0.93) | 3,757 (0.93) | 3,757 (0.93) | 3,757 (0.93) | 0 |
| 850 | 3 | 360,859.6 (89.17) | Majority of parcel is a tidal wetland. Access from Route 52. | 0 | 0 | 14,497 (3.58) | 14,497 / 18,025* (3.58 / 4.45) | 26,662 (6.59) | 14,497 (3.58) | 14,497 / 18,025 * (3.58 / 4.45) | 26,662 (6.59) | 0 |
| 850 | 6 | 106,109.0 (26.22) | Majority of parcel is a tidal wetland. Access from Route 52. | 0 | 0 | 8,258 (2.04) | 8,258 (2.04) | 8,258 (2.04) | 8,258 (2.04) | 8,258 (2.04) | 8,258 (2.04) | 0 |
| Total Area (listed Islands) | | 1,011,192.1 (249.87) | | 41,200 (10.18) | 36,512 (9.02) | 43,298 (10.70) | 43,298/ 47,856* (10.70 / 11.83) | 62,206 (15.37) | 43,298 (10.70) | 43,298/ 47,856* (10.70 / 11.83) | 62,206 (15.37) | 0 |
| Percent of Listed Islands (4(f) Parklands) Affected by Alternative | | | | 4.1% | 3.6% | 4.3% | 4.3% / 4.7%† | 6.2% | 4.3% | 4.3% / 4.7%† | 6.2% | 0% |

* Area in square meters / Area in square meters if toe berms are required at the outside bases of the edge walls (Area in acres / Area in acres with toe berms).
† Percentage / Percentage if toe berms are required at the outside bases of the edge walls.

NOTE: Area impacts are estimates based on the preliminary design, and may be refined during final design.

#### 4.3.3.2 Historic Bridge

Under all of the Build Alternatives, the World War Memorial Bridge on Route 52 over Ship Channel and the other causeway bridges are planned for removal for public safety reasons. Possible mitigation measures are identified in Section 4.4.2.

#### 4.3.3.3 Other Historic Sites

There are no anticipated adverse impacts to the Somers Mansion, listed on the National Register, because its setting did not contribute to its eligibility for listing on the National Register. There are no anticipated physical impacts to the Bay Front Historic District, also listed on the National Register, under any of the Build Alternatives. Indirect impacts include the modification of the setting and visual environment due to changes in the appearance of the causeway and bridges as seen from the Bay Front Historic District. The impacts to the setting of Bay Front Historic District cannot be avoided. However, the long viewing distances from the Bay Front Historic District will tend to minimize the impact of the higher profile. Moreover, the more gradual vertical alignments employed in the proposed viaducts, compared with the sharp existing vertical curve, may tend to result in a more aesthetically pleasing experience for the viewer.

As indicated previously, three sites in Ocean City within the Area of Potential Effect are eligible for inclusion on the National Register of Historic Places: the Dockside Café/Marina, Bayside Center, and the Tabernacle Baptist Church. There are no anticipated impacts from any of the alternatives to the Tabernacle Baptist Church or Bayside Center due to their distance from the project area. There are no anticipated physical impacts to the Dockside Café/Marina under any of the Build Alternatives. Indirect impacts include the modification of the setting and the visual environment due to changes in the appearance of the causeway and bridges as seen from the Dockside Café/Marina. These visual impacts would be relatively more significant under Alternative 5A, 5B, and 5C, since the alignment under these alternatives brings the roadway and structures closer to the Dockside Café/Marina. None of the alternatives under consideration would result in a 4(f) use of these historic sites.

### 4.3.4 Summary/Conclusion of Alternatives Analysis

As discussed in Section 4.3.2 above, several alternatives were considered to avoid or minimize the use of Section 4(f) properties or resources.

The avoidance alternatives include the No Build, the Rehabilitation and the Tunnel alternatives. The No Build Alternative is not feasible as the existing facility is functionally obsolete and the causeway bridges are deteriorated to the point that they cannot be safely maintained. The Rehabilitation Alternative is not feasible as the facility would remain functionally obsolete. Also, the structural condition of the causeway is too deteriorated for effective rehabilitation of the entire causeway. The Tunnel Alternative is not prudent as it eliminates recreational access to the parklands, has significant socioeconomic impacts and its cost of construction is unusually high.

The minimization alternatives include the Modified Rehabilitation and Alignment distantly to the west. The Modified Rehabilitation alternative is not prudent as it introduces unacceptable safety hazards and only partially restores the functionality of the facility. The Alignment distantly to the west is not prudent as it eliminates recreational access to the parklands and has significant socioeconomic impacts.

Thus the alternatives that avoid or minimize the use of Section 4(f) properties are not feasible and prudent. There are unique problems or unusual factors involved in the use of alternatives that avoid these properties, or the cost, social, economic, and environmental impacts, or community disruption resulting from such alternatives reach extraordinary magnitudes.

## 4.4 MEASURES TO MINIMIZE HARM

Impacts of feasible Build Alternatives that were studied in detail in the DEIS, including the Preferred Alternative, have been detailed in Section 4.3.3, and summarized in Table 4.3-1. All the Build Alternatives studied in detail have comparable impacts to Section 4(f) properties (except Alternatives 9/9A-3 that take a larger area of parkland due to side slopes). The Preferred Alternative (Alternative 9-1) is a feasible and prudent alternative as it meets the project purpose and need of providing a safe and efficient transportation facility while avoiding or minimizing impacts to sensitive environmental and community resources, including Section 4(f) properties. The mitigation measures to further reduce impacts and harm to Section 4(f) resources are identified in the following sections.

### 4.4.1 Parkland/Open Space Mitigation

The Preferred Alternative will have some adverse effect on the tidal marsh islands that are part of Ocean City's open space inventory through acquisition of land for the highway right-of-way, as summarized on Table 4.3-1. Several measures are proposed to minimize impacts, as listed below.

- Maximize the use of the existing right-of-way to offset the acquisition of 4(f) land for right-of-way purposes.
- Provide improved access and parking for recreational fishermen and other users to enhance the use of the Rainbow Islands parkland/open space.
- Transfer ownership of the existing right-of-way along the islands in Great Egg Harbor Bay to the City of Ocean City to offset the area acquired for the new alignment.
- Build causeway on structure to minimize impacts to wetlands/Green Acres areas.
- A parking lot and low-level timber public recreation/fishing pier are proposed to be built in Somers Point, near the site of the World War Memorial Bridge on the north bank of Ship Channel. A relatively level-grade pavement or boardwalk would connect the parking lot and the recreation/fishing pier. This would enhance recreational fishing in Great Egg Harbor Bay,

and would be easily accessible to children, the elderly and the handicapped. A monument with a plaque commemorating the World War Memorial Bridge would also be placed at this location.

### 4.4.2 Mitigation for Historic Bridge and Other Historic Sites

- For the historic bridge over the Ship Channel, the following mitigation measures have been agreed upon in a Memorandum of Agreement (MOA) between FHWA, NJDOT, and NJSHPO (for details, please refer to Appendix B):

  1. Prior to the demolition of the Route 52 Bridge over the Ship Channel (the World War Memorial Bridge), document the bridge to the Historic American Engineering Record (HAER) Standards.
  2. As a supplement to the HAER recordation, prepare an interpretive display showing the contribution of the bridge to the development of Ocean City and the Jersey Shore. Place the display on the acquired Gulf station property adjacent to the historic site, where parking would be possible.
  3. Attempt to market the bridge structure up to the time when specifications for the demolition contract must be finalized.
  4. Develop a list of bridge design guiding principles that would help in selecting design parameters and elements that reflect the project area's historic setting.

- Impacts on the viewshed of historic properties in the project area can be minimized by the following measures:

  1. Include architectural elements of design in the new bridges.
  2. Use the longest spans that are economically feasible, which will minimize the visual clutter that piles usually introduce.

## 4.5 COORDINATION WITH STATE HISTORIC PRESERVATION OFFICE AND THE PUBLIC

Section 106 coordination for the Route 52 Project consisted of consultation with cultural resources staff at the NJDOT and the NJSHPO through three means: 1) partnering workshops, 2) project-specific site meetings and 3) on-going coordination, both verbal and written.

An initial Partnering Workshop for the project was held on May 29, 1996. Review agencies having interests and/or regulatory authority with cultural resources that were represented were the NJSHPO, NJDEP-Office of Program Coordination, NJDOT and the FHWA.

A second partnering workshop was held on December 11, 1997. The purpose of this second workshop was to build upon the action plan and alternatives discussed at the first partnering workshop. Again, representatives from the NJDOT, FHWA, the project consultants and various local, county, state and federal agencies were in attendance. Review agencies having interests and/or regulatory authority with cultural resources that were represented were the NJSHPO, NJDEP-Office of Program Coordination, NJDOT and the FHWA.

On January 9, 1998, a meeting was held at the project study area with representatives of the NJDOT, NJSHPO and the cultural resources consultant, McCormick, Taylor & Associates, Inc. The purpose of the meeting was to discuss/agree upon the project APE, and specifics of the historic architecture study methodology.

Follow-up coordination was done with representatives of NJDOT and NJSHPO in Spring, 1998 regarding the project APE. In addition, discussions with the NJDOT took place regarding the reporting format for the TESs.

On July 29, 1999 at 10:30 AM, a workshop meeting was held for the purpose of briefing local officials from the City of Somers Point, Ocean City and Atlantic and Cape May Counties prior to the Public Information Center held on August 12, 1999. The officials were presented with large-scale drawings of the various alternatives and recreational access plans. An explanation of the proposed alternatives that were proposed for further study in the Draft Environmental Impact Statement (DEIS) was also given.

A Public Information Center was held on August 12, 1999 from 3:00 PM to 7:00 PM at the Ocean City Intermediate School for the purpose of informing the public on the planned reconstruction of Route 52. The public was encouraged to ask questions and provide input and comments. A newsletter advertising the Public Information Center was mailed to everyone on the Route 52 mailing list, approximately 250 people. Approximately 140 people signed in attendance. The majority was residents and business owners from Ocean City and Somers Point. In addition, the mayors and various officials of both cities, representatives from Atlantic and Cape May Counties and interested parties from nearby communities also attended. Representatives of the Atlantic County Gazette, Ocean City Gazette, Ocean City Sentinel and the TSM TV network provided press coverage.

The State Historic Preservation Office, in a letter dated April 14, 2000, expressed their satisfaction at the adequacy of the efforts to identify archaeological and historical architecture properties, and concurred with the conclusions on the adverse effects to three eligible historical architecture properties. A copy of this correspondence may be found in Appendix C.

On November 15, 2000, a Public Information Center and Public Hearing took place at the Jordan Elementary School. A summary of comments given by the public at the Public Hearing is provided in Section 5.1.2.

A MOA between FHWA, NJDOT, and NJSHPO dated January 16, 2002 specifies that the replacement of the Route 52 Causeway shall be implemented in accordance with stipulations outlined in the MOA in order to take into account the effect of the proposed undertaking on historic property. The MOA is provided in Appendix B.

## 4.6 CONCLUSION

Based upon the above considerations, there is no feasible and prudent alternative to Alternative 9. The use of land from the tidal marshlands in the Great Egg Harbor (Green Acres encumbered parklands) and the taking of the Historic Bridge over Ship Channel, and the proposed action, includes all possible planning to minimize harm to these Section 4(f) properties.

# 5. COORDINATION AND CONSULTATION

The lead agencies for the Route 52 Reconstruction Project are the U.S. Department of Transportation, FHWA, and NJDOT. The USACOE, USCG, and USFWS are cooperating agencies in the preparation of this FEIS.

## 5.1 PUBLIC INVOLVEMENT

### 5.1.1 Scoping Meetings and Public Hearings

Prior to the issuance of the DEIS, the public involvement program included the following activities:

1) Scoping (partnering) meetings were held on May 29, 1996 and December 11, 1997. Primarily county, state, and federal officials having a jurisdictional interest in the project, and officials of Somers Point and Ocean City attended these meetings.

2) On July 6, 1998, a Local Workshop Meeting was held at the Somers Point Municipal Building in Somers Point with local and county officials and local business representatives.

3) On August 11, 1998, the NJDOT made a presentation to the Greater Ocean City Chamber of Commerce. This presentation was held at the Somers Diner in Somers Point.

4) A Congestion Management Study Stakeholders Meeting was held on February 22, 1999 in Somers Point. The topic of this meeting was the Route 52 Widening CMS.

5) In July 1999, a newsletter describing the project and advertising the Public Information Center was mailed to everyone on the Route 52 mailing list, approximately 250 people.

6) On July 29, 1999, a meeting was held for the purpose of briefing local officials from the City of Somers Point, Ocean City and Atlantic and Cape May Counties prior to the Public Information Center held on August 12, 1999.

7) A Public Information Center was held on August 12, 1999 at the Ocean City Intermediate School to inform the public on the planned reconstruction of Route 52. Residents and business owners from Ocean City and Somers Point, the mayors and various officials of both cities, representatives from Atlantic and Cape May Counties and interested parties from nearby communities attended.

8) A meeting was held on September 21, 1999 with local citizens from the Palen Avenue citizens group of Ocean City.

Subsequent to the issuance of the DEIS, the following activities took place:

9) In October 2000, another newsletter was sent. This newsletter described the project and advertised the Public Information Center and Public Hearing scheduled for November 15, 2000 and was mailed to everyone on the Route 52 mailing list.

10) On November 15, 2000, a Public Information Center and Public Hearing took place at the Jordan Elementary School.

11) A meeting was held with the local officials of the City of Somers Point, the NJDOT and the project's consultant, Earth Tech. The proposed crosswalk and signalized intersection at Braddock Drive and various alternatives for the proposed lane configurations for MacArthur Boulevard were discussed.

### 5.1.2 Public Comments

The following is a summary of comments given by the public at the Public Hearing on November 15, 2000 at The Jordan Road Elementary School in Somers Point, NJ. A written transcript was made of all comments received at this hearing.

| Public Comment | Response |
|---|---|
| 1. Provide safe pedestrian crossing of MacArthur Boulevard. | 1. A pedestrian crossing is proposed at Braddock Avenue (see section 3.1.8.2 in the FEIS). |
| 2. Construct new entrance/exit ramps on Garden State Parkway for the use of CR 559 Mays Landing Road as an access to Ocean City. | 2. Construction of a new entrance ramp will have excessive right of way and environmental impacts. For details, see section 3.6.2 of the FEIS |
| 3. Provide signs on Garden State Parkway for traffic destined for Ocean City – all streets north of 15th Street use Exit 30 (Laurel Drive) and all streets south of 15th Street use Exit 25 (34th Street Bridge). This will help to disperse traffic. | 3. A request to provide appropriate signage has been submitted to the Garden State Parkway Authority. |
| 4. Provide 175' horizontal clearance to allow for large barges to maneuver against currents at the Beach Thorofare (Bascule bridge will not provide sufficient horizontal clearance for maneuvering). | 4. The preferred alternative eliminates the bascule bridge. Horizontal clearance exceeding the proposed 100 feet will be determined during final design. |
| 5. Provide a barrier, planting or bushes along East Laurel Drive. | 5. The preferred alternative proposes one lane in each direction and a center turning lane between Braddock Avenue and Route 9, and therefore, provides a wider space for planting along East Laurel Drive (see section 3 of the FEIS). |
| 6. Provide convenient bus stops near the new intersection (Somers Point Circle) to allow public to use public transportation to Ocean City. | 6. Coordination with NJ Transit regarding placement of bus stops will be done during final design and permitting. |
| 7. Concern over traffic backup at intersection with Route 9. | 7. Improved geometry and signal timing will result in a reduction of queue length at the intersection with Route 9. For details, see section 3.1.6 in the FEIS. |
| 8. Address the issue that traffic queue on Par Drive entering MacArthur Boulevard will block Laurel Drive. | 8. The preferred alternative proposes one lane in each direction and a center turning lane between Braddock Avenue and Route 9, and therefore, does not change existing conditions on Par Drive. |
| 9. Concern with increased noise level from new roadway. | 9. Noise mitigation measures are addressed in section 3.3.4 of the FEIS. |

| Public Comment | Response |
|---|---|
| 10. Concern with cracks in foundation of homes due to increase traffic flow (Public requests that noise and vibration studies be performed). | 10. Noise and vibration monitoring will be evaluated during final design and construction. |
| 11. Project should be done in stages to minimize impact on community. | 11. Every practical method will be utilized during construction to minimize impacts on the community. |
| 12. Provide protected and continuous bicycle corridor that includes the Causeway and MacArthur Boulevard. There are Federal and State funds for these purposes. | 12. The preferred alternative proposes continuous shoulders along the causeway for bicycle use. |
| 13. Request to approve a plan that leaves the Information Center in its present location on the causeway. | 13. Under the preferred alternative, the Visitor's Information Center will not be visible from the elevated causeway and therefore will loose its attractiveness to public access. In addition, Ocean City has expressed interest to relocate this center into the city itself to enhance its functionality and provide better service to visitors and the community. |
| 14. Concern that widening MacArthur Boulevard will create physical and social barriers. | 14. The proposed layout of MacArthur Boulevard was revised to provide only three lanes through the residential area (see section 3.1.8 of the FEIS). In addition, a crosswalk and traffic signal are proposed at the intersection at Braddock Drive. This improvement does not introduce physical or social barriers; however, it maintains community cohesion and provides a safer crossing of MacArthur Boulevard. |

## 5.2 AGENCY COORDINATION

### 5.2.1 Partnering Workshops and Coordination Meetings

Coordination with other agencies was also an important part of the process. The following activities took place prior to the issuance of the DEIS to facilitate this coordination:

1) A Notice of Intent (NOI) to prepare an EIS on the Route 52 Reconstruction Project appeared in the Federal Register on October 24, 1996.

2) Two Partnering Workshops were conducted by the NJDOT in May 1996 and December 1997. Representatives from Ocean City, the City of Somers Point, Atlantic County, NJDOT, NJDEP, New Jersey Legislature, New Jersey Fish Game and Wildlife, FHWA,

USACOE, USFWS, NMFS, and the Ocean City Route 52 Advisory Committee participated in these two partnering workshops.

3) Regular interagency coordination meetings involving representatives of NJDEP, USACOE and other federal agencies such as USFWS and NMFS usually occur monthly. The Route 52 Reconstruction Project is one of the projects that have been discussed.

4) On January 9, 1998, a field meeting was held at the project study area with representatives of NJDOT and the NJSHPO to discuss and decide upon the Area of Potential Effects (APE) for the Historic Architecture TES.

5) A Green Acres meeting was held on January 21, 1999.

6) An All-Agency meeting was held on March 11, 1999 and was attended by representatives of NJDOT, NJDEP, FHWA, USACOE, USFWS, and USCG.

7) A workshop meeting of the mayors and other officials of Ocean City and Somers Point was held on July 29, 1999 to brief the local officials and public representatives in advance of the August 12, 1999 Public Information Center.

Subsequent to the issuance of the DEIS, the following activities took place:

8) A meeting was held on March 12, 2001 with the NJ Fish and Wildlife Service, the NJDOT, and the project consultant Earth Tech at the office of the NJDEP at 501 East State Street. Various details regarding proposed access for anglers and other recreational users were discussed.

9) A meeting was held on April 30, 2001 with the FHWA, the NJDOT, and the project's consultant Earth Tech.

10) A preliminary version of the FEIS was prepared and sent to the Cooperating Agencies (USACOE, USFWS, and USCG), as well as to NMFS, USEPA - Reg. II, and NJDEP for review and comments. Appendix C includes the response letters from these agencies. Table 5.2.2 includes the responses to significant comments received from these agencies.

### 5.2.2 Agency Comments

The following table summarizes the agency comments and the responses:

| Agency Comment | Response |
|---|---|
| ***US Fish and Wildlife Service*** | ***11/13/00*** |
| 1. Reconsider selecting Alternative 9A-1 as the preferred alternative. | 1. The relative benefits and impacts of Alternative 9A-1 were reevaluated in comparison to those of Alternative 9-1. Alternative 9-1 remains the preferred alternative. See section 3.4.7 in the FEIS. |
| 2. Alternative 9 requires dredging of benthic habitats, which may cause long-term indirect adverse effects, such as turbidity and substrate alteration. | 2. Both Alternative 9 and 9A will result in impacts to benthic habitat during construction, and from the installation of support structures. Alternative 9 will temporarily disrupt limited areas of benthic habitat as a result of dredging, but will not cause a change in the substrate composition. These impacts will be temporary and involve only a relatively small area. It is anticipated that shellfish beds would be become reestablished after dredging disturbances end. See Section 3.4.7 of the FEIS. |
| 3. USFWS comments on Preliminary DEIS from letter of September 21, 2000 were not addressed. | 3. The DEIS was already in the process of being printed at the time this letter was received. The comments have been reiterated in the 11/13/00 letter and are being addressed here. |
| 4. DEIS should provide information regarding traffic problems, stemming from bascule bridges, during previous emergency evacuations. | 4. The USCG "Captain of the Port" (located in Philadelphia) maintains the authority for closing the Bascule bridges in case of emergency. The "Captain" will usually order the Bridge and the port to be closed at least 12 hours before an impending Hurricane. (marine advisories calling for vessels to return to port are issued at least 18 hours in advance). |
| 5. Shifting the ICWW would increase the potential for wetland erosion along the north bank of Beach Thorofare. | 5. The wetlands along the north bank of the ICWW will be protected by the fender system for the pier on that side of the channel. In addition, sheeting will be provided to further prevent sloughing. |
| 6. Construction alternatives that satisfy the design considerations and further minimize wetland impacts should be identified. | 6. Alternatives 7 and 8, with alignments offset to the west of the existing causeway, satisfy design considerations and minimize wetland impacts. However, they are not feasible as they have severe socioeconomic impacts in the form of property takes, change of land use, change in traffic patterns and introduction of visual blight in Ocean City. |
| 7. Safety and design standards should be identified. | 7. Safety and design standards will be in accordance with New Jersey DOT Highway and Bridge Design Standards. |
| 8. Alt. 9A-1 would cost $7 million less than Alt. 9-1. | 8. The anticipated construction cost of Alternative 9-1 is $11 million less than for Alternative 9A-1. Moreover, the estimated life cycle cost for Alternative 9-1 is $17 million less for Alternative 9-1, compared to Alternative 9A-1. (FEIS, Table 2.1) |

| Agency Comment | Response |
|---|---|
| ***New Jersey Division of Fish and Wildlife*** | ***11/16/00*** |
| 1. No exception is taken to Alternative 9-1. | 1. Alternative 9-1 is the Preferred Alternative. |
| 2. Diamondback Terrapins need to be addressed for Causeway Option 3, if this Option is chosen. | 2. Causeway Option 1 (viaduct on structure) is the Preferred Alternative. |
| 3. A clear and concise description of angler access with drawings/designs should be consolidated into one section and included in the FEIS. | 3. A full description with drawings depicting the access for recreational users has been incorporated into the FEIS.( Sect. 3.6.2.1 and Figures 3.6-1 and 3.6-2.) |
| 4. The proposed fishing pier in Somers Point should extend further out into Ship Channel. | 4. The feasibility of extending the fishing pier further into Ship Channel will be determined during final design. |
| 5. An additional fishing pier should be added on the south side of Ship Channel. | 5. Due to safety concerns and access restrictions, an additional fishing pier on the south side of Ship Channel will not be provided. |
| 6. Access should be created to the island between Ship Channel and Elbow Thorofare. | 6. Due to safety, liability, and access restrictions, access will not be provided to the island between Ship Channel and Elbow Thorofare. |
| 7. Parking at the parking lot on the island between Elbow Thorofare and Rainbow Channel should be increased. | 7. The number of parking spaces for the proposed parking area under the causeway at this location has been increased from 16 to 30 spaces. (Sec. 3.6.4 and Fig. 3.6-2 |
| 8. Option B for Information Center should be chosen, and parking should be increased at Information Center. | 8. The City of Ocean City has expressed their intention to move the Information Center into Ocean City (Option C). However, the parking area for the Information Center will be maintained and enlarged for the benefit of recreational users. |
| 9. Fishing access off both sides of the structure should be provided where the viaduct crosses Rainbow Channel and Elbow Thorofare, and fishing at these areas and must not be restricted. | 9. Currently, anglers may not legally access for fishing off of the structures spanning Rainbow Channel and Elbow Thorofare. Accordingly, the project neither reduces nor restricts access in this regard. However, we will consider adding bump-outs for recreational purpose to the proposed sidewalk over Rainbow Channel during Final Design. |
| 10. The viaduct should be lowered over Elbow Thorofare and Rainbow Channel to accommodate anglers. | 10. The elevation of the viaduct must be raised so that it is above the elevation of the 100-year flood, in order that the causeway will function effectively as an evacuation route. It cannot be lowered to accommodate recreational users. |
| 11. Portions of existing bridges, over Elbow Thorofare and Rainbow Channel, should remain. | 11. The existing bridges are in extremely poor condition, and it would be prohibitively costly to continue to maintain these structures. Further, the presence of these structures would continue to expose the NJDOT to legal liabilities. |
| 12. Walkways should lead to terminal fishing areas near or under the causeway at the edges of all of the islands. Detailed design of walkways, paths, bulkheads, etc. needs to be included. | 12. Additional graphics depicting the walkways and access to recreational areas have been incorporated into the FEIS (Fig. 3.4-2). Detailed designs for the walkways, paths, and bulkheads shall be prepared in the design phase of the project. |

| Agency Comment | Response |
|---|---|
| ***New Jersey Department of Environmental Protection, Historic Preservation Office*** | ***11/15/00*** |
| 1. Establish recordation of World War Memorial Bridge as per Historic American Engineering Record (HAER) standards. | 1. Recordation of the bridge according to HAER standards is one of the mitigation measures proposed in the FEIS. |
| 2. Reuse or market components of World War Memorial Bridge. | 2. Efforts for marketing of the bridge components will continue up to the time when specifications for the demolition contract must be finalized. Reuse of a portion of the approach span as a fishing pier has been considered and was found not to be feasible. |
| 3. Provide interpretive displays of World War Memorial Bridge. | 3. An interpretive display will be produced as a supplement to the HAER recordation. |
| 4. Place visual displays of World War Memorial Bridge on Gulf Station property. | 4. The interpretive display will be in the nature of a large signboard and it will be placed at the Gulf Station property. |
| 5. Convert north viaduct approach of World War Memorial Bridge into a recreational/fishing pier. | 5. It is not economically feasible to convert a portion of the bridge into a recreational/fishing pier. Further, such a facility would expose the NJDOT to additional legal liabilities. However, the FEIS proposes that a low-level timber recreation/fishing pier and a parking lot would be built at the site of the World War Memorial Bridge, with an interpretive display mounted on a large signboard. |
| 6. Incorporate architectural components and details of World War Memorial Bridge into new bridge. | 6. Replicating the architectural components and details of the World War Memorial bridge is not feasible, as they are obsolete, substandard, and do not comply with current safety standards. Further, they would clash visually with the smooth lines of the proposed new structures and viaduct. However, the causeway designer will take into consideration the project setting, including the historic nature of the existing bridge, when developing the architectural details of the new structure. |
| 7. Specify architectural finishes for edge walls of proposed new bridge structures. | 7. The Preferred Alternative proposes that the causeway be built entirely on structure. The option with edge walls has been eliminated. |
| 8. Provide plantings along edge walls of proposed new bridge structures. | 8. The Preferred Alternative proposes that the causeway be built entirely on structure, with no edge walls. |
| 9. Use longest spans feasible. | 9. The use of the longest spans feasible is a proposed as a mitigation measure. |
| 10. Landscape bridge touchdown areas. | 10. Aesthetically pleasing landscaping will be incorporated into the plans for the touchdown areas in both Somers Point and Ocean City, in the design phase of the project. |

| Agency Comment | Response |
|---|---|
| 11. NJDOT must submit an Application for Project Authorization Under the New Jersey Register of Historic Places Act. | 11. All the mitigation measures have been incorporated in a Memorandum of Agreement that has been signed by NJDOT, the NJSHPO and the FHWA (Appendix B). Further, the Application for Project Authorization under the New Jersey Register of Historic Places Act will be submitted to the Historic Preservation Office during final design. |
| ***New Jersey Department of Environmental Protection*** | ***12/5/00*** |
| 1. Either Alternative 9 or 9A would be acceptable. While Alternative 9 requires dredging/minor island loss, the environmental impacts are not expected to be significant. | 1. Alternative 9 is the Preferred Alternative. |
| 2. Causeway Option 3 (embankment with side slopes), is not readily acceptable. | 2. Causeway Option 1 (viaduct on structure) is part of the Preferred Alternative. Option 3 has been eliminated as a viable option. |
| 3. A clear and concise description of angler access with drawings/designs should be consolidated into one section and included in the FEIS. | 3. A full description with drawings depicting the access for recreational users has been incorporated into the FEIS. ( Sect. 3.6.2.1 and Figures 3.6-1 and 3.6-2.) |
| 4. The proposed fishing pier in Somers Point should extend further out into Ship Channel. | 4. The feasibility of extending the fishing pier further into Ship Channel will be determined during final design. |
| 5. An additional fishing pier should be added on the south side of Ship Channel. | 5. Due to safety concerns and access restrictions, an additional fishing pier on the south side of Ship Channel will not be provided. |
| 6. Access should be created to the island between Ship Channel and Elbow Thorofare. | 6. Due to safety, liability, and access restrictions, access will not be provided to the island between Ship Channel and Elbow Thorofare. |
| 7. Parking at the parking lot on the island between Elbow Thorofare and Rainbow Channel should be increased. | 7. The number of parking spaces for the proposed parking area under the causeway at this location has been increased from 16 to 30 spaces. |
| 8. Option B for Information Center should be chosen, and parking should be increased at Information Center. | 8. The City of Ocean City has expressed their intention to move the Information Center into Ocean City (Option C). However, the parking area for the Information Center will be maintained and enlarged for the benefit of recreational users. |
| 9. Fishing access off both sides of the structure should be provided where the viaduct crosses Rainbow Channel and Elbow Thorofare, and fishing at these areas and must not be restricted. | 9. Currently, anglers may not legally access for fishing off of the structures spanning Rainbow Channel and Elbow Thorofare. Accordingly, the project neither reduces nor restricts access in this regard. |

| Agency Comment | Response |
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| 10. The viaduct should be lowered over Elbow Thorofare and Rainbow Channel to accommodate anglers. | 10. The elevation of the viaduct must be raised so that it is above the elevation of the 100-year flood, in order that the causeway will function effectively as an evacuation route. It cannot be lowered to accommodate recreational users. |
| 11. Portions of existing bridges, over Elbow Thorofare and Rainbow Channel, should remain. | 11. The existing bridges are in extremely poor condition, and it would be prohibitively costly to continue to maintain these structures. Further, the presence of these structures would continue to expose the NJDOT to legal liabilities. |
| 12. Walkways should lead to terminal fishing areas near or under the causeway at the edges of all of the islands. Detailed design of walkways, paths, bulkheads, etc. needs to be included. | 12. Additional graphics depicting the walkways, and access to recreational areas have been incorporated into the FEIS (Fig. 3.4-2). Detailed designs for the walkways, paths, and bulkheads shall be prepared in the design phase of the project. |
| 13. Establish recordation of World War Memorial Bridge as per Historic American Engineering Record (HAER) standards. | 13. Establish recordation of the bridge according to HAER standards is one of the mitigation measures proposed in the FEIS. |
| 14. Reuse or market components of World War Memorial Bridge. | 14. Efforts for marketing of the bridge components will continue up to the time when specifications for the demolition contract must be finalized. Reuse of a portion of the approach span as a fishing pier has been considered but found to be not feasible. |
| 15. Provide interpretive displays for the World War Memorial Bridge. | 15. An interpretive display will be produced as a supplement to the HAER recordation. |
| 16. Place visual displays of World War Memorial Bridge on Gulf Station property. | 16. The interpretive display will be in the nature of a large signboard and it will be placed at the Gulf Station property |
| 17. Convert north viaduct approach of World War Memorial Bridge into a recreational/fishing pier. | 17. It is not economically feasible to convert a portion of the bridge into a recreational/fishing pier. Further, such a facility would expose the NJDOT to additional legal liabilities. However, the FEIS proposes that a low-level timber recreation/fishing pier and a parking lot would be built at the site of the World War Memorial Bridge, with an interpretive display mounted on a large signboard. |
| 18. Incorporate architectural components and details of World War Memorial Bridge into new bridge. | 18. Replicating the architectural components and details of the World War Memorial bridge is not feasible, as they are obsolete, substandard, and do not comply with current safety standards. Further, they would clash visually with the smooth lines of the proposed new structures and viaduct. |
| 19. Specify architectural finishes for edge walls of proposed new bridge structures. | 19. Causeway Option 2, which proposes building a portion of the causeway on embankment fill with edge walls, The Preferred Alternative proposes that the causeway is built entirely on structure. The option with edge walls has been eliminated. |

| Agency Comment | Response |
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| 20. Provide plantings along edge walls of proposed new bridge structures. | 20. The Preferred Alternative proposes that the causeway be built entirely on structure, with no edge walls. |
| 21. Use longest spans feasible. | 21. The DEIS states that the use of the longest spans feasible is a proposed mitigation measure. |
| 22. Landscape bridge touchdown areas. | 22. Aesthetically pleasing landscaping will be incorporated into the plans for the touchdown areas in both Somers Point and Ocean City, in the design phase of the project. |
| 23. NJDOT must submit an Application for Project Authorization Under the New Jersey Register of Historic Places Act. | 23. All the mitigation measures have been incorporated in a Memorandum of Agreement that has been signed by NJDOT, the NJSHPO and the FHWA (Appendix B). Further, the Application for Project Authorization under the New Jersey Register of Historic Places Act will be submitted to the Historic Preservation Office. |
| 24. The build alternative selected would be required to minimize the impact to parkland and parkland taken must be replaced. | 24. The Preferred Alternative includes bridges with causeway entirely on viaduct structure, minimizing the impacts to parkland. Areas to replace the parkland taken by the project have been identified in section 3.6.4 of the FEIS. |
| 25. Public access to parkland must be maintained, and should be improved. | 25. Public access to recreational areas will be maintained and improved, as described in the FEIS. |
| ***South Jersey Transportation Planning Organization*** | ***10/31/00*** |
| 1. An Ocean City/Ninth Street Corridor Study is currently being conducted. | 1. NJDOT has contacted the South Jersey Transportation Planning Organization and coordinated the project to take into account the findings of the study. |
| ***City of Somers Point*** | ***12/1/00*** |
| 1. Widening MacArthur Boulevard to five lanes will adversely affect Somers Point businesses. | 1. The widening of MacArthur Boulevard has been studied again. The build alternative that is now acceptable to the City has three lanes between Route 9 and Braddock Ave. and five lanes between Braddock Ave. and Route 585. This widening and the reconfiguration of the Route 52/Mays Landing intersection will improve traffic flow in the vicinity of Somers Point businesses; enhancing the ability of persons to reach adjacent stores and businesses, and improving access for drive-by traffic. |
| 2. Widening MacArthur Boulevard to five lanes will create an unsafe condition for pedestrians crossing the road. | 2. Installation of a traffic signal and a crosswalk are proposed at the intersection of Braddock Drive and MacArthur Boulevard to provide a safe pedestrian crossing. (FEIS, Section 3.1.8.2.) |

| Agency Comment | Response |
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| 3. Widening MacArthur Boulevard to five lanes will not facilitate the flow of summer traffic. | 3. Traffic studies and modeling indicate that widening MacArthur Boulevard and reconfiguring the intersection of Route 52/Mays Landing Road (CR559) will eliminate a bottleneck situation and improve traffic flow. It is noted that it is not a goal of the project to reduce the volume of traffic along the boulevard. |
| 4. The business owners have specific needs that have been ignored at previous hearings. | 4. The concerns of the business owners have been heeded by the NJDOT, and numerous alterations to the conceptual design have been incorporated to accommodate these needs. For example, lane configurations on Mays Landing Road have been modified to accommodate the Circle Liquors store and other businesses in that location. Further, a second entrance to the Circle Liquors store was added to improve access to that business. |
| 5. Most residents along MacArthur Boulevard are opposed to the widening of the road. | 5. Comments of the residents have been heeded. The widening scheme now proposed keeps three lanes in the primarily residential area between Route 9 and Braddock Ave. |
| ***U.S Environmental Protection Agency, Region 2*** | ***December 8, 2000*** |
| 1. The "Purpose and Need" section of the DEIS does not provide rationale for the need to improve end point curves to accommodate a specific design speed. | 1. The "Purpose and Need" section (section 1.5.1) does state that the "Substandard horizontal and vertical curves on the present causeway cannot support acceptable speed limits." The specific design criteria are cited in section 2.3 of the DEIS/FEIS and reference the NJDOT standard bridge and highway details. |
| 2. The "Purpose and Need" section of the DEIS does not provide rationale for the assertion that Route 52 must serve as an evacuation route. | 2. The "Purpose and Need" section includes Figure 1.4-1 entitled "Alternative Routes to Ocean City". This graphic depicts the routes going out of Ocean City. Route 52 is the only major route going directly from Ocean City to the mainland and, hence, is the primary evacuation route. Further, Route 52 is designated as an evacuation route by the Atlantic County Emergency Evacuation Group and the Cape May Emergency Evacuation Group under the Federal Emergency Management Agency (FEMA) guidelines and with conjunction of the NJ State Police. It is listed in the Evacuation Annex of the Atlantic County Emergency Plan and the Cape May County Plan. |

| Agency Comment | Response |
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| 3. The "Purpose and Need" section of the DEIS does not provide rationale for continuing to allow access to fishing areas adjacent to the roadway. | 3. Continued access to the fishing areas adjacent to the roadway is not a direct need of the project. However, such a project must endeavor to comply with the goals established by the cooperating agencies and other stakeholders. These goals were established at partnering meetings and are discussed in section 1.5.3 "Project Goals" of the DEIS. One of the goals stated in this section is to maintain recreational access to islands traversed by the causeway. |
| 4. The "Purpose and Need" section of the DEIS makes no mention of the need to realign the Ship Channel and ICWW, which appears in contradiction with the objective to avoid or minimize any shift in these alignments stated on page I-20 of the DEIS. | 4. Every effort to minimize the need to realign Ship Channel and the ICWW was expended, while balancing this objective against the other numerous constraints and environmental considerations affecting this project. Compliance has been achieved by minimizing this impact. |
| 5. DEIS does not clearly establish the need to realign the channels, or the relationship between this realignment and the vertical clearance of the bridges. | 5. In order to maintain the touchdown points and the bridge gradients, it is necessary to realign the channels in order to achieve the required vertical clearance of 55-ft. (See Section 2.5 in the FEIS.) |
| 6. The DEIS does not make a clear case for the need to achieve 99% marine traffic passage without an opening. | 6. The need to achieve 99% marine traffic passage is based on the need to maintain Route 52 as an uninterrupted evacuation route and reduce delays during the peak season. Further, the additional cost to construct, maintain and operate a bascule bridge over the ICWW is quite substantial. |
| 7. Alternatives should have been brought forward which lengthen the bridge further into Ocean City, achieving the required vertical clearance without the need to realign the ICWW. If these alternatives were considered, but rejected, then they should be more completely discussed in the DEIS. | 7. Alternatives 7 and 8, with alignments offset to the west of the existing causeway, satisfy design considerations and do not require the realignment of the ICWW. However, they are not feasible as they have severe socioeconomic impacts in the form of property takes, change of land use, change in traffic patterns and introduction of visual blight in Ocean City. |
| 8. An option for the disposition of the Information Center should be chosen that avoids impacts to submerged aquatic vegetation. The FEIS should discuss this area in greater detail and discuss the potential for indirect impacts. | 8. The Preferred Alternative (9-1) avoids direct impacts to submerged aquatic vegetation. Indirect impacts to water quality, including those during construction, were discussed at length in Section 3.4.4.2 of the DEIS. |
| 9. The FEIS should discuss the impacts to all jurisdictional waters of the U.S. | 9. The impact to open waters caused by the placement of piers and piles for the preferred alternative is discussed in section 3.4.5 in the FEIS. |

| Agency Comment | Response |
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| 10. The FEIS should discuss the plans for disposal of dredged material and the indirect impacts resulting from this disposal. | 10. Plans for disposal of dredged material are discussed in section 3.9.4 of the FEIS. The specific disposal site area will be determined in the design phase of the project. Direct impacts from dredging and mitigation are also discussed in section 3.9.4. Indirect impacts on wetlands and mitigation are addressed in section 3.4.5 of the FEIS. |
| 11. The wetlands impacts and mitigation sections of the FEIS should contain a more detailed discussion of the mitigation strategies for the various wetland types, including tidal emergent wetlands, upland wetlands, and mudflats, which must all be mitigated on an in-kind basis. | 11. The Preferred Alternative (9-1) chosen has the least amount of direct wetland impact and only minor additional shading impacts. There are ample areas available to mitigate the small areas that are impacted on an in-kind basis. Areas of replacement wetlands are identified in the FEIS in section 3.4.5. |
| 12. The FEIS must demonstrate that this project comes from a Long Range Plan and Transportation Improvement Program, or include a project level conformity analysis. | 12. Air quality modeling was re-addressed for conformity to the Long Range Plan and Transportation Improvement Program (see section 3.2.2 in the FEIS). |
| 13. The assumptions used for the Mobile 5a-h Model are incorrect. The modeling should be revised to reflect this change. | 13. Emission calculations using 92%/8% centralized/decentralized were compared to calculations done using 70%/30% centralized/ decentralized. The CO emissions for 7%/30% versus 92%/8% I&M increased by 3% or less and, therefore, did not warrant MOBILE 5a-H remodeling. |
| 14. The DEIS did not mention compliance with the Coastal Zone Management Act (CZMA). The FEIS should contain a detailed discussion about the applicability of the CZMA and the State CZMA for the project. | 14. Section 3.4.4 of the FEIS denotes conformance with the NJDEP rules on Coastal Zone Management in the preparation of the conceptual design and evaluation of various options based on the Conditionally Acceptable Pretreatment Methods for Stormwater. Further, the DEIS was prepared in close coordination with the DEP, and no exceptions were forthcoming. Conformance with the CZMA and State Rules on Coastal Management will be addressed further, when an application is submitted to the DEP for the Waterfront Development Permit. |
| 15. The FEIS should discuss the indirect impact of dredging of the ICWW and the Ship Channel on shellfish beds and wetlands on the Rainbow Islands. | 15. No dredging is proposed in Ship Channel. The extent of dredging required for the ICWW is minor, and will need little or no maintenance dredging. Section 3.4.4 of the DEIS discusses the direct impacts of dredging. No indirect impacts are anticipated for either wetlands or shellfish habitat as a result of dredging. |

| Agency Comment | Response |
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| 16. The DEIS failed to discuss indirect and cumulative impacts on water quality, wetlands and other waters of the U.S., socioeconomics and land use, including the removal of the old causeway and construction of the new one. | 16. Section 3.10 of the FEIS summarizes the Indirect and Cumulative impacts that were discussed in the DEIS. Section 3.4.4 of the DEIS does address the impacts to surface water quality during construction of the new causeway. Section 3.4.7 of the DEIS discusses short-term impacts to finfish migratory pathways during construction, and to finfish habitat through displacement as a result of the removal of the existing structure. Further, this section also discusses possible mitigation measures. The impacts on soils from removal of the existing structures and construction of the new causeway are discussed in section 3.4.1 of the DEIS. There are no other indirect or cumulative effects anticipated as a result of the proposed project since the project will not change development, drainage patterns or traffic patterns. |
| 17. The FEIS must contain an analysis of all past, present, and reasonably foreseeable actions undertaken by both federal and nonfederal agencies, which focuses on affected resources and communities. | 17. Coordination among federal and nonfederal agencies is documented in section 3.5 in the FEIS. |
| ***City of Ocean City*** | ***12/7/00*** |
| 1. Exception was taken to the statement on page III-169 of the DEIS which reads "Zoning is considered to have a negative impact on the investment and economic growth in the central area (3rd Street to 15th Street)." | 1. This sentence appears to have been misstated in the DEIS. This statement has been modified in the FEIS. See Section 3.6.3.3 under "Potential for Induced Development". |
| 2. The DEIS indicates that a cul-de-sac at the end of Palen Avenue is more favorable. | 2. The DEIS notes that both a cul-de-sac at the end of Palen Avenue and a through street from Palen Avenue to Pleasure Avenue were considered, but that a through street is expected to have relatively less impact on residents and is the preferred option in the FEIS. |
| 3. There is concern regarding loss of visibility of the Information Center. The viability of relocating the Visitor's Information Center should be discussed. | 3. Relocation of the Information Center is fully viable under the Preferred Alternative. The parking lot for the center will remain, and access maintained to it for the benefit of recreational users. |
| 4. The Preferred Alternative would result in the loss of the existing dredged material disposal area. | 4. The dredged material disposal area resides primarily on State-owned property. There is no outstanding agreement or permit in existence that entitles the City to the use of this property. It is incumbent upon the City to find an alternative disposal site. Accordingly, no compensation is warranted. |
| 5. The 100-year flood elevation shown in the DEIS does not correspond with the 1984 FEMA maps. | 5. The reference and graphics for the 100-year flood elevation have been modified to correspond correctly with the 1984 FEMA maps in the FEIS. |
| 6. The NJDOT should consider increasing the elevation of 9th Street to improve access during times of high tide and storm conditions. | 6. The disposition of the Ocean City streets beyond the limits of the project is beyond the jurisdiction and responsibility of the NJDOT. |

| Agency Comment | Response |
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| ***National Marine Fisheries Service*** | ***12/27/00*** |
| 1. Provided all dredging complies with the conditions of the Biological Opinion, issued November 26, 1996 and modified on May 25, 1999, further consultation with National Marine Fisheries Service (NMFS) will not be necessary. | 1. The realignment of the ICWW will require dredging in Beach Thorofore and will be done in full compliance with the Biological Opinion issued by NMFS. |
| 2. Alternative 9A-1 is the least damaging alternative, and should be designated as the Preferred Alternative. | 2. After additional analysis and evaluation of potential impacts, it was determined that Alternative 9-1 is preferable to Alternative 9A-1. Alternative 9-1 is the option which fulfills the purpose and needs of the project while balancing the project goals, taking into consideration the interests of the many and various stakeholders in the project. (See Section 2.5 in the FEIS) |
| 3. The lead federal agency must consult with NMFS in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act for any federal action that may adversely affect essential fish habitat (EFH). A separate EFH Assessment must be prepared and submitted to the NMFS. | 3. An essential fish habitat assessment has been prepared and submitted to the NMFS. |
| 4. After the EFH assessment has been received and reviewed, the NMFS will send a letter with the conservation recommendations. The federal agency should respond to NMFS within 30 days. | 4. The conservation recommendations have been received and a response has been incorporated into the FEIS (Sections 3.4.7 and 3.4.9). |
| 5. The federal action agency's EFH assessment, the NMFS conservation recommendations, and the federal action agency's response are to be included in the FEIS. | 5. The EFH assessment, the NMFS's conservation recommendations, and the written response have been included in the FEIS (Sections 3.4.7 and 3.4.9). |
| ***United States Coast Guard*** | ***12/12/00*** |
| 1. The clearances for the proposed structures appear adequate, but that a final determination will not be forthcoming until a public notice has been issued, and any objections have been cleared up. | 1. Noted. No action required at this time. |
| 2. A complete listing of all adjacent property owners, commercial businesses located adjacent to the project area, and commercial waterway users must be included in the submission for the application for a bridge permit. | 2. We intend to comply fully with the requirements and stipulations for the bridge permit application, including the list of persons and businesses described. |

| Agency Comment | Response |
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| ***NJDEP – Land Use Regulation Program*** | ***12/12/00*** |
| 1. Alternative 9A and causeway Option 1 would have the least adverse impacts to fish and wildlife resources. | 1. Both Alternative 9 and 9A will result in impacts to benthic habitat during construction, and from the installation of support structures. Alternative 9 will temporarily disrupt limited areas of benthic habitat as a result of dredging, but will not change the substrate composition. These impacts will be temporary and involve only a relatively very small area. It is anticipated that shellfish beds would be become reestablished after dredging. |
| ***U.S. Department of the Interior*** | ***1/03/01*** |
| 1. DEIS should provide information regarding traffic problems, stemming from bascule bridges, during previous emergency evacuations. | 1. The USCG "Captain of the Port" (located in Philadelphia) maintains the authority for closing the Bascule bridges in case of emergency. The "Captain" will usually order the Bridge and the port to be closed at least 12 hours before an impending Hurricane. (marine advisories calling for vessels to return to port are issued at least 18 hours in advance). |
| 2. Shifting the ICWW would increase the potential for wetland erosion along the north bank of Beach Thorofare. | 2. The wetlands along the north bank of the ICWW will be protected by the fender system for the pier on that side of the channel. In addition, sheeting will be provided to further prevent sloughing. |
| 3. Construction alternatives that satisfy the design considerations and further minimize wetland impacts should be identified. | 3. Alternatives 7 and 8, with alignments offset to the west of the existing causeway, satisfy design considerations and minimize wetland impacts. However, they are not feasible as they have severe socioeconomic impacts in the form of property takes, change of land use, change in traffic patterns and introduction of visual blight in Ocean City. |
| 4. Safety and design standards should be identified. | 4. Safety and design standards will be in accordance with New Jersey DOT Highway and Bridge Design Standards. |
| 5. Alternative 9A-1 would cost $7 million less than Alternative 9-1. | 5. The anticipated construction cost of Alternative 9-1 is $11 million less than for Alternative 9A-1. Moreover, the estimated life cycle cost for Alternative 9-1 is $17 million less for Alternative 9-1, compared to Alternative 9A-1. (FEIS, Table 2.1) |
| 6. The Department strongly recommends that the FHWA and NJDOT reconsider selecting Alternative 9A-1 as the preferred alternative. | 6. After additional analysis and evaluation of potential impacts, it was determined that Alternative 9-1 is preferable to Alternative 9A-1. Alternative 9-1 is the option which fulfills the purpose and needs of the project while balancing the project goals, taking into consideration the interests of the many and various stakeholders in the project. (See Section 2.5 in the FEIS) |

| Agency Comment | Response |
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| ***Army Corps of Engineers, Philadelphia District*** | ***1/16/01*** |
| 1. Pages III-231 and III-232 of the DEIS discuss disposal of material in the middle of Rainbow Island for Alternative 9, Options 2 and 3, but it is not clear exactly where this material would be placed or whether additional wetlands would be impacted. | 1. The pages of the DEIS referenced indicate that, under Alternative 9 with causeway Option 2 or 3, the dredged material would be used as fill for the raised embankment area supporting the causeway to be constructed on Rainbow Island. However, this dredged material would be stockpiled in the 20-meter (66-foot) wide area directly east of the existing roadway, until it could be used during construction of the raised embankment. These paragraphs will be modified in the FEIS for clarity. It is noteworthy that Options 2 and 3 are no longer under consideration for inclusion with the preferred alternative. |
| 2. The DEIS discusses off-site disposal of "drained" material for Alternative 9, Option 1, but does not provide information about where the material would be drained and the specific site of disposal. | 2. Plans for dewatering dredged material are discussed in section 3.9.4 of the FEIS. |
| 3. Disposal sites should be identified for use during the initial dredging and for future maintenance dredging. | 3. Plans for disposal of dredged material are discussed in section 3.9.4 of the FEIS. The specific disposal site area will be determined in the design phase of the project. |
| 4. Supporting technical documentation addressing the need for maintenance dredging should be provided in the FEIS. | 4. Supporting technical documentation indicates that maintenance dredging will not be required for Alternative 9-1, which is discussed in section 3.9.5 of the FEIS. |
| 5. Consideration must be given to the resource agency comments in the processing of the Department of the Army permit. Accordingly, outstanding issues with the U.S. Coast Guard, U.S. Fish and Wildlife Service should be given serious consideration in the FEIS. | 5. The Department has resolved all outstanding issues with the U.S. Coast Guard and the U.S. Fish and Wildlife Service prior to the issuance of the FEIS. |
| 6. Issuance of the Department of the Army permit will require documentation of compliance with Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act. The Endangered Species Act was not referenced in the Summary section under the required Federal Actions in the DEIS. | 6. The DEIS/FEIS clearly documents compliance with Section 106 of the National Historic Preservation Act. Section 3.4.9 of the DEIS discusses Threatened and Endangered Species at length. Section 7 of the Endangered Species Act has been added to the list of Federal Actions in the Summary portion of the FEIS. |

| Agency Comment | Response |
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| ***Army Corps of Engineers, Philadelphia District*** | ***4/25/02*** |
| 1. Section 3.1 ("Traffic and Transportation") should have a discussion of navigation issues, such as bridge clearances and the sharp turn in the proposed relocated Federal channel. Under your preferred alternative, northbound vessels would make a sharp right turn, facing the end of the new sheet pile wall almost head-on. We would like to know if hydrographic surveys support a gentler curve to transition from the existing channel to the new alignment. Would a more gradual curve require additional dredging, or do existing depths in this area meet or exceed six feet? As previously stated, relocation of the ICWW will require Corps of Engineers approval. The approval process starts with a letter formally requesting this relocation and explaining the need for it. The Corps of Engineers would then coordinate navigation and boat safety issues with the U.S. Coast Guard. | 1. FEIS Section 2.3 (Design Criteria), page II-2 discusses navigational issues. The geometry of the ICWW channel realignment was proposed to allow vessels (barges) up to 300 feet long to clear the structure before making a turn. A gentler curvature is curtailed by the location of Cowpens Island to the south. However, this is only a preliminary design. It provides a concept that addresses vessel needs and we believe will work. But we will refine the design and consider making the curve more gentle in final design. The dredge quantity will be better determined at that time and may slightly increase or decrease. A survey of vessel types using the channel and the ACE Publication EM 1110-2-1611 were used as a guide in developing the conceptual plans. |
| 2. In Section 3.4.5, page III-39, Figure 3.4.1 shows the horizontal clearance between piers (at the channel) to be about 45 meters for the fixed bridge, and about 50 meters for the bascule bridge. However, the drawings in Appendix D show the clearance to be about 80 meters for the fixed bridge and 30 meters for the bascule. All other piers are about 25 meters apart. | 2. The precise location of piers for either the fixed bridge option (Alt 9) or bascule bridge option (Alt 9A) is to be determined during final design. Both alternatives propose a minimum of 30.48 meters (100 ft) horizontal clearance. The location of piers and size shown in figure 3.4.1 is approximate. The figure is modified to better approximate the locations of piers as shown in the drawings in Appendix D. |
| 3. In Section 3.4.5, page III-40, the referenced tables should be included in the FEIS. In the DEIS, Tables 3.4-3, 3.4-4 and 3.4-6 all show the same impacts to wetlands and open waters for Alternatives 9 and 9A. Based on Figure 3.4.1, this would not be the case. | 3. Impact to wetlands in Alternative 9 and Alternative 9A are the same. Impact to open water in Alternative 9A is larger by approximately 950 sm due to the larger piers required for a bascule bridge. This difference was not reflected in table 3.4-6 of the DEIS. Section 3.4.5, page III-40 of the FEIS reflects this difference. |
| 4. The proposed wetland compensation ("mitigation") site shown on Figure 3.4.2, page III-41, is the same area proposed for dewatering of dredged material. There should be an explanation of how the timing of dewatering could be completed, and the material removed, prior to construction in wetlands, so that construction of the wetland compensation could commence in a timely fashion. In the Corps' permit process, this office normally requires wetland compensation to be completed prior to or concurrent with wetland impacts. | 4. The area for dewatering dredged material may require approximately 20% of the total area proposed for wetland mitigation on the north (east) side of the causeway. The timing for the dewatering and construction of wetland compensation can be done in stages so that the wetland mitigation could commence with the initiation of the causeway construction. |

### 5.2.3 Correspondence Received Subsequent to Issuance of the DEIS

Key letters of federal, state, county, and local government agencies that responded to requests for information or comments during the environmental study process are provided in Appendix B of the DEIS. These letters are summarized in tabular form in Section 5.2.4 of the DEIS. Subsequent to the issuance of the DEIS, the following relevant project correspondence was sent: (See Appendix "C")

| DATE: | FROM: | TO: | COMMENTS: |
|---|---|---|---|
| 5/13/02 | NJ Department of Environmental Protection, Office of Coastal Planning & Program Coordination | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 5/08/02 | NJ Department of Environmental Protection, Division of Parks & Forestry, Historic Preservation Office | NJ Department of Environmental Protection, Office of Coastal Planning & Program Coordination | Comments on the March 2002 PFEIS. |
| 4/29/02 | U.S. Department of Interior, Fish and Wildlife Service | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 4/26/02 | National Marine Fisheries Service | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 4/25/02 | Army Corps of Engineers, Philadelphia District | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 4/09/02 | United States Coast Guard | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 3/06/02 | Federal Highway Administration | New Jersey Department of Transportation | Comments on the March 2002 PFEIS. |
| 02/07/02 | New Jersey Department of Transportation | New Jersey Department of Transportation | Memorandum of a meeting held with NJDEP and NJF&W discussing Angler Access. |
| 01/18/02 | National Marine Fisheries Service | New Jersey Department of Transportation | Comments on the December 2001 Essential Fish Habitat (EFH) report. |
| 5/30/2001 | City of Somers Point | New Jersey Department of Transportation | Resolution 87 of 2001 to support for Alternative 9-1 and the widening of MacArthur Boulevard to 3 lanes through residential areas and 5 lanes through the commercial zone. |
| 3/26/01 | New Jersey Department of Transportation | City of Somers Point Municipal Services | Proposed crosswalk at Braddock Drive and alternative MacArthur Boulevard configuration – Re: Resolution No.174 |

| DATE: | FROM: | TO: | COMMENTS: |
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| 1/31/01 | Somers Point Board of Education | City of Somers Point Municipal Services | Formal Motion in support of the City of Somers Point Resolution 174 of 2000 |
| 1/16/01 | Army Corps of Engineers, Philadelphia District | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 1/11/01 | City of Somers Point | New Jersey Department of Transportation | Resolution 174 of 2000 to rescind support for the widening of MacArthur Boulevard to 5 lanes. |
| 1/3/01 | U.S. Department of Interior | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/27/00 | National Marine Fisheries Service | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/12/00 | NJ Department of Environmental Protection, Land Use Regulation Program | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/12/00 | United States Coast Guard | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/8/00 | U.S. Environmental Protection Agency | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/7/00 | City of Ocean City | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/5/00 | NJ Department of Environmental Protection | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 12/1/00 | City of Somers Point | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 11/16/00 | NJ Division of Fish and Wildlife | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 11/15/00 | NJ Department of Environmental Protection | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 11/13/00 | U.S. Fish and Wildlife Service | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 10/31/00 | South Jersey Transportation Planning Organization | New Jersey Department of Transportation | Comments on the August 2000 DEIS. |
| 9/21/00 | U.S. Fish and Wildlife Service | New Jersey Department of Transportation | Response to NJDOT letter dated August 19, 2000 regarding selection of Preferred Alternative. |

## 6.0 LIST OF PREPARERS/VITAE

### Federal Highway Administration

Randell E. Prescott: Leader, Program Operations, New Jersey Division Office, FHWA. Bachelors Degree in Civil Engineering, Clarkson University. MBA, Rider University. Licensed PE, State of Pennsylvania. Eleven years of experience in all phases of highway engineering construction.

### N.J. Department of Transportation

Nicholas Caiazza: Environmental Team Leader, Division of Project Management, NJDOT. M.S. Degree, Plant Ecology, Rutgers University, 1979; B.S. Degree, Biology, Northeastern University, 1976. Work experience: NJDOT, Bureau of Environmental Analysis and Division of Project Management, 21 years.

Scott J. Deeck, P.E.: Project Engineer, Transportation, Bureau of Project Scope Development, NJDOT. B.S. Degree in Civil Engineering, College of Engineering, Rutgers, The State University of New Jersey, 1988. Registered Professional Engineer – New Jersey, Pennsylvania. Work Experience: Bureau of Regional Design, Region II, 6 years; Bureau of Project Scope Development, Southern Group, 8 years.

E. David Lambert III, P.E.: Project Manager, Division of Project Management, New Jersey Department of Transportation. B.S. Degree in Civil Engineering, Lafayette College, 1983. Work Experience: NJDOT Bureau of Structural Engineering 10 years; NJDOT Project Management 8 years.

Ahmad A. Qureshi: Principal Engineer, Division of Project Management, NJDOT. Masters Degree, Business Administration, University of Nevada, Las Vegas, Nevada, 1982; B.S. Degree in Mechanical Engineering, University of Engineering and Technology, Lahore, Pakistan, 1974. Work Experience: engineering experience in the private sector, 8 years; Bureau of Materials, NJDOT, 9 years; Bureau of Project Support, NJDOT, 1 year; Division of Project Support, Environmental Team, 3 year.

**Earth Tech**

Nicholas Spaventa, P.E. - Earth Tech, Project Manager
Mr. Spaventa has 25 years of experience in the planning, design, and construction engineering of highway transportation facilities and related public works. As Director of Engineering, he has overall Division responsibility for establishing and implementing technical standards for the execution of project assignments. Mr. Spaventa has a BSCE from The City College of New York (1975) and an MSCE from Polytechnic Institute of New York (1980).

Leon Zelazny – Earth Tech, Project Engineer
Mr. Zelazny has over 27 years of experience in application of computer programs for engineering design, CADD, graphics, and communications as they apply to the planning and design of bridge and highway projects. His experience includes the use of finite element analysis to evaluate structures in both dynamic and static environments. Farleigh Dickinson University (1982).

William Bekemeier, P.E. - Earth Tech, Principal Engineer
Mr. Bekemeier has over 21 years in engineering design and construction management on projects involving bridge, highway, and utility construction and rehabilitation. He has a BSCE from Valparaiso University (1980) and an MBA with Honors from Iona College (1996).

Ray Heimbuch, P.E. – Earth Tech, Quality Assurance
Mr. Heimbuch has 49 years of experience in the planning and design of infrastructure projects, including new and reconstructed urban and rural highways and site development. His special areas of expertise include environmental, geotechnical, pavement, TSM, drainage, utilities, signage and construction staging, as well as EISs and public outreach. Mr. Heimbuch has a BSCE from Manhattan College in Structures (1951), and an MSCE from Columbia University in Soils and Foundations (1958).

Barbara C. Hotchkin – Earth Tech, Senior Environmental Specialist
Ms. Hotchkin has 19 years of extensive experience preparing environmental impact statements and assessments, including those where potential impacts on natural ecosystems have been major considerations. Ms. Hotchkin has experience on both transportation and other types of EIS projects (mining, landfills, etc.). Ms. Hotchkin has an Master of Science from the departments of Urban and Environmental Policy and Civil Engineering, Tufts University (1981) and a Bachelor of Science in Biology, Union College (1976).

## 7.0 AGENCIES WHO RECEIVE THE FEIS

FEDERAL

1. Federal Highway Administration, New Jersey Division Office
2. U.S. Environmental Protection Agency, Region 2, Environmental Review Section
3. U.S. Environmental Protection Agency, Office of Federal Activities
4. U.S. Department of Health & Human Services, Office of Environmental Affairs
5. U.S. Department of Housing & Urban Development, Environmental Clearing Office
6. U.S. Department of Interior, Office of Environmental Policy and Compliance
7. Advisory Council on Historic Preservation
8. Federal Emergency Management Agency, Region II
9. National Marine Fisheries Service, Northeast Region
10. Federal Transit Administration
11. U.S. Army Corps of Engineers, Philadelphia District
12. National Oceanic & Atmospheric Administration, Office of Ecology & Conservation
13. U.S. Coast Guard, Fifth Coast Guard District

STATE

1. N.J. Department of Commerce & Economic Development, Division of Economic Development
2. N.J. Department of Environmental Protection, Office of Program Coordination
3. New Jersey Transit

REGIONAL AND COUNTY

1. South Jersey Transportation Planning Organization
2. Atlantic County Engineer
3. Cape May County Engineer

MUNICIPAL

1. Somers Point Clerk Office
2. Somers Point Public Library
3. Ocean City Clerk Office
4. Ocean City Engineer
5. Ocean City Chamber of Commerce
6. Ocean City Information Center
7. Ocean City Public Library
8. Ocean City Howard Station Senior Center
9. Ocean City Community Center

## 8.0 LIST OF SUPPORTING DOCUMENTS

Traffic Technical Environmental Study
Prepared by Eng - Wong, Taub & Associates and
Earth Tech / Rust E & I for NJDOT
December 1999

Air Quality Technical Environmental Study
Prepared by Earth Tech / Rust E & I for NJDOT
September 1999

Noise Technical Environmental Study
Prepared by Earth Tech / Rust E & I for NJDOT
September 1999

Natural Ecosystems Technical Environmental Study
Prepared by Earth Tech / Rust E & I for NJDOT
March 2000

Archaeology Technical Environmental Study
Prepared by McCormick, Taylor and Associates, Inc. and
Earth Tech / Rust E& I for NJDOT
July 1999

Historical Architecture Technical Environmental Study, Volumes I, II, III and IV
Prepared by McCormick, Taylor and Associates, Inc. and
Earth Tech / Rust E& I for NJDOT
December 1999

Socioeconomic and Land Use Technical Environmental Study
Prepared by Earth Tech / Rust E & I for NJDOT
March 2000

Hazardous Waste Technical Environmental Study, Volumes I and II
Prepared by McCormick, Taylor and Associates, Inc. and
Earth Tech / Rust E& I for NJDOT
July 1999

Preliminary Subsurface Investigation Report
Prepared by Earth Tech / Rust E & I for NJDOT
December 1998

Constructibility Report
Prepared by Earth Tech / Rust E & I for NJDOT
August 1999

Route 52 CMS, Single Occupancy Vehicle Capacity Increasing Project
Prepared by Parsons Brinckerhoff-FG, Inc.
Prepared for NJDOT
January 1999

Study of Sunlight Exposure Below Elevated Structures in Tidal Marsh Areas
Prepared by Earth Tech / Rust E & I for NJDOT
July 1997

Report on Conceptual Alternatives
Prepared by Earth Tech / Rust E & I for NJDOT
June 1996

Report on Selection of Alternatives to be Analyzed in the DEIS
Prepared by Earth Tech / Rust E & I for NJDOT
September 1998

Feasibility Study for the Physical Relocation of the Intracoastal Waterway and Ship Channel
Prepared by Earth Tech / Rust E & I for NJDOT
January 1994

Existing Conditions Analysis and Deficiency Report
Prepared by McCormick, Taylor & Associates for NJDOT
March 1995

Report on the Reinspection and Analysis of the Route 52 Bridge over Beach Thorofare
Prepared by Hardesty and Hanover Consulting Engineers for NJDOT
April 1985

Value Engineering Analysis of Structure Types
Prepared by Earth Tech / Rust E & I for NJDOT
August 1998

## 9.0 GLOSSARY AND ACRONYMS

**"A" Weighted Sound Level** - a method of representing the human ear's interpretations of the loudness of an equal sound level throughout the audible frequency range. The scale is normally referenced to the loudness at 1 kHz.

**ACHP -** Acronym for Advisory Council on Historic Preservation.

**Acoustic Recorder** - activities that are affected by excessive noise levels.

**Acoustic Reflection** – the process by which the general direction of sound waves is reversed by barriers.

**AHNT** - Acronym for consulting engineering firm Ash, Howard, Needles, and Tammen.

**Air Pollution** - the general term alluding to the undesirable addition to the atmosphere of substance (gases and liquids and solid particles) that are either foreign to the "natural" atmosphere or in quantities exceeding their natural concentrations.

**Air Quality Standards** - maximum allowable contaminant concentrations set up by State and Federal agencies to protect public health and welfare. The standards were developed to protect those people who are especially susceptible to the effects of air pollutants. These susceptible individuals are primarily the very old and very young, those with cardiac insufficiencies, anemia, and respiratory cripples.

**Air Quality -** the composition of air with respect to quantities of pollutants therein; used most frequently in connection with "standards" of maximum acceptable pollutant concentrations.

**APE** - Acronym for Area of Potential Effects.

**Background Level** - The concentration of a pollutant that would exist in the absence of the particular source under study.

**Barrier Island-** Island generally separating the ocean from a bay or harbor, created by deposition of sand.

**Building Attenuation** - the reduction of energy of a sound field resulting from its passage through a building's structural elements.

**Carbon Monoxide (CO)-** a colorless gas, odorless under atmospheric conditions, having molecular form CO.

**CMS-** Acronym for Congestion Management Strategies.

**Cone of Depression-** the depression, approximately conical in shape, that is formed in a water-table or potentiometric surface when water is removed from an aquifer.

**Contamination-** the introduction of any physical, chemical, biological, or radiological substance or matter which renders soil, air, and waters impure or unsuitable for their designated uses.

**Contingency Plan-** a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire or explosion or a release of hazardous waste or hazardous waste constituents from a treatment, storage, or disposal facility that could threaten human health or the environment.

**Decibel (dB) -** a unit of measure of sound pressure level used to describe the loudness of sound.

$dB = 10\log (P/Po)^2$
where: Po = 0.00002 microbar
P = root mean square sound pressure
0.00002 microbar is the threshold of hearing for a normal, healthy human ear.

**Developed Land** - those tracts of land or portions thereof which contain improvements or activities devoted to frequent human use or habitation.

**DHV - Design Hourly Volume** - the 30th highest hourly volume of vehicles with its associated speed on a roadway. This relationship is generally used for highway design purposes and may also be the noisiest traffic condition.

**Discharge-** the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste onto any land or water.

**Disposal-** the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

**Emission Factor**- a pollutant discharge rate. For vehicles, an emission factor is the amount of a pollutant discharged over a distance traveled. Units are grams per mile.

**Environmental Cleanup Responsibility Act (ECRA)**- New Jersey law imposes pre-conditions on the sale or closure of Industrial Establishments involved in the generation, manufacture, refining, transportation, treatment, storage handling, or disposal of hazardous substances or hazardous wastes. Requires industrial establishments to clean up their facilities as a precondition to closure, sale, or transfer of operations.

**Existing Air Quality-** present day or base year air quality levels.

**Existing Noise** - that noise which is characteristic of an area before the construction of the proposed highway project.

**Facility-** all contiguous land, structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operation units, e.g., one or more landfills, surface impoundments, or a combination of them.

**FHWA**- Acronym for Federal Highway Administration.

**Generator-** any person who first creates a hazardous waste, or any person who first makes the waste subject to the Subtitle C regulation (e.g., imports a hazardous waste, initiates a shipment of a hazardous waste from a TSD or mixed hazardous wastes of different DOT shipping descriptions by placing them into a single container). In identifying a hazardous waste, DOT becomes the generator since they are now required to properly dispose of the substance.

**Groundwater-** water below the land surface in a zone of saturation.

**HABS**- Acronym for Historic American Building Survey

**HAER**- Acronym for Historic American Engineering Record

**Hazardous Substance-** the regulations define hazardous substances as those elements and compounds, including petroleum products, defined by NJDEP after a public hearing, included on the "List of Hazardous Substances" found in Appendix A of N.J.A.C. 7:1E. Appendix A includes a list of hazardous substances adopted by the Environmental Protection Agency pursuant to Section 311 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. & 1321, and a list of toxic pollutants designated by Congress or the Environmental Protection Agency pursuant to Section 307 of the Act, 33 U.S.C. & 1317. Sewage and septage are not considered hazardous substances.

**Hazardous Waste**- as defined in RCRA, the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

A. cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

B. pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed.

As defined in the regulations, a solid waste is hazardous if it meets one of four conditions:

1. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.33).

2. Has been listed as hazardous (40 CFR Sections 261.31 through 261.33).

3. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste).

4. Is not excluded from regulation as a hazardous waste.

**Hertz (Hz)** - frequency in cycles per second.

**HPO**- Historic Preservation Office

**Hydrocarbons (HC)**- a collective term used to describe a long list of organic air contaminants. A major component in total hydrocarbons is methane which is considered unreactive. Hydrocarbons other than methane are considered capable of entering into photochemical reaction, and therefore are referred to as being reactive.

**ICWW**- Acronym for Intracoastal Waterway.

**Instability**- a state in which the vertical distribution of temperature is such that an air particle, if given either an upward or a downward impulse, will tend to move away with increasing speed from its original level.

**KPH-** Acronym for Kilometers Per Hour.

**L10 Noise Level** - that level of noise where the A-weighted sound pressure level in decibels is exceeded ten percent of the time.

**L90 Noise Level** - that level of noise where the A-weighted sound pressure level in decibels is exceeded 90 percent of the time.

**Landfill-** a disposal facility or part of a facility where waste is placed in or on land and which is not a land treatment facility, a surface impoundment, or an injection well.

**Leq Noise Level** - that level of constant noise which contains the same amount of acoustic energy as time varying noise levels (eg. Traffic noise) during a given time interval.

**Listed-** hazardous wastes that have been placed on one of three lists developed by EPA: Non-specific source wastes; Specific source wastes; Commercial chemical products. These lists were developed by examining the different types of waste and chemical products to see if they exhibit one of the four characteristics, meet the statutory definition of hazardous waste, are acutely toxic or acutely hazardous, or are otherwise toxic.

**LUST -** Acronym for Leaking Underground Storage Tank.

**Microscale**- a term used to describe relative size. Used in this report, microscale refers to a relatively small area on and near the roadway within which pollutant concentrations are above background levels.

**MOE-** Acronym for Measures of Effectiveness.

**Monitoring (Observation) Well-** a well used to measure groundwater levels, and in some cases, to obtain water samples for water quality analysis.

**MOU**- Acronym for Memorandum of Understanding.

**MPH**- Acronym for Miles Per Hour.

**National Priorities List (NPL)-** EPA's list of the most serious, uncontrolled, or abandoned hazardous waste sites identified for possible long-term remedial response using money from the trust fund. The list is based primarily on the score a site receives on the Hazard Ranking System. EPA is required to update the NPL at least once a year.

**Nitrogen Dioxide (NO2**)- a red-brown, toxic gas under atmospheric conditions.

**NJDEP-** Acronym for New Jersey Department of Environmental Protection.

**NJDOT**- Acronym for New Jersey Department of Transportation.

**NJSHPO-** Acronym for New Jersey State Historic Preservation Office.

**Noise Abatement Criteria (NAC)** - noise levels established by FHWA in 23 CFR 772 for various activities. When the predicted noise level approaches or exceeds the NAC as given in Table 1 of 23 CFR 772, an impact exists and mitigation must be considered.

**Noise Contours** - areas along a roadway within which noise levels will exceed a specified noise level. (Not to be interpreted as any single line.)

**Noise Reduction Coefficient (NRC)** - the ratio of the sound energy absorbed by the barrier surface and the sound energy striking the barrier surface.

**Noise Sensitive Areas or Locations** - general areas of land or specific locations having Activities that are affected by excessive noise levels.

**On-Site**- means on the same or geographically contiguous property which may be divided by public or private right(s) of ways, provided the entrance and exit between the properties is at a crossroads, intersection, and access is by crossing as opposed to going along the right(s)-of-way. Noncontiguous properties owned by the same person but

connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

**Operator-** the person responsible for the overall operation of a facility.

**Owner-** the person who owns a facility or part of a facility.

**Peak Eight Hour Traffic**- the traffic expected to occur over the peak eight consecutive hour period in a designated year.

**Peak Hour Traffic**- the highest number of vehicles found to be passing over a section of a lane or roadway during 60 consecutive minutes of a designated year.

**Plume**- a body of contaminated groundwater originating from a specific source and influenced by such factors as the local groundwater flow pattern, density of contaminant, and character of the aquifer.

**PPM-** Acronym for Parts Per Million.

**Primary Pollutants**- airborne contaminants which are emitted directly into the atmosphere.

**Priority Pollutants**- a group of approximately 130 chemicals (about 110 are organics) that appear on a USEPA list because they are toxic and relatively common in industrial discharge.

**RCRA**- the Resource Conservation and Recovery Act of 1976- PL 94-580 (RCRA) provided for the development of Federal and State programs for the regulation of land disposal of waste materials and the recovery of materials and energy resources. The Act regulates not only the generation, transportation, treatment, storage, and disposal of hazardous wastes, but also solid waste disposal facilities. Since 1976 there have been six amendments to RCRA imposing a series of more stringent requirements than the original law.

**Receiver** - a location at which noise levels are predicted and analyzed.

**Remedial Action**- measures incorporated into project design to minimize impact.

**SDWA**- Acronym for Safe Water Drinking Act.

**Secondary Pollutants**- airborne contaminants which have undergone transformation (largely via photochemical processes) in the atmosphere.

**Sensitivity**- referring to a laboratory: the smallest increment of concentration that can be distinguished. For example, being able to distinguish 1.1 ppm from 1.0 ppm implies greater sensitivity than being able to distinguish only 1.5 ppm from 1.0 ppm.

**Site-** the land or water area where any facility or activity is physically located.

**Solid Waste**- as defined in RCRA the term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under the Clean Water Act, or special nuclear or by-product material as defined by the Atomic Energy Act of 1954.

**Stability**- a state in which the vertical distribution of temperature is such that an air particle will resist displacement from its level.

**Storage-** the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

**STP Excavations**- Acronym for Shovel Test Pit.

**Sulfuric Dioxide (SO2**)-a colorless, pungent gas formed by burning sulfur in air and dissolving it in water.

**Surface Impoundment**- a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

**Tank**- a stationary device, designed to contain an accumulation of hazardous waste, which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) that provides structural support.

**Traffic Mix** - ratio of cars to medium trucks (vehicles with two axles and six wheels) to heavy trucks (vehicles with three or more axles and more than six wheels).

**Transmission Loss** - is the difference between the sound energy striking a barrier surface and sound energy transmitted through a barrier.

**Treatment-** any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character of composition of any hazardous waste so as to neutralize it, or render it non-hazardous or less hazardous, or to recover it, make it safer to transport, store or dispose of, or amenable for recovery, storage, or volume reduction.

**TSD**- Acronym for treatment, storage, or disposal facility.

**TSM-** Acronym for Traffic Safety Management.

**Type I project** – a proposed project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes.

**Type II project** - a proposed highway project for noise abatement on an existing highway.

**Undeveloped Land** - those tracts of land or portions thereof which contain no improvements or activities devoted to frequent human use or habitation.

**USFWS**- Acronym for the United States Fish and Wildlife Service.

**USEPA**- Acronym for United States Environmental Protection Agency.

**UST -** Acronym for Underground Storage Tank.

**Volatile**- the characteristic of a pure chemical or solute that results in easy vaporization from the liquid phase into the gas phase. If the chemical is an organic compound, it is called a volatile organic compound (VOC).

**Well-** an artificial excavation that derives fluid from the interstices of the rocks or soils which it penetrates, except that the term is not applied to ditches or tunnels that lead groundwater to the surface by gravity. With respect to the method of construction, wells may be divided into dug wells, bored wells, drilled wells, and driven wells.

**Well Capacity**- the rate at which a well will yield water.

# ESSENTIAL FISH HABITAT ASSESSMENT
# FOR THE
# NEW JERSEY ROUTE 52
# BETWEEN SOMERS POINT AND OCEAN CITY, NEW JERSEY
# PROPOSED MODIFICATION

***Submitted To:***

Stanley W. Gorski
Field Offices Supervisor
National Marine Fisheries Service

***Submitted By:***

New Jersey Department of Transportation

January 24, 2002

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# LIST OF FIGURES

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# 1. PROJECT DESCRIPTION

## 1.1 Applicants

New Jersey Department of Transportation (NJDOT) and the Federal Highway Administration (FHWA).

## 1.2 Location

The project area extends from the intersection of Route 52 with Route 9 in Somers Point over Great Egg Harbor Bay to the intersection of 9th Street with Bay Avenue in Ocean City, New Jersey (see Figure 1-1, Project Location Map).

## 1.3 Activity

The NJDOT and the FHWA propose to reconstruct approximately 4.5 kilometers (2.8 miles) of New Jersey Route 52(1) between Somers Point, Atlantic County and Ocean City, Cape May County, New Jersey. The project area extends from the intersection of Route 52 with Route 9 in Somers Point over Great Egg Harbor Bay to the intersection of 9th Street with Bay Avenue in Ocean City. The purpose of the proposed project is to reconstruct an important but deteriorated section of the National Highway System in order to provide efficient vehicular and marine traffic flow as well as to improve safety. The project entails:

- Replacement of the causeway over Great Egg Harbor Bay, including four concrete bridges (approximately 3.5 kilometers (2.2 miles);
- Construction of standard width driving lanes and shoulders for the length of the causeway;
- Construction of a sidewalk along one side of the causeway and bicycle-compatible shoulders along both;
- Replacement of the Somers Point traffic circle with a signalized intersection that includes turning lanes; and
- Widening of Route 52 (MacArthur Boulevard) in Somers Point from Shore Road to U.S. Route 9 from two lanes to two lanes plus a center turning lane (approximately 1.0 kilometers [0.6 miles]).

Ten (10) "Build" alternatives plus five options, or variations, for the reconstruction of the causeway were evaluated conceptually in addition to the "No-Build" alternative. Three variations of one of the "Build" alternatives plus two variations of another "Build" alternative were selected for detailed environmental study and evaluation in the Draft Environmental Impact Statement (DEIS).


SOMERS POINT
GARDEN STATE PARKWAY
N. LAUREL DR
ROUTE 9
BEGINNING OF PROJECT
MACARTHUR BLVD
SHORE RD
E. MAINLAND AV.
NJ ROUTE 52
COWPENS ISLAND
OCEAN CITY
9 th ST.
WESLEY AV.
BAY AVE.
SHOOTING ISLAND
END OF PROJECT
N
NEW JERSEY
QUADRANGLE LOCATION
SCALE
0
500m
1000m
METERS
SOURCE: American Digital Cartography, Inc.
30090.DWG
New Jersey Department of Transportation
FIGURE 1-1
PROJECT LOCATION MAP
ROUTE 52, SECTION 1

Based on the Draft Environmental Impact Statement (DEIS, August 2000) analysis, Alternative 9 (Option 1) is the Initially Preferred Alternative (IPA) identified in the DEIS. Under this alternative, the two existing bascule (i.e., draw) bridges are proposed to be replaced with fixed-span bridges. The primary factor in the selection of this bridge type is the need to improve vehicular and marine traffic flow within the project area. The IPA is on a centerline alignment offset from the existing embankment approximately 10 meters (33') east of the existing centerline alignment, and with high fixed bridges at both realigned channels. The portion of IPA that traverses the island between Elbow Thoroughfare and Rainbow Channel is proposed to be a continuous structure (i.e., no embankment). This greatly minimizes direct filling of tidal wetlands compared to other options considered which involved an embankment with side slopes.

Another alternative given additional consideration is Alternative 9A (Option 1). For Alternative 9A, a high fixed bridge with a 16.7-meter (55') clearance is used over the realigned Ship Channel. Alternative 9A is similar to Alternative 9, but proposes a high bascule bridge with a clearance of 13.7 meters (45') over the Intracoastal Waterway (ICWW) and requires no realignment of that channel. Similar to Alternative 9 (Option 1), the portion of Alternative 9A (Option 1) that traverses the island between Elbow Thoroughfare and Rainbow Channel is proposed to be a continuous structure (i.e., no embankment).

Alternatives 9 and 9A both propose high fixed bridges over a realigned Ship Channel. Realignment will occur through the movement of channel marker buoys, requiring no dredging at this channel. At the ICWW, Alternative 9 employs a high fixed bridge over the channel that has been realigned approximately 65 meters (215') further from the shore, whereas 9A employs a high bascule bridge over the existing channel. Accordingly, Alternative 9 (Option 1) will require dredging to realign the ICWW, whereas Alternative 9A will not require dredging. Figure 1-2 shows the extent and depth of dredging under the IPA.[4] New viaducts will be constructed over the other existing waterways. High fixed bridges with a minimum vertical clearance of 16.7 meters (55') are used for Alternative 9 over the Ship Channel and the ICWW. Alternative 9 requires realignment of both channels.

Also, the project includes the conversion of the Somers Point traffic circle into a four-legged-signalized intersection with turn lanes in order to improve traffic operations and increase safety. It also includes the widening of MacArthur Boulevard in Somers Point from two to four lanes between the circle and its recently improved intersection with Route 9.

The proposed action smoothes out the causeway between the Somers Point traffic circle and Ocean City, by reducing the severity of the horizontal and vertical curves and by providing more direct approaches into and out of both Somers Point and

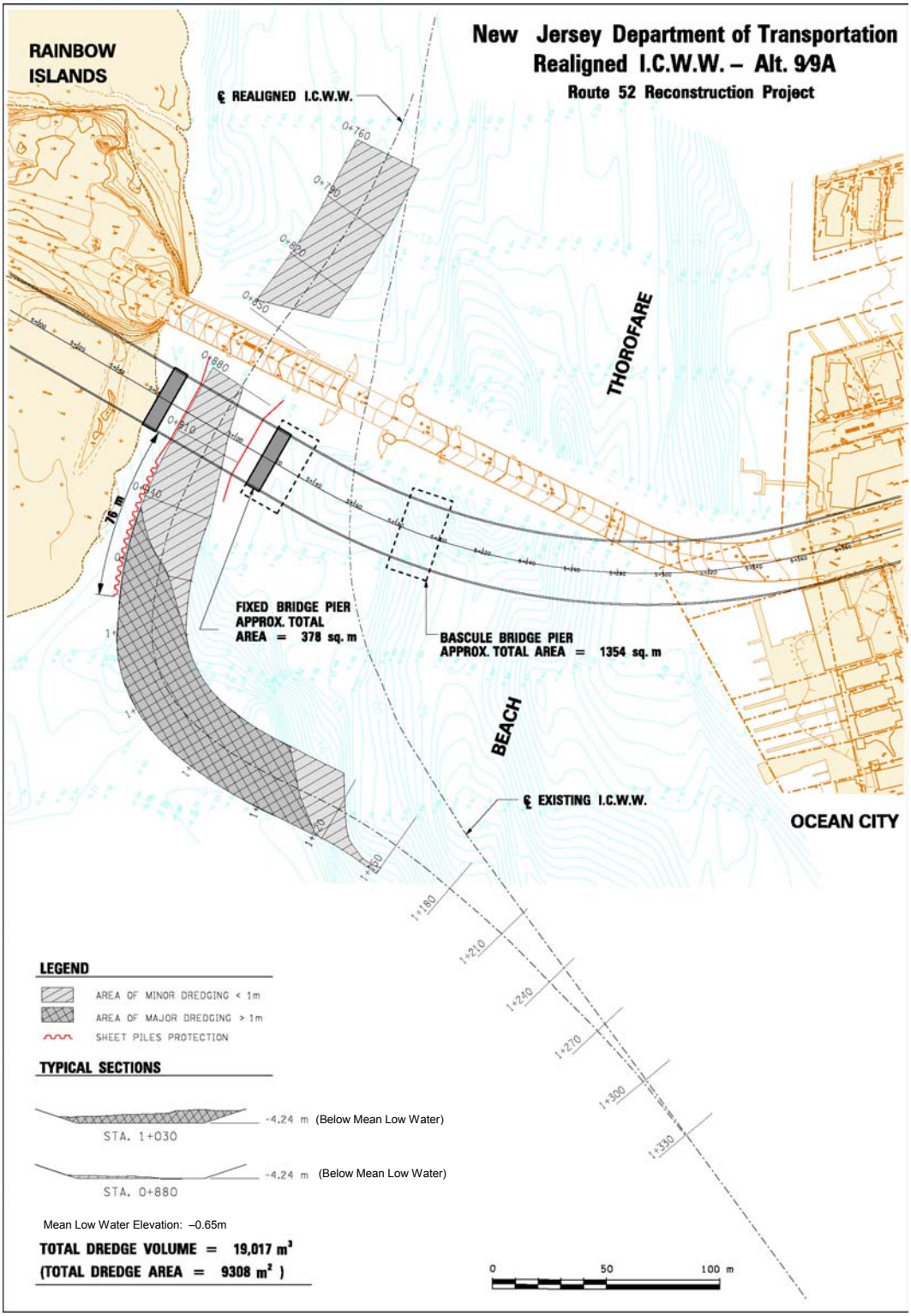



Figure 1-2: Footprint of Realigned ICWW Dredging for the Preferred Alternative

Ocean City. In addition the proposed action would also avoid the settlements caused by added embankment loads and the potential delays associated with the need to preconsolidate soft subsoils prior to final paving. Both Alternatives 9 (Option 1) and 9A (Option 1) suffer from the following adverse impacts:

- Their foundation piles penetrate tidal wetlands and high value clam habitat.
- They shade out tidal wetland grasses if kept at minimum heights. Conversely, they make access for recreational fisherman to tidal wetlands very difficult if raised sufficiently to avoid significant shading impacts.
- Since the NJDOT would acquire the land beneath the elevated structure, replacement of open space would have to be obtained for Ocean City's Open Space Program under Green Acres. This could be done by excavating the existing embankment down to below high tide and planting cordgrass (*Spartina alterniflora)*. An approved disposal area would have to be obtained.
- They impact properties in Somers Point and Ocean City, albeit to the minimal extent possible.
- The foundation piles penetrate high value clam habitat and a very limited area of tidal wetland.
- Realignment of the Ship Channel (no dredging required).
- Construction occurs immediately adjacent to maintained causeway traffic and will require staged construction activities.

In addition to these impacts, the IPA, Alternative 9 (Option 1), suffers from the following adverse impacts:

- The IPA requires dredging to realign the ICWW within its own thoroughfare.

# 2. ESSENTIAL FISH HABITAT (EFH) DESIGNATIONS

The Magnuson-Stevens Fishery Conservation and Management Act (the Act) as amended in 1996 strengthened the ability of the National Marine Fisheries Service (NMFS) and the eight regional fishery management councils to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is known as the essential fish habitat (EFH) and is defined by the Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The Act requires the regional fishery management council to identify EFH for all managed species, to specify actions to conserve and enhance EFH, and to minimize adverse effects on EFH. Fish may change habitats with changes in life history stage, seasonal and geographic distributions, abundance, and interactions with other species. The *Guide to Essential Fish Habitats in the Northeastern United States* provides a geographic species list of EFH designations and is utilized to determine the species and life stages of fish, shellfish, and mollusks for which EFH has been designated in a particular area. Tabular summaries are provided for EFH species in selected 10-minute by 10-minute squares of latitude and longitude along the coast. The Route 52 project area is within the square described as the waters within the Atlantic Ocean and within the New Jersey Inland Bay estuary affecting south of Margate City, New Jersey, south and east of Ocean City, New Jersey, and Peck Beach within Great Egg Harbor Bay and Peck Bay. Along with the EFH descriptions, Estuaries Tables are often provided, indicating salinity zones for a given species. The Route 52 project area lies within a 10 minute x 10 minute square with a northern border at 39 degrees 20 minutes, an eastern border at 74 degrees 30 minutes, a southern border at 39 degrees 10 minutes and a western border at 74 degrees 40 minutes. A further description of this quadrant can be found at www.nero.nmfs.gov/ro/States4/new_jersey/39107430.html. These sources of information were used to compile Table 2-1, which summarizes the EFH by life stage (i.e., eggs, larvae, juveniles, adults) in the vicinity of the Route 52 project.

**Table 2-1: Summary of Essential Fish Habitat by Life Stage – New Jersey Route 52 Proposed Modification**

| Common Name | Latin Name | Seasonal Occurrence | Description of Habitat |
|---|---|---|---|
| **EGGS** | | | |
| Red hake | *Urophycis chuss* | May–November, peaks in June and July | Surface waters of inner continental shelf |
| Winter flounder | *Pleuronectes americanus* | January–May | Bottom habitats with a substrate of sand, muddy sand, mud, and gravel |
| Windowpane flounder | *Scopthalmus aquosus* | February–November, peaks May and October in middle Atlantic | Surface waters |
| Monkfish | *Lophius americanus* | March–September | Surface waters (eggs contained in long mucus veils that float near or at the surface) |
| King mackerel | *Scomberomorus cavalla* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets |
| Spanish mackerel | *Scomberomorus maculatus* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets |
| Cobia | *Rachycentron canadum* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; high salinity bays, estuaries, seagrass habitat; all coastal inlets |
| **LARVAE** | | | |
| Red hake | *Urophycis chuss* | May–December, peaks in September and October | Surface waters (newly settled larvae need shelter, including live sea scallops, also use floating or mid-water objects for shelter) |
| Winter flounder | *Pleuronectes americanus* | March to July | Pelagic and bottom waters |
| Windowpane flounder | *Scopthalmus aquosus* | February–November, peaks May and October in middle Atlantic | Pelagic waters |
| Monkfish | *Lophius americanus* | March–September | Pelagic waters |

| Common Name | Latin Name | Seasonal Occurrence | Description of Habitat |
|---|---|---|---|
| Summer flounder | *Paralicthys dentatus* | Mid-Atlantic Bight from September–February | Pelagic waters, larvae most abundant 19–83 km from shore (high use of tidal creeks and creek mouths) |
| King mackerel | *Scomberomorus cavalla* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets |
| Spanish mackerel | *Scomberomorus maculatus* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets |
| Cobia | *Rachycentron canadum* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; high salinity bays, estuaries, seagrass habitat; all coastal inlets |
| Sand tiger shark | *Odontaspis taurus* | | Neonate/early juveniles: shallow coastal waters from Barnegat Light, New Jersey south to Cape Canaveral, Florida to the 25m isobath. |
| Dusky shark | *Charcharinus obscurus* | | Neonate/early juveniles: shallow coastal waters, inlets, and estuaries to the 25m isobath from the eastern end of Long Island, New York to Cape Lookout, North Carolina/ |
| Sandbar shark | *Charcharinus plumbeus* | | Neonates/early juveniles: shallow coastal areas to the 25m isobath from Montauk, Long Island, New York to Cape Canaveral, Florida |
| Tiger shark | *Galeocerdo cuvieri* | | Neonate/early juveniles: shallow coastal areas to the 200m isobath from Cape Canaveral, Florida north to offshore Montauk, Long Island, and New York. |
| **JUVENILES** | | | |
| Red hake | *Urophycis chuss* | | Bottom habitats with substrate of shell fragments, including areas with and abundance of live scallops. |
| Winter flounder | *Pleuronectes americanus* | | Bottom habitats with a substrate of mud or fine-grained sand (major prey: amphipods, copepods, polychaetes, bivalve siphons). |
| Windowpane flounder | *Scopthalmus aquosus* | | Bottom habitats with substrate of mud or fine-grained sand. |

| Common Name | Latin Name | Seasonal Occurrence | Description of Habitat |
|---|---|---|---|
| Atlantic sea herring | *Clupea harengus* | | Pelagic waters and bottom habitats. |
| Bluefish | *Pomatomus saltatrix* | North Atlantic estuaries from June–October, Mid-Atlantic estuaries from May–October | Pelagic waters (use estuaries as nursery areas). |
| Atlantic butterfish | *Peprilus triacanthus* | (Winter: shelf; spring to fall: estuaries) | Pelagic waters (larger individuals found over sandy and muddy substrates, pelagic schooling: smaller individuals associated with floating objects including jellyfish). |
| Summer flounder | *Paralicthys dentatus* | | Demersal waters, muddy substrate but prefer mostly sand; found in the lower estuaries in flats, channels, salt marsh creeks, and eelgrass beds. Habitat Area of Particular Concern: all native species of macroalgae, seagrasses and freshwater and tidal macrophytes in any size bed as well as loose aggregations. (major prey: mysid shrimp). |
| Scup | *Stenotomus chrysops* | Spring and summer in estuaries and bays | Demersal waters north of Cape Hatteras and Inshore on various sands, mud, mussel, and eelgrass bed type substrates. |
| Black sea bass | *Centropristus striata* | Found in coastal areas (April–December, peak June–November) between Virginia and Massachusetts, but winter offshore from New Jersey and south; estuaries in summer and spring | Rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas, offshore clam beds and shell patches may be used during wintering (Young-of-Year use salt marsh edges and channels; high habitat fidelity). |
| Surf clam | *Spisula solidissima* | | Throughout substrate to a depth of 3 feet within federal waters. (Burrow in medium to coarse sand and gravel substrates. Also found in silty to find sand, not in mud.) |
| King mackerel | *Scomberomorus cavalla* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets. |
| Spanish mackerel | *Scomberomorus maculatus* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets. |

| Common Name | Latin Name | Seasonal Occurrence | Description of Habitat |
|---|---|---|---|
| Cobia | *Rachycentron canadum* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; high salinity bays, estuaries, seagrass habitat; all coastal inlets. |
| Sandbar shark | *Charcharinus plumbeus* | | Late juveniles/subadults: shallow coastal areas to the 25m isobath from Barnegat Light, New Jersey to Cape Canaveral, Florida. |
| **ADULTS** | | | |
| Atlantic cod | *Gadus morhua* | Spawn during fall, winter, and early spring | Bottom habitats with a substrate of rocks, pebbles, or gravel (major prey: fish crustaceans, decapods, amphipods) |
| Winter flounder | *Pleuronectes americanus* | Spawn February–June | Bottom habitats including estuaries with a substrate of mud, sand, gravel (major prey: amphipods, polychaetes, bivalve siphons, crustaceans). |
| Windowpane flounder | *Scopthalmus aquosus* | Spawn February–December, peak in May in middle Atlantic | Bottom habitats with substrate of mud or fine-grained sand (major prey: polychaetes, small crustaceans, mysids, small fish). |
| Atlantic sea herring | *Clupea harengus* | Spawn July–November in bottom habitats with a substrate of gravel, sand, cobble and shell fragments, also on aquatic macrophytes. | Pelagic waters and bottom habitats (major prey: zooplankton). Herring eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. |
| Bluefish | *Pomatomus saltatrix* | North Atlantic estuaries from June–October, Mid-Atlantic estuaries from May to October | Pelagic waters. Highly migratory. (major prey: fish). |
| Summer flounder | *Paralicthys dentatus* | Shallow coastal & estuarine waters in warmer months and offshore on outer Continental Shelf at depths of 150m in colder months | Demersal waters and estuaries. Habitat Area of Particular Concern: all native species of macroalgae, seagrasses and freshwater and tidal macrophytes in any size bed as well as loose aggregations. (major prey: fish, shrimp, squid, polychaetes). |
| Scup | *Stenotomus chrysops* | Wintering adults (November to April) are usually offshore, south of New York–North Carolina | Demersal waters north of Cape Hatteras and Inshore estuaries (various substrate types). (spawn <30m during inshore migration May to August; prey: small benthic inverts). |

| Common Name | Latin Name | Seasonal Occurrence | Description of Habitat |
|---|---|---|---|
| Black sea bass | *Centropristus striata* | Wintering adults (November–April) offshore south of New York–North Carolina. Inshore, estuaries from May–October | Structured habitats (natural and man-made) sand and shell substrates preferred. (spawn in coastal bays but not estuaries; change sex to males with growth; prey: benthic and near bottom inverts, small fish, squid). |
| Surf clam | *Spisula solidissima* | (Spawn – summer to fall at 19–30ºCelsius) | Throughout substrate to a depth of 3 feet within federal waters. |
| King mackerel | *Scomberomorus cavalla* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets. |
| Spanish mackerel | *Scomberomorus maculatus* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; all coastal inlets. |
| Cobia | *Rachycentron canadum* | | Sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from surf zone to shelf break but from the Gulf Stream shoreward; high salinity bays, estuaries, seagrass habitat; all coastal inlets. |
| Sandbar shark | *Charcharinus plumbeus* | | Shallow coastal areas from the coast to the 50m isobath from Nantucket, Massachusetts south to Miami, Florida. |

Note: All information presented is part of the Regional Fishery Management Council's EFH designations except for that contained within () which is provided as important additional ecological information.

# 3. ANALYSIS OF EFFECTS TO ESSENTIAL FISH HABITAT

Alternative 9 Option 1, the Initially Preferred Alternative, and Alternative 9A Option 1 will be used in the analysis of effects to Essential Fish Habitat in Great Egg Harbor relative to the No-Build (i.e., existing conditions) alternative. Habitat, food source and species-specific distribution data will be reviewed in this analysis.

## 3.1 Adverse Effects to Habitat

Potential impacts to EFH resulting from the Route 52 modification may occur through a number of pathways, including impacts to surface water quality, wetlands and aquatic resources. Potential impacts to these resources from the proposed action are described below.

### *3.1.1 Surface Water Impacts*

Surface water quality is essential to the maintenance of Great Egg Harbor Bay fish populations. Potential impacts to surface water quality relate mainly to non-point source stormwater runoff impacts. Roadway operation and maintenance can generate stormwater runoff containing heavy metals, hydrocarbons, deicing chemicals, sediment, and debris that can affect the quality of surface waters. In addition, short-term water quality impacts to Great Egg Harbor Bay can occur resulting from construction-related soil erosion that can increase turbidity and suspended solids, lower dissolved oxygen, and alter pH values. The most significant long-term impact to surface water quality associated with this project, however, will likely be sand and silt in stormwater runoff reaching Great Egg Harbor Bay and tidal wetlands.

Both Build Alternatives will result in runoff directly into Great Egg Harbor Bay or onto the surface of the tidal marsh islands. Also, both Build Alternatives involve a significant increase in impervious area, and they would eliminate the existing onsite infiltration on the wide sandy embankment area on the east side of the causeway over the islands, thereby potentially increasing the amount and rate of runoff relative to existing conditions.

Although the proposed Build Alternatives will result in an overall increase in impervious area and runoff, the number of vehicles traveling on the Route 52 causeway between Ocean City and Somers Point is not likely to increase significantly faster than it would on the existing facility. Therefore, the total mass load of pollutants would not increase significantly (i.e., greater runoff volume but lower concentration of pollutants). Effects to surface water are discussed in depth in Section 3.4.4 of the Draft Environmental Impact Statement (DEIS, August 2000). The proposed alternatives will result in a wider, more efficient roadway, especially since high-level fixed or high-level bascule bridges are to be used. This will result in a more unrestricted flow of traffic along Route 52 and over the bridges, reducing

conditions such as stopping, idling, and delays, and resulting in less time for traffic to deposit pollutants. Additionally, according to the FHWA report on mitigation of highway stormwater runoff, for highways with an average daily traffic (ADT) of 30,000 or more, the ratio of cumulative impervious roadway surface to total watershed area for the receiving waters, (dilution ratio) should not exceed 0.01. A previous traffic report from 1996 estimated the ADT for Route 52 to be 40,800. Therefore, the dilution ratio was calculated for the proposed alternatives. Due to the size of the receiving waters (the Great Egg Harbor Bay), the dilution ratio is smaller than 0.01.

Water quality impacts due to soil erosion and sedimentation will be minimized through implementation of a Soil and Erosion Sediment Control Plan that will be developed specifically for this project. Specific surface water quality protection measures for the Route 52 modification project are provided below.

#### *3.1.1.1 Ocean City*

The proposed approach and roadway for Route 52 into Ocean City on 9th Street will remain within the existing curb lines and will not increase the impervious area. The existing stormwater pipeline under the roadway is adequate for the proposed condition and will be maintained. New inlets are proposed in this area. There is insufficient room to incorporate any of the conditionally approved pretreatment methods into this existing system. To improve the water quality, manufactured oil/grit separators are proposed on all new inlet connections.

#### *3.1.1.2 Causeway between Somers Point and Ocean City*

The low points in the profiles of the Build Alternatives occur within, or close to, the limits of the tidal marsh islands bordering the causeway. Point discharge from a large pipe at these low points carrying sediment-laden runoff could concentrate the deposition of sediments on the marsh surface and have a negative impact on the vegetation. Accordingly, the runoff from the elevated structures would be dispersed through a series of scuppers that discharge directly into open water. For Alternatives 9 and 9A, causeway Option 1, where the causeway structure passes over the marsh islands, the runoff would be routed through leader pipes into scour basins. The scour basins would serve to detain the flow of the runoff and allow some infiltration into the sandy substrate, enhancing the water quality, and minimizing the potential for erosion.

Construction activities can also result in impacts to surface water. For example, foundations consisting of large diameter precast concrete cylinder piles will be driven down through existing soft deposits to depths where firm support can be obtained. Jetting of water alongside the outside of the piles reduces skin friction and facilitates the driving of the piles; however, the jetting operation invariably creates a great deal

of turbidity around piles being driven in open water locations. Even the pile driving operation itself tends to create some turbidity, but to a much lesser degree.

These potential impacts were given serious thought during the alternative evaluation process. The alignment chosen for the Initially Preferred Alternative is the one of all those considered that has the least impacts to surface water. The alignment of the IPA not only minimizes the number of piles required, but also ensures that a large number of the piles will be installed on the islands instead of in open water.

Furthermore, characteristics inherent to the nature of the project work to protect surface water resources. The impact of the jetting operation is temporary, and the impact area will be limited to the corridor along the centerline alignment. Further, the primary grain size of the dredged sediment (fine/medium sands: USDOT, FHA and NJDOT, 1998) will result in relatively rapid deposition.

Nevertheless, mitigation measures should also be implemented during construction to minimize impacts due to turbidity. For piling driving our proposed turbidity mitigation strategy consists of the following:

- Use turbidity curtains only in hydrologically quiescent areas (i.e., areas of low to no current velocity).

- Employ a stringent level of visual monitoring to ensure minimal offsite migration of suspended solids (e.g.; use a Secchi disk).

Surface water quality can also be affected by dredging, which would be required at the ICWW under Alternative 9. Dredging causes an increase in turbidity, which can adversely affect aquatic resources such as submerged vegetation, shellfish, and finfish habitat. Under Alternative 9, the dredged material would most economically be pumped directly into a 6000 square meter (66,000 square foot) triangular area directly east of the existing causeway on the island directly north of Beach Thoroughfare. It would be diked to contain the slurry of sand and water and allowed to drain. The dried out material will then be transported for use, sale or disposal at an appropriate dredged material disposal site. If necessary, any remaining dredge spoil will be disposed of permanently under the structure on the southernmost island, out of the wetlands.

For dredging operations our proposed turbidity mitigation strategy consists of the following:

- Where possible use a hydraulic dredge to pump sediment to a diked onshore dewatering area as described above.

- Where hydraulic dredging is not feasible and a clamshell bucket is necessary for dredging, an “Environmental Bucket”, which seals upon closure and minimizes

spillage and leakage, would be utilized. The transfer of dredge spoils for offsite transport would also be accomplished using best management practices.

- Where necessary, use turbidity curtains only in hydrologically quiescent areas (i.e., areas of low to no current velocity).

- Employ a stringent level of visual monitoring to ensure minimal offsite migration of suspended solids consistent with typical dredging operations (e.g.; use a Secchi disk).

- Prohibit dredging activities during the period December 1st to May 31st to protect winter flounder spawning and blue crab overwintering habitats (see also Sections 3.1.3.1, 3.1.3.4 and 4.3).

Although the initial dredging may result in temporary impacts to surface water, it is not anticipated that periodic maintenance dredging will be required. Studies have revealed that a large percentage of the tidal flow comes through Beach Thoroughfare; approximately 16 percent of the flood tide goes up Beach Thoroughfare, and 34 percent flows back through at ebb tide. These high flow rates indicate that the velocity of the water surging through the channel will be sufficient to keep the channel clean. The sedimentation rate in the bay was found to be about 1 inch in the last 25 years in shoaling areas. With no evidence of shoaling in Beach Thoroughfare, this channel has not been dredged in 25 years. Therefore, dredging the shelf for realigning the channel is unlikely to require maintenance dredging.

#### *3.1.1.3 MacArthur Boulevard: Somers Point Circle to Route 9*

Under Alternatives 9 and 9A, the traffic circle will be converted to a signalized four-legged intersection, and the configuration of MacArthur Boulevard will be modified. The result of the improvements will be slightly more than an 80 percent increase in impervious area. The projected future traffic is not expected to be any different than the traffic that would occur if the roadway were not widened. Accordingly, most of the pollutants associated with vehicular traffic will not increase because of the improvements. In fact, because the long delays and associated idling will be reduced, the pollutant load in general may be reduced. However, the quantity of runoff and amount of aggregates used for winter ice control can be expected to approximately double in magnitude. Further, the increase in sediments washed off the additional pavement could lead to an increase in turbidity. A preliminary watershed analysis of the MacArthur Boulevard area revealed that the overall increase in paved area due to the widening of MacArthur Boulevard would be 1.27 hectares (3.13 acres). This area is considered impervious, because it will not permit water to seep through.

The conceptual drainage plan for the Build Alternatives is the same in the vicinity of MacArthur Boulevard. Much of the existing drainage system, which is old and undersized, will be replaced with a new system of catch basins and piping capable of handling the flow of a 10-year frequency storm (the average worst storm occurring every 10 years). The proposed drainage system for MacArthur Boulevard will consist of piping along the west curb line, which will route runoff to an underground grid of pipes with slits, or perforations, in the bottoms. This system will be located under a parking lot (at Station 0+625) near the low point on MacArthur Boulevard in the vicinity of Braddock Avenue. This system will hold, or detain, the runoff water until it infiltrates, or soaks, into the ground underneath. The majority of runoff contributing to this drainage system will be from a 16-hectare (40-acre) drainage area north of the low point, including the roadway and adjacent areas from the Route 9 intersection to the low point. In addition, runoff from a 2.5-hectare (6-acre) drainage area south of the low point will contribute to the MacArthur Boulevard drainage system, including the roadway and adjacent areas from the low point to a point near the Somers Point traffic circle. To improve the useful life of the underground system, it is recommended that oil/grit separators be installed on the collecting pipes in MacArthur Boulevard.

A significant drainage area of approximately 28 hectares (70 acres) exists to the east of MacArthur Boulevard. However, the runoff from this area is collected in an existing piping system and does not contribute to the MacArthur Boulevard drainage system or underground detention/infiltration system. The flow from the east is piped under MacArthur Boulevard at the low point (Station 0+650), where it will be combined with the discharge from the MacArthur Boulevard drainage system and discharge through an existing outfall. Based on current design standards, the existing outfall is already undersized for the prevailing conditions and should be upgraded. Due to the detention capacities built into the proposed drainage design, the post-construction flows are anticipated to be less than, or equal to, the preconstruction flows.

The existing detention/infiltration basin near Route 9 between Laurel Drive and MacArthur Boulevard is basically a deep open ditch. This basin will be modified and utilized to collect the flow from approximately 1.2 hectares (3 acres) in the northwest corner of the project. Existing pipes will be modified slightly so that all of the flow from the northwest will be routed into the new detention/infiltration basin prior to entering the MacArthur Boulevard piping system at Station 0+200. The new detention/infiltration basin will be approximately 14 meters (45') wide by 100 meters (325') long and could detain the runoff from a 1-year, 24-hour storm of 2.8 inches. Flow leaving this basin will ultimately also be routed through the detention/infiltration piping system located at the low point (Station 0+650). The basin will remain between the west curb line of MacArthur Boulevard and the new east curb line of Laurel Drive.

The Somers Point drainage system will be replaced to accommodate the flow from a 1.5-hectare (4-acre) drainage area surrounding the four-legged intersection proposed to replace the Somers Point traffic circle. The flow from the roadway between Station 0+900 and Station 1+100 will be collected in a new piping system along the west curb line, which will be routed through an oil/grit separator prior to discharge at the abutment of the new bridge. Runoff rainwater from the southwest quadrant of the new intersection will be detained in a depression in the traffic island prior to entering the piping system at Station 1+010. A separate piping system in the eastern portion of the intersection will be provided to accommodate the flow from the northeast and southeast quadrants of the intersection. This flow will be discharged into a vegetated swale on the east side of the north approach of the bridge over Ship Channel prior to being discharged into Great Egg Harbor Bay.

The proposed drainage system for MacArthur Boulevard, including the upgraded piping system and new pretreatment facilities, will be a significant improvement over the existing system from the Route 9 intersection to the Somers Point traffic circle. Currently, none of the runoff is pretreated prior to discharge into Great Egg Harbor Bay. In contrast, the proposed drainage system provides for pretreatment of all runoff through the use of detention/infiltration facilities, oil/grit separators, and/or grassed swales.

### *3.1.2 Wetland Impacts*

Many fish species utilize the wetlands of Great Egg Harbor Bay in a number of ways. Some spend their entire lives in the wetlands, while others use the wetlands primarily for reproduction and nursery grounds. Many fish species frequent these marshes for feeding or feed on organisms produced in the wetlands. The tidal marshes are important for shellfish including bay scallops, grass shrimp, blue crabs, oysters and clams. Among the more familiar wetland-dependent fishes are menhaden, bluefish, fluke, white perch, sea trout, mullet, croaker, striped bass and drum. The estuarine aquatic beds found within the wetlands also provide important cover for juvenile fishes and other estuarine organisms. Also, due to the presence of wetlands immediately adjacent to Route 52, the marshes act as a pollution filter for man-made debris and they remove or partially remove and absorb sediments and chemicals emanating from the road.

In general, reconstruction of Route 52 will require placement of fill and installation of piles in wetland areas for the Build Alternatives. Wetland impacts (removal of wetland habitat) associated with the Build Alternatives are due to the driving of pilings into the tidal marsh, providing access to the recreational island, and shading. Also, in the Build Alternatives, a small tidal wetland area would be removed west of the existing causeway where the proposed highway enters into Somers Point. Generally, the wetlands to be affected by the installation of piles and shading from the causeway are stands of salt marsh cordgrass (*Spartina alterniflora*) that exist throughout much of the

remaining islands in the vicinity of the study area. However, both Build Alternatives would also affect some wetlands immediately adjacent to the existing causeway that comprise the transitional zone between the upland areas and the salt marsh. These wetlands consist of transient species of wetland plants like marsh elder (*Iva frutescens*) that represent ecotones between upland and wetland communities. Pilings, embankment material or the shoulder of Route 52 often bordered their upland boundaries, along the causeway. Vegetation on the upland communities was absent or is consistent with disturbed environments and contains primarily phragmites (*Phragmites communis)* and poison ivy (*Toxicodendron radicans*).

Table 3-1 summarizes the direct impacts of wetlands, due to dredging and filling, and also the shading impacts for the entire wetlands areas beneath the structure. The amount of direct wetland impacts associated with these proposed alternatives is small when compared to the size of the project, considering that the entire project is being constructed within a large wetland/aquatic habitat.

Build Alternatives 9 (Option 1) and 9A (Option 1) are the same with respect to wetland impacts, resulting in the filling of about 1/10 of a hectare (just under ¼ acre). The Build Alternatives impact wetlands that are directly adjacent the existing causeway. Of all Build Alternatives considered in the DEIS, Alternatives 9 and 9A (Option 1) involve the least impact to wetlands.

Shading impacts are also indicated in Table 3-1. Alternatives 9/9A have comparable impacts (somewhat less than a hectare of additional shading relative to the No-Build Alternative). However, over some of this area, the structures shall be of sufficient height to allow a few hours of sunlight to reach the wetlands areas and, consequently, the effects of shading in these areas will be lessened.

Total shading created by the causeway over wetlands may inhibit the growth or displace the native wetland vegetation. Therefore, a design option involving a raised and split viaduct for the stretches of Route 52 that would pass over vegetated wetland islands was evaluated. This option would potentially reduce impacts to the marsh cordgrass by decreasing the shading effect of the new and wider roadway by allowing more sunlight to reach the vegetation. Raising the height from 4 meters to 12 meters, and separating the northbound and southbound lanes by approximately 10 meters (34'), would allow sunlight to reach vegetated areas that would otherwise be shaded by the lower viaduct. The split viaduct option was not selected because it would significantly increase the footprint of the causeway, inhibit angler access and significantly increase the project cost.

**Table 3-1: Summary of Impacts of Various Alternatives on Wetlands, Route 52(1) Between Somers Point, Atlantic County and Ocean City, Cap May County**

| Block | Lot | Description | Area Impacted By Various Alternatives Units in Square Meters (Square Feet) | | |
|---|---|---|---|---|---|
| | | | Alternative 9 | Alternative 9A | Alternative 11 No-Build |
| | | | Option 1[3] | Option 1 | |
| 1750 | 1 | Majority of lots are tidal wetlands. Access from Route 52. | 0 | 0 | 0 |
| 1750 | 2 | | 0[1] {F}<br>70 (753){S} | 0[1] {F}<br>70 (753){S} | 0 |
| 1750 | 4 | Majority of lot is a tidal wetland. No access from Route 52. | 0 | 0 | |
| 1750 | 11 | Cowpens Island. Entire lot is a tidal wetland. No access from Route 52. | 0 | 0 | 0 |
| 1750 | 16 | Majority of lot is a tidal wetland. Access from Route 52. The Ocean City Information Center is located on this lot. | 0[1]{F}<br>6071 (65,347){S} | 0[1]{F}<br>6071 (65,347){S} | 0 |
| 850 | 1 | Majority of lots are tidal wetlands. Access from Route 52. | 0[1]{F}<br>540 (5812){S} | 0[1]{F}<br>540 (5812){S} | 0 |
| 850 | 3 | | 0[1]{F}<br>1244 (13,390){S} | 0[1]{F}<br>1244 (13,390){S} | 0 |
| 850 | 6 and/or 7 | Majority of lots are tidal wetlands. Access from Route 52. Lot 7 is privately owned. | 0[1]{F}<br>539 (5802){S} | 0[1]{F}<br>539 (5802){S} | 0 |
| 2012 | 12.01 | Lot includes beach, wetland and developed area in Somers Point. | 771 (8299){F} | 771 (8299){F} | 0 |
| Not Determined | | Piles[2] | 162 (1743){F} | 162 (1743){F} | 0 |
| **Total** | | | **911 (9806){F}<br>8464 (91,105){S}** | **911 (9806) {F}<br>8464 (91,105){S}** | **0** |

Estimates are based on the Alternative designs, and may change based on the final design.

[1] Some area is impacted, but is addressed in terms of the total piles needed for the alignment, rather than by lot.

[2] Areas impacted were not determined in terms of lot and block, but by the number of piles in wetlands.

[3] Initially Preferred Alternative

{F} Fill Impact

{S} Shading Impact (worst case)

### *3.1.3 Aquatic Resource Impacts*

Potential impacts to shellfish beds and submerged aquatic vegetation are discussed below. Table 3-2 summarizes the potential impacts to these aquatic resources.

**Table 3-2: Summary of Impacts on Aquatic Resources, New Jersey Route 52(1) Between Somers Point, Atlantic County and Ocean City, Cape May County**

| | | Build Alternatives | | |
|---|---|---|---|---|
| | | **Alternative 9 Option 1[2]** | **Alternative 9A Option 1** | **Alternative 11 (No-Build)** |
| Permanent Impacts | Permanent Habitat Loss Area[1] | 420 SM (4520 SF) | 1350 SM (14530 SF) | 0 |
| Permanent Habitat Change | Shallow Dredging Area (< 1 meter below bottom) | 6,300 SM (68,000 SF) | 0 | 0 |
| | Deep Dredging Area (> 1 meter below bottom) | 3,000 SM (32,000 SF) | 0 | 0 |
| | Total Dredging Area | 9,300 SM (100,000 SF) | 0 | 0 |
| | Dredging Volume | 19,017 $M^3$ (24,870 $YD^3$) | 0 | 0 |
| Aquatic Ecology | Impacts to Shellfish | Temporary/Long-term | Minor Temporary/ Long-term | Temporary |
| | Impacts to Finfish and Migratory Pathways | Temporary | Temporary | Temporary |
| | Impacts to Submerged Aquatic Vegetation | None | None | None |
| | Impacts to Wintering Areas | Temporary | Temporary | Temporary |

[1] Construction Estimates for Habitat Loss Due to Pile Driving

[2] Initially Preferred Alternative

Temporary — Refers to impacts associated with disruption of the benthos, sediment resuspension, increased turbidity, lowered dissolved oxygen levels and physical obstruction during the construction phase of the project.

Long-term — Refers to impacts directly relating to the loss of habitat from the support structures.

#### *3.1.3.1 Shellfish/Benthic Habitat*

Great Egg Harbor Bay provides shellfish habitat in excess of 285 hectares (704 acres). According to the State Water Quality Inventory Report (1998), these shellfish habitats have been classified as either "Seasonal Area" or "Approved Area". Several shellfish species inhabit Great Egg Harbor Bay, including the surf clam (*Spisula solidissima*), which is a federally managed EFH species (Refer to Table 2-1). The most important commercial species is the hard clam (*Mercenaria mercenaria*). Although it is not a federally managed EFH species, it is given special

mention due to its importance to the local economy. The hard clam is considered the most widely distributed shellfish species in New Jersey, present in abundant quantities in nearly every estuary from Raritan Bay to Cape May. The location of the existing Route 52 study area includes shellfish habitat classified as "Approved Area" with the exception of sections within the ICWW and the Ship Channel, which have a "Seasonal Area" classification. The "Seasonal Areas" are approved for the harvesting of shellfish only from November 1 through April 30 and are so designated typically due to the reduction of oxygen levels near the bay bottom adjacent to the urban areas during the warmer months.

Bottom habitat is important to other marine organisms in addition to shellfish. These organisms are a vital food source (forage base) for fish and crustaceans. These organisms live either on or within the bottom substrata (sediments, debris, macrophytes, filamentous algae, etc.) for at least part of their life cycle. The most common groups of benthic organisms include insects, clams, snails, worms, and crustaceans. Species-specific information on benthic organisms within the study area, with the exception of shellfish and some arthropods, is limited. However, the presence of polychaete worms, oligochaetes, various arthropods including blue crab (*Callinectes sapidus*), mud fiddler and various mollusk species, can be expected throughout the bay.

Furthermore, distinct variations in bottom topography and composition make many of the channels in the northern portion of the bay ideal habitat for benthic organisms and provide over-wintering grounds for blue crabs. Crabs overwinter in the substrate and separate by gender in the winter (i.e., December – March) according to salinity (Riportella 2001). In bays females tend to aggregate in areas with higher salinity (e.g., approximately >25 ppt) and males locate in areas with lower salinity (Riportella 2001; Kahn 2001). The salinity of the bay in the area of the Route 52 Bridge ranges on average from 28.4 ppt–30.3 ppt (NJDEP Department of Watershed Management 1999). Thus, the bay area near the causeway can be considered a female blue crab aggregate overwintering area. Therefore, construction activities in this area that impact benthic areas should be prohibited from December 1$^{st}$ to March 31$^{st}$ to protect this resource.

Shellfish habitat will be temporarily affected locally by construction activities associated with Alternative 9-1 or Alternative 9A-1, both of which would generate suspended sediments, create turbidity and lower oxygen levels in the immediate project vicinity. For Alternative 9-1 only, dredging to realign the ICWW would temporarily disrupt approximately 9,300 square meters (100,000 square feet) of localized areas of shellfish and benthic habitat.

The required elevation of channel bottom is –3.65 meters (-12') referenced to Mean Low Water, or –4.3 meters (-14') relative to the 1988 NGVD datum. Soil borings taken in the immediate vicinity of the proposed dredging indicate that the composition of the soil is uniform, consisting of gray fine sand and some shell

fragments, to a depth of about -7 meters (-23') relative to the 1988 NGVD datum. So, the proposed dredging would not cause a change in substrate composition.

Most of the proposed dredging would be quite shallow (see Figure 1-2, Footprint of Realigned ICWW Dredging for the Preferred Alternative). The total area that would require dredging would be about 9,300 square meters (100,000 square feet). Roughly two thirds of this area, or 6,300 square meters (68,000 square feet), would require dredging of less than 1 meter (3.3') below the existing bottom. The remaining third, or 3,000 square meters (32,000 square feet), would require dredging in the range of 1 meter (3.3') to 3.4 meters (11.5') below the existing channel bottom. It is unlikely that periodic maintenance dredging would be required. These changes in depth will result in a permanent change to benthic habitat only in areas affected by the proposed dredging. Such habitat changes may result in changes in benthic species diversity and abundance.

Since Beach Thoroughfare has a good flushing rate (due to relatively high current speeds), significant deposition of sediments on the seafloor is not anticipated. Therefore, smothering of benthic creatures is not expected from these activities. However, the magnitude of change in depth could have some effect on the diversity and abundance of benthic organisms (i.e., flora and fauna assemblages). A significant change in depth of this area from dredging would cause changes to hydrologic flow through this area with concomitant changes to light transmissivity, current flow, and the temperature profile throughout the water column. Accordingly, this could result in changes to the number and diversity of species assemblages. Conversely, a small relative change in the depth profile of dredged areas should have a marginal effect on species assemblages in dredged areas.

From an Essential Fish Habitat perspective, life stages of federally managed fish species expected to occur in the project area have been reported to inhabit the entire range of the pre- and post-dredge depths (see Table 3-3). Benthic organisms in the dredge area that serve as a forage base for the various fish species life stages will be temporarily impacted during the construction and/or dredging phase of the project. However, these organisms are expected to recolonize and become re-established after construction and/or dredging disturbances are ended. Due to the linear nature of this project, adjacent undisturbed forage base areas with benthic organisms are available for the various life stages of these mobile fish species life stages. As described above, potential changes may occur to the forage base species diversity and abundance due to dredge depth modifications; however, federally managed fish species expected in the project area are adapted to feeding on a forage base available at both the pre- and post-depths as evidenced by the habitat depth range shown on Table 3-3. Therefore, no significant impact to the forage base for EFH species is anticipated in this area.

**Table 3-3: Habitat Depth Range of Life Stages of Federally Managed Species Expected to Occur in Great Egg Harbor Bay-New Jersey Route 52 Proposed Modification**

| Common Name | Life Stage(s) | Habitat Depth Range (Meters [m]/feet['']) | Expected Occurrence |
|---|---|---|---|
| Red hake | Juveniles | <100m (328') | Rare |
| Winter flounder | Eggs<br>Larvae<br>Juveniles<br>Adults | <5m (16')<br><6m (20feet)<br>1-50m (3-164')<br>1-100m (3-328') | Common<br>Common<br>Common<br>Common |
| Windowpane flounder | Eggs<br>Larvae<br>Juveniles<br>Adults | <70m (230')<br><70m (230')<br>1-100m (3-328')<br>1-75m (3-246') | Highly abundant<br>Highly abundant<br>Highly abundant<br>Highly abundant |
| Spanish mackerel | Eggs<br>Larvae | Throughout water column, outer estuary<br>Throughout water column, outer estuary | May be found<br>May be found |
| Summer flounder | Larvae<br>Juveniles<br>Adults | 1-70m (3-230')<br>1-70m (3-230')<br>1-360m (3-1,180') | Rare<br>Common<br>Common |
| Sand tiger shark | Neonate | To 25m (82') | May be found |
| Dusky shark | Neonate | To 25m (82') | May be found |
| Sandbar shark | Neonate<br>Juveniles<br>Adults | To 25m (82')<br>To 25m (82')<br>To 50m (164') | May be found<br>May be found<br>May be found |
| Atlantic sea herring | Juveniles<br>Adults | 15-135m (49-443')<br>20-130m (66-426') | May be found<br>May be found |
| Bluefish | Juveniles<br>Adults | Ubiquitous within "mixing" and "seawater" zones.<br>Ubiquitous within "mixing" and "seawater" zones. | Expected<br>Expected |
| Atlantic butterfish | Juveniles | 10-365m (33-1,200') | Expected |
| Scup | Juveniles<br>Adults | <40m (132')<br><40m (132') | May be found<br>May be found |
| Black sea bass | Juveniles<br>Adults | <10m (33')<br>10-20m (33-66') | Expected<br>Expected |

Since EFH species in the area are already adapted to feeding on forage base species throughout the depth ranges of pre- and post-dredging, it is anticipated that these EFH species will continue to utilize the post-dredge areas for feeding following recolonization by benthic forage base species. Permanent loss of benthic environment would result from the installation of pilings for the causeway for a total area of either 420 square meters (4,520 square feet) for Alternative 9-1, or 1,350 square meters (14,530 square feet) for Alternative 9A-1.

Long-term impacts to the benthic substrate and shellfish beds are anticipated from the placement of piers or piles to support structures during the construction of either

Build Alternative. Both would permanently affect the benthic substrate and exclude colonization by shellfish of those areas occupied by the piles. These piers will provide a beneficial impact by increasing habitat for juvenile fish species and encrusting shellfish. In fact, the total surface area resulting from the new pilings (from the seafloor to the high tide line) is anticipated to be 3,436 m (36,970 square feet). This is more than double the benthic area lost due to piling installation.

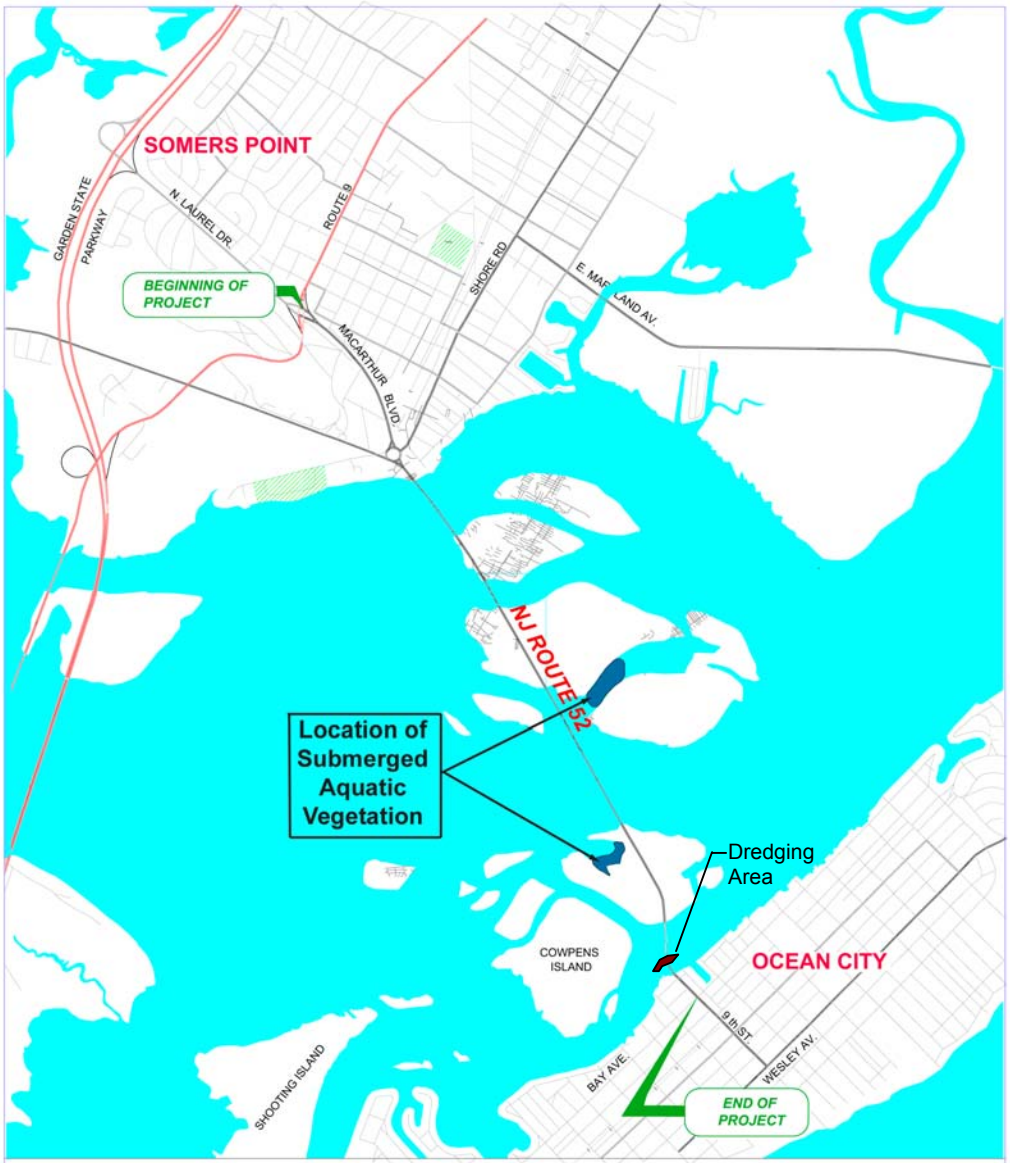
Also, the removal of portions of the existing causeway bridges including numerous pilings that would represent navigational hazards can produce minor temporary impact to finfish habitat through displacement.

In a broader sense, these impacts would not be substantial, since the total area of impact is very small, relative to the total extent of shellfish beds in Great Egg Harbor Bay [in excess of 285 hectares (706 acres)]. Where viable, turbidity barriers would be employed during construction in order to minimize impact caused by the resuspension of sediments. These barriers should be positioned around the area of disturbance to minimize suspended particle drift during tidal fluctuation.

To mitigate for the loss of bottom habitat in the footprint of support structures, transplanting shellfish has been considered. In an attempt to investigate the possibility of mitigating for loss of shellfish habitat by transplanting, several experts in the field of aquaculture or shellfish research were contacted to determine their professional opinion of the success and or failures associated with shellfish transplants. In general, experts are unaware of any precedent that involved the seeding or transplantation of clams to areas where they were not already successful. Most have had poor success in growing clams where they were not already established.

#### *3.1.3.2 Submerged Aquatic Vegetation*

All native species of seagrasses, macroalgae, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder essential fish habitat are designated by the Mid-Atlantic Fishery Management Council as Habitat Areas of Particular Concern. Great Egg Harbor Bay supports limited areas of submerged aquatic vegetation. In fact, submerged vegetation is most prevalent in coastal areas north of the study area. Two areas of submerged aquatic vegetation, which have not been delineated as to species, are mapped in the vicinity of the study area. One mapped patch of vegetation is located to the northwest of the Ocean City Information Center, west of the existing causeway. The second area is located east of the existing alignment in Rainbow Channel (see Figure 3-1 for the locations of these areas). As can be seen from Figure 3-1, the approximate distance of the dredging operation from these two SAV


SOMERS POINT
GARDEN STATE PARKWAY
N. LAUREL DR.
ROUTE 9
BEGINNING OF PROJECT
MACARTHUR BLVD.
SHORE RD
E. MAINLAND AV.
NJ ROUTE 52
Location of Submerged Aquatic Vegetation
Dredging Area
COWPENS ISLAND
OCEAN CITY
9 th ST.
WESLEY AV.
BAY AVE.
SHOOTING ISLAND
END OF PROJECT
N
NEW JERSEY
QUADRANGLE LOCATION
SCALE
0
500m
1000m
METERS
SOURCE: American Digital Cartography, Inc.
30090.DWG
New Jersey Department of Transportation
Figure 3-1
Location of SAV Beds
ROUTE 52, SECTION 1

beds is 500m and 1,500m, respectively. The closer bed is on the opposite side of a marsh island and the more remote bed is located between two of the Rainbow Islands. Based on these distances, the primary grain size of the dredged sediment (fine/medium sands) (USDOT, FHA and NJDOT, 1998) which results in relatively rapid deposition, and the fact that the SAV beds are separated from the dredging operations by marsh islands, the potential for substantial sediment deposition within these beds is low.

No areas of submerged aquatic vegetation were observed in the vicinity of the existing causeway during field investigations in October 1997. Submerged shallow water areas directly adjacent to the causeway appeared to have a sandy or mud bottom barren of vegetation.

Long-term impacts to submerged aquatic vegetation could result from the placement of fill materials and/or the placement of piers or piles to support the Route 52 modification. However, the Build Alternatives under consideration will not be routed through the known areas of submerged aquatic vegetation. Therefore, Alternatives 9 (Option 1) and 9A (Option 1) will not affect submerged aquatic vegetation.

#### *3.1.3.3 Finfish Habitat and Migratory Pathway*

A review of the habitat depth ranges of egg, larval, juvenile, and adult life stages of resident and migratory EFH species inhabiting the area of dredging demonstrates these species are already adapted to the depth changes anticipated by the proposed dredging (Table 3-3). Therefore, material long-term impacts to these EFH species are not anticipated.

Short-term impacts to finfish habitat and migratory pathways are possible during construction of support structures and dredging for channel realignments for all of the Build Alternatives. Turbidity caused by resuspension of sediments could act as a temporary barrier to finfish passage. Similarly, turbidity and sediment deposition will temporarily displace wintering finfish species and crabs. Temporary impacts could also result from the use of turbidity barriers, sheet piles, cofferdams, and similar structures that could physically inhibit the movement of fish through an area. However, the causeway is very long, and work will take place and the work will be performed progressively and in stages, such that the contractor will only be working in a few localized areas at any given time. Further, it will be necessary to maintain channels for the passage of ships during construction. Accordingly, there will always be large zones of clear water for the fish to use for migration, while construction is taking place. These impacts will be temporary and the finfish migratory pathways would be re-established after construction disturbances end. Impacts will be similar for both Alternatives 9-1 and 9A-1.

The removal of portions of the existing structure, including the existing piers, can produce minor temporary impacts to finfish habitat through displacement. During

final design, a decision will be made whether to leave the existing pilings in place below customary navigational draft depths. However, the construction of new pilings/support structures will provide additional habitat for finfish and some species of encrusting shellfish. It is expected that concrete pilings function similarly to artificial reefs and that fixed and shaded artificial structures would provide significant habitat for many species of larval fish.

#### *3.1.3.4 Wintering Areas*

Great Egg Harbor Bay serves as a wintering area for several finfish species and other commercially important species including winter flounder, striped bass, and blue claw crabs (Draft Environmental Impact Statement, August 2000). These species are expected to utilize Great Egg Harbor Bay, including the study area, during the winter months. In addition, marine turtles typically utilize New Jersey waters for periods ranging from May to November.

Short-term impacts to wintering grounds and utilization of the study area by these finfish, crabs, and marine turtles are possible during construction due to sediment resuspension, increased turbidity, and lowered oxygen levels. Short-term impacts may also result from the proposed dredging as described below.

As described in Section 3.1.3.1, the bay area where the Route 52 project will occur, tends to serve as an aggregate area for blue crabs. Since blue crabs overwinter in this area (by burrowing in the sediment), they are vulnerable to the impacts of marine construction that impacts the bay floor. Overwintering occurs from December–March (Riportella 2001). In addition, winter flounder spawn from January–May (Riportella 2001) in the area of construction and dredging, with spawning generally occurring from January–March (Stone *et al.* 1994, Scarlett 2001). Therefore, as described in Section 4.3, Fisheries Impact Mitigation, construction activities that impact winter flounder egg and blue crab overwintering habitats (i.e., demersal and benthic habitats) should not occur from December 1st through May 31st. Prohibitions on construction activities impacting benthic environments will result in the protection of these resources, while allowing construction to occur in an expeditious manner. This will minimize the need for repeated mobilization/ demobilization operations which, in themselves, impact the bay environment.

#### *3.1.3.5 Removal of the Existing Causeway*

During construction, most of the existing Route 52 structures and causeway will be removed once the new causeway and bridges have been built. The bridges and concrete pavements would generate a large quantity of debris, which poses disposal concerns. Consideration has been given to incorporation of recyclable construction materials and portions of demolition materials into the artificial reef program sponsored by the New Jersey Department of Environmental Protection (NJDEP).

These efforts will help to minimize impacts involving the disposal of construction materials and would mitigate habitat loss within the project area through the creation or enhancement of new, offsite marine habitats. The NJDEP has indicated willingness to incorporate these materials into the artificial reef program as long as the material meets the following conditions:

- The material consists of concrete, steel or rock;
- There is no wood or other floatable debris;
- The material is inspected by NJDEP personnel;
- The material is placed in either the Great Egg or Ocean City reef sites, each located approximately 7 miles from the Great Egg Inlet; and
- Deployment at sea is observed by NJDEP personnel.

Removal of the old bridges along with all of the piers may have a temporary negative impact on finfish habitat. However, this temporary negative impact will be offset by the beneficial impacts associated with the new pilings/support structures that will be constructed, which will serve to replace some of the lost finfish habitat. Consideration will be given during final design to leaving in place that portion of existing pilings below customary navigational draft depths.

#### *3.1.3.6 Sound and Pressure Impacts*

Temporary sound and pressure (i.e., shock waves) can result from construction activities associated with pile driving and blasting operations. At this time it is not known if blasting will be required to remove the existing causeway; but, if required, this section addresses blasting concerns. Blasting in or near water produces shock waves that can rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae (CDFO 2000). Accordingly, the following sound mitigation strategies may be employed during project construction:

- Use of noise generators to move fish out of area;
- Detonation of small scaring charges set off one minute prior to detonation of main charge to scare fish away from the area;
- Installation of bubble/air curtain to disrupt shock waves; and
- Prohibition of blasting from January 1$^{st}$ to March 31$^{st}$ to protect winter flounder spawning overwintering habitat (blue crabs do not appear to be impacted by sound/shock waves (Young 1991)).

## 3.2 Impact on Food Source

The implementation of either Alternative 9-1 or 9A-1 will result in varying impacts to the forage base of federally managed fish species relative to the No-Build Alternative. Impacts of food sources result mainly from temporary or permanent alterations to species inhabiting wetlands, hard surfaces and benthic environments.

### *3.2.1 Wetlands Forage Base Impacts*

The loss of 911 square meters (0.23 acres) of wetlands due to filling and the 8,464 square meters (2.09 acres) reduction in wetland productivity from shading will result from either Alternative in permanent impacts to fish and shellfish species that utilize these wetland habitats in the bay (e.g., Atlantic silversides, mummichogs, and polychaete worms, quahogs). These species serve a forage base function to many of the federally managed species listed in Table 2-1 and described in greater detail below.

These reductions in marshlands relative to the areal extent of marshes in Great Egg Harbor Bay are not expected to measurably effect the source of epifaunal and infaunal forage base for federally managed fish species in bay.

### *3.2.2 Hard-Surface Forage Base Impacts*

Both Alternative 9-1 and 9A-1 will result in the permanent increase of hard surfaces from pilings placement in the bay relative to the No-Build Alternative. Hard surfaces provide substrate for algae and marine invertebrates (e.g., gastropods, etc.) that serve a forage base function to many of the federally managed species listed in Table 2-1 and described in greater detail below. However, an overall increase in hard-surface areas from the pilings are not expected to have a measurable effect on fish populations that feed on algae and invertebrates that live on hard surfaces.

Also, as described above, consideration has been given to incorporation of recyclable construction materials and portions of demolition materials into the artificial reef program sponsored by the NJDEP. The NJDEP has indicated willingness to incorporate these materials into the artificial reef program as long as the materials meet their requirements. These efforts will help to minimize impacts involving the disposal of construction materials and would mitigate habitat/forage base loss near the project area through the creation or enhancement of new, offsite marine habitats. Areas considered for artificial reef development include the Great Egg or Ocean City reef sites each located approximately 7 miles from the Great Egg Inlet.

### *3.2.3 Benthic Forage Base Impacts*

Benthic infauna and epifauna provide a forage base for federally managed species in Great Egg Harbor Bay. The benthic habitat/forage base located in the areas of piling

placement will be permanently removed, resulting in the permanent loss of an estimated 708 square meters of benthic habitat under both Build Alternatives. The reduction of benthic area relative to the size of the benthos in the project area is not expected to have a measurable effect on fish populations that feed on benthic forage base.

Alternative 9 (Option 1), the IPA, requires the dredging of an estimated 19,017 cubic meters of sediment in order to realign the ICWW. The other Build Alternative does not require dredging. Such dredging will disrupt benthic habitat and, consequently, benthic forage base production. However, due to the relatively high current velocities in the area of dredging (i.e., Beach Thoroughfare), maintenance dredging is not anticipated. Therefore, only a one-time channel realignment dredging is expected. Accordingly, it is predicted that benthic infauna and epifauna will recolonize the disturbed dredged area, resulting in a temporary loss of forage base in the disturbed area. Such a temporary loss is not anticipated to have a measurable effect on fish population that feed on benthic forage base.

Both Build Alternatives are not routed through the submerged aquatic vegetation (SAV) beds. Therefore, no changes to benthic infauna and epifauna production associated with SAV beds are anticipated under either Build Alternative.

## 3.3 Fish Species Impacted by the Build Alternatives

An analysis of EFH for each fish species and appropriate life stages listed in Table 2-1, including the likelihood of the species using the project area, is presented below.

### *3.3.1 Red Hake*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, and juvenile Red Hake. EFH (NEFMC 1998a) for Red Hake eggs is surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras, North Carolina. Eggs were found where sea surface temperatures were less that 10ºC (50ºF) along the inner continental shelf with salinities less than 25 parts per thousand (ppt). EFH (NEFMC 1998a) for larvae is in similar areas as the eggs where sea surface temperatures were less that 19ºC (66ºF), and in waters less than 200 meters (656') deep. EFH (NEFMC 1998a) for juveniles is in similar areas as the eggs with bottom habitats with substrates of shell fragments, areas with an abundance of live scallops, and areas with temperatures less than 16ºC (61ºF), depths less than 100 meters (328'), and a salinity range of 31–33 ppt. Data from the New Jersey Inland Bays (Stone *et al.* 1994) indicate that Red Hake eggs and larvae were not collected in these bays. Red Hake juveniles were reported as rare in these bays. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore eggs and larvae are not expected in the project area. Juveniles may be expected to be rare in the project area.

### *3.3.2 Winter Flounder*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, juveniles, and adult Winter Flounder. EFH (NEFMC 1998b) for Winter Flounder eggs is bottom habitats with substrates of sand, muddy sand, and gravel on Georges Bank, inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to Delaware Bay. Eggs are found where water temperatures are less than 10ºC (50ºF), salinities range from 10–30 ppt, and water depths are less than 5 meters (16'). Eggs are often observed in Great Egg Harbor from January to May (Riportella 2001) with spawning generally occurring from January through March (Stone *et al*. 1994, Scarlett 2001). EFH (NEFMC 1998b) for Winter Flounder larvae is pelagic and bottom waters of Georges Bank, inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic to Delaware Bay. Larvae are found where sea temperatures are less than 15ºC (59ºF), salinities range from 4–30 ppt, and water depths are less than 6 meters (20'). Larvae are observed from March to July. EFH (NEFMC 1998b) for Winter Flounder juveniles is bottom habitats with substrates of mud or fine-grained sand on Georges Bank, inshore areas of the Gulf of Maine, southern New England and middle Atlantic areas south to Delaware Bay. Juveniles are found where water temperatures are below 25ºC (77ºF), water depths range from 1–50 meters (3–164'), and salinities range from 10-30 ppt. EFH (NEFMC 1998b) for Winter Flounder adults is bottom habitats that include estuaries with mud, sand, and gravel substrates on Georges Bank, inshore areas of the Gulf of Maine, southern New England and areas in the middle Atlantic south to Delaware Bay. Adults are found where water temperatures are less than 25ºC (77ºF), water depths range from 1–100 meters (3–328'), and salinities range from 15–33 ppt. Data from the New Jersey Inland Bays (Stone *et al* 1994.) indicate that Winter Flounder eggs, larvae, juveniles and adults were common in abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore, all the life stages of Winter Flounder may be found in the project area.

### *3.3.3 Windowpane Flounder*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, juveniles, and adult Windowpane Flounder. EFH (NEFMC 1998c) for Windowpane eggs is surface waters of the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras, North Carolina. Eggs are found where sea surface temperatures are less than 20ºC (68ºF) and water depths are less than 70 meters (230'). Peak numbers of eggs are observed from May to October in the middle Atlantic. EFH (NEFMC 1998c) for Windowpane larvae is pelagic waters of the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras, North Carolina. Larvae are found where sea temperatures are less than 20ºC (68ºF) and where depths are less than 70 meters (230'). Peak numbers of larvae are observed from May to October in the middle Atlantic. EFH (NEFMC 1998c) for Windowpane juveniles is bottom

habitats with substrates of mud or fine-grained sand of the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras, North Carolina. Juveniles are found in water temperatures below 25ºC (77ºF), where depths are 1–100 meters (3–328') and where salinities are between 5.5–36 ppt. EFH (NEFMC 1998c) for Windowpane adults is similar to that for juveniles except that adults are found where water temperatures are below 26.8ºC (80ºF), water depths range from 1–75 meters (3–246') and salinities are between 5.5–36 ppt. Data from the New Jersey Inland Bays (*Stone et al.*1994) indicate that Windowpane Flounder eggs, larvae, and juveniles and adults were highly abundant. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore, all the life stages of Windowpane Flounder may be found in the project area.

### *3.3.4 Monkfish*

Great Egg Harbor Bay is designated as EFH for eggs and larvae of Monkfish. EFH (NEFMC 1998d) for Monkfish eggs is described as surface waters of the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras, North Carolina. Monkfish egg veils are found where sea surface temperatures are below 18 ºC (64ºF) and water depths from 15–1000 meters (49–3,280') during March to September. EFH (NEFMC 1998d) for Monkfish larvae is pelagic waters of the Gulf of Maine, Georges Bank, southern New England and the Middle Atlantic south to Cape Hatteras, North Carolina. Larvae are found where water temperatures are approximately 15ºC (59ºF) and water depths range from 15–1,000 meters (49–3,280') during March to September. Characteristics of the pelagic waters with lower temperatures and greater depths are not typical of the shallower, estuarine habitat in Great Egg Harbor Bay. Communications with the NMFS Sandy Hook Laboratory (Fahay 2001) indicated that specific data have not been collected that suggest Monkfish eggs or larvae would occur in the Great Egg Harbor Bay area. Communication with the Ocean Stock Assessment Program of the New Jersey Division of Fisheries & Wildlife (NJDF&W) (Byrne 2001) indicated that Monkfish egg veils have not been observed in their trawl catches. Therefore, this species is not expected to be in the project area.

### *3.3.5 King Mackerel*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, juvenile, and adult King Mackerel. EFH for King Mackerel is described as including sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. King Mackerel is a coastal migratory pelagic species and would not be expected in the lower portion of the moderately saline Great Egg Harbor estuary. Communications with NJDF&W (McClain 2001) and the Barnegat Bay Estuary Program (Dieterich 2001) indicated that this species is unlikely to occur in Great Egg Harbor Bay. This species is not expected to be in the project area.

### *3.3.6 Spanish Mackerel*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, juvenile, and adult Spanish Mackerel. Similar to the King Mackerel the EFH includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Spanish Mackerel is also a coastal migratory pelagic species. Communication with the NMFS Sandy Hook Laboratory (Fahay 2001) indicated that Spanish Mackerel, in recent years, have been documented as spawning off the New Jersey coast. Eggs and larvae of this species could be expected in the beach areas and also up into coastal estuaries (Fahay 2001). Therefore, eggs and larvae of this species may be found in the project area.

### *3.3.7 Cobia*

Great Egg Harbor Bay is designated as EFH for eggs, larvae, juvenile, and adult Cobia. EFH for Cobia includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone and also high salinity estuaries, bays and eelgrass habitat. Cobia is a coastal migratory pelagic species and would not be expected in the mixed saline portion of the project area. Communications with NJDF&W (McClain 2001) and the Barnegat Bay Estuary Program (Dieterich 2001) indicated that this species is unlikely to occur in Great Egg Harbor Bay. This species is not expected to be in the project area.

### *3.3.8 Summer Flounder*

Great Egg Harbor Bay is designated as EFH for larvae, juveniles, and adult Summer Flounder. EFH for Summer Flounder larvae for inshore areas is all estuaries where Summer Flounder were identified as present (including rare) in the NOAA Estuarine Living Marine Resource Program (ELMR) data in the "mixing" and "seawater" salinity zones. Larvae were reported as most abundant in nearshore areas at water depths of 1–70 meters (3–230'). In the northern part of the Mid-Atlantic Bight they occur frequently from September to February. EFH for Summer Flounder juveniles in inshore areas is all estuaries where juvenile Summer Flounder were identified as being present (including common) in the ELMR data for "mixing" and "seawater" salinity zones. Juveniles use several estuarine habitats as nursery areas (salt marsh creeks, open bay areas, eelgrass beds) where water temperatures are greater than 3ºC (37ºF) with salinities ranging from 10–30 ppt. EFH for adult Summer Flounder in inshore areas is in estuaries where Summer Flounder were identified as common, abundant, or highly abundant in the ELMR data for "mixing" and "seawater" salinity zones. Adults have been observed in shallow coastal and estuarine areas during the warmer months. Data from the New Jersey Inland Bays (Stone *et al.* 1994) indicate that Summer Flounder larvae were rare in abundance and juvenile and adult Summer Flounder were common in abundance. Great Egg Harbor is included as part of the

New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore larvae, juveniles and adults of Summer Flounder are expected to be in the project area.

### *3.3.9 Sand Tiger Shark*

Great Egg Harbor Bay is designated as EFH for the neonate stage of the Sand Tiger Shark. Typical conditions for Sand Tiger Shark neonates are shallow coastal waters from Barnegat Inlet, New Jersey to Cape Canaveral, Florida to a depth of 25 meters (82') (NOAA 1999). Communications with the NJDF&W (McClain 1999) and National Marine Fisheries Service (NMFS) (Pratt 2001) indicated that this species may be present in Great Egg Harbor. Therefore, this species may be expected in the project area.

### *3.3.10 Dusky Shark*

Great Egg Harbor Bay is designated as EFH for the neonate stage of the Dusky Shark. Typical conditions for Dusky Shark neonates are inlets, estuaries and shallow coastal waters to a depth of 25 meters (82') from the eastern end of Long Island, New York to Cape Lookout, North Carolina (NOAA 1999). Communications with the NJDF&W (McClain 2001) and NMFS (Pratt 2001) indicated that this species is rare in the area but may be present in Great Egg Harbor Bay. Therefore, this species is expected to be in the project area.

### *3.3.11 Sandbar Shark*

Great Egg Harbor Bay is designated as EFH for the neonate stage, juveniles, and adult of the Sandbar Shark. Typical conditions for Sandbar Shark neonates are shallow coastal areas to depths of 25 meters (82') from Montauk, Long Island, New York south to Cape Canaveral, Florida. Nursery areas are in shallow coastal waters from Great Bay, New Jersey to Cape Canaveral, Florida. Important nursery and pupping grounds were noted in shallow areas and in the locale of the mouth of Great Bay, New Jersey. Typical conditions for juveniles are from Barnegat Inlet, New Jersey to Cape Canaveral, Florida in shallow coastal areas to a depth of 25 meters (82'). Typical conditions for adults are coastal shallow areas from Nantucket, Massachusetts to Miami, Florida, from the coastal area to depths of 50 meters (164') (NOAA 1999). Communications with the NMFS (Pratt 2001) indicated that this species has been collected in Great Egg Harbor Bay. Juveniles have been noted to occur from the last week in May through October. Female adults have been noted from the second week of June through the first week of July. Pupping occurs during this time. Neonates have been noted from early June through the first week of October (Pratt 2001). Therefore, this species is expected to be in the project area.

### *3.3.12 Tiger Shark*

Great Egg Harbor Bay is designated as EFH for the neonate stage of the Tiger Shark. Typical conditions for Tiger Shark neonates are from shallow coastal areas to depths of 200 meters (656') from Cape Canaveral, Florida north to offshore Montauk, Long Island, New York (NOAA 1999). Communication with the Ocean Stock Assessment Program of the NJDF&W (Byrne 2001) indicated that in the annual trawl surveys that sample out to depths of approximately 30 meters (approximately 90') adult Tiger Sharks have not been captured. Communication with NMFS (Pratt 2001) indicated that the main nursery area for this species has been observed to be off the coast of Georgia and northern Florida. Neonates of this species would not be expected to occur in Great Egg Harbor Bay. Communications with the NJDF&W (McClain 2001) also indicated that this species is unlikely to occur in Great Egg Harbor Bay. Therefore, this species is not expected to be in the project area.

### *3.3.13 Atlantic Sea Herring*

Great Egg Harbor Bay is designated as EFH for juveniles and adult Atlantic Sea Herring. EFH (NEFMC 1998e) for juvenile Atlantic Sea Herring is pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic to Cape Hatteras. Juveniles are found where water temperatures are less than 10ºC (50ºF), water depths of 15–135 meters (49–443') with a salinity range of 26–32 ppt. EFH (NEFMC 1998e) for adult Atlantic Sea Herring is similar to that of juveniles, but in areas with water temperatures below 10ºC (50ºF), water depths from 20–130 meters (66–426'), and salinities above 28 ppt. Data from the New Jersey Inland Bays (Stone *et al.* 1994) indicate that Atlantic Sea Herring juveniles and adults were common in abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore, the juvenile and adult stage of this species may be expected in the project area.

### *3.3.14 Bluefish*

Great Egg Harbor Bay is designated as EFH for juveniles and adult Bluefish. EFH for juvenile and adult Bluefish inshore is all major estuaries between Penobscot Bay, Maine and St. Johns River, Florida. Juvenile Bluefish occur in Mid-Atlantic estuaries from May–October within the "mixing" and "seawater" salinity zones. Adult Bluefish occur in Mid-Atlantic estuaries from April–October in the "mixing" and "seawater" zones. Bluefish are generally found in salinities greater than 25 ppt. Data from the New Jersey Inland Bays (Stone *et al.* 1994) indicate that Bluefish juveniles were abundant and adults were common in relative abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore, the juvenile and adult stages of this species are expected in the project area.

### *3.3.15 Atlantic Butterfish*

Great Egg Harbor Bay is designated as EFH for juvenile Butterfish. EFH for Atlantic Butterfish juveniles in the inshore areas are the" mixing" and "seawater" portions of estuaries where juvenile Atlantic Butterfish are "common," "abundant," or "highly abundant" along the Atlantic coast from Maine to Virginia. Juvenile Atlantic Butterfish have been collected in depths of 10–365 meters (33–1,200') and in temperatures between 3–28ºC (37–82ºF). Data from the New Jersey Inland Bays (Stone *et al.* 1994) indicate that Butterfish juveniles were common in abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994). Depth and temperature conditions described above are present in Great Egg Harbor Bay and juvenile Atlantic Butterfish are reported as common in abundance, therefore juveniles of this species are expected in the project area.

### *3.3.16 Scup*

Great Egg Harbor Bay is designated as EFH for juvenile and adult Scup. EFH for Scup juveniles are estuaries where Scup have been identified as common, abundant or highly abundant in the Estuarine Living Marine Resources Program (ELMR) data for "mixing" and "seawater" salinity zones. Juveniles are generally found in spring and summer in estuaries and bays from Massachusetts to Virginia in water temperatures greater than 7ºC (45ºF) and salinities greater than 15 ppt. Juveniles can be found in association with sand, mud and eelgrass bed types of substrates. EFH for Scup adults in the inshore area is estuaries where adults were identified as common, abundant, or highly abundant in ELMR data for the "mixing" and "seawater" salinity zones. Wintering adults are usually offshore south of New York to North Carolina in water temperatures great than 7ºC (45ºF). Data from the New Jersey Inland Bays (Stone *et al.* 1994*)* indicate that Scup juveniles and adults were rare in abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994). Communication with NJDF&W (McClain 2001) indicated that mostly juveniles and some adults of this species have been reported in Great Egg Harbor Bay. Therefore, juveniles and adults of this species may be expected in the project area.

### *3.3.17 Black Sea Bass*

Great Egg Harbor Bay is designated as EFH for juvenile and adult Black Sea Bass. EFH for juvenile and adult Black Sea Bass is in estuaries where the juveniles and adults were identified as being common, abundant or highly abundant in the ELMR data for "mixing" and "seawater" salinity zones. Juveniles and adults are found in estuaries during the spring and summer in water temperatures above 6ºC (43ºF) with salinities greater that 18 ppt. They tend to prefer rough substrate, shell patches, and man-made objects in the habitat (Steimle *et al.* 1999). Data from the New Jersey

Inland Bays (Stone *et al.* 1994) indicate that Black Sea Bass juveniles and adults were common in abundance. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994), therefore juvenile and adult stages of this species are expected to occur in the project area.

### *3.3.18 Atlantic Surfclam*

Great Egg Harbor Bay is designated as EFH for juvenile and adult Atlantic Surfclam. Great concentrations of juvenile and adult Atlantic Surfclams are reported (Cargnelli *et al* 1999) as usually found in well-sorted, medium sand, but also may occur in fine sand and silty-fine sand. This species is common at depths of 8–66 meters (25–215') in turbulent areas beyond the breaker zone. In the field, Atlantic Surfclams have been found only at salinities greater than 28 ppt (Cargnelli *et al*. 1999). Habitat conditions in the more estuarine Great Egg Harbor Bay differ from those of the beach zone, oceanic, and more turbulent areas where this species is most common. This species is not expected to be in the project area.

### *3.3.19 Atlantic Cod*

Great Egg Harbor Bay is designated as EFH for adult Atlantic Cod. EFH (NEFMC 1998f) for Atlantic Cod adults includes bottom habitats with a substrate of smooth sand, rocks, pebbles, or gravel in the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Delaware Bay. Conditions where Atlantic Cod adults are found include water temperatures below 10ºC, depths from 10–150 meters (33–492'), and oceanic salinities. These lower temperatures and greater depths and salinity are not typical of the more estuarine habitat in the vicinity of the project site. Stone *et al*. (1994) noted that Atlantic Cod adults were not present in the New Jersey Inland Bays. Great Egg Harbor Bay is included as part of the New Jersey Inland Bays system as defined by Stone *et al.* (1994). Communication with NJDF&W (McClain 2001) indicated that Atlantic Cod adults have not been noted in Great Egg Harbor Bay. Therefore, this species is not expected to be in the project area.

## 3.4 Cumulative Impacts

Cumulative impacts are impacts that result from the incremental consequences of an action (the project) when added to other past and reasonably foreseeable future actions. The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even indirect impacts, but nevertheless when added to other actions may eventually lead to a measurable environmental change.

The major natural resources that are within the area of potential effects of the project include parts of Somers Point, Ocean City, the Great Egg Harbor Bay, and the barrier islands in the bay. The ecosystem of Great Egg Harbor Bay has been formed over time by geological forces. This ecosystem, including the fish habitat, is vulnerable to

incremental effects. Table 3-4 summarizes temporary and permanent impacts to EFH resulting from the Route 52 Reconstruction Project.

**Table 3-4: Summary of Impacts to EFH**[1]

| EFH Resource | Summary of Effects |
|---|---|
| ***Surface Water Quality*** | |
| Ocean City | • New inlets proposed along with oil/grit separators for all new inlet connections.<br>• No increase in impervious area. |
| Causeway between Somers Point and Ocean City | • Causeway runoff put through scuppers.<br>• Scour basins over marsh islands to enhance water quality/minimize erosion.<br>• Pile driving using jetting can increase turbidity during construction.<br>• Dredging of realigned ICWW will cause increased turbidity during dredging.<br>• Maintenance dredging not anticipated. |
| MacArthur Boulevard: Somers Point Circle to Route 9 | • 3.13 acre increase in paved area.<br>• MacArthur Boulevard drainage system using catch basins, piping and oil/grit separators will be installed to upgrade existing system.<br>• Outfall upgraded.<br>• Upgrade to existing detention/infiltration basin near Route 9.<br>• Somers Point drainage system upgraded. |
| ***Wetland Resources*** | |
| Fill Impact | 9,806 square feet |
| Shading Impact | 91,105 square feet |
| ***Aquatic Resources*** | |
| Permanent Impacts | 4520 square feet due to pile driving |
| Permanent Habitat Change | • Shallow (<1 m) dredging: 68,000 square feet<br>• Deep (>1m) dredging: 32,000 square feet<br>• Dredging volume: 19,017 cubic meters |
| Shellfish | Temporary/Long-Term[2] |
| Finfish Habitat and Migratory Pathway | Temporary[2] |
| Submerged Aquatic Vegetation | None |
| Wintering Areas | Temporary[2] |
| Sound and Pressure Impacts | Temporary[2], if blasting occurs |
| ***Impacts on Food Source*** | |
| Wetland Forage Base Impacts | Loss of 9,806 square feet due to fill and 91,105 square feet due to shading of wetland resources will result in a reduction of forage base species that utilized wetland habitat. |

**Table 3-4: Summary of Impacts to EFH (Cont'd)**

| EFH Resource | Summary of Effects |
|---|---|
| Hard-Surface Forage Base Impacts | An increase of 36,970 square feet of hard-surface habitat will result from piling construction, further resulting in an increase in forage base species that utilize intertidal and subtidal hard surface habitat. |
| Benthic Forage Base Impacts | Loss of 4,520 square feet of benthic habitat due to pile driving will result in a reduction of forage base species that utilized benthic habitat. |
| ***Fish Species Potentially Impacted by the Build Alterative*** | |
| Winter Flounder | Spawning occurs in the bay from January to May with most spawning occurring from January through March. |
| Windowpane Flounder | Present in all life stages. |
| Summer Flounder | Larvae, juveniles and adults present in the Bay. |
| Spanish Mackerel | Eggs and larvae are present in the Bay. |
| Sand Tiger Shark | Neonates may be in the Bay. |
| Dusky Shark | Neonates may be in the Bay. |
| Sandbar Shark | Neonates, juveniles and adults may be in the Bay. |
| Atlantic Sea Herring | Juveniles and adults may be in the Bay. |
| Bluefish | Juveniles and adults may be in the Bay. |
| Atlantic Butterfish | Juveniles may be in the Bay. |
| Scup | Juveniles and adults may be in the Bay. |
| Black Sea Bass | Juveniles and adults may be in the Bay. |

[1] Effects Summary based on the Initially Preferred Alternative.

[2] Temporary refers to impacts associated with disruption of the benthos, sediment resuspension, increased turbidity, lowered dissolved oxygen levels and physical obstruction during the construction phase of the project; Long-term refers to impacts directly related to the loss of habitat from the support structures.

At this time, there are no other activities or projects that are ongoing or contemplated in this geographical area, within the life cycle of this project, that could result in additional impacts to the resources affected by the project, resulting in cumulative effects of any significance. Extensive coordination has been done with the public, the city of Somers Point Planning and Zoning, the city of Ocean City Planning Department, the Atlantic County Economic Development Corporation and the Department of Public Works, the Cape May County Planning Department and the Department of Public Works, the South Jersey Transportation Planning Organization, and State and federal agencies having jurisdiction in the area. None of the above contacts have identified any projects that involve dredging or in any other way could have additive, countervailing, or synergistic effects on the natural systems that will be affected by the proposed project. Moreover, there are no projects or actions in the reasonably foreseeable future that would impose any kind of cumulative effect, when added to the direct effects of the subject project, on the habitat or the flora and fauna on which these fish rely.

# 4. PROPOSED MITIGATION

## 4.1 Surface Water Impact Mitigation

To mitigate potential impacts to surface water, a storm drainage system will be designed to minimize impacts to surface water and ground water, and a comprehensive sediment and erosion control plan will be implemented to insure that severe construction-related impacts do not occur. Construction techniques, such as prefabrication, also can significantly reduce on-site construction duration and subsequent erosion and sedimentation concerns. Any and all dredging shall comply with the stipulations in the "Biological Opinion to the Army Corps of Engineers (ACOE) for Dredging Activities within the Philadelphia District" issued from the NMFS to the ACOE, dated November 26, 1996 and modified on May 25, 1999 (Biological Opinion). Potential impacts to surface water and proposed mitigation measures are discussed in detail in Section 3.4.4 of the Draft Environmental Impact Statement (DEIS, August 2000). For both Build Alternatives, measures suggested to mitigate potential impacts to surface water quality are as follows:

### *4.1.1 Ocean City*

- Integrate into existing drainage system and install manufactured oil/grit separators on all new inlet connections.

### *4.1.2 Causeway Between Somers Point and Ocean City*

- Design all stormwater discharge systems to either discharge small volumes frequently through scuppers over open water, or through scuppers and leaders to scour basins under the structure;

- During construction take precautions to minimize spillage and tracking of sand and silt on the road surface and promptly clean them up should they occur;

- For piling driving and other construction activities affecting the water column and seafloor (except dredging), the proposed turbidity mitigation strategy consists of the following:

  - Use turbidity curtains only in hydrologically quiescent areas (i.e., areas of low to no current velocity).

  - Employ a stringent level of visual monitoring to ensure minimal offsite migration of suspended solids (e.g., use a Secchi disk).

- Dewater impounded dredge material properly in order to prevent the release of sediments into the bay.

- Use Best Management Practices to contain all materials used in above water construction activities.

#### *4.1.3 MacArthur Boulevard: Somers Point Circle to Route 9*

- Remove and replace the existing detention/infiltration basin near the Route 9 intersection between Laurel Drive and MacArthur Boulevard.

- Abandon the existing 60-year old drainage system located under MacArthur Boulevard and replace this system with a new drainage system of catch basins and piping located along the west curb line of MacArthur Boulevard.

- Increase the size of the existing outfall pipeline, which is currently inadequate, to handle the developed flow.

- Provide an underground detention/infiltration piping system at the low point in MacArthur Boulevard near Braddock Avenue, to retain the first flush of a storm and improve water quality.

- Abandon the existing 60-year old drainage system located under the Somers Point Traffic Circle and replace this system with a new drainage system of catch basins and piping.

- Utilize a vegetated detention basin in the southwest quadrant of the four-legged intersection proposed to replace the traffic circle, and a vegetated swale located directly east of the north approach of the bridge over Ship Channel, discharging into Great Egg Harbor Bay.

- Integrate oil/grit separators in the new drainage system to improve water quality.

Implementation of the above measures and comprehensive storm drainage design will minimize water quality impacts due to soil erosion and sedimentation.

## 4.2 Wetland Impact Mitigation

To comply with E.O. 11990, entitled "Protection of Wetlands," the project must be designed to avoid wetland impacts unless there is no practicable alternative, and that, all practicable measures, be taken to minimize harm to wetlands. Due to the nature of the project, it is impossible to avoid wetland impacts. However, construction in wetlands, especially filling, has been minimized as much as practicable for the proposed Build Alternatives. For instance, Alternatives 9 and 9A (Option 1) involve a causeway on continuous structure rather than fill.

Methods to further mitigate wetland impacts include the implementation of sedimentation and erosion control plans and, to the maximum extent possible,

avoidance of work or staging conducted within the wetland. The following specific mitigation measures are proposed:

- Use the maximum structural span lengths economically feasible, probably 27 meters (90'), to minimize the number of piers;

- Use pile foundations, rather than excavated pier foundations, so that construction disturbance is limited to the penetration of the piles themselves;

- Use meadow mats (30 cm × 30 cm timbers lashed together), or approved equivalent, during construction in wetland areas to minimize temporary impacts, and restore wetlands, where disturbance does occur; and

- Implement soil erosion control measures to minimize the deposition of eroded soils in wetlands.

After the wetland impacts have been reduced as much as practicable, adequate wetland mitigation will be provided. The United States ACOE and the NJDEP normally require wetland mitigation in the ratio of 2 acres created for each acre impacted. Under Alternatives 9 and 9A, efforts to create wetlands in place of those removed may be coordinated with the removal of portions of the existing causeway. Portions of these areas would be excavated down to a grade consistent with the existing tidal wetlands, and revegetated with tidal marsh species. Mitigation will be done on an "in-kind" basis, and will be detailed in the Wetlands Mitigation Plan to be prepared as part of the Final Design.

## 4.3 Fisheries Impact Mitigation

In order to mitigate for temporary impediments to migratory finfish pathways, construction techniques that interfere with the movement of fish along finfish migratory pathways should be avoided. Construction techniques that create a physical or biological barrier to the movement of fish along finfish migratory pathways should not be employed, unless acceptable mitigating measures are used. Further, any and all dredging shall comply with the stipulations in the "Biological Opinion."

The following mitigation measures are proposed:

- Implement a phased approach to the construction effort to limit impacts to discrete sections of the highway at any one time, so as not to create a continuous barrier along the entire length of the project.

- For piling driving and other construction activities affecting the water column and seafloor (except dredging), the proposed turbidity mitigation strategy consists of the following:

- Use turbidity curtains only in hydrologically quiescent areas (i.e., areas of low to no current velocity).

- Employ a stringent level of visual monitoring to ensure minimal offsite migration of suspended solids (e.g.; use a Secchi disk).

- For dredging operations our proposed turbidity mitigation strategy consists of the following:

  - Where possible use a hydraulic dredge to pump sediment to a diked onshore dewatering area as described above.

  - Where hydraulic dredging is not feasible and a clamshell bucket is necessary for dredging, an "Environmental Bucket", which seals upon closure and minimizes spillage and leakage, would be utilized. The transfer of dredge spoils for offsite transport would also be accomplished using best management practices.

  - Where necessary, use turbidity curtains only in hydrologically quiescent areas (i.e., areas of low to no current velocity).

  - Employ a stringent level of visual monitoring to ensure minimal offsite migration of suspended solids consistent with dreding operations (e.g.; use a Secchi disk).

  - Prohibit dredging activities during the period December 1st to May 31st to protect winter flounder spawning and blue crab overwintering habitats (see also Sections 3.1.3.1, 3.1.3.4).

- If feasible, dredged materials will be used for beneficial uses such as beach replenishment/nourishment or as construction materials by contractors. If these uses are not feasible the dredged material will be placed or disposed of at a location that does not adversely harm or impact intertidal or subtidal habitat.

- To the extent possible, recycle acceptable construction materials (i.e., clean concrete and rebar) from the demolition of the four existing causeway bridges into artificial reefs to create habitat in mitigation for habitat lost in pile areas.

- Use demolition containment techniques to minimize the scattering of debris.

- For Sound Mitigation the following sound mitigation strategies may be employed during project construction:

  - Use of noise generators to move fish out of area.

  - Detonation of small scaring charges set off 1 minute prior to detonation of main charge to scare fish away from the area.

  - Installation of bubble/air curtain to disrupt shock waves.

- Blasting is prohibited from January 1st to March 31st to protect winter flounder spawning overwintering habitat (blue crabs do not appear to be impacted by sound/shock waves [Young 1991]).

- For Construction over the Water use Best Management Practices to contain all materials used in above water construction activities.

# 5. CONCLUSIONS

The applicants have identified a number of construction and long-term issues associated with the proposed modifications to New Jersey Route 52 that may have impacts to essential fish habitat in Great Egg Harbor Bay, including impacts to surface water, wetlands, and aquatic resources. Pile-driving and construction-associated dredging may increase sediment input into the bay. However, due to water velocity in the area, maintenance dredging is not anticipated. An increase in impervious area associated with road upgrades is mitigated through the proposed use of oil/grit separators, an improved detention/infiltration system and a new stormwater piping system, improving the stormwater treatment in the area of road improvement.

Reconstruction of Route 52 will require placement of fill in wetland areas for either of the two Build Alternatives. Wetland impacts (removal of wetland habitat) associated with the Build Alternatives are due to the driving of pilings into the tidal marsh, enhancing recreational access, and shading. Overall, the Initially Preferred Alternative, Alternatives 9 (Options 1) involves the least impact to wetlands.

Dredging and ICWW realignment under the IPA option will affect shellfish and benthic habitat. Since these activities are expected to be associated only with construction activities, it is anticipated that affected benthic areas will recolonize with time. Any dredging needed shall comply with the stipulations in the "Biological Opinion." The phased construction approach will allow finfish to avoid construction operations. Though bottom habitat decreases with piling installation, these same pilings and the existing causeway materials (anticipated to be used in the artificial reef program) will provide additional fishery habitat. Also, federally managed species in the area of dredging are already adapted to pre- and post-dredge depths, therefore impacts to these species due to depth change are not anticipated.

Based on the scope and nature of impacts expected from the project and the mitigation measures identified above, the applicants have determined that there will be minimal adverse individual or cumulative effects on EFH in the project area.

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January 23, 2002

**Memorandum of Agreement**
**Among the Federal Highway Administration, the New Jersey Department of Transportation and the New Jersey Historic Preservation Office**
**Regarding the Reconstruction of Route 52, Section 1;**
**City of Somers Point, Atlantic County and Ocean City, Cape May County**
**New Jersey**

**WHEREAS,** the New Jersey Department of Transportation (NJDOT) proposes to replace the Route 52 Causeway that carries the highway over the Ship Channel and Rainbow Channel and connects Somers Point in Atlantic County with Ocean City in Cape May County, New Jersey with a higher level structure, using funds provided by the Federal Highway Administration (FHWA); and

**WHEREAS**, the said reconstruction will be on a different alignment and will require acquisition of additional Right of Way for bridge construction, slope and drainage easements; and

**WHEREAS,** FHWA has consulted with the New Jersey State Historic Preservation Officer (SHPO) and local governments pursuant to 36 CFR Part 800 regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) in order to determine the Area of Potential Effects (APE), and to identify and assess the effects of the project on historic properties either listed on or eligible for inclusion on the National Register of Historic Places (Register); and

**WHEREAS**, FHWA has determined that the Route 52, Section 1 Reconstruction Project will have an adverse effect through demolition on the Route 52 Bridge over the Ship Channel (Structure #0511-153), which is a property eligible for listing on the Register; and

**WHEREAS**, FHWA has determined that the Rt. 52, Section 1 Reconstruction Project will have an adverse effect on the Bayfront Historic District, which is a district listed on the Register, by introducing new elements into the district viewshed; and

**WHEREAS**, FHWA has determined that the Rt. 52, Section 1 Reconstruction Project will have an adverse effect on the Dockside Café/Marina, which is a property eligible for listing on the Register, by introducing new elements into the property=s viewshed; and

**WHEREAS,** FHWA and NJDOT have unsuccessfully marketed the Route 52 Bridge over the Ship Channel, and have also found that the bridge is of insufficient condition to re-use at another NJDOT location; and

**WHEREAS**, the FHWA, the NJDOT, and the SHPO have developed a plan to mitigate the adverse effects of the proposed construction project; and

**WHEREAS**, the Advisory Council on Historic Preservation (Council) has been notified of the Adverse Effect finding, and has declined to participate in the Section 106 consultation process; and

**WHEREAS**, the NJDOT participated in the consultation and has been invited to concur in this Memorandum of Agreement;

**NOW, THEREFORE** the FHWA, the New Jersey SHPO, and NJDOT agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the proposed undertaking on historic properties.

## Stipulations

The Federal Highway Administration will ensure that the following measures are carried out:

1. Prior to demolition of any elements of the Route 52 Bridge over the Ship Channel, the NJDOT, using the services of a qualified consultant, will document the bridge to Historic American Engineering Record (HAER) Standards, Level II as defined in *Archaeology and Historic Preservation: Secretary of the Interior=s Standards and Guidelines* (48 FR 44715-44742), and as specifically detailed in *Guide to Written Reports for the Historic American Engineering Record,* pp. 10 - 11, or as otherwise directed by the National Park Service. The FHWA shall ensure that all documentation is completed prior to the obscuring or demolition of any elements of the structure, and that copies of this documentation are subsequently made available to the National Parks Service - Mid-Atlantic Region, the New Jersey SHPO, and other local archives as appropriate. All copies shall, with the exception of any original HAER drawings made for the project which may be blue-line copies, be archivally stable.

2. NJDOT will ensure that an interpretive display will be produced as a supplement to the HAER recordation. This display will be in the nature of a large signboard consisting of approximately 16 square feet in area, and will concentrate on the existing bridge and its contribution to the development of Ocean City and the Jersey Shore during the automobile age. NJDOT and its design consultant will consult with the NJSHPO to attempt to reach a consensus on a conceptual design and layout for the display. Once a concept is developed, it will be conveyed to representatives of the cities of Somers Point and Ocean City for comment. The NJDOT and its consultant will then develop the final plan for the display, which will be submitted to the NJSHPO and the municipalities for final comment. It will be placed at the acquired Gulf Gasoline Station, located in Somers Point, adjacent to one of the historic resources. NJDOT will coordinate with the city of Ocean City in an attempt to have

a duplicate version of the display placed at the city's visitors center.

3. NJDOT will develop a package of original resource materials used to produce the cultural resource survey reports and the HAER documentation, such as historic maps, digitize them, produce them in a CD format, and make copies available to local historic societies and school libraries.

4. Because a recipient for the Rt. 52 Bridge over the Ship Channel has not been identified, NJDOT and FHWA will continue to review any offers received up to the time when specifications for the demolition contract must be finalized. If an offer is received an agreement will be established among the donee, FHWA, and NJDOT that the integrity of the bridge will be maintained at the new location and the features that make the bridge historic will be maintained.

5. In consultation with the NJSHPO, the city of Somers Point, and Ocean City, NJDOT will work with the bridge design consultant to establish a list of guiding principles to apply to the overall bridge design. This list will reflect a consideration of the project area's setting and history, and have as its objective a development of the bridge=s context. NJDOT, with the services of a consultant, shall develop a design review process that will be comprised of at least the following:

   A. Background Research – Research will focus on the accumulation of information about the history of the Great Egg Harbor Bay, including the design of the historic structure and why it was chosen, as well as any structures that previously crossed the bay in the project area. This research will also focus on the natural and man-made setting of the bay. Resources to be used in this effort will include, but not be limited to; the HAER documentation compiled as a result of Stipulation 1, historic photographs and as-built plans of comparable bridges over nearby coastal waterways, and historic engineering literature (for example Engineering News-Record, Civil Engineering [American Society of Civil Engineers], etc.).

   B. Evaluation and Explanation of Appropriate Design – As the result of the background research described above, an explanation of the setting for the new bridge will be presented at a design meeting.

   C. Engineering Analysis and Design Recommendations – The consultant's design analysis will begin with an inventory and brief discussion of how chosen design parameters relate to the setting as developed in section A, above. This will include the relationships between roadway design, marine operations, the natural and man-made environment, and environmental protection requirements. The consultant will briefly discuss a range of structural designs, technologies, and materials which could be employed to provide for a structure that is compatible with the previously developed setting. A design scheme or concept (verbal description and justification with conceptual sketches) will be developed for the new causeway that conveys such compatibility. Consideration will be given to the

overall mass and form of the structure; as well as (to a lesser extent) the choice of sub- and superstructure materials (including their configuration, tint, texture and/or color); type of parapet, railing, and lighting; and landscaping.

D. NJDOT will submit the initial causeway design developed through the above-stated process to the FHWA, SHPO and the cities of Somers Point and Ocean City for final comment prior to proceeding to Final Design.

**Administrative Conditions**

1. NJDOT, on behalf of FHWA, will ensure that all work encompassed by Stipulation 1 is carried out in accordance with the *Secretary of Interior=s Standards and Guidelines for Architectural and Engineering Documentation* (48FR 44730 - 44734) and by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualifications and Standards* (48 FR 44738-9).

2. NJDOT, on behalf of FHWA, will ensure that all work encompassed by Stipulations 2 and 5 will be carried out in accordance with the terms of this agreement, and will submit photographic documentation of the completed products to FHWA and the NJSHPO. Such documentation will be sufficient to clearly illustrate the conformance to mutually agreed upon design features and details of the new bridge design, as well as the details of the proposed interpretive center display.

3. Dispute Resolutions
   A. At any time during the implementation of the measures stipulated in this MOA, should an objection to any such measure or its manner of implementation be raised, FHWA will notify all signatories to the agreement, take the objection into account, and consult as needed to resolve the objection.
   B. Disputes regarding the completion of the terms of this agreement as necessary shall be resolved by the signatories. If the signatories cannot agree regarding a dispute, the FHWA shall then initiate appropriate actions in accordance with the provisions of 36 CFR ∋800.6(b) and ∋800.7 as appropriate.
   C. Modification, amendment or termination of this agreement as necessary shall be accomplished by the signatories in the same manner as the original agreement.

4. Should construction of the above mentioned project not commence within 5 years of the date of FHWA=s acceptance of this MOA, this agreement becomes null and void. If FHWA decides to continue with the undertaking, it shall re-initiate its review process in accordance with 36 CFR Part 800.

Execution of this Memorandum of Agreement by the FHWA, the NJSHPO, and NJDOT, and the implementation of its terms, evidence that the FHWA has afforded the Council an opportunity to

comment on the Route 52, Section 1, Reconstruction project and its effects on historic properties, and that the FHWA has taken into account the effects of the undertaking on historic properties.

FEDERAL HIGHWAY ADMINISTRATION

By: _____ Date: 1/28/02

for Dennis L. Merida
Division Administrator, New Jersey Division Office

NEW JERSEY STATE HISTORIC PRESERVATION OFFICE

By: _____ Date: 1/24/02

Dorothy P. Guzzo
Deputy State Historic Preservation Officer

**Concur:**
NEW JERSEY DEPARTMENT OF TRANSPORTATION

By: _____ Date: 1/23/02

Arthur Silber
Director, Division of Project Management

# APPENDIX C

James E. McGreevey
*Governor*

State of New Jersey
Department of Environmental Protection

Bradley M. Campbe
Commissioner

**Office of Coastal Planning & Program Coordination**
**PO Box 418**
**Trenton, NJ 08625-0418**
**Phone 609-292-2662**
**Fax 609-292-4608**
lschmidt@dep.state.nj.us

May 13, 2002

Nicholas Caiazza
Division of Project Management
New Jersey Department of Transportation
PO Box 600
Trenton, NJ 08625-0600

PROJECT MANAGEMENT
RECEIVED
MAY 16 2002

Lourdes Castaneda
Federal Highway Administration
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

RE: **Preliminary Final Environmental Impact Statement Comments**
**Route 52 (1) Causeway**
**Somers Point, Atlantic County to Ocean City, Cape May County**

Dear Mr. Caiazza and Ms. Castaneda:

The Office of Coastal Planning and Program Coordination of the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the Preliminary Final Environmental Impact Statement (PFEIS). We offer the following comments for your consideration regarding natural resources, cultural resources, the Green Acres Program, and engineering and construction.

## NATURAL RESOURCES

The NJDEP's Division of Fish and Wildlife (DFW) continues to support the preferred alternative of the PFEIS, Alternative 9 with Option 1. However, concerns remain regarding the development of a complete recreational fishing access plan that is acceptable to the DFW, that is, one which maintains and improves upon existing use. As indicated in the first correspondence found in Appendix C (2/7/02 Memorandum), there are a number of unresolved issues with regard to angler access. This correspondence notes that some additional items were agreed to and that others are under consideration and will be decided upon in the Final Design Phases of the project.

Priority issues in this correspondence include:

- angling off the bridges over Rainbow Channel and Elbow Thorofare;
- adding bump-outs for anglers use over these channels;
- maintaining underwater old-pier structure for habitat/cover (remnants of existing causeway, see page III-46); and
- pursuing angler access on both sides of the causeway over Rainbow Channel.

Except for old-pier structure, the DFW notes that the PFEIS does not refer to or acknowledge the existence of additional gains or future endeavors. In fact, the Table on page V-7 actually indicates that some of these issues (#6, #9 & #10) have been dismissed. Any commitments toward furthering angler access are also absent in the text.

Therefore, the DFW notes that the Final EIS needs to refer to this correspondence and provide some assurances toward the most viable issues. The Table on page V-7 should be corrected accordingly.

## CULTURAL RESOURCES

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Federal Highway Administration (FHWA), the New Jersey Department of Transportation (NJDOT), and the NJDEP's Historic Preservation Office (HPO) have executed on January 24, 2002 a Memorandum of Agreement (MOA) for the project.

Since the Route 52, Section 1 Reconstruction project will have an adverse effect on the Bayfront Historic District, listed on the New Jersey Register of Historic Places (NJRHP), the HPO is anticipating the submission of an Application for Project Authorization under the New Jersey Register of Historic Places Act from NJDOT.

The HPO has no additional comments on the PFEIS which have not been resolved in the MOA.

## GREEN ACRES PROGRAM

The NJDEP's Green Acres Program's review of the PFEIS notes that parklands (in this case the islands) that are needed for new right of way and wetland mitigation is considered a diversion of use that requires compensation. Replacement land is required that would become part of Ocean City's Recreation and Open Space Inventory. A recreation walkway that spans the length of the bridge is encouraged as well as public fishing access made available to all islands.

The project will require a diversion application to be submitted to the Green Acres Program by Ocean City. The application for diversion must be approved by the Commission of the NJDEP and the State House Commission.

**ENGINEERING AND CONSTRUCTION**

The NJDEP's Division of Engineering and Construction has reviewed PFEIS and has no additional comments. Please note that the preferred alternative will require NJDOT to relocate the existing navigational channels to a new location. These locations may need additional dredging to accommodate the existing natural navigational channels in the area.

Thank you for the opportunity to review the PFEIS.

Sincerely,

Lawrence Schmidt
Director
Office of Coastal Planning
& Program Coordination

C: Robert McDowell, NJDEP
Dorothy Guzzo, NJDEP
David Smith, NJDEP
Bernard J. Moore, NJDEP

HPO-E2002-92 PROD
Log # 02-1592

James E. McGreevey
*Governor*

State of New Jersey
Department of Environmental Protection
Division of Parks & Forestry, Historic Preservation Office
PO Box 404, Trenton, NJ 08625
TEL: (609) 292-2023 FAX: (609) 984-0578
www.state.nj.us/dep/hpo

Bradley M. Campbel
Commissioner

PROJECT MANAGEMENT
RECEIVED
MAY 13 2002

May 8, 2002

# MEMORANDUM

To: Lawrence Schmidt, Director
Office of Coastal Planning and Program Coordination

From: Dorothy P. Guzzo
Deputy State Historic Preservation Officer

RE: **Route 52 (1) Causeway**
**Somers Point (Atlantic County) & Ocean City (Cape May County)**
**Preliminary Final EIS**

This memorandum is in response to your cover letter dated April 9, 2002, with Preliminary Final Environmental Impact Statement (PFEIS), Section 4F Evaluation attached, received at this office April 11, 2002.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Federal Highway Administration (FHWA), New Jersey Department of Transportation (NJDOT), and Historic Preservation Office (HPO) have executed on January 24, 2002 a Memorandum of Agreement (MOA) for the Route 52 (1) Causeway Project.(Please see attached.)

Since Route 52, Section 1 Reconstruction project will have an adverse effect on the Bayfront Historic District, listed on the New Jersey Register of Historic Places (NJRHP) the HPO is anticipating the submission of an Application For Project Authorization Under The New Jersey Register Of Historic Places Act from NJDOT.

The HPO has no additional comments to the PFEIS which have not been resolved in the MOA.

DPG/seh
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c. Andras Fekete, NJDOT
Nick Caiazza, NJDOT

January 23, 2002

Log #01-2286
HPO-A2002-185 PROD

# Memorandum of Agreement
## Among the Federal Highway Administration, the New Jersey Department of Transportation and the New Jersey Historic Preservation Office Regarding the Reconstruction of Route 52, Section 1; City of Somers Point, Atlantic County and Ocean City, Cape May County New Jersey

WHEREAS, the New Jersey Department of Transportation (NJDOT) proposes to replace the Route 52 Causeway that carries the highway over the Ship Channel and Rainbow Channel and connects Somers Point in Atlantic County with Ocean City in Cape May County, New Jersey with a higher level structure, using funds provided by the Federal Highway Administration (FHWA); and

WHEREAS, the said reconstruction will be on a different alignment and will require acquisition of additional Right of Way for bridge construction, slope and drainage easements; and

WHEREAS, FHWA has consulted with the New Jersey State Historic Preservation Officer (SHPO) and local governments pursuant to 36 CFR Part 800 regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) in order to determine the Area of Potential Effects (APE), and to identify and assess the effects of the project on historic properties either listed on or eligible for inclusion on the National Register of Historic Places (Register); and

WHEREAS, FHWA has determined that the Route 52, Section 1 Reconstruction Project will have an adverse effect through demolition on the Route 52 Bridge over the Ship Channel (Structure #0511-153), which is a property eligible for listing on the Register; and

WHEREAS, FHWA has determined that the Rt. 52, Section 1 Reconstruction Project will have an adverse effect on the Bayfront Historic District, which is a district listed on the Register, by introducing new elements into the district viewshed; and

WHEREAS, FHWA has determined that the Rt. 52, Section 1 Reconstruction Project will have an adverse effect on the Dockside Café/Marina, which is a property eligible for listing on the Register, by introducing new elements into the property's viewshed; and

WHEREAS, FHWA and NJDOT have unsuccessfully marketed the Route 52 Bridge over the Ship Channel, and have also found that the bridge is of insufficient condition to re-use at another NJDOT location; and

**WHEREAS**, the FHWA, the NJDOT, and the SHPO have developed a plan to mitigate the adverse effects of the proposed construction project; and

**WHEREAS**, the Advisory Council on Historic Preservation (Council) has been notified of the Adverse Effect finding, and has declined to participate in the Section 106 consultation process; and

**WHEREAS**, the NJDOT participated in the consultation and has been invited to concur in this Memorandum of Agreement;

**NOW, THEREFORE** the FHWA, the New Jersey SHPO, and NJDOT agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the proposed undertaking on historic properties.

## Stipulations

The Federal Highway Administration will ensure that the following measures are carried out:

1. Prior to demolition of any elements of the Route 52 Bridge over the Ship Channel, the NJDOT, using the services of a qualified consultant, will document the bridge to Historic American Engineering Record (HAER) Standards, Level II as defined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44715-44742), and as specifically detailed in *Guide to Written Reports for the Historic American Engineering Record*, pp. 10 - 11, or as otherwise directed by the National Park Service. The FHWA shall ensure that all documentation is completed prior to the obscuring or demolition of any elements of the structure, and that copies of this documentation are subsequently made available to the National Parks Service - Mid-Atlantic Region, the New Jersey SHPO, and other local archives as appropriate. All copies shall, with the exception of any original HAER drawings made for the project which may be blue-line copies, be archivally stable.

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a duplicate version of the display placed at the city's visitors center.

3. NJDOT will develop a package of original resource materials used to produce the cultural resource survey reports and the HAER documentation, such as historic maps, digitize them, produce them in a CD format, and make copies available to local historic societies and school libraries.

4. Because a recipient for the Rt. 52 Bridge over the Ship Channel has not been identified, NJDOT and FHWA will continue to review any offers received up to the time when specifications for the demolition contract must be finalized. If an offer is received an agreement will be established among the donee, FHWA, and NJDOT that the integrity of the bridge will be maintained at the new location and the features that make the bridge historic will be maintained.

5. In consultation with the NJSHPO, the city of Somers Point, and Ocean City, NJDOT will work with the bridge design consultant to establish a list of guiding principles to apply to the overall bridge design. This list will reflect a consideration of the project area's setting and history, and have as its objective a development of the bridge's context. NJDOT, with the services of a consultant, shall develop a design review process that will be comprised of at least the following:

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   C. Engineering Analysis and Design Recommendations – The consultant's design analysis will begin with an inventory and brief discussion of how chosen design parameters relate to the setting as developed in section A, above. This will include the relationships between roadway design, marine operations, the natural and man-made environment, and environmental protection requirements. The consultant will briefly discuss a range of structural designs, technologies, and materials which could be employed to provide for a structure that is compatible with the previously developed setting. A design scheme or concept (verbal description and justification with conceptual sketches) will be developed for the new causeway that conveys such compatibility. Consideration will be given to

the overall mass and form of the structure; as well as (to a lesser extent) the choice of sub- and superstructure materials (including their configuration, tint, texture and/or color); type of parapet, railing, and lighting; and landscaping.

D. NJDOT will submit the initial causeway design developed through the above-stated process to the FHWA, SHPO and the cities of Somers Point and Ocean City for final comment prior to proceeding to Final Design.

## Administrative Conditions

1. NJDOT, on behalf of FHWA, will ensure that all work encompassed by Stipulation 1 is carried out in accordance with the *Secretary of Interior's Standards and Guidelines for Architectural and Engineering Documentation* (48FR 44730 - 44734) and by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualifications and Standards* (48 FR 44738-9).

2. NJDOT, on behalf of FHWA, will ensure that all work encompassed by Stipulations 2 and 5 will be carried out in accordance with the terms of this agreement, and will submit photographic documentation of the completed products to FHWA and the NJSHPO. Such documentation will be sufficient to clearly illustrate the conformance to mutually agreed upon design features and details of the new bridge design, as well as the details of the proposed interpretive center display.

3. Dispute Resolutions
   A. At any time during the implementation of the measures stipulated in this MOA, should an objection to any such measure or its manner of implementation be raised, FHWA will notify all signatories to the agreement, take the objection into account, and consult as needed to resolve the objection.
   B. Disputes regarding the completion of the terms of this agreement as necessary shall be resolved by the signatories. If the signatories cannot agree regarding a dispute, the FHWA shall then initiate appropriate actions in accordance with the provisions of 36 CFR §800.6(b) and §800.7 as appropriate.
   C. Modification, amendment or termination of this agreement as necessary shall be accomplished by the signatories in the same manner as the original agreement.

4. Should construction of the above mentioned project not commence within 5 years of the date of FHWA's acceptance of this MOA, this agreement becomes null and void. If FHWA decides to continue with the undertaking, it shall re-initiate its review process in accordance with 36 CFR Part 800.

Execution of this Memorandum of Agreement by the FHWA, the NJSHPO, and NJDOT, and the implementation of its terms, evidence that the FHWA has afforded the Council an opportunity to

comment on the Route 52, Section 1, Reconstruction project and its effects on historic properties, and that the FHWA has taken into account the effects of the undertaking on historic properties.

FEDERAL HIGHWAY ADMINISTRATION

By:_____ Date:_____

Dennis L. Merida
Division Administrator, New Jersey Division Office

NEW JERSEY STATE HISTORIC PRESERVATION OFFICE

By: Dorothy P. Guzzo Date: 1/24/02

Dorothy P. Guzzo
Deputy State Historic Preservation Officer

**Concur:**
NEW JERSEY DEPARTMENT OF TRANSPORTATION

By: A D Silber Date: 1/23/02

Arthur Silber
Director, Division of Project Management

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
http://njfieldoffice.fws.gov

In Reply Refer to:

FP-02/14

PROJECT MANAGEMENT
RECEIVED
MAY 0 2 2002

April 29, 2002

Mr. Nicholas Caiazza, Environmental Team Leader
Division of Project Management
New Jersey Department of Transportation
1035 Parkway Avenue, CN 600
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

This responds to your March 21, 2002 letter to the U.S. Fish and Wildlife Service (Service) requesting review and comment on the March 2002 Preliminary Final Environmental Impact (FEIS) Statement, Section 4(f) Evaluation for NJ Route 52 (1) Causeway between the City of Somers Point, Atlantic County and Ocean City, Cape May County. The purpose of the proposed project is to reconstruct an important, but deteriorated section of the National Highway System in order to provide efficient vehicular and marine traffic as well as to improve safety.

## AUTHORITY

These comments provide technical assistance only and do not represent the review comments of the Department of the Interior on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 (NEPA) as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*), nor do these comments preclude separate review and comments by the Service as afforded by the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*). In reviewing application where permits are required, the Service may concur, with or without stipulations, or recommend denial of the permit, depending upon the potential for the project to adversely impact fish and wildlife resources. This response also does not preclude Service comments on issues related to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

## COMMENTS

The New Jersey Department of Transportation (NJDOT) has reviewed the Service's previous comments as well as the comments received from other agencies having jurisdiction, expertise, or interest in the Route 52 project. The FEIS reiterates the Preferred Alternative 9-1 identified in the draft - two fixed bridges, with causeway on continuous structure, slightly east of the existing

alignment. Building the entire causeway supported on a viaduct-type structure involves the least impact to wetlands. The preferred alternative will result in the following unavoidable adverse effects:

- 7.93 acres of open space inventory (Green Acres) has to be acquired for right-of-way;
- 2.09 acres of shading impact and 0.23 acres of direct impact to wetlands due to fill and piles;
- 0.39 acres of direct open waters impact due to placement of piles and piers; and
- shellfish populations will be reduced as a result of 0.17 acres of habitat destruction.

The Service has determined that the proposed actions and reductions in adverse impacts to fish and wildlife resources have been minimized to the maximum extend practicable. To compensate for project-related adverse impacts, the Service recommends that the NJDOT develop detailed mitigation plans to compensate for unavoidable adverse impacts to wetlands and open water habitat.

The Service has determined that construction of the proposed project would not have unacceptable adverse impacts on fish and wildlife resources provided that the aforementioned mitigation needs for wetlands and open water habitat are appropriately addressed in project mitigation planning and implemented as part of project construction.

Thank you for the opportunity to comment. Please contact Allen Jackson of my staff at (609) 646-9310 extension 23 if you have any questions concerning these comments.

Sincerely,

Clifford G. Day
Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

April 26, 2002

Nicholas Caiazza
State of New Jersey
Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600

**RE: FEIS for the Proposed Reconstruction of Route 52**
**From Somers Point, Atlantic County, to Ocean City,**
**Cape May County, New Jersey**
**NJDOT #8000-139**
**FHWA #BRF-007(103)**

Dear Mr. Caiazza:

We have reviewed the preliminary copy of the above referenced document dated March 2002. The document has incorporated the National Marine Fisheries Service's comments and essential fish habitat recommendations.

We have no further comments to offer.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

cf: EPA, Region II
USFWS, Pleasantville
NJDEP, Land Use Regulation
NJDEP, Fish and Wildlife
A. Fox, FHWA NJ office
J. Boyer, PH, USACE

PROJECT MANAGEMENT
RECEIVED
MAY 0 1 2002

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO ATTENTION OF

APR 25 2002

Regulatory Branch
Application Section II

SUBJECT: CENAP-OP-R-199400807-24
Route 52(1) Reconstruction

PROJECT MANAGEMENT RECEIVED
APR 26 2002

Mr. Nicholas Caiazza
New Jersey Department of Transportation
Division of Project Management
P. O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

This is in regard to the proposed reconstruction of Route 52(1), between the City of Somers Point, Atlantic County, and the City of Ocean City, Cape May County, New Jersey. We have received your letter dated March 25, 2002, in which you forwarded a copy of the Preliminary Final Environmental Impact Statement (FEIS) for the project (dated March 2002).

In letters dated May 22, 2000, and January 16, 2001, we provided comments to you on the Draft EIS. This office has previously concurred with the "Purpose and Need" statement in the EIS. We have also concurred with the set of alternatives which were advanced to the EIS. This office has verified the limits of Federal jurisdiction within the project area.

We have reviewed the Preliminary FEIS, and we offer these comments as a cooperating agency:

1. In the Table of Contents, Section 3.4.5 should be "Wetlands and Open Waters," as on page III-37; and Section 7 should be "Agencies Who Receive This FEIS" (not DEIS).

2. In Parts "v." and "vii." of the Summary, pages S-6 and S-7, it should be emphasized that the cooperating agencies do not necessarily concur with the Federal Highway Administration's preferred alternative; nor can such a concurrence be made until the necessary permit processes have been completed by those agencies.

3. Section 3.1 ("Traffic and Transportation") should have a discussion of navigation issues, such as bridge clearances and the sharp turn in the proposed relocated Federal channel. Under your preferred alternative, northbound vessels would make a sharp right turn, facing the end of the new sheet pile wall almost head-on. We would like to know if hydrographic surveys

support a gentler curve to transition from the existing channel to the new alignment. Would a more gradual curve require additional dredging, or do existing depths in this area meet or exceed six feet? As previously stated, relocation of the Intracoastal Waterway will require Corps of Engineers approval. The approval process starts with a letter formally requesting this relocation and explaining the need for it. The Corps of Engineers would then coordinate navigation and boat safety issues with the U.S. Coast Guard.

4. In Section 3.4.5, page III-39, Figure 3.4.1 shows the horizontal clearance between piers (at the channel) to be about 45 meters for the fixed bridge, and about 50 meters for the bascule bridge. However, the drawings in Appendix D show the clearance to be about 80 meters for the fixed bridge and 30 meters for the bascule. All other piers are about 25 meters apart.

5. In Section 3.4.5, page III-40, the referenced tables should be included in the FEIS. In the DEIS, Tables 3.4-3, 3.4-4 and 3.4-6 all show the same impacts to wetlands and open waters for Alternatives 9 and 9A. Based on Figure 3.4.1, this would not be the case.

6 The proposed wetland compensation ("mitigation") site shown on Figure 3.4.2, page III-41, is the same area proposed for dewatering of dredged material. There should be an explanation of how the timing of dewatering could be completed, and the material removed, prior to construction in wetlands, so that construction of the wetland compensation could commence in a timely fashion. In the Corps' permit process, this office normally requires wetland compensation to be completed prior to or concurrent with wetland impacts.

7. In Section 3.4.7, page III-43, it should be stated that disposal of materials as artificial reefs is subject to State and Federal approval. For your reference, there is an existing Department of the Army permit, CENAP-OP-R-199802530-1, which authorizes placement of material at reef sites. There are a number of conditions attached to that permit, and it expires in the year 2004. You can contact this office for further information on the terms of that authorization. You should coordinate with the permittee (New Jersey Department of Environmental Protection) regarding acceptability of material for the reefs.

8. In Section 7.0, page VII-1, "Department of the Army, Philadelphia District" should be "U.S. Army Corps of Engineers, Philadelphia District."

None of the above comments are intended to prejudice any permit decisions for this project. It is our understanding that an application for a Department of the Army permit will be submitted after the publication of the Final EIS. It is not possible for us to make a decision relative to your preferred alternative until we have completed our permit process.

SUBJECT: CENAP-OP-R-199400807-24

You should continue to coordinate with this office regarding the submission of application materials for a permit. Please contact Dr. James N. Boyer of my office at (215) 656-5826 if you have any questions regarding this matter. We thank you for the opportunity to comment on this project.

Sincerely,

Frank J. Cianfrani
Chief, Regulatory Branch

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard (Aowb)
Fifth Coast Guard District

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6227
FAX: (757) 398-6334



16590
9 Apr 02

Mr. Nicholas Caiazza
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

This is in response your letter dated March 21, 2002 requesting comments on the Preliminary Final Environmental Impact Statement/Section 4(f) Evaluation for the proposed reconstruction of Route 52(1) from Somers Point, Atlantic County, to Ocean City, Cape May County, New Jersey.

The Preliminary FEIS/Section 4(f) Evaluation has been reviewed by Mrs. Linda Bonenberger, of my staff. The proposed 55-foot vertical clearance at mean high water and the 70-foot horizontal clearance for the proposed fixed replacement bridges across Ship Channel and Beach Thorofare (New Jersey Intracoastal Waterway) appear adequate based on the information provided in the Preliminary FEIS. Even though the navigational clearances for new bridges across Ship Channel and Beach Thorofare appear to meet the reasonable needs of navigation, a final determination will be made after we issue a public notice soliciting public comment on the proposed new bridges. If we receive comments objecting to the proposed clearances, the concerns of those objecting will have to be cleared up before a Coast Guard Bridge Permit will be issued.

To ensure that the vertical clearances for the proposed new replacement bridges across Elbow Thorofare and Rainbow Channel are adequate for navigation, please provide navigational usage information on these two waterways by identifying the types and sizes of vessels known to transit these waterways, and of any commercial use.

The National Oceanic and Atmospheric Administration's (NOAA) navigational charts and the U.S. Army Corps of Engineers' Federal Navigation Project Book were reviewed to determine if there where any federally maintained channels in Ships Channel, Beach Thorofare, Rainbow Channel and Elbow Thorofare. The information provided in the charts and the project book revealed that no federally maintained navigational channel exists along any of the four waterways. To make sure the proposed replacement bridges do not encroach upon navigational channels that we are unaware of, we require that you verify with the appropriate city officials of Ocean City and Somers Point as to whether they have a designated navigational channel in any of the four waterways. Also, for the NOAA's information and for the navigational charts maintained by them, we need for you to identify the longitude and latitude of where each proposed replacement bridge will be located across each waterway.

When you submit your application for a Coast Guard Bridge Permit, please provide separate plan sheets for each waterway crossing since each of the four bridges are over waterways of different

names. One reproducible original and three copies of the location map and plan sheets for each proposed replacement bridge will need to be included in your permit application package. The bridge plans and location map will need to provide the following information:

**The Title Block (lower right corner of each page):**

a. Applicant's name

b. Waterway name

c. Milepoint of bridge location in miles and metric equivalent in kilometers.

d. City and State

e. Date of plans

f. Sheet number of total number of sheets in the set.

**The Plan View needs to show the following:**

a. Properties adjacent to the proposed bridge and names of the owners.

b. Length and width of the bridge in U.S. linear feet and metric equivalent in meters.

c. Fendering system, if any.

d. Falsework/Temporary structures.

e. Banks of the waterway.

f. Navigation channel limits (dimensions).

g. Structures immediately adjacent of the proposed bridge and their pier alignment in relation to the proposed bridge.

h. Graphic bar scale.

i. North arrow.

j. Horizontal clearance normal to the axis of the channel in U.S. linear feet and metric equivalent in meters.

k. Channel axis.

**Elevation View should show the following:**

a. Navigational opening, marked in red.

b. Datum.

c. Horizontal clearance normal to the channel in U.S. linear feet and metric equivalent in meters.

d. Vertical clearance above the appropriate datum in U.S. linear feet and metric equivalent in meters.

e. The dimensions and minimum clear horizontal distance to the channel axis between most restrictive parts of the fendering system.

f. The minimum navigational clearances of falsework and temporary structures.

g. The 100-year flood elevation.

h. The elevation of the waterway bottom.

i. Amount of fill, if any.

j. The graphic bar scale.

The Coastal Zone Management (CZM) Act of 1972 (P. L. 92-583), as amended, require all projects located within the designated coastal zone of a state to be consistent with the state's federally approved CZM plan. If the State of New Jersey has a federally approved CZM plan and this project is located in the coastal zone, we will need a written certification that this proposed project is consistent with the approved state CZM plan and the State CZM Program office's concurrence in writing with your certification.

Section 401 of the Federal Water Pollution Control Act (P. L. 92-500), as amended, prohibits federal permitting agencies from issuing authorizations for construction activities having discharges into navigable waters, until the appropriate water quality certifying agency has issued a water quality certification or waiver procedures have been satisfied. In order for the Coast Guard to issue bridge permits for this project, you must obtain a Water Quality Certification (WQC) or waiver from the appropriate Federal, inter-state, or state agency.

In accordance with Part 118 of 33 Code of Federal Regulations, navigational lights will be required on the proposed replacement bridges across Elbow Thorofare and Rainbow Thorofare if they support nighttime navigation. The proposed replacement bridges across Ships Channel and Beach Thorofare will require navigational lights.

16590
9 Apr 02

We appreciate the opportunity to review the Preliminary Final Environmental Impact Statement. If you should have any questions regarding this matter, please contact Mrs. Linda Bonenberger, Bridge Management Specialist, at (757) 398-6227.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, New Jersey 08628-1019

March 6, 2002

IN REPLY REFER TO:
HPO-NJ

Route 52 (1) Causeway
Atlantic & Cape May Counties
Final EIS
BRF-0007(103)

Andras Fekete
Manager, Bureau of Environmental Services
Division of Project Management
New Jersey Department of Transportation
1035 Parkway Avenue, P.O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Fekete:

We have completed our review of the Final EIS for Route 52 (1) Causeway project in the City of Somers Point, Atlantic County and in Ocean City, Cape May County. Here are our comments for your consideration. If there are any questions, please call Amy Fox at (609) 637-4238 or myself at (609) 637-4237.

Sincerely yours,
Lourdes Maria Castaneda

Lourdes Castaneda
Area Engineer

cc: N. Caiazza w/ encl.
D. Lambert w/ encl.

PROJECT MANAGEMENT
MAR 0 7 2002

**FHWA Comments on the Final EIS**
**Route 52 (1) Causeway**

1. Page III-48, third paragraph, third sentence: Please reword sentence, it doesn't read correctly.

2. Pages III-74 & III-75: Pages have the same info, one can be removed.

3. Page IV-6, Table 4.3-1: Consider adding a column stating 'Meet Purpose & Need'.

4. Page IV-10, Figure 4.3-1: Text is hard to read and is blurry. Please enlarge text.

5. Page IV-14, first sentence: Please add 'properties or resources' after 'of Section 4(f)'.

6. Page IV-15, second paragraph: First sentence states 'The Preferred Alternative has will have some adverse effect.....'. Needs to be reworded.

7. Appendix A & C: Why are these appendices not double-sided?

8. Proposed location of the Visitor's Center needs to be shown on one of the Appendix D maps (Alternative 9 Option 1).

9. Existing boat ramp on the north bank of Rainbow Channel to be enhanced needs to be shown on one of the Appendix D maps (Alternative 9 Option 1).

10. Page II-11: Is maintenance dredging & wetland mitigation included in the Life Cycle Cost? Also how the Life Cycle Cost was calculated needs to be briefly explained.

11. The FEIS should not reference sections or text from the DEIS; rather the FEIS should contain the information that existed in the DEIS.

12. Where is the Section 7 consultation discussed?

13. Where is the projects compliance with the Coastal Zone Management discussed?

**NEW JERSEY DEPARTMENT OF TRANSPORTATION**

**MEMORANDUM**

**TO:** Record

**FROM:** Nick Caiazza

**DATE:** February 7, 2002

**PHONE:** 5-2991

**SUBJECT:** Route 52 (1) Causeway
Angler Access

---

Today a meeting was held to discuss angler access along the proposed Route 52 Causeway with the following in attendance: Andrew Didun, NJDEP Division of Fish and Wildlife (NJF&W), and Dave Lambert and Nick Caiazza, NJDOT Division of Project Management.

Representatives of Project Management last met with NJF&W personnel on April 13, 2001, (after the circulation of the Draft Environmental Impact Statement) where various concerns were expressed about the project's effects on existing fishing access. Subsequently, a letter dated August 13, 2001 was sent to NJF&W, where Project Management responded to each concern and outlined a revised plan to replace fishing access in the project area. Mr. Didun requested today's meeting to clarify his office's concerns and respond to our letter.

The following is a summary of the issues discussed, including any follow-up that is necessary:

- Mr. Didun came to the meeting with a set of photos that illustrated the inconsistencies in allowing angler access in the area. For example, he stated that the Longport bridge (over Beach Thorofare) allows fishing to the point that trash cans are supplied yet the bridge sidewalk is only about 2' wide without protection. More importantly, photos of the Rush Chatin bridge over Corson's Inlet shows angler access by way of a parking lot, boat ramp (trailers), shoreline fishing, and about a 5' wide protected sidewalk and bump-outs for anglers on both sides of the bridge crossing. Dave Lambert took some of the Corson's Inlet photos for discussion / reference.
- Mr. Didun asked if the proposed ground-level walkway on the southern-most island will provide access all the way across the island to the northwestern shore of Beach Thorofare. Mr. Caiazza responded that it will.
- Mr. Didun asked if the proposed replacement boat ramp on the southern shore of Rainbow Channel will have an access path that will accommodate vehicles with small boats on trailers. The path should include an area for vehicles to turn around to launch boats. The

NJDOT response was that we will make every attempt to provide such a path during final design of the project, consistent with regulatory requirements associated with any land use and environmental permits that will be required.

- For the new fishing pier proposed for the southern shore of Rainbow Channel, it was agreed that during design we will consider a configuration that would allow access to both sides of the bridge (such as a T shape). We will also attempt to preserve, to the extent practicable, fishing access from the existing bulkhead on the southwestern side of the abutment. If this is feasible, it would eliminate the need for the T-shaped fishing pier.
- Mr. Didun questioned whether the project will allow for angler access along the southwest side of the existing causeway adjacent to the northern shore of Rainbow Channel. It appears that this will be feasible, and during design we will attempt to maximize angler access in this area, all the way to, and including part of, the abutment. This will probably involve repair or reconstruction of the existing bulkhead along that stretch of causeway, to maintain the existing upland area.
- Mr. Didun reiterated that, to maintain existing fish habitat, we should preserve as many piles from the existing structures across Elbow Thorofare and Rainbow Channel as possible. We will attempt to maximize the number of piles that are cut down to some level above the channel bottoms, consistent with navigation/boating safety issues that we expect will be raised at the permit application phase of the project.
- Mr. Didun asked if the proposed sidewalk on the structure could have a continuous concrete barrier constructed between it and the shoulder. Mr. Lambert replied that this option is being seriously considered along with a widened sidewalk. The decision on this will be made during Final Design.
- Mr. Didun highlighted that the NJF&W's foremost concern is to allow angler use on the bridges over Rainbow Channel and Elbow Thorofare. DOT's response of liability concerns was questioned in lieu of the Corson's Inlet crossing and others that allow fishing. The NJF&W asked for fishing to be allowed over Rainbow Channel and to design bump-outs on the protected sidewalk if conflicts between anglers and pedestrians/bicyclists are a concern. We are considering such bump-outs for the high bridges over Beach Thorofare and Ship Channel, on the northeast side of the structure only. Mr. Didun felt that if we are considering them for the higher bridges, then we should install them on the lower ones as well. Bump-outs would not be appropriate for the southwest side of the causeway, since there is no sidewalk proposed there for the main structure. We will consider adding bump-outs to the proposed sidewalk over Rainbow Channel during Final Design (Mr. Didun offered assistance from his office in choosing their location). We will also consider adding a sidewalk to the ramp on the southbound side of the causeway that provides access to the island currently supporting the Visitors Center. This would provide pedestrian access from the proposed parking lot on that island to the southwest side of the structure over the southern portion of Rainbow Channel. It would, however, dead-end on the structure.
- Mr. Didun noted that anglers would make efforts to fish off of both sides of Rt. 52 depending on the currents / tides. Therefore, angler access was requested and emphasized on both sides of the new Rt. 52, especially over Rainbow Channel but also Elbow Thorofare. Safety was Mr. Didun's concern. Currently anglers are in jeopardy fishing off of the existing causeway; if they do that now, they will make attempts to do the same on the new bridge.

The new causeway design currently calls for a continuous sidewalk on one side of the road only.

- Mr. Didun reiterated the need to provide access for anglers to the northern-most island, between Ship Channel and Elbow Thorofare. Mr. Didun noted that access, in general, is currently available on all islands along existing Rt. 52. It was noted that this is likely an island encumbered under one of the Green Acres procedures and access would need to be provided. Mr. Caiazza was to look into the issue; he suggested that a stair-tower may be needed. (After the meeting, a review of past meeting records indicated that this possibility was looked at previously and the bridge at this point would be higher than in other areas where a stair tower has been proposed, therefore safety would be a concern.) Reasons were given in the August 13 letter as to why providing such access is not feasible and prudent due to safety and liability considerations. The NJDOT still believe these reasons to be valid, although the issue can be revisited during Final Design. In regard to Elbow Thorofare, the NJF&W also asked for the construction of some kind of low bridge or preservation of a portion of the existing causeway to provide angler use and access to the northern-most island. Mr. Lambert explained that the new Rt. 52 causeway would cover the existing causeway, which would need to be demolished for new pier supports. A new bridge would be costly and considered unsafe for navigation. Mr. Didun noted neither Elbow Thorofare or Rainbow Channel are open to navigation, and that the new higher bridges would make it appear that those channels could be navigated.
- Mr. Didun noted and emphasized that the Director of NJF&W (R. McDowell) as well as the Marine Fisheries Administrator (T. McCloy) and the Marine Fish Council are interested in the outcome of angler access issues for this project. If necessary, their support and the support of the marine fish anglers at-large can be made available to the NJDOT.
- In a telephone conversation after the meeting, Mr. Didun noted that a (newly proposed) small pedestrian / bicyclist / angler sidewalk sized-ramp off of the ascending ramp from the parking area proposed on the central Rainbow Island could serve two purposes. It would provide access to the island between Ship Channel and Elbow Thorofare as well as provide angler use over Elbow Thorofare.

Finally, it was agreed that a meeting should be convened at the beginning of the Final Design process between the NJDOT, its designers and NJF&W. At that time the access commitments outlined in this memorandum and the FEIS can be brought to the attention of the designers and discussed at the beginning of the design effort, to allow for proper consideration in an efficient manner.

Cc: attendees
R. Gramlich
L. Castaneda, FHWA
N. Spaventa, Earthtech

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

JAN 18 2002

Nick Caiazza
Environmental Team Leader
Division of Project Management
State of New Jersey
Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

PROJECT MANAGEMENT
RECEIVED
JAN 22 2002

Dear Mr. Caiazza:

We have reviewed the essential fish habitat (EFH) assessment which was dated December 21, 2001 and which was submitted to us by the New Jersey Department of Transportation on behalf of the Federal Highway Administration for the rebuilding of New Jersey Route 52 across Great Egg Harbor Bay between Somers Point in Atlantic County and Ocean City in Cape May County, New Jersey. We offer the following comments and recommendations on this project pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act, and the Fish and Wildlife Coordination Act (FWCA).

Because the EFH section was not included in the New Jersey Route 52 draft environmental impact statement (DEIS), the EFH section of the final environmental impact statement (FEIS) should include our conservation recommendations to protect EFH, as well as the federal action agency's response (or a response from the NJDOT which has been designated as the action agency). We will also clarify other recommendations pursuant to the Endangered Species Act and the Fish and Wildlife Coordination Act (FWCA) in this letter.

**Essential Fish Habitat Comments**

All life stages of winter flounder (*Pseudopleuronectes americanus*) may be found in the project area. Winter flounder spawning times are determined by water temperatures. Spawning may occur as early as December and as late as April with early life stages continuing their development through June. Because winter flounder eggs are demersal and the early life stages are vulnerable to destruction by dredging activities, seasonal restrictions for dredging activities are necessary for winter flounder protection.

**Essential Fish Habitat Conservation Recommendations**

Provided that the following conservation recommendations are incorporated into the project plan, we concur with the assessment that the project will have no more than a minimal adverse individual or cumulative effect on EFH in the project area:

- for the protection of the early life stages of winter flounder (*Pseudopleuronectes americanus*), a seasonal restriction on dredging from 1/1 until 5/31 of any year would minimize impacts on this species

According to section 305(b)(4)(B) of the MSA, the federal action agency has a regulatory requirement to provide a written response to NMFS within 30 days after receiving NMFS' EFH conservation recommendations. If the federal action agency is not able to respond fully within 30 days, it may send a preliminary response stating that it has received NMFS' recommendations, will consider them fully, have not yet made a decision on the project, but will respond to NMFS' recommendations in detail in a letter or within the final EIS or EA. The federal action agency then must respond to the recommendations by letter or within the final EIS or EA in a section or chapter clearly labeled as such. The federal action agency response must be provided to NMFS at least 10 days before it signs a Finding of No Significant Impact or a Record of Decision, to allow time for dispute resolution if necessary. The federal action agency response must include a description of measures proposed for avoiding, mitigating, or offsetting the impact of the activity on EFH, as required by section 305(b)(4)(B) of the MSA and 50 CFR 600.920(j). In the case of a response that is inconsistent with NMFS' conservation recommendations, the federal action agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action or the measures needed to avoid, minimize, mitigate, or offset such effects.

**Fish and Wildlife Coordination and Management Act Comments**

Female Blue crabs (*Callinectes sapidus*) form overwintering aggregates in the project area. These crabs burrow into the sediment, become lethargic, and are vulnerable to dredging activities. For the protection of this resource, we recommend that a seasonal restriction from December 1 through March 31 be incorporated into project plans.

**Endangered Species Act Comments**

Several species of sea turtles including the threatened loggerhead (Caretta caretta), endangered Kemp's ridley (Lepidochelys kempii), and green (Chelonia mydas) may occur in inshore waters of New Jersey.

These turtles feed primarily on mollusks, crustaceans, sponges, and a variety of marine grasses and seaweeds. In addition, the endangered leatherback (Dermochelys coriacea) sea turtle may occupy the coastal waters of New Jersey, foraging for jellyfish. These sea turtles may be found in New Jersey waters from late spring to mid-fall.

NMFS issued a Biological Opinion on November 26, 1996 which was modified on May 25, 1999 and included all dredging activities in the Philadelphia Army Corps of Engineers' District. Provided that the dredging activities comply with the terms and conditions of the Biological Opinion, further consultation with NMFS under Section 7 of the Endangered Species Act will not be necessary. However, should project plans change or should new information become available that modifies the basis for this determination, then consultation should be reinitiated.

Although it is not planned at the present time, if it becomes necessary to use blasting for the removal of the old bridge piers, consultation with the Protected Resources Division of the National Marine Fisheries Service should be initiated regarding the effects to endangered sea turtles. Turtles may be present in the project area between June 1 and November 30, and the planning of blasting outside these time frames is recommended.

If you wish to discuss this matter further, please contact Anita Riportella of my staff at (732) 872-3116.

Sincerely,

Peter D. Colosi, Jr.
Assistant Regional Administrator
for Habitat Conservation

cf: EPA, Region II
USFWS, Pleasantville
NJDEP, Land Use Regulation
NJDEP, Fish and Wildlife
NMFS, Protected Species, M. Colligan

ar/route 52 efh assessment

# City of Somers Point

# Resolution

No. 87 of 2001 (As Amended)

**Subject:** Endorsing Rt. 52 Causeway Project **Introduced By:** Councilman Smith

**WHEREAS**, the New Jersey Department of Transportation has undertaken a project known as the New Jersey Route 52 Causeway Project between the City of Somers Point, Atlantic County and Ocean City, Cape May County; and

**WHEREAS**, the City of Somers Point objected to an element of the proposed project which included the expansion of MacArthur Blvd. into a five lane highway, as evidenced by the passage of Resolution No. 174 of 2000; and

**WHEREAS**, in response to that objection, the New Jersey Department of Transportation developed a three-lane alternative configuration through the residential area of MacArthur Blvd., and transmitted that configuration to the City by a letter dated March 26, 2001.

**NOW, THEREFORE, BE IT RESOLVED** that the City Council of the City of Somers Point hereby reiterates its endorsement and support of Alternative 9 for the New Jersey Route 52 Causeway project, so long as it incorporates the three-lane alternative configuration through the residential area of MacArthur Blvd., a copy of which is attached hereto, and made a part hereof.

**BE IT FURTHER RESOLVED** that said endorsement and support is conditional upon the following

1) The speed limit for MacArthur Blvd. to be 35 miles per hour
2) The new light at Braddock Drive to be a pad timer so that it allows the free flow of traffic on MacArthur Blvd., unless cars actually require it to change to allow flow to and from the side streets
3) The project will provide appropriately spaced architectural lights similar to style of lights on Bay Avenue (Victorian Gas Lamp Style)
4) The project will eliminate the existing drainage swale and cyclone fence on the south side of Route 52 near the intersection of Route 9, and replace it with an attractively and densely landscaped berm. Underground drainage pipe will be utilized, if necessary.
5) The project will visually enhance the roadway and reduce road noise emanating to the surrounding area by the use of dense, large, sound-absorbing plantings. These plantings will be mature enough to serve their intended purpose when planted. These plantings are to be, at least, in the area between the intersection of Route 9 and where the existing businesses fronting on MacArthur Blvd. begin. The plantings should be diverse, and appropriate for our climate and soil. Suggestions would include a mixture of:
   a) Trees - Blue Spruce, Leyland Cypress, Douglas Fir, White Fir, Dogwood, Crabapple, Flowering Pear, Washington Hawthorn, White Ash, Elm and Hickory
   b) Bushes - Yews, Arborvitae, Forsythia, Boxwood, Juniper and Azaleas
   c. Perennial Flowers - (around the boarder of plantings) - Daffodils and tulips for spring bloom, various types of lilies for summer blooms.
6) The State of New Jersey will adequately maintain the improvements including the lights and landscaping.

7) The State of New Jersey will not withhold approval of changes on local roads which the City might desire to institute, and which might include such items as: prohibiting left turns from MacArthur Blvd. onto certain local streets, one way streets, and the elimination of public access from MacArthur Blvd. businesses onto local streets, except for emergency vehicles.

8) The State of New Jersey will implement changes in its construction plans so as to adequately protect local affected businesses and residents from the adverse effects identified in Mayor DiMaria's letter of December 1, 2000 to the NJDOT (copy attached hereto).

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I Carol L. Degrassi, City Clerk of the City of Somers Point, New Jersey, hereby certify that the foregoing Resolution is a true copy, duly adopted by the City Council of said City at a Regular meeting held on the 24th day of May, 2001.

In Witness Whereof, I have hereunto set my hand and seal of my Office this 24th day of May, 2001.

Carol L. Degrassi

Carol L. Degrassi, RMC/CMC, City Clerk

# State of New Jersey

DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
PO Box 600
Trenton, New Jersey 08625-0600

DONALD T. DI FRANCESCO
*Acting Governor*

JAMES WEINSTEIN
*Commissioner*

March 26, 2001

City of Somers Point
Municipal Services Building
New Jersey Avenue and Shore Road
Somers Point, New Jersey 08244

Attention: Mr. Harvey Smith
City Council President

RE: Somers Point Circle Elimination and MacArthur Blvd. Widening Project
Letter from Mayor DiMaria dated December 1, 2001
Resolution No. 174 dated December 28, 2001

Dear Mr Smith:

Reference is made to Mayor DiMaria's letter dated December 1, 2001 and subsequent Resolution No. 174 dated December 28, 2001 regarding the subject above. The Department has investigated the location of existing schools and recreational areas in the vicinity of the project and acknowledges that a safe pedestrian crossing between Route 9 and the proposed Circle cut through is warranted. In response to your concerns, the Department has developed some conceptual traffic calming techniques which we have applied to the original 5 lane MacArthur Blvd. configuration as proposed in the Draft Environmental Impact Statement (Reference attached Sketch No. 1). These traffic calming techniques involve bumping out the curbs at a proposed **signalized pedestrian crossing at Braddock Drive** (Reference Detail A from attached Sketch No. 1). The bumped out curbs reduce the crossing distance for pedestrians and reduce traffic speeds for increased pedestrian safety.

In addition, we have developed a **new MacArthur Blvd. highway configuration** which provides a three lane configuration through the residential area (i.e., North of Braddock Drive) and widens out to 5 lanes past Braddock Drive through the business district (Reference attached Sketch No. 2). This alternative was developed in an attempt to satisfy the community's widening concerns and also provide for adequate stacking of vehicles approaching the proposed signalized intersection which will replace the Circle. This alternative also contains a signalized pedestrian crossing at Braddock Drive.

In light of the information provided above, our design consultant, Earthtech, has analyzed the traffic flow through the area for the two highway configurations listed above. The analysis was performed with the use of computer models. The models were based upon current peak traffic data for the year 2004 (build year) as well as the year 2024 (20 years hence) and assume a 1% growth rate. I have attached the weekday and weekend peak traffic data for your information. As you are well aware, peak weekday traffic volumes occurs on Friday night

during the summer tourist season. The weekend peak occurs on Saturday morning and again on Sunday night during the summer tourist season.

The growth rate of 1% which is assumed in the computer model appears appropriate based upon coordination with the Department's Mobility Strategy Unit, Local Planning Offices and consultation with the New Jersey Highway Authority (NJHA). We have attached traffic data obtained though the NJHA which shows a consistent growth rate of 2.3 % on average at Exit 30 of the Garden State Parkway. In addition, NJHA projects a 2.9% per year growth over the next ten years on the GSP segment that covers Exit 30. Summarized below for your convenience are the results of the traffic simulation computer analysis for MacArthur Blvd..

- The five lane configuration provides for better overall traffic flow and will prevent potential gridlock from occurring at Braddock Drive in the Southbound direction and Braddock Avenue in the Northbound direction during peak periods.

- The five lane configuration (Sketch 1) allows for some movement of traffic from side streets such as Par Drive, however, regardless of the alternative left turns will be extremely difficult. The Department will most likely make a recommendation to restrict left turns at Sixth Ave, Par Drive, Braddock Avenue and Goll Ave. for certain time periods and/or months of the year. The recommendation to close access from Route 52 to Par Drive or Sixth Avenue cannot be ruled out regardless of the final highway configuration.

- The modified three lane alternative (Sketch 2) provides for virtually no opportunity for left turns during peak periods, except at the proposed signalized intersection at Braddock Drive. As stated above, left turns will most likely be restricted.

- Reference the attached memorandum from Earthtech dated March 21, 2001 for more detailed information.

At this time, it is requested that the City review the attached sketches and accompanying documentation (4 copies) and provide your comments regarding further design development of these concepts. Based upon the traffic engineering information provided above, the Department continues to recommend the 5 lane configuration as our preferred alternative. We believe that this alternative provides for the best traffic flow during peak periods and will continue to serve the community well into the foreseeable future.

If any questions arise or you would like to schedule a meeting to discuss these items further, please call me.

Sincerely,

Dave Lambert

Dave Lambert, P.E.
Project Manager
Division Of Project Management

Attachments

CC:Mainfile,RWG,DL,N.Caiazza(w/attach),A.Qureshi,S.Deeck(w/attach),Senator Gormley (w/attach)
Yanina Eyfa(FHWA,w/attach),N.Spaventa(earthtech),J.Stevenson(w/attach),M.Russo

# SOMERS POINT BOARD OF EDUCATION

JORDAN ROAD SCHOOL
129 JORDAN ROAD
SOMERS POINT, NEW JERSEY 08244

Gerald V. Toscano
Superintendent
609-927-3043

Nancy J. Steinhauer
Business Administrator/Board Secretary
609-927-2053

January 31, 2001



City of Somers Point
Municipal Services Building
New Jersey Avenue & Shore Road
Somers Point, New Jersey 08244

Attention: Ms. Carol Degrassi, RMC/CMC, City Clerk

Dear Ms. Degrassi:

Please be advised the Somers Point Board of Education, by formal motion duly carried, unanimously approved support of the City of Somers Point Resolution No. 174 of 2000 at their Regular Meeting held January 18, 2001.

This Resolution was objecting to Route 52 Causeway Project, which includes expansion of MacArthur Blvd to a five-lane highway.

As stated in your Resolution, the Board has serious concerns for their students having to cross this highway to and from school and the recreational facilities, not to mention the increase flow of traffic so close to the school grounds.

Please include the support of the Board of Education in your objection to this project and the recommendation that said project be changed for the safety of the students and the community.

Sincerely,

Nancy J. Steinhauer
Business Administrator

cc: New Jersey Department of Transportation

# City of Somers Point

# Resolution

No. 174 of 2000

Subject: Objecting to Route 52 Causeway Project which includes expansion of MacArthur Blvd to a five lane highway

Introduced By: Councilman Gerety

WHEREAS, the New Jersey Department of Transportation has undertaken a project known as the New Jersey Route 52 Causeway Project between the City of Somers Point, Atlantic County and Ocean City, Cape May County; and

WHEREAS, said project proposes the expansion of MacArthur Blvd. to a five lane highway, four lanes with a center turning lane; and

WHEREAS, said expansion of MacArthur Blvd. would be a risk to our children who need to cross this highway to get to school and recreational facilities; and

WHEREAS, said expansion of MacArthur Blvd. would increase the opportunity for speeding through our community and negatively impact on the surrounding neighborhoods and businesses, unnecessarily taking away property; and

WHEREAS, said expansion of MacArthur Blvd. would create further traffic problems as it would funnel into a two lane residential street (Laurel Drive) and effectively cut our community in half; and

WHEREAS, the Governing Body has received much objection to this expansion of MacArthur Blvd. from the residents of the City of Somers Point

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Somers Point hereby strongly objects to the portion of the above project which expands MacArthur Blvd. to a five lane highway.

BE IT FURTHER RESOLVED that the City Council of the City of Somers Point hereby request, in the best interest of the City of Somers Point, that said project be changed to include the expansion of MacArthur Blvd. to a three lane highway (two lanes with a center turning lane) which was originally proposed, including sidewalks on both sides.

---

I Carol L. Degrassi, City Clerk of the City of Somers Point, New Jersey, hereby certify that the foregoing Resolution is a true copy, duly adopted by the City Council of said City at a Regular meeting held on the 28th day of December, 2000.

In Witness Whereof, I have hereunto set my hand and seal of my Office this 28th day of December, 2000.

Carol L. Degrassi, RMC/CMC, City Clerk

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO ATTENTION OF

JAN 16 2001

Regulatory Branch
Application Section II

SUBJECT: CENAP-OP-R-199400807-24
Route 52(1) Reconstruction

Mr. Nicholas Caiazza
New Jersey Department of Transportation
Division of Project Management
1035 Parkway Avenue
P. O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

This is in regard to the proposed reconstruction of Route 52(1), between the City of Somers Point, Atlantic County, and the City of Ocean City, Cape May County, New Jersey. We have received your letter dated October 6, 2000, in which you forwarded copies of the Draft Environmental Impact Statement (DEIS) for the project (dated August 2000).

We previously reviewed an earlier version of the DEIS (dated February 2000). This office has previously concurred with the "Purpose and Need" statement in the DEIS. We have also concurred with the set of alternatives which were advanced to the DEIS. This office has verified the limits of Federal jurisdiction within the project area.

In a letter dated May 22, 2000, we provided comments to you on the earlier version of the DEIS. In a letter dated August 18, 2000, you responded to those comments. We acknowledge that revisions have been made to the DEIS relative to our comments. However, we continue to note that details are lacking regarding dredging and disposal associated with your "initially preferred alternative" (IPA). Pages III-231 and III-232 describe disposal of material at the middle of Rainbow Island for Alternative 9, Options 2 and 3. It is not clear exactly where this would be or whether additional wetlands would be impacted. The only mention of disposal options for Alternative 9, Option 1, your IPA, describes off-site disposal of "drained" material. There is no information about where this material would be drained, and if it would require additional wetland impacts. Disposal sites should be identified for use during the initial dredging associated with the relocation of the New Jersey Intracoastal Waterway and for future maintenance needs. Sites must be of sufficient size to hold the initial quantity of dredged material plus volumes from maintenance dredging. Hydraulic

SUBJECT: CENAP-OP-R-199400807-24

dredging will also require space for pumped slurry. Final destinations for relocation of any dewatered material should be identified. Supporting technical documentation should be provided about the nature of the material to be dredged and the need (or lack thereof) for maintenance dredging. The information should verify the 30-year maintenance cycle for a relocated channel. This information should be incorporated into the final EIS. The 1994 feasibility study on relocation of the navigation channels only addressed dredging of Rainbow Channel.

We have noted comment letters from the U.S. Coast Guard and U.S. Fish and Wildlife Service. The issue of the waiver on bridge clearance from the Coast Guard should be resolved before the EIS is finalized. We note the concerns of the Fish and Wildlife Service regarding impacts to shellfish. Please bear in mind that consideration must be given to resource agency comments in the processing of a Department of the Army permit. Therefore, it is recommended that their views be given serious consideration in the Final EIS.

None of the above comments are intended to prejudice any permit decisions for this project. It is our understanding that an application for a Department of the Army permit will be submitted after the publication of the Final EIS. It is not possible for us to make a decision relative to your preferred alternative until we have completed our permit process. We recommend that the issues outlined above be addressed in the Final EIS. They should not be left for the design-build contractor to address afterward. These issues will need to be dealt with by the Corps in their evaluation of environmental impacts in the permit process.

We did not see the Endangered Species Act mentioned in the "Summary" section under required Federal actions. Since the proposed action is a Federally funded highway project, Federal Highway Administration should be the lead agency with regard to Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act. We will not be able to complete our permit process until we have documentation of compliance with those laws.

You should continue to coordinate with this office regarding the submission of application materials for a permit. Please contact Dr. James N. Boyer of my office at (215) 656-6731 if you have any questions regarding this matter. We thank you for the opportunity to comment on this project.

Sincerely,

Frank J. Cianfrani
Chief, Regulatory Branch

# *City of Somers Point*
# Resolution

No. 174 of 2000

**Subject:** **Objecting to Route 52 Causeway Project which includes expansion of MacArthur Blvd to a five lane highway**

**Introduced By:** **Councilman Gerety**

**WHEREAS**, the New Jersey Department of Transportation has undertaken a project known as the New Jersey Route 52 Causeway Project between the City of Somers Point, Atlantic County and Ocean City, Cape May County; and

**WHEREAS**, said project proposes the expansion of MacArthur Blvd. to a five lane highway, four lanes with a center turning lane; and

**WHEREAS**, said expansion of MacArthur Blvd. would be a risk to our children who need to cross this highway to get to school and recreational facilities; and

**WHEREAS**, said expansion of MacArthur Blvd. would increase the opportunity for speeding through our community and negatively impact on the surrounding neighborhoods and businesses, unnecessarily taking away property; and

**WHEREAS**, said expansion of MacArthur Blvd. would create further traffic problems as it would funnel into a two lane residential street (Laurel Drive) and effectively cut our community in half; and

**WHEREAS**, the Governing Body has received much objection to this expansion of MacArthur Blvd. from the residents of the City of Somers Point

**NOW, THEREFORE, BE IT RESOLVED** that the City Council of the City of Somers Point hereby strongly objects to the portion of the above project which expands MacArthur Blvd. to a five lane highway.

**BE IT FURTHER RESOLVED** that the City Council of the City of Somers Point hereby request, in the best interest of the City of Somers Point, that said project be changed to include the expansion of MacArthur Blvd. to a three lane highway (two lanes with a center turning lane) which was originally proposed, including sidewalks on both sides.

PROJECT MANAGEMENT
RECEIVED

JAN 11 2001

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I Carol L. Degrassi, City Clerk of the City of Somers Point, New Jersey, hereby certify that the foregoing Resolution is a true copy, duly adopted by the City Council of said City at a Regular meeting held on the 28th day of December, 2000.

In Witness Whereof, I have hereunto set my hand and seal of my Office this 28th day of December, 2000.

Carol L. Degrassi

Carol L. Degrassi, RMC/CMC, City Clerk

# United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

1849-1999

ER 00/762

JAN 3 2001

Robin L. Schroeder, PE
Director, Division of Project Operations
Federal Highway Administration
640 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Dear Ms. Schroeder

This is in response to your request for comments from the Department of the Interior regarding the draft environmental impact statement (DEIS) and Section 4(f) evaluation for Route 52 Reconstruction Project from Route 9 in Somers Point, Atlantic County to Bay Avenue in Ocean City, Cape May County, New Jersey.

SECTION 4(f) COMMENTS

At this time we cannot concur that there are no other prudent or feasible alternatives to the project as proposed or that all possible planning has been undertaken to mitigate harm to section 4(f) resources. Our primary concerns have to do with impacts on fish and wildlife resources and are outlined in detail below.

DRAFT ENVIRONMENTAL IMPACT STATEMENT COMMENTS

General

The following comments on the DEIS have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 et seq.), and the National Environmental Policy Act of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), and are consistent with the intent of the Department's Fish and Wildlife Service (FWS) Mitigation Policy (Federal Register, Vol. 46, No. 15, Jan. 23, 1981), which emphasizes that avoidance and minimization precede compensation for unavoidable adverse impacts on fish and wildlife resources and supporting ecosystems. We are concerned that the least environmentally damaging alternative has not been selected for this proposal.

Information in the DEIS identifies Alternative 9, option 1 (9- 1) as the initially preferred alternative for the proposed project. In a letter dated June 19, 2000, the FWS commented on the Preliminary DEIS and the Technical Environmental Study (TES) dated March 2000 for the

proposed project. In that letter, the FWS identified Alternative 9A, option 1 (9A- 1) as having the least potential for adverse impacts on the aquatic environment within the proposed project area. Alternative 9A-1 would not require a realignment of the Intracoastal Waterway (ICWW) and subsequent dredging within Great Egg Harbor Bay.

According to NJDOT's August 19, 2000, letter to the FWS and information provided in the DEIS, the decision to select Alternative 9- 1 as the initially preferred alternative was based on the need for an uninterrupted emergency evacuation route, cost minimization (i.e., elimination of initial, operational, and maintenance costs involved with Alternative 9A- 1), and compliance with safety and roadway design requirements. Implementation of Alternative 9- 1 would involve construction of a fixed bridge (i.e., eliminating the existing bascule bridge), which would require a realignment of the existing ICWW in Beach Thorofare. Realignment of the ICWW would require dredging important benthic habitats, including shellfish beds, in Beach Thorofare.

The FWS responded to NJDOT's August 19, 2000, letter and Preliminary DEIS in a letter dated September 21, 2000. However, these comments were not incorporated into the August 2000 DEIS due to time constraints (Qureshi, personal communication, 2000). Therefore, this response serves to reiterate the FWS concerns not addressed in the DEIS and TES.

Purpose and Need

The Department questions the need for a fixed bridge, rather than a bascule bridge, to provide an uninterrupted emergency evacuation route for motor vehicles. It appears that an extended closure of a bascule bridge, as proposed under Alternative 9A- 1, would serve as an uninterrupted route to facilitate traffic flow during an emergency evacuation. In addition, it is unlikely, in view of advances in weather forecasting and storm warning procedures, that vessels requiring the opening of a bascule bridge would be in the ICWW during a storm that necessitates emergency evacuation. The DEIS does not provide specific information regarding traffic problems, associated with the existing bascule bridge design, that may have occurred during previous emergency evacuations.

Impacts on Benthic Habitat

Information provided in the TES indicates that many of the channels in the northern portions of Great Egg Harbor Bay, such as the proposed project area, provide ideal habitats for a variety of benthic organisms, including shellfish (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000a). Although FHWA and NJDOT (2000a) indicate that shellfish beds in Great Egg Harbor Bay are plentiful and widespread, dredging at a relatively large scale, such as proposed for Alternative 9-1, would contribute to Statewide cumulative impacts on shellfish resources. According to the DEIS, Alternative 9A-1 is the only option that would not require maintenance dredging of the ICWW.

Indirect effects of dredging, such as turbidity and substrate alteration, may cause long-term adverse impacts to benthic organisms in the bay. Loss of such resources contributes to the overall degradation of the aquatic ecosystem and, subsequently, fish and wildlife resources in the project

area. In addition, shifting the ICWW approximately 210 feet northward (i.e., within approximately 50 feet of existing saltmarsh), as proposed for Alternative 9-1, would increase the potential for wetland substrate sloughing via wave action.

Safety Standards and Cost Considerations

While the Department recognizes that NJDOT is constrained by certain safety and design standards, roadway construction options that would satisfy such considerations and further minimize wetland impacts, should be identified and evaluated. Specific safety and design standards should be identified, in relation to previous FWS recommendations, that would minimize adverse impacts on wetlands.

Wetland mitigation expenses and costs associated with dredging and dredged material disposal, may equal or exceed the final costs of Alternative 9A- 1, including costs associated with operation and maintenance of a bascule bridge. The Department notes that costs associated with operation and maintenance of a bascule bridge would be minimized via an anticipated 93 percent reduction of bridge openings as proposed under Alternative 9A-1 (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000b). A total cost comparison between the alternatives indicates that Alternative 9A- 1 would cost an estimated $7 million less than Alternative 9-1 (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000b).

SUMMARY AND RECOMMENDATIONS

To facilitate further evaluation of alternatives, the Department recommends that the final EIS address specific information regarding traffic problems associated with the existing bascule bridge and roadway safety and design standards. We encourage you to provide this information as early as possible to FWS to allow inclusion of mitigation measures in the final EIS to minimize adverse impacts on wetlands and benthic resources in Great Egg Harbor Bay. Overall, the Department maintains that Alternative 9A-1, if constructed as proposed, would have the least adverse impact on aquatic ecosystems, including estuarine emergent wetlands and shellfish resources within the proposed project area.

Therefore, based on the above-mentioned considerations regarding purpose and need, impacts on wetlands and shellfish resources, safety standards, and cost evaluation, the Department strongly recommends that FHWA and NJDOT reconsider selecting Alternative 9A-1 as the preferred alternative for the Route 52(1) bridge reconstruction project. The Department remains opposed to the selection of alternatives that require dredging of existing benthic habitats, including shellfish beds, in Great Egg Harbor Bay unless adequate mitigation measures can be implemented.

Thank you for the opportunity to provide comments on the DEIS and TES for the proposed reconstruction of the Route 52 causeway. Should you have any questions regarding these comments pertaining to fish and wildlife concerns, please contact the FWS at:

Supervisor, New Jersey Field office
U.S. Fish and Wildlife Service
927 North Main Street (Bldg. D)
Pleasantville, New Jersey 08232
(609-646-9310)

Sincerely,

Willie R. Taylor

Willie R. Taylor
Director, Office of Environmental
Policy and Compliance

## REFERENCES

U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation. 2000a. *NJ Route 52(1) causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County*, Federal #BRF-0070103, technical environmental study, natural ecosystems. Prepared by Earth Tech, New York, New York, for the U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation in cooperation with the U.S. Army Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service. 83 pp. + appendices.

_2000b. *NJ Route 52(1) Causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County*, draft environmental impact statement, section 4(f) evaluation (volume 1). Prepared by Earth Tech, New York, New York, for the U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation in cooperation with the U.S. Army Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service. 250 pp. + appendices.

Personal Communication, Qureshi, A. 2000. Environmental Team Member, New Jersey Department of Transportation, Trenton, New Jersey.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

December 27, 2000

Mr. Nicholas Caiazza
NJ Department of Transportation
Division of Project Management
1035 Parkway Avenue
P.O. Box 600
Trenton, NJ 08625

Dear Mr. Caiazza:

As discussed with Mr. Ahmad Qureshi during a telephone conversation on December 12, 2000, we are providing comments on the Draft Environmental Impact Statement (DEIS) for the Route 52 causeway reconstruction from Route 9 to Ocean City, NJ after the comment period has ended. We had not received a copy of the DEIS prior to the due date. The DEIS was sent to us from Earth Tech, Inc. on December 13, 2000.

Our comments include recommendations for the least environmentally damaging alternative and the request to fulfill the requirement to further the conservation and enhancement of essential fish habitat (EFH) in accordance with section 305(b)(2) of the Magnuson-Stevens Act which requires an EFH consultation with the National Marine Fisheries Service for any federal action that may adversely affect essential fish habitat (EFH).

Also, the National Marine Fisheries Service (NMFS) issued a Biological Opinion on November 26, 1996 which was modified on May 25, 1999 and included all dredging activities in the Philadelphia Army Corps of Engineers' District. Provided that all dredging activities comply with the terms and conditions of the Biological Opinion, further consultation with NMFS under Section 7 of the Endangered Species Act will not be necessary. However, should project plans change or should new information become available that modifies the basis for this determination, then consultation should be reinitiated.

We submit that alternative 9A-1 is the least environmentally damaging alternative and therefore should be the preferred alternative under the authority of the Fish and Wildlife Coordination Act and the National Environmental Policy Act of 1969, which states that avoidance and minimization precede compensation for unavoidable adverse impacts on fish and wildlife resources and supporting ecosystems. Alternative 9A-1 would not require realignment of the Intracoastal Waterway (ICWW) and the subsequent dredging within Great Egg Harbor Bay, while the selected preferred alternative, alternative 9-1, would realign a section of the ICWW which would require

new dredging and would impact estuarine emergent wetlands by filling. The information provided in the Technical Environmental Study indicates the that proposed project area provides important habitats for benthic organisms, including shellfish and many species of finfish which would be impacted by the initial dredging and the periodic maintenance dredging that would be required with alternative 9-1.

Pursuant to section 305 (b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), federal agencies are required to consult with NMFS regarding any action they authorize, fund, or undertake that may adversely affect EFH. We assume that the lead federal agency will be either the U. S. Army Corps of Engineers, the Federal Highway Administration or the U.S. Coast Guard. An adverse effect has been defined in the EFH regulations as follows: "Any impacts which reduce the quality and/or quantity of EFH. Adverse effects may include direct (e.g., contamination or physical disruption, indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions." 15C.F.R Section 600.810.

We offer the following pertinent sections from the EFH Interim Final Rule (600.920):

(2)(b) Designation of lead agency.
If more than one Federal agency is responsible for a Federal action, the consultation requirements of 305 (b)(2-4) of the Magnuson-Stevens Act may be fulfilled through a lead agency. The lead agency must notify the National Marine Fisheries Service (NMFS) in writing that it is representing one or more additional agencies.

© Designation of non-Federal representative.
A Federal agency may designate a non-Federal representative to conduct an abbreviated consultation or prepare an EFH Assessment by giving written notice of such designation to NMFS. If a non-Federal representative is used, the Federal action agency remains ultimately responsible for compliance with section 305(b)(2) and 305(b)(4) of the Magnuson-Stevens Act.

(c) Use of existing consultation/environmental review procedures.
(1) Criteria. Consultation and commenting under sections 305(b)(2) and 305(b)(4) of the Magnuson-Stevens Act should be consolidated, where appropriate, with interagency consultation, coordination, and environmental review procedures required by other statutes, such as the National Environmental Policy Act (NEPA), Fish and Wildlife Coordination Act, Clean Water Act, Endangered Species Act (ESA), and Federal Power Act. The consultation requirement of section 305 (b)(2) of the Magnuson-Stevens Act can be satisfied using existing or modified procedures required by other statutes if such processes meet the following criteria:
(I) The existing process must provide NMFS with timely notification of actions that may adversely affect EFH. The Federal action agency should notify NMFS according to the same time frames for notification (or for public comment) as in the existing process. However, NMFS should have at least 60 days notice prior to a final decision on an action, or at least 90 days if the action would result in substantial adverse impacts. NMFS and the action agency may agree to use shorter time frames if they allow sufficient time for NMFS to develop EFH conservation recommendations.
(II) Notification must include an assessment of the impacts of the proposed action on EFH that meets the requirements for EFH Assessments contained in paragraph (g) of this section. If the EFH Assessment is contained in another document, that section of the document must be clearly identified as the EFH Assessment.

(g) EFH Assessments.

(1) For any Federal action that may adversely affect EFH, except for those activities covered by a General Concurrence, Federal agencies must provide NMFS with a written assessment of the effects of that action on EFH. Federal agencies may incorporate an EFH Assessment into documents prepared for other purposes such as ESA Biological Assessments pursuant to 50CFR part 402 or NEPA documents and public notices pursuant to 40 CFR part 1500. If an EFH Assessment is contained in another document, it must include all the information required in paragraph (g)(2) of this section and be clearly identified as an EFH Assessment. The procedure for combining an EFH consultation with other consultation of environmental reviews is set forth in paragraph (e) of this section.

(2) Mandatory contents. The assessment must contain:

(i) A description of the proposed action

(ii) An analysis of the effects, including cumulative effect, of the proposed action on EFH, the managed species, and associated species, such as major prey species, including affected life history stages.

(iii)The Federal agency's views regarding the effect of the action on EFH.

(iv) Proposed mitigation, if applicable.

(3) Additional Information.

If appropriate, the assessment should also include:

(i) The results of an on-site inspection to evaluate the habitat and the site-specific effects of the project.

(ii) The views of recognized experts on the habitat or species that may be affected.

(iii) A review of pertinent literature and related information.

(iv) An analysis of alternatives to the proposed action. Such analysis should include alternatives that could avoid or minimize adverse effect on EFH, particularly when a action is non-water dependent.

(v) Other relevant information.

(j) Responsibilities of Federal action agency following receipt of EFH conservation recommendations.

(1)As required by section 305(b)(4)(B) of the Magnuson-Stevens Act, the Federal action agency must provide a detailed response in writing to NMFS and the appropriate Council within 30 days after receiving an EFH conservation recommendation. Such a response must be provided at least 10 days prior to final approval of the action, if a decision by the Federal agency is required in fewer than 30 days. The response musts include a description of measures proposed by the agency for avoiding, mitigating or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NMFS conservation recommendations, the Federal Action agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed Acton and the measures needed to avoid, minimize, mitigate, or offset such effects.

(2) Further review of decisions inconsistent with NMFS or Council recommendations.

If a Federal action agency decision is inconsistent with a NMFS EFH conservation recommendation, the Assistant Administrator for Fisheries may request a meeting with the head of the Federal action agency, as well as any other agencies involved, to discuss the proposed action and opportunities for resolving any disagreements. If a Federal action agency decision is also inconsistent with a Council recommendation made pursuant to section 305(b)(3) of the Magnuson-Stevens Act, the Council may request that the Assistant Administrator initiate further review of the Federal agency's decision and involve the Council in any interagency discussion to resolve disagreements with the Federal agency. The Assistant Administrator will make every effort to accommodate such a request. Memoranda of agreement or other written procedures will be developed to further define such review processes with Federal action agencies.

(k) Supplemental consultation. A Federal action agency must reinitiate consulate with NMFS if the agency substantially revises its plans for an action in a manner that may aversely affect EFH or if new information becomes available that affects the basis for NMFS's EFH recommendations.

In the future, the EFH assessment and the NMFS conservation recommendations can be incorporated into a DEIS document. Because the EFH section was not included in the NJ Route 52 DEIS document, we will send a letter to you with the conservation recommendations after a separate EFH assessment has been received and reviewed by this office. The federal action agency's EFH assessment, the NMFS conservation recommendations and the federal action agency's response can then be included in the final EIS.

According to section 305(b)(4)(B) of the MSA, the federal action agency has a statutory requirement to provide a written response to NMFS within 30 days after receiving the NMFS's EFH Conservation Recommendations. If the federal action agency is not able to respond fully within 30 days, they may send a preliminary response stating that they have received NMFS recommendations, will consider them fully, have not yet made a decision on the project, but will respond to NMFS recommendations in detail, in a letter or within the final EIS or EA. The federal action agency then must respond to the recommendations by letter or within the final EIS or EA in a section or chapter clearly labeled as such. The federal action agency response must be provided to NMFS at least 10 days before they sign a Finding of No Significant Impact or a Record of Decision, to allow time for dispute resolution if necessary. The federal action agency response must include a description of measures proposed by the USACE for avoiding, mitigating, or offsetting the impact of the activity on EFH, as required by section 305(b)(4)(B) of the MSA and 50 CFR 600.920(j). In the case of a response that is inconsistent with NMFS conservation recommendations, the federal action agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action or the measures needed to avoid, minimize, mitigate, or offset such effects.

For EFH information, go to the following website: www.nero.nmfs.gov/ro/doc/newefh.html. If you need additional information regarding this matter, please contact Anita Riportella at (732) 872-3116.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

er/route52.doi
cf: EPA, Region II
FWS, Pleasantville
NJDEP, LURP
NJF&W
MAFMC - T. Hoff
NEFMC - M. Pentony
Qureshi, A., NJDOT

State of New Jersey

Christine Todd Whitman
*Governor*

Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439, Trenton, NJ 08625-0439
Fax # (609) 777-3656
www.state.nj.us/dep/landuse

Robert C. Shinn, Jr.
*Commissioner*

December 12, 2000

Andras Fekete
Manager, Bureau of Environmental Services
Division of Project Management
NJ Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

RE: DEIS/Section 4(f) Evaluation for the Proposed Reconstruction of Route 52(1),
From Somers Point, Atlantic County to Ocean City, Cape May County, New Jersey
Federal Project No: BRF-7(103)

Dear Mr. Fekete:

The New Jersey Department of Environmental Protection, Land Use Regulation Program, has reviewed the "Draft Environmental Impact Statement/Section 4(f) Evaluation, Volumes 1 and 2, NJ Route 52(1) Causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County" dated August 2000.

The Program concurs with the United States Fish and Wildlife Service, in that a review of the alternatives selected for detailed environmental evaluation (i.e., Alternatives 5A, 5B, 5C, 9 and 9A) indicates that Alternative 9A would have the least adverse impacts to fish and wildlife resources, including estuarine wetlands and marine ecosystems of Great Egg Harbor Bay. Also, Option 1 (of the three causeway options), would have the least adverse impacts to the coastal wetlands. This alternative does not require dredging or relocation of the existing Intracoastal Waterway. Other alternatives that would require dredging or ICWW relocation would have an adverse impact on shellfish, submerged aquatic vegetation, coastal wetlands and finfish migratory pathways.

Thank you for the opportunity to review and comment on the DEIS for the proposed reconstruction of the Route 52 causeway. If you have any questions regarding these comments, please contact Janet Stewart of my staff at (609) 984-0288.

Sincerely,

K. J. Broderick

Kevin Broderick
Section Chief
Land Use Regulation Program

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BEA

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard (Aowb)
Fifth Coast Guard District

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6227
FAX: (757) 398-6334

16590
12 Dec 00

Mr. Andras Fekete
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Fekete:

This is in response your letter dated October 6, 2000 requesting comments on the Draft Environmental Impact Statement/Section 4(f) Evaluation for the proposed reconstruction of Route 52(1) from Somers Point, Atlantic County to Ocean City, Cape May County, New Jersey.

The DEIS/Section 4(f) Evaluation has been reviewed by Ms. Linda Gilliam of my bridge staff. The proposed vertical clearances for the proposed new bridges across Elbow Thorofare, Rainbow Channel, Ship Channel and Beach Thorofare appear adequate at this time. Even though these clearances appear to meet the reasonable needs of navigation, a final determination will be made after we issue a public notice soliciting public comment on the proposed new bridges. If we received comments objecting to the proposed clearances, the concerns of those objecting will have to be cleared up before a Coast Guard Bridge Permit will be issued.

As stated in our May 25, 2000 letter, a complete listing of adjacent property owners, commercial businesses located along the route of the proposed project and commercial waterway users will need to be provided to us when you submit your application for a bridge permit.

A copy of our Bridge Permit Application Guide is enclosed for your use. We strongly recommend that you carefully review this Guide since the information provided in it will ensure that our requirements for applying for a Coast Guard Bridge Permit are met.

If you should have any questions regarding this matter, please contact Ms. Linda Gilliam, Bridge Management Specialist, at (757) 398-6227.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

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BEA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC - 3 2000

Rating: EC-2

Mr. Robin Schroeder
Programs Operations Director
Federal Highway Administration
840 Bear Tavern Road, Suite 310
West Trenton, New Jersey 08628

Dear Mr. Schroeder:

The Environmental Protection Agency (EPA) has reviewed the Federal Highway Administration's (FHWA's) draft environmental impact statement (draft EIS) for the NJ Route 52 (1) Causeway project (CEQ# 000354), located in Somers Point Atlantic County, and Ocean City, Cape May County, New Jersey. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C 7609, PL 91-604 12 (a), 84 Stat. 1709), the National Environmental Policy Act and the Council on Environmental Quality's regulations implementing NEPA (40 CFR Parts 1500-1508).

The draft EIS states that the proposed project will reconstruct and widen 1.0 kilometer of Route 52, also known as MacArthur Blvd., between Route 9 and the traffic circle in Somers Point; convert the circle to a signalized intersection, and reconstruct 2.2 kilometers of the causeway across Great Egg Harbor Bay from that intersection to Bay Avenue in Ocean City. The alternatives that were developed and evaluated for this project include: no-build, and two build alternatives with three variations each. Those variations involved the possible bridge types that can be considered such as fixed or bascule bridges and the type of causeway either on fill or on structure. The alternatives considered were based upon a need to replace deteriorating bridges and improve traffic circulation and reduce conflicts between marine traffic and vehicle traffic on the causeway. Alternative 9, option 1, (two fixed bridges and a causeway on structure), was identified as the preferred alternative. Based on our review, we offer the following comments.

Purpose and Need and Alternatives:

We have concerns regarding the project Purpose and Need. The draft EIS mentions bridge deterioration, bridge openings delaying traffic, and high volume of traffic as some of the issues that serve as the basis for the need to replace the causeway. However, other issues that are offered as reasons for action are not adequately described. For example, the draft EIS does not provide rationale for the need to improve the end point curves to accommodate a specific design speed, nor is there a reason given as to why this particular route must serve as the evacuation route in the event of a storm and other routes either do not or cannot. The draft EIS also did not provide rationale for continuing to allow access to fishing areas adjacent to the roadway. A number of these issues affect how the alternatives are determined. Furthermore, we believe that in certain instances, (e.g., providing access to the Ocean City visitors center in the described options), could cause greater impacts to environmentally sensitive areas than is necessary. The final EIS should discuss the Purpose and Need with more detail and discuss why certain provisions of the

alternatives are being proposed, such as the need to provide access to recreational areas, provide for a certain design speed, or improve function of the causeway as an emergency evacuation route.

Our greatest concern is that the Purpose and Need makes no mention of a need to realign the Ship Channel or the Intercoastal Waterway (ICWW), which in turn involves dredging. This would seem to be contrary to the avoid or minimize any shift in the alignment of the existing navigational channels objective stated on page I-20. Of the five build alternatives, four would involve the realignment of the ICWW and the Ship Channel. However, the draft EIS provides no detail as to why these channels need to be realigned. We can only ascertain, primarily from the alternatives cross section diagrams, that due to the design of the new bridges the channels need to be realigned to bring the ships under the highest point of the bridge which would be in a different location from the current point of crossing. If this is the case, that issue should be discussed in much greater detail. While we agree that the project is needed to improve traffic mobility as much as possible, the draft EIS did not make a clear case for the need to achieve the 99% marine traffic passage without a bridge opening. The draft EIS states that having a lower bascule bridge that allows 93% of marine traffic passing without opening the bridge would amount to perhaps two openings per day. Therefore, we agree with the statement in the draft EIS that this number of bridge openings is acceptable creating minimal delay, certainly better than current conditions and believe that it should not be necessary to dredge any portion of the channels if there are other alternatives available.

It appears in the draft EIS that some alternatives may have been rejected due to their impact on businesses along the project right of way in Ocean City. Also, alternatives that may modify the approach into Ocean City were removed for economic reasons, though those are not fully discussed. While we can appreciate FHWA's objective to avoid causing economic difficulties to businesses along Route 52 in Ocean City, those alternatives should have been more completely discussed. If lengthening the Bridge causeway further into Ocean City provides an adequate approach and grade to achieve the needed height to allow the greatest majority of ships to pass underneath thereby avoiding the realigning of the ICWW, then those alternatives should have been brought forward. By comparing these alternatives against the alternatives that demand the realignment of the ICWW and the Ship Channel, the public and decisionmaker may weigh the level of impacts on both the economics and the environment.

The draft EIS suggests options for the approach to the Ocean City Visitors center located on one of the Rainbow Islands. We strongly recommend the alternative that completely avoids impacting the area of submerged aquatic vegetation. We suggest that the final EIS discuss this area in greater detail and discuss the potential for indirect impacts due to the close proximity of the road and Visitors Center approach.

Impacts to Waters of the U.S.:

The draft EIS states that there could be anywhere from 5.48 acres to .37 acres of direct fill to wetlands depending on the alternative, though these numbers do not reflect the potential acreage of dredging or filling impacts to other non-wetland waters of the U.S. (e.g., from channel realignment activities). While these other waters of the U.S. may not contain obligate wetland plant species it does not diminish their importance to the overall

ecosystem and should therefore be discussed in conjunction with the vegetated wetlands eco-tones. The final EIS should contain a more complete discussion of the impacts to all jurisdictional waters of the U.S. The final EIS should also discuss in greater detail the disposal plan for any dredge material and a more complete description of the indirect impacts resulting from this disposal.

We are concerned that the draft EIS did not provide any detail regarding mitigation for impacts to waters of the U.S. such as wetlands and other special aquatic sites. While a 2-1 mitigation ratio is often assumed, that ratio depends upon the functions and values of the waters and wetlands in question. Based upon the brief description in the draft EIS, these waters of the U.S. are highly functioning wetlands and have significant value not only as wildlife habitat and water quality filtration, but recreational values as well. The draft EIS states that there are different kinds of wetlands that may be impacted by the alternatives, such as tidal emergent wetlands, upland wetland types, and mudflats. All of these must be considered for mitigation on an in-kind basis. The wetlands impacts and mitigation sections of the draft EIS are insufficient to allow us to determine whether the functions and values of the waters of the U.S. and wetlands in particular are preserved. We strongly suggest that the final EIS contain a much more detailed discussion of the mitigation strategies that will be employed to ensure the continued well being of this complex of water types.

Also, we recommend the selection of the split viaduct option, if it is feasible, in order to mitigate the 7 acres of shading impact encountered with alternatives 5 A, B, and C. However, that option may not be practicable in order to mitigate for nearly 2 acres of shading impact encountered with alternative 9 and 9A. Yet, those impacts should be mitigated through either replacement or enhancement at an appropriate ratio and included in the overall mitigation plan.

Impacts to Water Quality:

The proposed project is located in the New Jersey Coastal Plain/Kirkwood-Cohasey Aquifer System, therefore our review was conducted in accordance with Section 1424(e) of the Safe Drinking Water Act (SDWA) and the 1984 Memorandum of Understanding between EPA and FHWA regarding construction of Federal projects in designated Sole Source Aquifer areas. Based on the information provided, we do not anticipate that the proposed project would result in significant adverse impacts to ground water quality.

We also encourage FHWA to vigorously pursue the measures outlined in the draft EIS to reduce and eliminate untreated roadway runoff from entering open surface waters.

Impacts to Air Quality:

The draft EIS states that neither general or transportation conformity apply to this area, where the 1-hour ozone standard was revoked. However, the 1-hour ozone standard will be reinstated in January 2001. Therefore, the final EIS must demonstrate that this project comes from a conforming Long Range Plan and Transportation Improvement Program in order to demonstrate conformity. If the project is not included in a conforming plan and TIP then a project level conformity analysis must be done and included in the final EIS.

In a related matter, the technical environmental study shows the emission factors developed using the Mobile 5a-h Model. However, the New Jersey enhanced motor vehicle inspection and maintenance program assumptions are incorrect. The vehicle distribution according to the program network should be 70% centralized and 30% decentralized for both pre- and post-1999 programs. The modeling should be revised to reflect this change.

Impacts to Coastal Zone:

We are very concerned that the draft EIS made no mention of the project's compliance with the Coastal Zone Management Plan (CZMP) for New Jersey. The Coastal Zone Management Act (CZMA) requires that federal agencies' programs and projects must be consistent with the policies of the state coastal zone management programs when conducting actions which affect the coastal zone. The federal agency must review the state CZMP to determine whether the activity would be consistent with the plan and then notify the State of its determination. The federal agency must prepare a written consistency determination which includes: a detailed description of the action, its associative facilities, and coastal zone effects: a brief statement of how the activity would be consistent with the state CZMP, and data to support that determination. We strongly encourage FHWA to contact the New Jersey Department of Environmental Protection, to discuss the plans for the causeway and the bridge options in particular. The final EIS should contain a detailed discussion concerning the applicability of the CZMA and the state CZMP for the proposed project.

Indirect and Cumulative Impacts:

We are seriously concerned with the impact from the dredging of the ICWW and the Ship Channel and the fact that the draft EIS does not provide enough detail to determine the full impact on the environment. For example, the indirect impacts from the dredging to the shell fish beds and wetlands on the Rainbow Islands is not discussed. The final EIS should discuss this issue in greater detail.

Finally, the draft EIS failed to discuss the indirect and cumulative impacts in particular on water quality, wetlands and other waters of the U.S., socio-economics, and land use. This is a serious omission. It is our belief that the cumulative impacts from the removal of the old causeway and construction of the new structures, may have a significant cumulative effect on those resources. In order to rectify this, the final EIS must contain a complete analysis of all past, present and reasonably foreseeable actions undertaken by both federal and nonfederal agencies, which focuses on affected resources and communities. We strongly recommend that FHWA address all of the cumulative and indirect impacts from spatially and temporally related projects, including potential impacts that may be out of direct control of FHWA.

In light of all of our concerns and comments regarding this project, we are rating this project as EC-2, Environmental Concerns, Insufficient Information, (see our enclosed "summary of rating definitions and follow-up actions"), because we have concerns regarding the purpose and need, and lack of a cumulative impacts analysis and the impacts to air quality and waters of the U.S. and the lack of a mitigation plan for those impacts to wetlands and waters of the U.S. However,

based upon our review, alternative 9A option 1 would appear to be the environmentally preferable alternative, particularly because neither channel would need dredging and realignment under this option, lessening the impacts to waters of the U.S. and wetlands.

We look forward to speaking with you soon. If you have any questions concerning this letter, please contact David Carlson of my staff at (212) 637-3502.

Sincerely yours,

Robert W. Hargrove, Chief
Strategic Planning and Multi-Media Programs Branch

Attachments (1)

CITY OF OCEAN CITY

AMERICA'S GREATEST FAMILY RESORT

PLANNING & COMMUNITY DEVELOPMENT

December 7, 2000

Nicholas Caiazza
NJDOT – DIVISION OF PROJECT MANAGEMENT
1035 Parkway Avenue
P.O. Box 600
Trenton, NJ 08625-0600

Re: ROUTE 52 RECONSTRUCTION PROJECT –
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Caiazza:

The following comments pertain to our review of the above referenced document. All comments pertain to **"Section 3 – Affected Environment/Environmental Consequences."**

| DEIS Reference | Statement/Comment |
|---|---|
| Page III-169 | What is the basis for the statement, "Zoning is considered to have a negative impact on the investment and economic growth in the central area (3rd Street to 15th Street)"? This statement may have been derived from an economic study that was used to justify some revisions to the City's zoning code. One of the primary objectives of the Old City Overlay Zone, created in 1997, was to encourage redevelopment and investment in the central (old City) area. In view of the positive steps taken by the City, this statement should either be modified or removed. |
| Page III-170 | In addition to the master plan documents cited, it should be noted that the City Planning Board adopted a Reexamination Report on October 17, 2000. A copy of this document is enclosed for your review. |
| Page III-186 | Land Use/Social Impacts – Under the alternatives considered, the touchdown point of the reconstructed road will be at Pleasure Avenue. The raised profile of this new road will block access to/from Palen Avenue. At this location a cul-de-sac and a one-way through street from Palen Avenue to Pleasure Avenue are proposed as design options. The report indicates that the cul-de-sac is more favorable to and was developed in response to the residents of Bridgeport condominiums. |

*Please refer to comments in next paragraph regarding the Information Center and Palen Avenue design.*



861 ASBURY AVENUE, OCEAN CITY, NJ 08226
609-525-9371 FAX 609-525-0823

Page III-190
Page III-201
Page III-208

Ocean City Information Center – The report notes that all of the build alternatives would affect access to this facility. The City's primary concern is the loss of visibility associated with this project. The reduced visibility will substantially affect the viability and usefulness of this facility. The report cites three options to mitigate these impacts. Neither Option A nor Option B address this issue albeit the use of signs.

To date, there has been no substantive dialog between the City and NJDOT regarding the Information Center. The City is anxious to discuss alternative solutions to this concern due to the importance of this facility to the local economy. A suitable location for the new Information Center may exist in the properties proposed for acquisition between Palen Avenue and Pleasure Avenue. This location has high visibility for visitors entering the City and appears to contain sufficient area for a small facility and associated parking. The feasibility of using this site for a new information center should be considered as the Palen Avenue access design progresses.

Page III-191
Page III-203

Dredge Material Disposal – The report notes that all causeway options would result in the loss of the City's existing dredged material disposal facility along Route 52. The report indicates that direct access to this site from Route 52 will not be feasible, and that without new access provisions via the Information Center this facility will not be accessible. The report suggests that the effect of loosing this site is limited since the City has other approved/permitted facilities available for this purpose.

The suggestion that loss of this spoils site will have only limited impact on the City is erroneous. Although the capacity of this site is relatively limited, this is the only spoils site in this area available to the City. A mechanism to compensate the City for loss of this site should be provided as part of this project.

Page III-193

Local Fiscal Resources – The report suggests it likely that three properties will be acquired by the State for this project: one is on an island, and two are along 9th Street. It should be noted that the owner of the property identified as OC-11 (Dockside Café and Marina Speed Boat Rentals) was granted site plan approval by the Planning Board November 1, 2000. This approval, when perfected and constructed, will result in a 3,500 square foot 2-story retail/office building, and nine parking spaces with access onto Pleasure Avenue.

Page III-206

Visual Impact –Figure 3.7-2 (the proposed wall at the end of Palen Avenue) depicts what appear to be concrete/cinder block as the wall material. Assuming this illustration is conceptual in nature, the City strongly recommends the use of split face decorative block, native stone or similar materials in all high visibility areas to enhance the appearance of all improvements.

Appendix A Alternative 9A Profile – The 100-year flood elevation depicted on this drawing at Beach Thorofare do not comport with the base flood elevations noted on the 1984 FEMA maps. There appears to be a variation in excess of two (2) feet in Zone A7, and over four (4) feet in Zone V8. These values, and others dependent upon them, should be evaluated and revised as necessary.

As part of this project, the NJDOT should consider increasing the elevation of 9th Street to the greatest practical extent to improve access during times of high tide and storm conditions. It appears that the street elevation proposed between Pleasure Avenue and Bay Avenue is less than four (4) feet.

Thank you for your attention to these concerns. Please contact this office should there be any questions regarding the matters noted herein.

Sincerely,

Randall E. Scheule, PP/AICP
Director of Planning and Development

C: Dennis Campbell, Economic Development
Michael Dattilo, Community Services
George Savastano, Public Works
Kit Wright, Environmental Office

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State of New Jersey

Christine Todd Whitman
*Governor*

Department of Environmental Protection
**Office of Program Coordination**
**PO Box 418**
**Trenton, NJ 08625-0418**
**Phone 609-292-2662**
**Fax 609-292-4608**
lschmidt@dep.state.nj.us

Robert C. Shinn, Jr.
*Commissioner*

December 5, 2000

Andras Fekete
Manager, Bureau of Environmental Services
Division of Project Management
New Jersey Department of Transportation
PO Box 600
Trenton, New Jersey 08625-0600

RE: Route 52 (1) Causeway
Somers Point, Atlantic County to Ocean City, Cape May County
Federal Highway Administration Project No. BRF-7(103)
Draft Environmental Impact Statement Comments



Dear Mr. Fekete:

The Office of Program Coordination of the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the Draft Environmental Impact Statement (EIS) and Section 4(f) Evaluation for the proposed Route 52 (1) Causeway from Somers Point, Atlantic County to Ocean City, Cape May County (Federal Highway Administration (FHWA) Project No. BRF-7(103)). The NJDEP recognizes and supports the need to replace the existing Route 52 Causeway. We offer the following comments for your consideration regarding natural resources, cultural resources, parkland, noise impacts, and regulatory requirements.

## NATURAL RESOURCES

The Department's Division of Fish and Wildlife (DFW) has no objection to either of the two replacement scenarios that remain viable, Alternative 9 (9, 9A) that utilize most of the existing Route 52 alignment. While Alternative 9 requires dredging/minor island loss to realign the Intracoastal Waterway (ICWW), we do not expect it to be a significant environmental impact and would leave the preference of alternative 9 or 9A to the needs and discretion of the New Jersey Department of Transportation (NJDOT). The remaining Alternative 5 proposals, creating an entire new alignment west and parallel to the existing Route 52, are not recommended by the DFW since they would have more environmental impacts (high value clam habitat impacts, additional tidal wetland/SAV (submerged aquatic

vegetation) shading, channel dredging/island loss, closer proximity to the heron rookery on Cowpens Island). The DFW has no major problem with the selection of the "initially" preferred Alternative 9 (Option 1) (page III-247).

In regard to the three options proposed for use on Alternative 9/9A, Options *(1) alignment on structure* and *(2) embankment retained between edge walls* are generally preferred since they would reduce wetland/intertidal impacts. Option *(3) embankment with side slopes* is not readily acceptable since it would enlarge the causeway's alignment into wetland areas. However, it should be noted that the DFW would accept a combination of Options 1 and 2 where each would make environmental sense/reduce costs when located over land (islands); options 3 may also have limited acceptability if additional pull-off areas are needed for island access (angler, Green Acres access).

Since the NJDOT has continued to coordinate with the DFW and incorporate most fish/wildlife concerns into the project design, major resource impacts will be avoided. However, there are still some fish and wildlife concerns that need to be further addressed in the Final EIS, namely, diamondback terrapin protection and angler access.

## Diamondback Terrapin Concerns

For any use of Alternative 9/9A option 3, the Endangered and Nongame Species Program (ENSP) of the DFW notes concerns relative to road mortality on diamondback terrapins; they would need to see measures taken to reduce incidences, such as:

- Constructing barriers (like low fences) along shoulders of the highway to prevent terrapins crawling from the marsh or water onto the filled highway area;
- Bulkheading along filled or water onto the filled/highway areas; and
- Ensuring that filled areas are densely re-vegetated to reduce their attractiveness to nesting terrapins (alternatively, some filled areas can be specifically designed to provide nesting habitat, as long as adequate measures are included to curtail movement of nesting females and hatchlings from the proposed roadway).

Final designs should be provided to the ENSP for their review and approval. If the "initially" preferred Alternative 9 with Option 1 becomes the selected alternative, then this issue is no longer a concern since the causeway would be on structure.

## Angler Access Concerns

One area of emphatic concern is angler access (continued and/or enhanced) relative to the recreational uses of this section of Great Egg Harbor Bay/Ship Channel/Elbow Thorofare/ and particular, Rainbow Channel. From the perspective of the DFW, it appears that the recreational information in the Draft EIS downplays the importance of this area for recreational angling. We suspect the informal surveys did not interview the appropriate groups (true anglers, fishing

clubs) to obtain the required information. In fact, it is the opinion of the DFW that Rainbow Channel meets the requirements for a "Prime Fishing Area" and is purposely targeted by the angling public because of fishing success and concentration of fishes. It is, therefore, unlikely that anglers would just give up this targeted area and move to another fishing spot as indicated on pages III-183 and III-196. In fact, public waterfront areas are rapidly disappearing and this project provides a good opportunity, through NJDOT design/assistance, to replace or even enhance recreational access for the benefit of the public. The DFW can help guide the NJDOT on this issue.

While the Draft EIS provides some descriptions of recreational access efforts albeit disjunct, it also notes that recreational access will be reduced (under all build alternatives (page III-243), including Alternative 9 (page III-237)). Given the use and value of this resource in the area, such access should not be reduced; efforts need to be made toward maintaining and enhancing this access. A clear and concise description with drawings/designs should be provided in the Final EIS, moreover, it should be consolidated in one section of the report. Further, essential coordination between the NJDOT and the DFW needs to be developed to reach an acceptable access proposal; coordination with regional marine biologist, John McClain (609-748-2020) and regional shellfish biologist, Jeff Norman (609-748-2040) is suggested. The staff of the DFW would be willing to meet as necessary.

The following comments from the marine staff of the DFW highlights access issues and provide the NJDOT with specific areas of concern for future coordination:

- The proposed fishing pier in Somers Point should be designed to extend further out in Ship Channel; a similar pier (or use of the old causeway) should be considered/designed on the opposite side of Ship Channel; access to the island between Ship Channel and Elbow Thorofare should be created by extending the recreational walkway across Elbow Thorofare and/or by providing stairs down to the island from the new bridge/causeway;
- On the second island (between Elbow Thorofare and Rainbow Channel, the number of parking spaces (16) needs to be scrutinized (increased) to ensure that parking for all users (anglers/wildlife viewers, etc.) is sufficient, this is a high use area for anglers; a similar concern is expressed on the Ocean City Visitor's Center island, parking here must be shared with sightseers, visitors, and very high (traditional) use by anglers; Option B for the Visitor's Center and access is supported by the DFW;
- It should be made clear that legal fishing will be allowed on the Rainbow Channel and Elbow Thorofare bridges without any restriction from the communities or FHWA/NJDOT; further fishing access should be provided off both sides of the bridges; (note: fishing access has been allowed on the Corsons Inlet Bridge (and designed with overhanging platforms) as well as the Longport Bridge and 96th Street Bridge in Stone Harbor); special designs for safety and angling may be required;
- The Draft EIS does not clearly indicate the height of the proposed causeway over the channels; concern here is that they may be too high for some fishing;

if this is so, consideration should be given to lowering the bridge crossings over the existing non-navigable channels;

- If feasible, a portion of the existing Rainbow Channel and Elbow Thorofare bridges should be retained as fishing piers; i.e. for the entire channel crossing or for only a portion of the crossing from each shore;
- A clarification is needed on the proposed recreational walk and the pedestrian sidewalk; if they are grade separate, then their depiction on *Access to Recreational Area Rainbow Island* needs to be corrected since the recreational walk appears to be on structure with the sidewalk; and
- Paths and walkways on the islands need to be developed fully and lead to terminal fishing areas near or under the new causeway at the edges of all the islands, a detailed design of walkways, paths and bulkheads or small pier terminuses needs to be provided.

## CULTURAL RESOURCES

The NJDEP's Historic Preservation Office (HPO) concurs with the Draft EIS that Alternatives 5A, 5B, 5C, 9 and 9A will have an **adverse effect** on **three (3) historic architectural properties**. The three (3) properties are **World War Memorial Bridge over Route 52 Ship Channel, Bay Front Historic District**, and **Dockside Café/Marina**. A Memorandum of Agreement (MOA), therefore, must be developed in consultation amongst Federal Highway Administration (FHWA), New Jersey Department of Transportation (NJDOT), and the HPO, to minimize and mitigate the adverse effects that preferred alternative will have on those three (3) historic architectural properties. This project has also been reviewed by the HPO pursuant to Section 106 Review of the National Historic Preservation Act (NHPA) of 1966 as amended.

Stipulations of the MOA must include but not be limited to the following items to mitigate the direct adverse impacts on **World War Memorial Bridge over Route 52 Ship Channel**:

- Recordation of **World War Memorial Bridge over Route 52 Ship Channel** to Historic American Engineering Record (HAER) standards;
- Reuse or market components of the bridge structure;
- Provide interpretive displays and/or educational materials produced as a supplement to the HAER recordation;
- Place visual displays of the historic bridge on the acquired Gulf station property adjacent to the historic site, where parking would be possible; and
- Possible conversion of the north viaduct approach, north of the bascule span, into a recreational/fishing pier.

Stipulations of the MOA must also include but not be limited to the following items to minimize the visual adverse impacts on the setting of **Bay Front Historic District**, and **Dockside Café/Marina**:

- Incorporate architectural components and detail of the historic bridge into the design of the new bridge structures;
- Investigate architectural finishes for edge walls of proposed new bridge structures which will be compatible with character defining features and materials of the historic architectural properties;
- Provide plantings of indigenous species along the base of edge walls of proposed new bridge structures;
- Use the longest spans economically feasible to minimize the visual clutter that piles usually introduce; and
- Employ landscaping at the bridge touchdown areas in Ocean City and Somers Point to soften the appearance of proposed new construction.

In addition, because **Bay Front Historic District** and **Somers Point Historic District** are listed in the New Jersey Register of Historic Places Act (NJRHPA) of 1970 as amended **(N.J.S.A. 13:1B-15.131 as implemented by N.J.A.C. 7:4-7.1)**. The NJDOT, therefore, must submit an **Application for Project Authorization under the New Jersey Register of Historic Places Act** for the HPO to determine the impacts this project might have on those properties pursuant to the NJRHPA.

Please contact HPO staff Carl Nittinger at 609-984-014 if you have any questions concerning the above review comments.

## PARKLAND

The Draft EIS addresses the various construction alternatives in regard to impacts to parkland of Ocean City, specifically the salt marsh islands. Ocean City has previously received Green Acres funding so all existing parkland comes under the jurisdiction of the NJDEP's Green Acres Program.

The NJDOT is aware of the requirements that any non-conservation or non-recreational use of parkland is a diversion that requires prior approval of the Commissioner of the NJDEP and the New Jersey State House Commission through the Green Acres Program. The build alternative selected would be required to minimize the impacts to parkland and the land would be required to be replaced. Options, such as building on structure and within walls would minimize impacts to the parkland. Public access to the parkland must be maintained or preferably improved. Improvements to parkland are desirable.

The State House Commission Application for the disposal of the parkland for road purposes would need to filed by Ocean City with the help of the NJDOT, and must include replacement lands and restoration of any temporarily impacted parkland. The process in very interactive and requires approximately six to twelve months. As specific plans are selected, a review by the Green Acres Program is necessary to determine the extent of the diversion.

## NOISE IMPACTS

The Draft EIS evaluates the effectiveness of the construction of two noise barriers adjacent to MacArthur Boulevard in Somers Point. The NJDEP advocates the construction of the noise barriers provided support of the residents of the potentially impacted dwellings.

## REGUALTORY REQUIREMENTS

The Draft EIS notes various regulatory requirements of our Department that the proposed project will need to comply. These requirements include:

- Compliance with regulations to abandon and replace monitoring wells;
- Compliance with regulations administered by our Department's Land Use Regulation Program with respect to dredging, filling, and pile installation for the construction of the causeway;
- Compliance with regulations for the construction and operation of detention basins and oil/grit separators;
- Compliance with regulations regarding impacts to cultural resources (see above); and
- Compliance with regulations of the Department's Green Acres Program for the diversion of use of parkland.

Thank you for the opportunity to be part of the EIS review process. Continued cooperation between the NJDEP and NJDOT is encouraged as the project advances through the design and construction stages.

Sincerely,

Lawrence Schmidt
Director
Office of Program Coordination

C: Andrew Didun, NJDEP
John McClain, NJDEP
Jeff Norman, NJDEP
Carl Nittinger, NJDEP
Ruth Ehinger, NJDEP
Mike Heenehan, NJDEP

"Small Town Charm on the Bay"

# City of Somers Point

City Hall
1 West New Jersey Avenue
Somers Point, NJ 08244
(609) 927-9088. Ext. 121
Fax: (609) 926-3016

John DiMaria
MAYOR

December 1, 2000

New Jersey Department of Transportation
Office of Community Relations
1035 Parkway Avenue
P.O. Box 600
Trenton, NJ 08625

Faxed to: (609) 530-2536 at 1:50 p.m. 12/1/00

Attn: Mr. James Stevenson, N.J. DOT, DCR

Re: New Jersey Route 52 Causeway Project

Dear Mr. Stevenson:

On November 29, 2000 I had a meeting with the business owners along MacArthur Blvd. (Route 52) in reference to the above project. They have no objection to the removal of the circle and the construction of the causeway (Alt. 9).

However, they are vehemently opposed to the widening of Route 52 to 5 lanes. They feel that a five-lane highway would:

1. Adversely affect their businesses
2. Be unsafe for pedestrian and customer crossing.
3. Probably will not resolve the problem of summer traffic flow that is intended to facilitate
4. Each business owner has personal needs which they have tried to have addressed at every hearing but no one listens and responds; for example, the Circle Liquor needs more than one access and others have similar concerns.
5. Most residents along the Blvd. are also opposed to the widening of the road.

Each and every business owner has asked individually and collectively that not withstanding Resolution No. 49 of 2000, we Mayor and Council, help them to get their points across to the D.O.T. Project Supervisor (s) via a letter from us to you prior to December 5, 2000.

They requested a special meeting with Council to air their concerns to us; and they also requested that we set up meetings with our State legislators, Gormley, Blee and LeFevre and possibly with Congressman LoBiondo.

Sincerely yours,

John DiMaria
Mayor

CITY OF SOMERS POINT

rl52.1

State of New Jersey
Department of Environmental Protection
Division of Fish and Wildlife
Robert McDowell, Director
P.O. Box 400
Trenton, NJ 08625-0400

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

# MEMORANDUM

**To:** Lawrence Schmidt, Director
DEP, Office of Program Coordination

**From:** Robert McDowell, Director
Division of Fish and Wildlife

**Date:** November 16, 2000

**Subject:** Route 52 (1) Causeway Reconstruction; Draft EIS / Section 4(f) Evaluation

This serves to inform you of the Division of Fish and Wildlife's [DFW] comments on the Rt. 52 Causeway Reconstruction as reported in the Draft EIS / Section 4(f) Evaluation.

The DFW recognizes and supports the need for the replacement of the existing Rt. 52 causeway. Of the two replacement scenarios that remain viable, the DFW has no objection to either of the Alternative 9 [9, 9A] proposals that utilize most of the existing Rt. 52 alignment. While Alternative 9 requires dredging / minor island loss to realign the Intracoastal Waterway [ICWW], we do not expect it to be a significant environmental impact and would leave the preference of Alternative 9 or 9A to the DOT's needs and discretion. The remaining Alternative 5 proposals, creating an entire new alignment west and parallel of the existing Rt. 52, are not recommended by the DFW since they would have more environmental impacts [e.g. high value clam habitat impacts, additional tidal wetland / SAV shading, channel dredging / island loss, closer proximity to the heron rookery on Cowpens Island]. The DFW has no major problem with the selection of the "initially" preferred Alternative 9 (option 1) [page III-247] if it is still the preferred selection.

In regard to the three options proposed for use on Alternatives 9/9A, options *(1) alignment on structure* and *(2) embankment retained between edge walls* are generally preferred since they would reduce wetland / intertidal impacts. Option *(3) embankment with side slopes* is not readily acceptable since it would enlarge the causeway's alignment into wetland areas. However, it should be noted that the DFW would accept a combination of options 1 & 2 where each would make environmental sense / reduce costs when located over land [islands]; option 3 may also have limited acceptability if additional pull-off areas are needed for island access [angler, Green Acres access].

Since the DOT has continued to coordinate with the DFW and incorporate most fish / wildlife concerns into the project design, we have been able to avoid major natural resource impacts. However, there are still some fish and wildlife concerns that need to be further addressed for a Final EIS, namely, diamondback terrapin protection and angler access.

**Diamondback Terrapin Concerns:**

For any use of Alternative 9/9A option 3, our Endangered and Nongame Species Program [ENSP] notes concern relative to road mortality on diamondback terrapins; they would need to see measures taken to reduce such incidence(s). Measures might be:

* constructing barriers [e.g. low fence] along shoulders of the highway to prevent terrapins crawling from the marsh or water onto the filled / highway areas;
* bulkheading along filled or water areas to prevent movement as noted above; and / or
* ensuring that filled areas are densely re-vegetated to reduce their attractiveness to nesting terrapins [alternatively, some filled areas can be specifically designed to provide nesting habitat as long as adequate measures are included to curtail movement of nesting females and hatchlings from the proposed roadway].

Final designs should be provided to the ENSP for their review and approval. If the "initially" preferred Alternative 9 with option 1 becomes the selected alternative, then this issue is no longer a concern since the causeway would be on structure.

**Angler Access Concerns:**

One area of **emphatic concern** is **angler** access [continued and/or enhanced] relative to the recreational uses of this section of Great Egg Harbor Bay / Ship Channel / Elbow Thorofare / and, in particular, Rainbow Channel. From the perspective of the DFW, it appears that the recreational information in the Draft EIS downplays the importance of this area for recreational angling. We suspect the informal surveys did not interview the appropriate groups [true anglers, fishing clubs] to obtain the required information. In fact, it is the DFW's opinion that Rainbow Channel meets the requirements for a "Prime Fishing Area" and is purposely targeted by the angling public because of fishing success and concentration of fishes. It is, therefore, unlikely that anglers would just give up this targeted area and move to another fishing spot as indicated on pages III-183 and III-196. In fact, public waterfront areas are rapidly disappearing and this project provides a good opportunity, through DOT design / assistance, to replace or even enhance recreational access for the public's benefit. The DFW can help guide the DOT on this issue.

While the Draft EIS provides some descriptions of recreational access efforts albeit disjunct, it also notes that recreational access will be reduced [under all build alternatives (page III-243), including Alternative 9 (page III-237)]. Given the use and value of this resource in the area, such access should not be reduced; efforts need to be made toward maintaining and enhancing this access. A clear and concise description with drawings / designs should be provided in the Final EIS, moreover, it should be consolidated in one section of the report. Further, essential coordination between the DOT and DFW needs to be developed to reach an acceptable access proposal; coordination with regional marine biologist, John McClain [609-748-2020] and regional shellfish biologist, Jeff Normant [609-748-2040] would be necessary. Our staff would be willing to meet as necessary.

The following comments from our marine staff highlights access issues and provides the DOT with specific areas of concern for future coordination:

* the proposed fishing pier in Somers Point should be designed to extend further out into Ship Channel; a similar pier (or use of the old causeway) should be considered / designed on the opposite side of Ship Channel; access to the island between Ship Channel and Elbow Thorofare should be created by extending the recreational walkway across Elbow Thorofare and / or providing stairs down to the island from the new bridge / causeway;
* on the second island, i.e. between Elbow Thorofare and Rainbow Channel, the number of parking spaces (16) needs to be scrutinized [i.e. increased] to ensure that parking for all users [anglers / wildlife viewers / etc.] is sufficient, this is a high use area for anglers; a similar concern is expressed on the Ocean City Visitor's Center island, parking here must be shared with sightseers, visitors, and very high [traditional] use by anglers; Option B for the Visitor's Center and access is supported by DFW;
* it must be made clear that legal fishing will be allowed on the Rainbow Channel and Elbow Thorofare bridges without any restriction from the communities or FHWA / DOT; further, fishing access should be provided off both sides of the bridges; [note: fishing access has been allowed on the Corsons Inlet Bridge [and designed with overhanging platforms] as well as the Longport Bridge and 96th Street Bridge in Stone Harbor]; special designs for safety and angling may be required ;
* the DEIS does not clearly indicate the height of the proposed causeway over the channels; concern here is that they may be too high for some fishing; if this is so, consideration should be given to lowering the bridge crossings over the existing non-navigable channels;
* if feasible, a portion of the existing Rainbow Channel and Elbow Thorofare bridges should be retained as fishing piers; i.e. for the entire channel crossing or for only a portion of the crossing from each shore;
* a clarification is needed on the proposed recreational walk and the pedestrian sidewalk; if they are grade separated, then their depiction on *Access to Recreation Area Rainbow Island* needs to be corrected since the recreational walk appears to be on structure with the sidewalk;
* paths and walkways on the islands need to be developed fully and lead to terminal fishing areas near or under the new causeway at the edges of all the islands, a detailed design of walkways, paths and bulkheads or small pier terminuses needs to be provided.

We hope this information is of service to you. We look forward to DOT responses to our concerns as well as future meetings on the access issue.

c. M. McHugh, DFW Asst. Dir.
T. McCloy, MF Adm.
A. Didun, OER
J. McClain, BMF
J. Normant, BSF
N. Caiazza, DOT

State of New Jersey

Christine Todd Whitman
*Governor*

Department of Environmental Protection
Division of Parks & Forestry
Historic Preservation Office
PO Box 404
Trenton, NJ 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Robert C. Shinn, Jr.
*Commissioner*

HPO-K2000-100 **PROD**
November 15, 2000

Mr. Nick Caiazza
Environmental Team Leader
Division of Project Management
New Jersey Department of Transportation
CN 600
1035 Parkway Avenue
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the Federal Register on 18 May 1999 (64 FR 27073-27084), I am providing continuing consultation comments for the following project:

PROJECT MANAGEMENT
RECEIVED
NOV 2 8 2000

**Route 52 (1) Causeway Reconstruction**
**City of Somers Point, Atlantic County**
**Ocean City, Cape May County**
**NJDOT #8000-139**
**FHWA #BRF-007 (103)**

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SUMMARY: Alternatives 5A, 5B, 5C, 9 and 9A will have an **adverse effect** on **three (3) historic architectural properties**. A Memorandum of Agreement (MOA), therefore, must be developed in consultation amongst Federal Highway Administration (FHWA), New Jersey Department of Transportation (NJDOT), and the Historic Preservation Office (HPO), to minimize and mitigate the adverse effects the preferred alternative will have on those three (3) historic architectural properties.

---

These comments are in response to your letter dated **August 19, 2000**, received at this office **August 21, 2000**, and the ***Draft EIS/Section 4(f) Evaluation*** and supporting technical environmental studies (a box containing fourteen (14) documents), received at this office

October 16, 2000, submitted by NJ DEP, OPC, requesting review and comments on the ***Draft EIS/Section 4(f) Evaluation.***

HPO staff concur with the submitted ***Draft EIS/Section 4(f) Evaluation*** that Alternatives 5A, 5B, 5C, 9 or 9A will have an adverse effect on three (3) of the identified historic architectural properties, i.e., **World War Memorial Bridge Over Route 52 Ship Cannel**, **Bay Front Historic District**, and **Dockside Café/Marina**. Therefore, a MOA must be developed in consultation amongst FHWA, NJDOT, and the HPO, to minimize and mitigate the adverse effects the preferred alternative will have on those three (3) historic architectural properties.

Stipulations of the MOA must include but not be limited to the following items to mitigate the direct adverse impacts on **World War Memorial Bridge Over Route 52 Ship Channel**:

1. recordation of **World War Memorial Bridge Over Route 52 Ship Channel** to Historic American Engineering Record (HAER) standards;
2. reuse or market components of the bridge structure;
3. provide interpretive displays and/or educational materials produced as a supplement to the HAER recordation;
4. place visual displays of the historic bridge on the acquired Gulf station property adjacent to the historic site, where parking would be possible; and
5. possible conversion of the north viaduct approach, north of the bascule span, into a recreational/fishing pier.

Stipulations of the MOA must also include but not be limited to the following items to minimize the visual impacts on the setting of **Bay Front Historic District**, and **Dockside Café/Marina**:

1. incorporate architectural components and detail of the historic bridge into the design of the new bridge structures;
2. investigate architectural finishes for edge walls of proposed new bridge structures which will be compatible with character defining features and materials of the historic architectural properties;

3. provide plantings of indigenous species along the base of edge walls of proposed new bridge structures;

4. use the longest spans economically feasible to minimize the visual clutter that piles usually introduce; and

5. employ landscaping at the bridge touchdown areas in Ocean City and Somers Point to soften the appearance of proposed new construction.

In addition, per HPO letter dated **April 14, 2000 (HPO-D2000-41 PROD)**, because **Bay Front Historic District** and **Somers Point Historic District** are listed in the New Jersey Register of Historic Places, this project undertaking is also subject to review under the New Jersey Register of Historic Places Act (NJRHPA) of 1970 as amended **(N.J.S.A. 13:1B-15.131 as implemented by N.J.A.C. 7:4-7.1)**. NJDOT, therefore, must submit an **Application For Project Authorization Under The New Jersey Register Of Historic Places Act** for the HPO to determine the impacts this project might have on those properties pursuant to the NJRHPA.

If you have further questions concerning this project review, please contact HPO staff Carl Nittinger at 609-984-0141.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG/cn
Log #01-0395 (01-0180, 00-0927)
c:\My Documents\106 REV\2000\HPO-K2000.100.doc
c. R. Schroeder, FHWA
A. Fox, FHWA
A. Fekete, NJDOT
D. Lambert, NJDOT
A. Qureshi, NJDOT

Ger

# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

IN REPLY REFER TO:

PL-P-00/417

November 13, 2000

**Memorandum**

**To:** National Park Service
Philadelphia Support Office
Philadelphia, Pennsylvania

**From:** Supervisor, New Jersey Field Office
U.S. Fish and Wildlife Service
Pleasantville, New Jersey

**Subject:** Review of Draft Environmental Impact Statement and Section 4(f) for Route 52 Reconstruction Project, from Somers Point, Atlantic County to Ocean City, Cape May County, New Jersey (ER-00/0762)

The U.S. Fish and Wildlife Service's New Jersey Field Office (NJFO) has reviewed the subject Draft Environmental Impact Statement (DEIS) as requested via the Environmental Review Distribution Transmittal of October 13, 2000. Attached is the Service's input for Departmental response to the New Jersey Department of Transportation (NJDOT) regarding the subject DEIS.

Previous NJFO comments regarding project alternatives are attached for reference. If you have any questions regarding any of the attached comments, please contact John Staples or Douglas Adamo of my staff at (609) 646-9310, extensions 18 and 44, respectively.

Clifford G. Day

Attachment

U.S. Fish and Wildlife Service Comments

ER-00/0762

The Department of the Interior's (Department) U.S. Fish and Wildlife Service (FWS) has reviewed the Draft Environmental Impact Statement/Section 4(f) Evaluation (DEIS) and Natural Ecosystems Technical Environmental Study (TES) (dated August 2000), provided with your October 6, 2000 letter to the Department's Office of Environmental Policy and Compliance, regarding the proposed Route 52 (causeway) reconstruction between Somers Point, Atlantic County and Ocean City, Cape May County, New Jersey. The proposed project is identified as Federal Project No. BRF-7(103) by the New Jersey Department of Transportation (NJDOT) and U.S. Department of Transportation's Federal Highway Administration (FHWA).

Information in the DEIS identifies Alternative 9, Option 1 (9-1) as the initially preferred alternative for the proposed project. The NJDOT, via letter dated August 19, 2000, provided comments regarding the FWS review (letter of June 19, 2000) of the Preliminary DEIS and TES (dated March 2000) for the proposed project. In the June 19, 2000 letter, the FWS identified Alternative 9A, Option 1 (9A-1) as having the least potential for adverse impacts on the aquatic environment within the proposed project area. As you are aware, Alternative 9A-1 would not require a realignment of the Intracoastal Waterway (ICWW) and subsequent dredging within Great Egg Harbor Bay. The FWS comments pursuant to NJDOT's August 19, 2000 letter and Preliminary DEIS were provided via letter dated September 21, 2000; however, these comments were not incorporated into the August 2000 DEIS due to time constraints (Qureshi, pers. comm., 2000). Therefore, this response serves to reiterate FWS concerns not addressed in the DEIS and TES.

According to NJDOT's August 19, 2000 letter and information provided in the DEIS, the decision to select Alternative 9-1 as the initially preferred alternative was based on the need for an uninterrupted emergency evacuation route, cost minimization (i.e., elimination of initial, operational, and maintenance costs involved with Alternative 9A-1), and compliance with safety and roadway design requirements. Implementation of Alternative 9-1 would involve construction of a fixed bridge (i.e., eliminating the existing bascule bridge), which would require a realignment of the existing ICWW in Beach Thorofare. Realignment of the ICWW would require dredging important benthic habitats, including shellfish beds, in Beach Thorofare.

## AUTHORITY

The following comments on the DEIS have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), and the National Environmental Policy Act of 1969 (83 Stat. 852; 42 U.S.C. 4321 *et seq.*), and are consistent with the intent of the FWS's Mitigation Policy (Federal Register, Vol. 46, No. 15, Jan. 23, 1981), which emphasizes that avoidance and minimization precede compensation for unavoidable adverse impacts on fish and wildlife resources and supporting ecosystems.

## FWS CONCERNS

Comments provided by FWS, with respect to consideration of Alternative 9A-1, have not been addressed; therefore, the Department is concerned that the least environmentally damaging alternative has not been selected for this proposal. The Department offers the following specific comments regarding potential adverse impacts of Alternative 9-1 (the initially preferred alternative) on benthic habitats and estuarine emergent wetlands in the project area.

Purpose and Need

The Department questions the need for a fixed bridge, rather than a bascule bridge, to provide an uninterrupted emergency evacuation route for motor vehicles. It appears that an extended closure of a bascule bridge, as proposed under Alternative 9A-1, would serve as an uninterrupted route to facilitate traffic flow during an emergency evacuation. In addition, it is unlikely, in view of advances in weather forecasting and storm warning procedures, that vessels requiring the opening of a bascule bridge would be in the ICWW during a storm that necessitates emergency evacuation. The DEIS does not provide specific information regarding traffic problems, associated with the existing bascule bridge design, that may have occurred during previous emergency evacuations.

Impacts on Benthic Habitat

Information provided in the TES indicates that many of the channels in the northern portions of Great Egg Harbor Bay, such as the proposed project area, provide ideal habitats for a variety of benthic organisms, including shellfish (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000a). Although FHWA and NJDOT (2000a) indicate that shellfish beds in Great Egg Harbor Bay are plentiful and widespread, dredging at a relatively large scale, such as proposed for Alternative 9-1, would contribute to Statewide cumulative impacts on shellfish resources. According to the DEIS, Alternative 9A-1 is the only option that would not require maintenance dredging of the ICWW.

Indirect effects of dredging, such as turbidity and substrate alteration, may cause long-term adverse impacts to benthic organisms in the bay. Loss of such resources contributes to the overall degradation of the aquatic ecosystem and, subsequently, fish and wildlife resources in the project area. In addition, shifting the ICWW approximately 210 feet northward (i.e., within approximately 50 feet of existing saltmarsh), as proposed for Alternative 9-1, would increase the potential for wetland substrate sloughing via wave action.

Safety Standards and Cost Considerations

While the Department recognizes that NJDOT is constrained by certain safety and design standards, roadway construction options that would satisfy such considerations and further

minimize wetland impacts, should be identified and evaluated. Specific safety and design standards should be identified, in relation to previous FWS recommendations, that would minimize adverse impacts on wetlands.

Wetland mitigation expenses and costs associated with dredging and dredged material disposal, may equal or exceed the final costs of Alternative 9A-1, including costs associated with operation and maintenance of a bascule bridge. The Department notes that costs associated with operation and maintenance of a bascule bridge would be minimized via an anticipated 93 percent reduction of bridge openings as proposed under Alternative 9A-1 (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000b). A total cost comparison between the alternatives indicates that Alternative 9A-1 would cost an estimated $7 million less than Alternative 9-1 (U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation, 2000b).

## SUMMARY AND RECOMMENDATIONS

To facilitate any further evaluation of alternatives, the Department requests revision of the DEIS to provide specific information regarding traffic problems associated with the existing bascule bridge. In addition, the Department recommends that the DEIS include specific roadway safety and design standards. Such information would allow the FWS and the Department to provide specific comments regarding measures to minimize adverse impacts on wetlands and benthic resources in Great Egg Harbor Bay.

Overall, the Department maintains that Alternative 9A-1, if constructed as proposals would have the least adverse impact on aquatic ecosystems, including estuarine emergent wetlands and shellfish resources, within the proposed project area. Therefore, based on the above-mentioned considerations regarding purpose and need, impacts on wetlands and shellfish resources, safety standards, and cost evaluation, the Department strongly recommends that FHWA and NJDOT re-consider selecting Alternative 9A-1 as the preferred alternative for the Route 52(1) bridge reconstruction project. The Department is opposed to the selection of alternatives that require dredging of existing benthic habitats, including shellfish beds, in Great Egg Harbor Bay.

Thank you for the opportunity to provide comments on the DEIS and TES for the proposed reconstruction of the Route 52 causeway. Should you have any questions regarding these comments pertaining to fish and wildlife concerns, please contact the FWS at:

Supervisor, New Jersey Field Office
U.S. Fish and Wildlife Service
927 North Main Street (Bldg. D)
Pleasantville, New Jersey 08232
(609-646-9310)

REFERENCES

Literature Cited

U.S. Department of Transportation Federal Highway Administration and New Jersey Department of Transportation. 2000a. NJ Route 52(1) causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County, Federal #BRF-0070103, technical environmental study, natural ecosystems. Prepared by Earth Tech, New York, New York, for the U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation in cooperation with the U.S. Army Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service. 83 pp. + appendices.

_____. 2000b. NJ Route 52(1) causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County, draft environmental impact statement, section 4(f) evaluation (volume 1). Prepared by Earth Tech, New York, New York, for the U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation in cooperation with the U.S. Army Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service. 250 pp. + appendices.

Personal Communication

Qureshi, A. 2000. Environmental Team Member, New Jersey Department of Transportation, Trenton, New Jersey.

SJTPO

Established 1993

Serving Atlantic, Cape May, Cumberland and Salem Counties

# SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION

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James B. Lewis, NJDOT

October 31, 2000

James Stevenson, Community Relations Manager
NJDOT - Office of Community Relations
1035 Parkway Avenue, PO Box 600
Trenton, NJ 08054

Dear Mr. Stevenson:

Thanks for the excellent "Connections" brochure on the Route 52 reconstruction project.

Let me take this opportunity to formally alert you to the Ocean City/Ninth Street Corridor Study, currently being conducted by a consultant team led by Orth Rodgers and Associates. This study, which arose from recommendations of the NJDOT-funded Ocean City Bike/Ped Needs Assessment of 1998, is examining various improvement packages in the Ninth Street corridor abutting the Route 52 eastern project limits.

NJDOT's Bureau of Mobility Strategies is participating in this SJTPO-funded Corridor Study, so I am confident that the two efforts will be coordinated in terms of design treatments north and south of Bay Avenue.

Sincerely,

Timothy G. Chelius, PP, AICP
Executive Director

TGC:mab

c: Scott Deeck, Lead Engineer, NJDOT - Bureau of Project Scope Development
Debbie Kingsland, Principal Engineer, NJDOT - Bureau of Mobility Strategies
Lance Weight, Section Chief, NJDOT - Bureau of Mobility Strategies
Dennis Campbell, Economic Development Coordinator, Ocean City
James Smith, Planning Director, Cape May County

NOV 17 2000

1173 E. Landis Avenue • Vineland, NJ 08360 • Tel: (856) 794-1941 • Fax: (856) 794-2549
• Website: www.sjtpo.org

# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

IN REPLY REFER TO:

FP-00/50

September 21, 2000

Mr. Nicholas Caiazza
Environmental Team Leader
Division of Project Management
New Jersey Department of Transportation
1035 Parkway Avenue, P.O. Box 600
Trenton, New Jersey 08625-0600

Dear Mr. Caiazza:

This is in response to your August 19, 2000 letter, regarding New Jersey Department of Transportation's (NJDOT) identification of Alternative 9 (Option 1) as the preferred alternative for the proposed reconstruction of the Route 52 (1) causeway (proposal) between Somers Point, Atlantic County and Ocean City, Cape May County, New Jersey. The August 19 letter included comments in reference to the U.S. Fish and Wildlife Service (Service) review (letter of June 19, 2000) of the Draft Environmental Impact Statement / Section 4(f) Evaluation (DEIS) and Natural Ecosystems Technical Environmental Study (TES) for the project, submitted by U.S. Department of Transportation's Federal Highway Administration (FHWA) and NJDOT. In our June 19 letter, we identified Alternative 9A (Option 1) as having the least potential for adverse impacts on the aquatic environment within the proposed project area. As you are aware, Alternative 9A (Option 1) would not require dredging within Great Egg Harbor Bay and involves the least adverse impacts on estuarine emergent wetlands in the proposed project area.

According to your August 19 letter, NJDOT's decision to select Alternative 9 (Option 1) was based on the need for an uninterrupted emergency evacuation route, cost minimization considerations (i.e., elimination of initial, operational, and maintenance costs involved with Alternative 9A (Option 1)), and compliance with safety and roadway design requirements. Implementation of Alternative 9 (Option 1) would involve construction of a fixed bridge (i.e., eliminating the existing bascule bridge), which would require a realignment of the existing Intracoastal Waterway (ICWW) in Beach Thorofare. Realignment of the ICWW would require dredging important benthic habitats, including shellfish beds, in Beach Thorofare. Service review of this proposal was coordinated with the New Jersey Department of Environmental Protection's Bureau of Shellfisheries, the National Marine Fisheries Service, and the Philadelphia District of the U.S. Army Corps of Engineers.

Indirect effects of dredging, such as turbidity and substrate alteration, may cause long-term adverse impacts to benthic organisms in the bay. Loss of such resources contributes to the overall degradation of the aquatic ecosystem and, subsequently, fish and wildlife resources in the project area.

Safety Standards and Cost Considerations

While the Service recognizes that NJDOT is constrained by certain safety and design standards, roadway construction options that would satisfy such considerations and further minimize wetland impacts, should be identified and evaluated. Specific safety and design standards should be identified, in relation to Service recommendations, that would minimize adverse impacts on wetlands.

Wetland mitigation expenses and costs associated with dredging and dredged material disposal, may equal or exceed the final costs of Alternative 9A (Option 1), including costs associated with operation and maintenance of a bascule bridge. The Service notes that costs associated with operation and maintenance of a bascule bridge would be minimized via an anticipated 93 percent reduction of bridge openings as proposed under Alternative 9A (Option 1) (U.S. Department of Transportation and New Jersey Department of Transportation, 2000). A total cost comparison between the alternatives indicates that Alternative 9A (Option 1) would cost an estimated $7 million less than Alternative 9 (Option 1) (U.S. Department of Transportation and New Jersey Department of Transportation, 2000).

## SUMMARY AND RECOMMENDATIONS

To facilitate any further evaluation of alternatives, the Service requests that NJDOT provide specific information regarding traffic problems associated with the existing bascule bridge. In addition, the Service requests that NJDOT provide specific roadway safety and design standards. Such information would allow the Service to provide specific comments regarding measures to minimize adverse impacts on wetlands and benthic resources in Great Egg Harbor Bay.

Overall, the Service maintains that Alternative 9A (Option 1), would have the least adverse impact on aquatic ecosystems, including estuarine emergent wetlands and shellfish resources, within the proposed project area. Based on the above-mentioned considerations regarding purpose and need, impacts on wetlands and shellfish resources, safety standards, and cost evaluation, we strongly recommend that NJDOT re-consider selecting Alternative 9A (Option 1) as the preferred alternative for the Route 52(1) bridge reconstruction project. The Service is opposed to the selection of alternatives that require dredging of existing benthic habitats, including shellfish beds, in Great Egg Harbor Bay.

Thank you for the opportunity to provide further comments on the alternatives evaluation for the proposed reconstruction of the Route 52 causeway. Should you have any questions regarding these comments, please contact John Staples or Doug Adamo of my staff at (609) 646-9310, extensions 18 and 44, respectively.

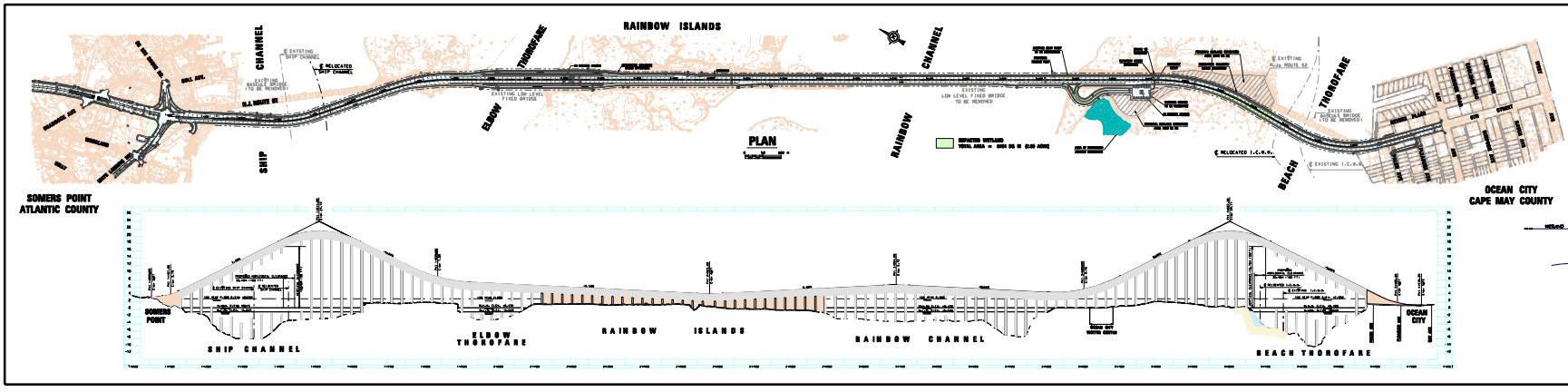
Sincerely,

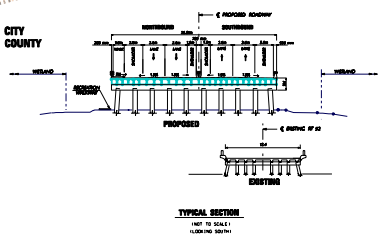
Clifford G. Day
Supervisor

Literature Cited

Earth Tech. 2000. NJ Route 52(1) causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County, Federal #BRF-0070103, technical environmental study, natural ecosystems. Prepared by Earth Tech, New York, New York, for the U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation. 83 pp. + appendices.

U.S. Department of Transportation, Federal Highway Administration and New Jersey Department of Transportation. 2000. NJ Route 52(1) causeway between City of Somers Point, Atlantic County and Ocean City, Cape May County, draft environmental impact statement, section 4(f) evaluation. New Jersey Department of Transportation, Trenton, New Jersey.




*New Jersey*
*Department Of Transportation*
*ROUTE 52*
***ALTERNATIVE 9***
OPTION 1

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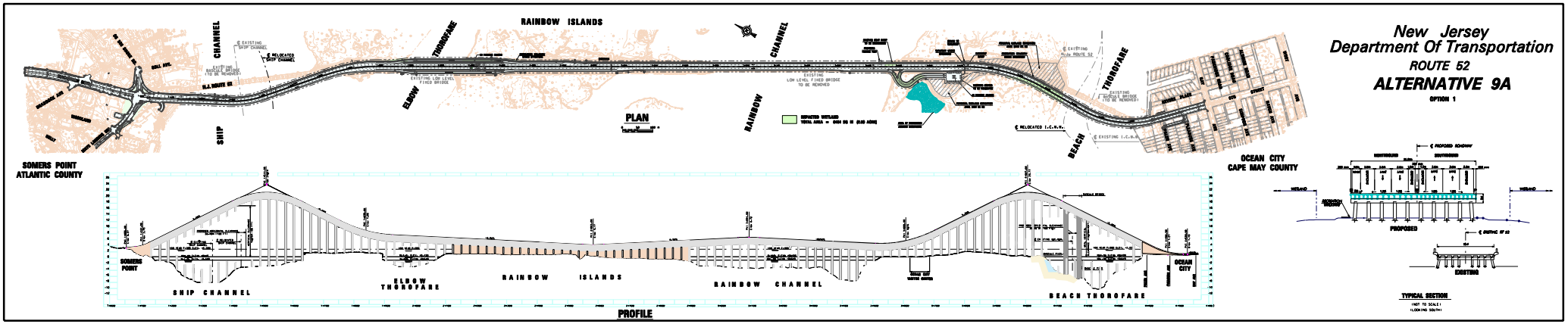


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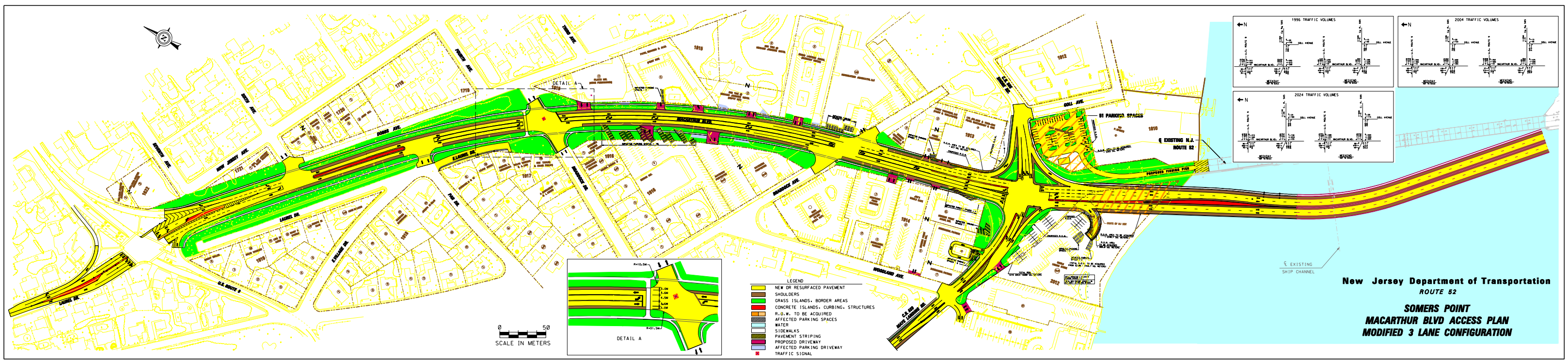
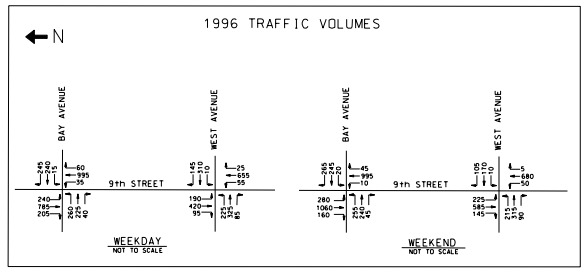
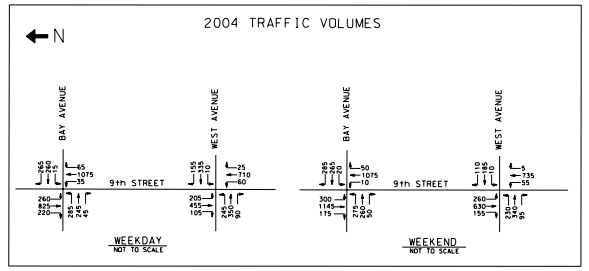


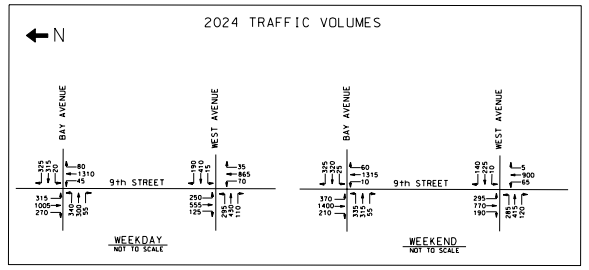

**New Jersey Department of Transportation**

*ROUTE 52*

***SOMERS POINT***
***MACARTHUR BLVD ACCESS PLAN***
***MODIFIED 3 LANE CONFIGURATION***




LEGEND

- NEW OR RESURFACED PAVEMENT
- SHOULDERS
- SIDEWALKS
- WATER
- IMPACT ATTENUATOR
- PROPOSED DRIVEWAY
- AFFECTED PARKING DRIVEWAY
- R.O.W. TO BE ACQUIRED
- GRASS ISLANDS, BORDER AREAS
- RETAINING WALL

EXISTING BASCULE BRIDGE (TO BE REMOVED)

C.L. RELOCATED I.C.W.W. (FOR ALTERNATIVE 9)

C.L. EXISTING I.C.W.W.

BEACH THOROFARE

PRANGE,FREDERICK J & CAROL L
DRANSFIELD,WILLIAN & FANNITA G
BOGUSKO,FRANK A & PATRICIA ANN
PALMER,MICHAEL & BARBARA
CLIFFORD,PHILIP & LINDA S
DEACON,THOM & SUSAN
MC CANN,CHARLES M & LINDA B. ETAL
ODONNELL,GRANGE & JOAN & JOSEPH
JONES,ROBERT
WARREN,GEOFFERY W & MILDRED I

LOSASSO,PAUL & AGNES
WALLS,JAMES A
ZETTLE,JOHN & MARGANET ETALS
ZINDAL,FRANK E, ELAINE M
FENDER,RAYMOND E & BARBARA
NITTENHOUSE,ROBERT A & JUNE C
MONASTRA,DAVID J & FUHRMAN, KARN
MILLER,TERENCE DEAN
WORTHINGTON – MCKEON & MARGANET

REVERE PLACE

BAY AVENUE

PARKRIDGE ROAD

COOLIDGE ROAD

9TH STREET

SIMPSON AVE

PALEN AVE

PLEASURE AVE

ROUTE 52 ENDS LIMIT OF JURISDICTION

BEGINNING WALL

ALLEY

EXISTING R.O.W.

R.O.W. AREA TO BE ACQUIRED – 667.0 SQ. METERS

R.O.W. AREA TO BE ACQUIRED – SCALE SEE MAP(S) ON

3.6 m
3.6 m
3.6 m
3.6 m
3.6 m

① COSTAL BANK @ COMMERCE BANK
810.02

② STILES,LOIS & CARLO
BUD'S OUTBOARD MARINE INC.
811.01

③ RAL REAL ESTATE LLC
MOBIL STATION

④ POWER TEST REALTY CO.LTD
GETTY STATION

⑤ 5.01

911

910 14.01

BUTLEDGE,NELSON & BARBARA
BEACH BUMS LIMITED

GILL,THOMAS
DOCKSIDE CAFE MARINA

⑫ BERTLAM REALITY, INC
MAB PAINTS
909

⑬ JEC FUNDING INC @
REAL EST DEPT.
ECKERD DRUGS

⑭ EXXON CORP.
EXXON STATION
908

0 50
SCALE IN METERS

# New Jersey Department of Transportation

OPTION 2
THROUGH STREET AT PALEN AVENUE

## OCEAN CITY ACCESS PLAN
Route 52