EXECUTIVE SUMMARY

This Executive Summary provides a brief overview of the Final Environmental Impact Statement/Environmental Impact Evaluation (FEIS/EIE). The complete text of all environmental documentation associated with this project may be viewed at the Connecticut Department of Transportation (ConnDOT), 2800 Berlin Turnpike, Newington, Connecticut 06131-7546. The FEIS/EIE is also available on the ConnDOT web site: www.ct.gov/dot, Plans, Projects and Studies.

ES.1 INTRODUCTION

On February 11, 1999 ConnDOT and the Federal Highway Administration (FHWA) released for circulation and review by federal, state and local agency regulatory officials and other interested parties, a Draft Environmental Impact Statement (DEIS) examining potential transportation improvement alternatives for the Route 82/85/11 Corridor. The DEIS study area included portions of the towns of Salem, Montville, Waterford and East Lyme in New London County, Connecticut. Fifteen project alternatives were evaluated in the DEIS. The alternatives were selected to cover a broad range of potential transportation options and establish a framework for comparative analysis. The DEIS was prepared and circulated pursuant to the National Environmental Policy Act (NEPA), codified in Title 23 of the Code of Federal Regulations, Part 771, Section (§) 771.119 and §771.135 (23 CFR 771.119 and 771.135) as well as Sections 22a-1a-1 through 12, inclusive, of the Regulations of the State of Connecticut.

Public hearings were held on April 7, 1999 and April 8, 1999 to solicit public and agency comment on the DEIS; the public comment period for the DEIS closed on May 21, 1999. Public comments, as well as comments received from local officials during the comment period, overwhelmingly supported extension of Route 11 on a new location along the alignment identified as $E_{(4)}$ in the DEIS. However, many comments noted substantial interest in

the Innovative Design Alternative, noting the potential to reduce impacts to private properties and sensitive natural resource features. Comments also favored the incorporation of an open space greenway along the roadway extension.

On September 19, 2001 FHWA granted approval for ConnDOT to go forward with preparation of the FEIS, advancing the $E_{(4)}$m-V3 alignment as the preferred alternative. This FEIS identifies the preferred alternative alignment and describes the coordination and public input that resulted in selection of the preferred alternative. Refinement of the initial alignment presented in the DEIS was the result of the coordination efforts among state and federal agencies and the towns that would be directly affected by the project.

Reevaluations of the DEIS were undertaken in November 2002 and June 2006 in accordance with FHWA regulations (23 CFR part 771.129), subsection "a" and NEPA regulations 40 CFR 1502.9(c)(1)(i-ii). The result was a determination that the preferred alignment advanced in the FEIS had not fundamentally or substantially changed from that presented in the DEIS. The evaluations showed that there are no new environmental factors or features in the project area or in the project concept that have changed, nor have there been changes in the laws or regulations that would significantly affect the information presented in the DEIS. It was determined that proceeding with the FEIS complied with NEPA and FHWA directives and that a supplement to the DEIS was not necessary.

ES.2 PROJECT PURPOSES AND NEEDS

Routes 82, 85 and 11 serve a vital transportation function in southeastern Connecticut as major travel routes between the capital region and the southeast shoreline area. However, this travel corridor is inadequate to safely and efficiently accommodate the volume of traffic utilizing these roadways. Routes 82 and 85 are, primarily, two-lane arterials that connect multi-lane, limited-access expressways at either end of the corridor study area. These roads currently serve both long-distance and local-access functions.

The following six key points summarize the purpose and need for transportation improvements in the Route 82/85/11 corridor as established by ConnDOT and FHWA under the NEPA process with input from the corridor advisory committee (AC):

- HIGHWAY SYSTEM LINKAGE

  To complete the final link in the limited-access highway between the southern terminus of Route 11 in Salem and I-95/I-395 in Waterford.

- ROADWAY FUNCTION AND USE

  To reduce conflicts between increased mobility/efficiency and access to local properties by separating through and local traffic.

- ROADWAY SAFETY AND ACCIDENT REDUCTION

  To improve motorist, pedestrian and bicycle safety in the corridor and reduce roadway hazards contributing to accident frequency and/or severity.

- ROADWAY CAPACITY

  To provide transportation system improvements that are capable of meeting current and projected future peak traffic demands for all vehicle classes.

- REGIONAL GROWTH AND DEVELOPMENT

  To sustain community character in evaluating long-term transportation options to meet the growing demands of residential development and the regional tourism industry.

- COMPATIBILITY WITH PLANS OF DEVELOPMENT

  To meet local, regional and statewide transportation needs while observing local growth and development goals and attempting to reduce excess burden on the corridor municipalities.

The ACOE is charged with developing a Basic Project Purpose for projects coming under their jurisdictional oversight (relative to §404 of the Clean Water Act). The ACOE has defined the Basic Project Purpose for the Route 82/85/11 corridor improvements as follows:

- ACOE BASIC PROJECT PURPOSE

  "To address existing and future year (2020) safety and capacity deficiencies in the existing Route 82 and 85 corridor."

The preferred alternative was selected because it best meets the project purposes and needs. The preferred alternative meets the ACOE **Basic Project Purpose** by alleviating existing and future traffic congestion and associated safety deficiencies on the existing arterial roadways, Routes 82 and 85.

By extending the existing four-lane, limited access Route 11 to I-95 on a new location, the preferred alternative meets the **Highway System Linkage** purpose. The preferred alternative meets the **Function and Use** purpose by separating through and local traffic. The traffic mix on existing routes would be more locally oriented, and would be more compatible with the land access function of the roads. The preferred alternative would partially meet the **Safety and Accident Reduction** purpose. The preferred alternative would improve safety on Route 82 and 85, primarily due to reductions in traffic volumes. Safety along Routes 82 and 85 will also be improved by separate ConnDOT projects, Route 85 Safety Improvements, State Projects 120-79 and 120-82, scheduled to begin construction in 2007. Safety would be improved at the I-95/I-395 Interchange as a result of improvements incorporated into the preferred alternative.

The preferred alternative would meet the **Roadway Capacity** purpose on Routes 82 and 85 and on I-95 in the study area by meeting future demand. The preferred alternative would partially meet the **Regional Growth and Development** purpose, since it would result in Routes 82 and 85 sustaining their present character while meeting growing regional travel demands. The currently undeveloped, natural land where the build alternatives are located, however, would look very different and would not sustain its existing character. Traffic volumes would be reduced on Routes 82 and 85 within the corridor, though the volumes would continue to rise in other areas to the south, such as the U. S. Route 1/Route 161 area. The preferred alternative would meet the **Compatibility with Plans of Development** purpose. The preferred alternative is consistent with local plans of development, and has been incorporated as a desired planned project. The Southeastern Connecticut Council of Governments (SCCOG) has stated its support for the preferred alternative and has included completion of Route 11 in the Regional Transportation Plan. The preferred alternative is consistent with many of the policies and growth principles of the Conservation and Development Policies Plan for Connecticut.

ES.3 PREFERRED ALTERNATIVE

ES.3.1 SELECTION OF THE PREFERRED ALTERNATIVE

The $E_{(4)}$m-V3 alignment was selected as the preferred alternative as a result of the process and coordination efforts described below between state and federal agencies and the towns that would be directly affected by the project.

Given the focus of the commentary and the apparent support for a reduced cross section alternative, an additional study was undertaken following the close of the DEIS comment period. In June 1999, the Connecticut Department of Transportation (ConnDOT) published the report *Impact Minimization Study, Evaluation of Arterial Design Options for the Route 82/85/11 Corridor*. The Impact Minimization Study studied the impact of applying modified design standards to alternatives presented in the DEIS that would minimize impacts. The $E_{(4)}$ alignment presented in the DEIS garnered the most support from local officials, regulatory agencies and the general public and thus was the favored minimized impact alignment.

The modified alignment examined in the Impact Minimization Study was termed $E_{(4)}$m. This alternative maintained the basic $E_{(4)}$ alignment, but it was modified to reduce the width of the roadway cross section, thereby minimizing impacts to wetlands. This was largely accomplished by reducing the median width between the northbound and southbound lanes and separating the directions of travel with a concrete barrier. In addition, the conceptual plan for $E_{(4)}$m called for constructing additional bridges or increasing bridge spans to minimize impacts to wetlands where crossings were unavoidable.

In comments submitted by the EPA, it was suggested that the existing roadway (Route 85) could be upgraded in a "community sensitive" manner, while still fulfilling capacity and safety needs. A *Community-sensitive Upgrade Study* was undertaken to specifically evaluate EPA's suggestion. This study, published in February 2000, showed that the "community sensitive" alternative would not meet the project purposes and needs and would not be supported by the community; therefore, a decision was made by ConnDOT and FHWA to not pursue this alternative further.

In March 2000, the ACOE requested that FHWA provide expert opinion on the community-sensitive upgrade alternative and the other DEIS Route 85 upgrade alternatives. FHWA findings were provided to the ACOE in the report, *Federal Highway Administration's Engineering Evaluation of Route 82/85 Upgrade Alternatives, August 2000.* The conclusions of this evaluation, which are included in the Correspondence section, were that the community-sensitive upgrade would not meet the long-term safety and capacity needs of the corridor, and "would only serve as a short term improvement which only temporarily addresses the safety and capacity needs of the corridor". None of the upgrade alternatives would meet the project purpose and need, or be acceptable to community residents or local officials. FHWA concluded that the upgrade alternatives would not be feasible to implement and would not be practicable.

After publication of these subsequent studies, ConnDOT and FHWA initiated a collaborative process among federal and state agencies and local officials to address remaining concerns and to reach a consensus regarding an approvable expressway configuration. Through this process, measures that could be taken to further minimize impacts were discussed and, accordingly, additional modifications were made to the conceptual plan for the roadway.

In May 2001, the ACOE convened an interagency streamlining committee to evaluate the effects of shifting a portion of the alignment to reduce impacts to aquatic resources and a large habitat block (Habitat Block No. 2). Further study took place during July and August of 2001 to determine how to best achieve this goal. Three potential variations on the $E_{(4)}$m alignment, identified as $E_{(4)}$m-V1, $E_{(4)}$m-V2 and $E_{(4)}$m-V3, were examined. On September 17, 2001, the ACOE made a determination that either the $E_{(4)}$m-V3 or $E_{(4)}$m-V1 alignment variations would satisfy the criteria for the Least Environmentally Damaging Practicable Alternative (LEDPA). The V1 variation would have resulted in substantially increased encroachments upon private properties. It would have required additional total property takes, and would have come within a few hundred feet of established neighborhoods. For this reason, it was met with strong opposition from East Lyme residents and town officials and was not selected. Alignment variation $E_{(4)}$m-V3 was determined to best satisfy the project purposes and needs, while reducing impacts. This determination was the direct result of the findings of the variation study as well as the collaborative process with the regulatory agencies and local officials.

Throughout the FEIS process, a dialog with federal regulators continued, with the most recent efforts devoted to developing a comprehensive mitigation program that appropriately compensates for unavoidable direct and indirect aquatic resources impacts.

ES.3.2 DESCRIPTION OF THE PREFERRED ALTERNATIVE

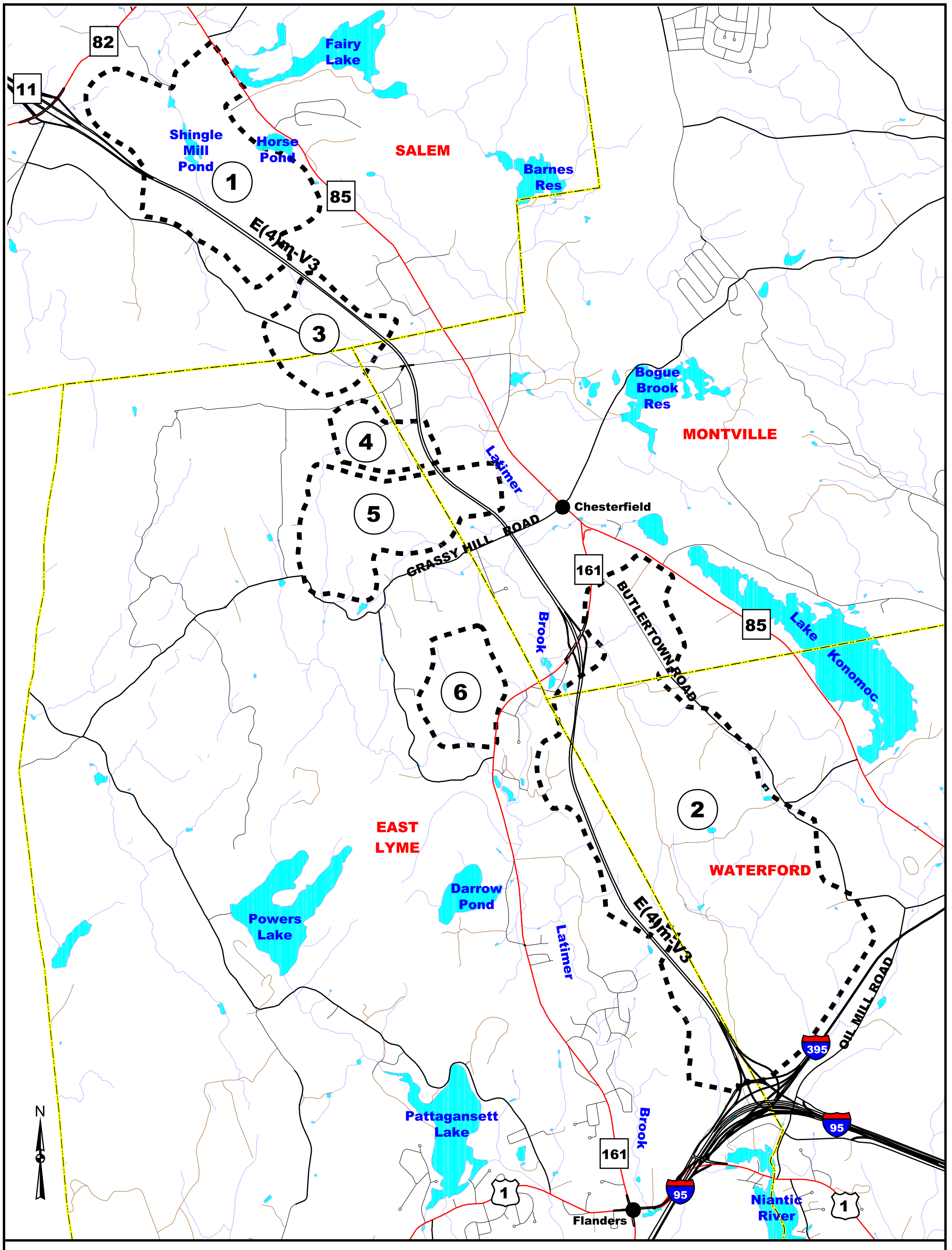
The preferred alternative alignment for the proposed extension of Route 11 is shown in Figure ES-1. It would be a four-lane limited access roadway that follows an alignment from the I-95/ I-395 interchange in East Lyme and Waterford to the existing terminus of Route 11 in Salem at Route 82. The length of this alignment would be approximately 13.7 km. (8.5 mi.). In addition, approximately 4.8 km. (3 mi.) of I-95 would be reconstructed to allow safe traffic movements at the interchange of Route 11, I-95 and I-395.

The typical roadway cross section for the preferred alternative would consist of four 3.6 m. (12 ft.) lanes, 3.0 m. (10 ft.) outside shoulders and 1.2 m. (4 ft.) inside shoulders. The opposing lanes would be separated by a concrete barrier. In general, the maximum side slopes for cut and fill areas would be 1:2 (vertical: horizontal). Metal beam rail would be utilized, as necessary, based on slopes and clear zone requirements. A maximum fill slope of 1:1 ½ would be used in certain areas to minimize wetland impacts, and steeper cut slopes would be used in areas of rock excavation. Side slopes would be contained within the right-of-way. Fourteen bridges and structures would be utilized along the alignment over streams, wetlands and roadways. A 61 m. (200 ft.) right-of-way is proposed along the majority of the alignment. However, a 152 m. (500 ft.) right-of-way will be maintained within the town of Salem, where the state currently owns the land along the proposed alignment.

The $E_{(4)}$m-V3 alignment would begin at the reconstructed I-95/I-395/Route 11 Interchange at the East Lyme/Waterford town boundary and head in a northerly direction toward Route 161. A grade-separated full service diamond interchange would be constructed at Route 161. The alignment would cross over Route 161 approximately 1,160 m. (3,800 ft.) south of the intersection of Route 85 and Route 161.

From Route 161, the alignment would continue in a northwesterly direction crossing Latimer Brook, Grassy Hill Road and Salem Turnpike Road. The alignment would then follow the existing right-of-way owned by the state of Connecticut in a northwesterly direction passing between Fawn Run and Beckwith Hill Drive and over Shingle Mill Brook just prior to splitting into two barrels to match the existing Route 11 roadway configuration in the vicinity of Route 82. The roadway would pass over Route 82 where there would be a grade separated full service diamond interchange. The northern half of this interchange was constructed in 1972 along with Route 11. The terminus of the alignment would be approximately 460 m. (1,500 ft.) northwest of Route 82, matching the existing Route 11 northbound and southbound roadway alignments.

Approximately 4.8 km. (3 mi.) of I-95 would be reconstructed in association with the construction of the interchange of Route 11, I-95 and I-395. This additional construction would be necessary because of the existing layout of the I-95/I-395 interchange. Close spacing of the adjacent interchanges (Exit 74-Route 161, Exit 75-U. S. Route 1 and Exit 80-Oil Mill Road), weaving movements and the left exit to I-395 northbound from I-95 compromise driver safety on this segment of roadway. To improve existing deficiencies in this area and



LEGEND

- E(4)m-V3
- INTERSTATE HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- DIRT ROAD
- WATER BODY
- STREAM/RIVER
- HABITAT BLOCK WITH NUMBER
- TOWN BOUNDARY

State of Connecticut Department of Transportation
Federal Highway Administration

ROUTE 11 CORRIDOR
FINAL ENVIRONMENTAL IMPACT STATEMENT
IN THE TOWNS OF
EAST LYME, MONTVILLE, SALEM, AND WATERFORD

PREFERRED ALTERNATIVE
E(4)m-V3

0 1 2 Kilometers

FEBRUARY 2003 FOR PLANNING PURPOSES ONLY

Figure ES-1

accommodate access to and from the proposed Route 11, I-95 would be reconstructed to include three lanes in each direction from immediately west of the Exit 74 (Route 161) overpass to approximately the Exit 81 (Cross Road) interchange. The left hand I-395 northbound ramp from I-95 northbound would be relocated to the right side, south of the U. S. Route 1 overpass.

The existing Exit 75 northbound I-95 off-ramp to U. S. Route 1 and southbound on-ramp to I-95 southbound would be removed. These movements would still be provided at Exit 74 (Route 161) and Exit 81 (Cross Road) located approximately 0.9 km. (0.6 mi) away. As a result of the modifications to this interchange, intersection improvements would be required at U. S. Route 1 and Route 161, and the I-95 northbound off-ramp and Route 161 intersection. Improvements would include signal modifications, pavement marking modifications and minor widening to accommodate proper lane arrangement for acceptable levels of service, based on the projected traffic volumes at this location. The existing on-ramp from Gurley Road to I-95 northbound would be removed as well as the Exit 80 - Oil Mill Road off-ramp from I-95 southbound. New ramps to and from Route 11 would be constructed in this area. Access to I-95 would be maintained by the Exit 81 - Cross Road interchange, located approximately 0.9 km. (0.6 mi.) away.

The following movements would be provided at the reconstructed I-95/I-395 interchange:

- Route 11 southbound to I-95 northbound
- Route 11 southbound to I-95 southbound
- U. S. Route 1 to I-95 northbound
- U. S. Route 1 to I-395 northbound
- I-95 southbound to Route 11 northbound
- I-95 northbound to Route 11 northbound (via I-395 northbound ramp)
- I-95 southbound to U. S. Route 1
- I-95 northbound to I-395 northbound
- I-395 southbound to U. S. Route 1
- I-395 southbound to I-95 southbound

The estimated construction, preliminary engineering and right-of-way acquisition costs, including contingencies, is estimated to range between $843,000,000 and $924,000,000, in projected year of expenditure (2013) dollars. Of this amount, between $364,000,000 and $400,000,000 is associated with the I-95/I-395/U. S. Route 1 interchange. These costs are substantially higher than those estimated for the alternatives in the DEIS. Much of the higher cost of the preferred alternative is attributed to the additional bridges and other structures added to minimize environmental impacts and as a result of the annual rate of inflation projected for the year of expenditure. The costs for the alternatives presented in the DEIS were based on 1998 dollars.

ES.3.3 OTHER MAJOR GOVERNMENT ACTIONS

ConnDOT's I-95 Branford to Rhode Island Feasibility Study, December 2004, recommended near-term and long-term improvements for the I-95 corridor, including portions of I-95 adjacent to the southern terminus of the Route 82/85/11 corridor.

ES.4 ALTERNATIVES CONSIDERED

The alternatives evaluated in this FEIS included the no build scenario, mass transit options, TSM options, Transportation Demand Management (TDM) options and several new construction, or "build" alternatives that involve either widening and upgrading existing routes or continuing Route 11 as a limited access expressway. The alternatives considered are summarized as follows:

- **No build** — Continue routine maintenance practices and implement programmed safety improvements;
- **Widening** — Increase capacity and improve safety on Routes 82 and 85 by widening existing roadways; three separate widening alternatives are considered: Alternative $W_{(4)}$ (full four-lane cross section), Alternative $W_{(4)}$m (modified four-lane cross section), and Alternative $W_{(2)}$ (two-lane cross section with improvements);
- **TSM** — Implement operational improvements without increasing roadway capacity. Such improvements consist of changes in signal timing and phasing, changes in signal actuation, coordination of signals, new signalized intersections, and increased storage bay length for turning lanes;
- **TDM/transit** — Reduce volume/shift volume peaks by expanding bus or rail services and promoting ridesharing, alternate modes, staggered work hours, etc; and
- **New location** — Provide a new limited access route on a new location from the existing Route 11 terminus to I-95/I-395 (full build); four separate alignments, including both four-lane and two-lane variations: alternatives 92PD (four-lane), $E_{(4)}$ (four-lane), $E_{(2)}$ (two-lane), $F_{(4)}$, $F_{(2)}$, $G_{(4)}$, $G_{(2)}$. The new location alternatives also included a new limited access route on a new location from the existing Route 11 terminus to Route 85 just south of Route 161, then proceeding as with the widening alternatives (partial build): $H_{(4)}$ (four-lane) and $H_{(2)}$ (two-lane).

For each of the build alternatives (widening or new location), development of the roadway cross section, location, design speed and horizontal and vertical alignments utilized ConnDOT

and American Association of State Highway and Transportation Officials (AASHTO) geometric design standards, according to the functional classification of each roadway alternative. The build alternatives are shown with the preferred alternative in Figure ES-2.

ES.5 ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

Impacts on human and natural resources estimated for the preferred alternative as compared with the no build alternative would be both beneficial and adverse. Avoidance and minimization of adverse impacts were incorporated to the greatest extent possible into the conceptual plan for the preferred alternative. Mitigation and/or compensation for unavoidable adverse impacts will be undertaken where practicable.

No impacts were identified for air quality, public water supply resources, historic architectural resources, or public parks and open space lands (Section 6(f) and non-historic Section 4(f)).

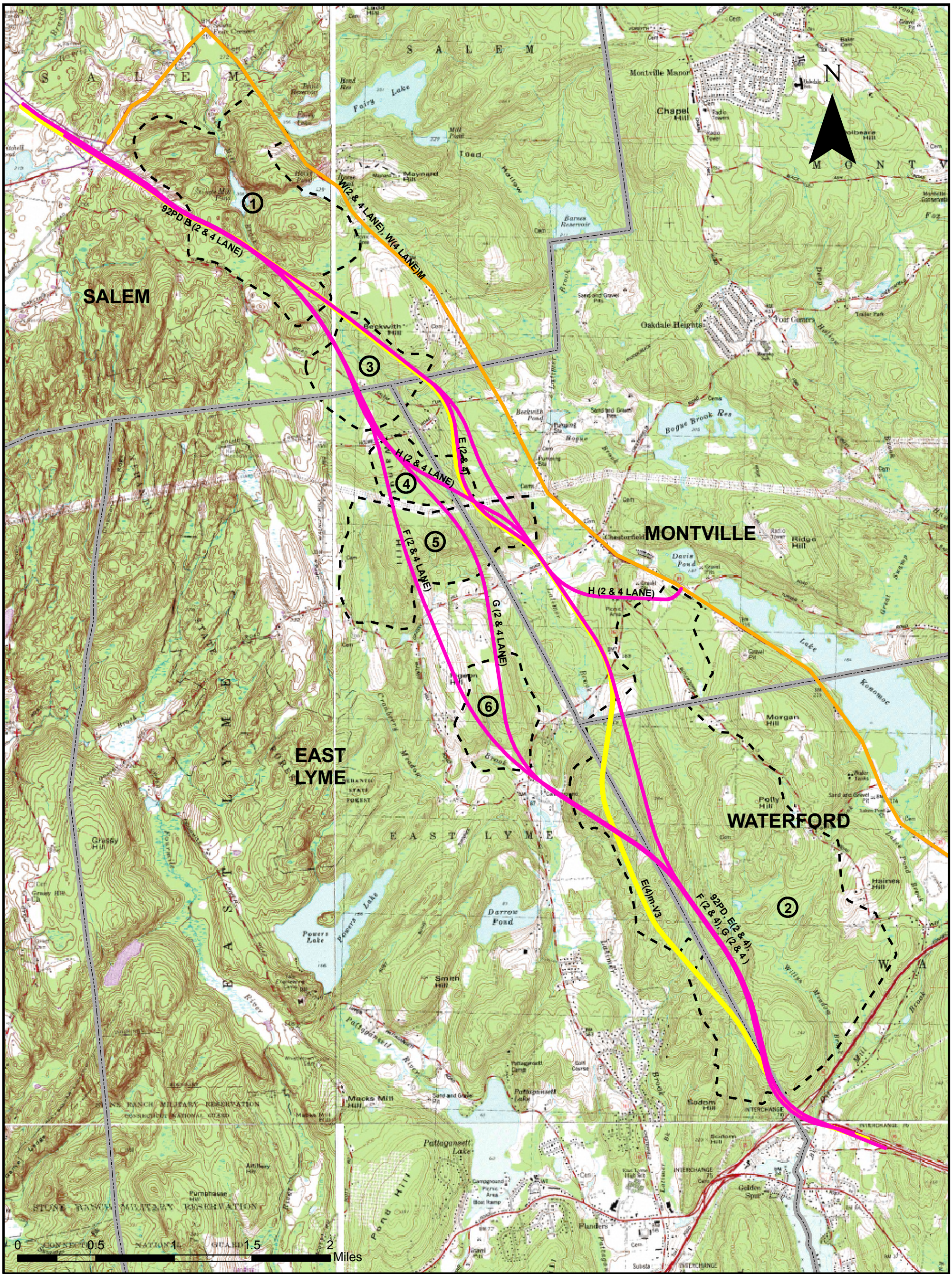
Beneficial impacts are anticipated as follows:

Traffic and transportation – Traffic congestion and poor levels of service would be alleviated in the corridor on Routes 82 and 85 by the diversion of through traffic to the Route 11 extension. This would also reduce the number of turning conflicts that contribute to crashes, thereby improving safety. Safety and capacity on I-95 at the interchange of Route 11/I-95/I-395 would be improved by the addition of a third lane and geometric improvements. The completion of the highway linkage would provide improved facilities for bus transit routes. Opportunities for the improvement of pedestrian and/or bicycle facilities through the development of an open space greenway would be possible with the preferred alternative. Planning for the greenway is already underway as a separate effort by the Route 11 Greenway Authority Commission (Route 11 GAC), which was established by Public Act 00-148 (May 26, 2000). The greenway is being planned as a corridor of open space located generally parallel to the proposed roadway alignment.

Emergency management – Designated emergency evacuation routes from the shoreline that utilize the Route 82/85/11 corridor would experience improved safety and capacity by the availability of a four-lane, limited access roadway without traffic signals and side streets.

Socioeconomics – The preferred alternative would improve access to existing and planned commercial and industrial zones in the corridor. It would improve highway linkage between regional destinations in the Hartford and the New London areas (e.g. Bradley International Airport, State Pier New London). Temporary employment and business opportunities would be created by the construction of the roadway.

Visual and Aesthetics – A reduction in traffic congestion along Route 85 would improve quality of life for local residents and allow Route 85 and intersecting streets to retain more of a



LEGEND

- 1998 ROUTE 82/85 WIDENING/ UPGRADE ALTERNATIVE
- 1998 EXPRESSWAY ALTERNATIVE
- PREFERRED ALTERNATIVE E(4)m-V3
- HABITAT BLOCK

NOTE: INTERCHANGES ARE NOT SHOWN Jan 2007

State of Connecticut Department of Transportation
Federal Highway Administration

ENVIRONMENTAL IMPACT STATEMENT (EIS)
ROUTE 82/85/11 CORRIDOR

IN THE TOWNS OF
SALEM, MONTVILLE, EAST LYME, WATERFORD

1998 BUILD ALTERNATIVES AND PREFERRED ALTERNATIVE

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Figure ES-2

local rural character. Views from the new roadway would be scenic, similar to the existing section of Route 11.

Hazardous Contamination Sites – For construction of the preferred alternative, additional site investigations will be required and any contaminated sites encountered would be cleaned in accordance with applicable state and federal laws.

Adverse impacts were identified for:

Noise – Noise modeling predicted a noise level impact at one residential location where the noise level increase was estimated to be 15 decibels over the 2020 no build condition. An additional five sensitive noise receptors would exceed FHWA Noise Abatement Criteria under both the 2020 no build and build conditions, and therefore were considered for noise mitigation.

Biological Diversity – The preferred alternative would have the following impacts on vegetation and wildlife:

Vegetation: The $E_{(4)}$m-V3 alignment would impact the two large forest blocks, Habitat Block Nos. 1 and 2 and three of the smaller forest blocks, Habitat Block Nos. 3, 4 and 5 through vegetation clearing and fragmentation. This alignment would result in the direct loss of 56.9 ha. (140.6 ac.) of forest habitat. In addition to the direct impact of land clearing for this alignment, indirect impacts associated with vegetation changes will extend outward from the roadway alignment, further fragmenting these forest blocks.

Fisheries/Aquatic Impacts: The $E_{(4)}$m-V3 alignment would have 13 stream crossings, including eight perennial and five intermittent streams and one pond. Bridge and/or culvert construction would require land clearing and placement of fill in adjacent streams. Fisheries impacts may include elevated water temperatures near areas cleared of vegetation, and stormwater pollution. Temporary impacts to Odonata and other aquatic invertebrates at these locations may result from construction activities. Potential impacts to watercourses that could adversely affect Odonata and other aquatic invertebrates include degradation of water quality (e.g. via turbidity, pollutants, etc.), alterations in water temperature, quantity, and/or flow rates, clearing of vegetation, erosion and sedimentation, and changes in other physical and chemical properties of the stream reach.

Terrestrial Biota: Impacts to habitat attributes that would affect a range of terrestrial species of invertebrates, birds, herpetofauna, and mammals include direct impact to four seasonal pools and the upland area around 28 seasonal pools; and direct and indirect impacts and fragmentation of two large and three small habitat blocks and three wildlife corridors.

Threatened and Endangered Species – Direct or indirect impacts to nine listed species in 11 sites, including one FWS Endangered Species Act (ESA) candidate species under review, are anticipated. The nine species include: three state special concern plant species – creeping bush-

clover, New England grape, and slender needle grass; two state special concern bird species – Bobolink and Brown Thrasher; one state special concern herpetofauna species – eastern ribbon snake; and two state threatened invertebrates – tiger spiketail (dragonfly) and frosted elfin (butterfly); and one FWS ESA candidate species of mammal – New England cottontail.

Topography and Geology – Total earth cuts required would be approximately 4,241,300 m^3 (5,547,100 y^3), with almost half occurring at the interchange of Route 11 and I-395/I-95. The total volume of fill required would be 2,677,000 m^3 (3,501,200 y^3). Approximately one third of total fill would occur at the Route 11/I-395/I-95 interchange. The deepest cut would be approximately 25 m. (81 ft.) cut and would occur at the I-95/I-395 interchange. The highest fill would be approximately 15 m. (49 ft.) and would occur south of the Route 161 interchange, east of Quailcrest Road. There is some potential that rock cuts south of the Montville/Waterford town line, east of Route 161 in East Lyme could expose bedrock formations known to produce acidic runoff in areas to the north of the corridor. Any surplus material from excavations would be disposed of by the construction contractor in accordance with ConnDOT Standards for Road, Bridges, and Incidental Construction.

Water Resources and Water Quality – The alignment would cross 8 perennial and 5 intermittent streams and 1 pond. With application of the appropriate mitigation measures, the percentage of storm events producing pollutant levels that exceed EPA's acute aquatic life criteria for lead, zinc and copper would be 4%, 21% and 92%, respectively. The pollutant concentrations for lead and zinc levels would be below the EPA's Nationwide Urban Runoff Program (NURP) suggested values and the percentage of storms exceeding NURP for copper would be 12%. No increases in the concentrations of sodium and chloride were identified as a result of the project. The preferred alternative would impact .68 ha (1.7 ac) of high-yield groundwater aquifer area.

Wetlands – Direct impacts to approximately 6.7 ha. (16.6 ac.) of wetlands were estimated, including four seasonal pools. The greatest amount of impact would occur in the Latimer Brook watershed. Indirect impacts may occur in some situations where construction of the roadway, bridge piers or cut slopes could alter hydrology within portions of a wetland system. Indirect impacts from stormwater runoff and invasive species may occur. Twenty-eight seasonal pools would be indirectly impacted by construction within the upland area.

Floodplains – Floodplain impacts estimated are 1.17 ha (2.9 ac). The majority of these impacts would occur along Latimer Brook at the Route 161 interchange and along Oil Mill Brook at the I-95 interchange. Other areas of impact would occur along Shingle Mill Brook in Salem and Latimer Brook near Grassy Hill Road.

Land Use – Construction of $E_{(4)}$m-V3 requires the total taking of 11 residential houses, six total takings of parcels of vacant land, and the partial taking of land from 33 parcels. All of the houses are located in Montville; two of these involve new homes constructed since publication of the DEIS in 1999.

Farmland – The preferred alternative would require the taking of 3.4 ha (8.4 ac) of prime farmland. The farmland consists of approximately 2.3 ha (5.8 ac) of currently active hayfields and the remaining impact area consists of residential uses. This impact would not preclude farming on adjacent areas of prime farmland.

Socioeconomics – Property acquisitions would result in the loss of jobs for two employees of a home-based business and the loss of municipal tax revenue on the acquired properties.

Historic and Archaeological Resources – Preferred alternative $E_{(4)}$m-V3 will affect 16 NRHP-eligible sites. Seven of the sites are also contributing resources within the collectively eligible Wolf Pit Hills potential archaeological district. All but one of these sites will be impacted by the construction of the preferred roadway. In consultation with the SHPO, it was determined that the 16 archaeological sites are chiefly significant for their information value. These sites have minimal value for preservation in place, a requirement for consideration under Section 4(f) of the Department of Transportation Act of 1966. Consequently, it is appropriate to mitigate the project effects by undertaking data recovery at the sites. In accordance with Section 106 of the National Historic Preservation Act, a draft MOA has been executed concerning the protection of identified archaeological resources, including the establishment of an archaeological preserve. Because preferred alternative $E_{(4)}$m-V3 would not affect resources qualifying for protection under Section 4(f), a final Section 4(f) Evaluation was not necessary.

Visual and Aesthetics – Views of the roadway would be most apparent at overpasses crossing local roads, interchanges, and near several residential neighborhoods. Distant views of the new roadway and in particular, the interchange at I-395/I-95 could occur from the numerous hilltops surrounding the corridor, particularly in winter. At the interchange, the greatest increase in elevation would be 8.5 m (28 ft.) over existing interchange elevations. The total area covered by the existing interchange is 25 ha. (62 ac.), while the proposed interchange would cover an area of 55 ha. (137 ac.).

Construction Impacts – Any build alternative would have short-term impacts during the construction phase. These impacts are likely to include noise, dust, sedimentation and erosion, and disruption of traffic.

A comparison of the major impacts of the preferred alternative and all other alternatives considered is provided in Table ES-1.

TABLE ES-1 COMPARISON MATRIX: OVERVIEW OF IMPACTS BY ALTERNATIVE

PROPOSED ALTERNATIVE	WETLANDS	NUMBER OF HABITAT BLOCKS	HABITAT BLOCK AREA	CLASS I & II LANDS	HIGH YIELD AQUIFERS	LISTED[1] SPECIES 2004-2005 SURVEY	PRIME FARMLAND	FLOODPLAINS	HISTORIC/ ARCHAEOLOGICAL	STRUCTURES POTENTIALLY AFFECTED	AIR QUALITY *MICROSCALE ANALYSIS/ MESOSCALE ANALYSIS	NUMBER OF NOISE RECEPTORS EXCEEDING CRITERIA[2]	POTENTIAL/KNOWN HAZARDOUS WASTE/ CONTAMINATED SITES	COST[4] (MILLIONS)
Preferred Alternative ***(Data based on 2000-2005 impact minimization studies, FEIS analyses and mitigation planning studies for the preferred alternative)***														
$E_{(4)}$m-V3	**6.7 ha (16.6 ac)**	**>200 ha - 2 50-200 ha - 3**	**56.9 ha (140.6 ac)**	**None**	**0.68 ha (1.7 ac)**	**9**	**3.4 ha (8.4 ac)**	**1.17 ha (2.9 ac)**	**None/ Yes**	**11 dwellings**	*No CO violations/ VOC & CO < No Build NO_x > No Build	**1**	**21 [3]**	**$843 to $924**
Alternatives	*(Data based on 1999 Draft EIS impact analysis for 15 alternatives)*													
No Build	None	None	None	None	None	None	None	None	None/ None	None	*No CO violations	4	None	None
$W_{(4)}$	2.07 ha (5.12 ac)	>200 ha - 2 50-200 ha - 0	1.8 ha (4.4 ac)	I - 2.99 ha (7.39 ac) II- 0.52 ha (1.28 ac)	3.5 ha (8.7 ac)	1	0.32 ha (0.78 ac)	1.6 ha (3.9 ac)	11 properties/ Yes	32 dwellings 7 commercial 1 institutional	*No CO violations/ VOC & CO < No Build NO_x < No Build	4	20	$41.0
$W_{(4)}$m	1.52 ha (3.77 ac)	>200 ha - 2 50-200 ha - 0	1.4 ha (3.5 ac)	I - 2.47 ha (6.06 ac) II- 0.44 ha (1.09 ac)	1.8 ha (4.3 ac)	1	0.26 ha (0.65ac)	1.1 ha (2.7 ac)	11 properties/ Yes	27 dwellings 7 commercial 1 institutional	*No CO violations/ VOC & CO < No Build NO_x < No Build	4	20	$33.0
$W_{(2)}$	1.37 ha (3.37 ac)	>200 ha - 2 50-200 ha - 0	1.2 ha (3.0 ac)	I - 2.42 ha (5.96 ac) II- 0.46 ha (1.15 ac)	1.3 ha (3.3 ac)	1	0.18 ha (0.45 ac)	1.0 ha (2.4 ac)	11 properties/ Yes	17 dwellings 3 commercial	*No CO violations/ VOC & CO = No Build NO_x = No Build	4	20	$31.1
TSM	0.26 ha (0.65 ac)	None	None	None	0.2 ha (0.5 ac)	None	0.12 ha (0.3 ac)	0.2 ha (0.5 ac)	None/ None	2 dwellings 3 commercial 2 institutional	*No CO violations/ VOC & CO = No Build NO_x = No Build	4	7	$1.7
TDM/Transit	None	None	None	None	None	None	None	None	None/ None	None	*No CO violations/ VOC & CO = No Build NO_x = No Build	4	None	$1.4[5]
92PD	14.17 ha (35.01 ac)	>200 ha - 2 50-200 ha - 2	59.2 ha (146.2 ac)	None	1.6 ha (4.1 ac)	9	6.32 ha (15.61 ac)	2.7 ha (6.6 ac)	1 properties/ Yes	31 dwellings 16 commercial	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	2	$255.6
$E_{(4)}$	14.27 ha (35.26 ac)	>200 ha - 2 50-200 ha - 3	63.8 ha (157.6 ac)	None	1.4 ha (3.5 ac)	9	6.32 ha (15.61 ac)	2.3 ha (5.6 ac)	1 properties/ Yes	22 dwellings 16 commercial	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	2	$255.2
$E_{(2)}$	7.89 ha (19.50 ac)	>200 ha - 2 50-200 ha - 3	47.5 ha (117.3 ac)	None	0.5 ha (1.1 ac)	9	5.93 ha (14.65 ac)	1.2 ha (3.0 ac)	None/ Yes	13 dwellings	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	2	$154.7
$F_{(4)}$	11.62 ha (28.72 ac)	>200 ha - 2 50-200 ha - 4	68.3 ha (168.7 ac)	None	1.9 ha (4.6 ac)	8	34.49 ha (85.23 ac)	1.8 ha (4.5 ac)	2 properties/ Yes	29 dwellings 16 commercial 2 institutional	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	3	$329.7
$F_{(2)}$	6.21 ha (15.35 ac)	>200 ha - 2 50-200 ha - 4	51.6 ha (127.5 ac)	None	0.8 ha (2.1 ac)	8	30.55 ha (75.48 ac)	0.7 ha (1.6 ac)	1 properties/ Yes	16 dwellings 2 institutional	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	3	$213.1
$G_{(4)}$	13.23 ha (32.69 ac)	>200 ha - 2 50-200 ha - 4	68.3 ha (168.7 ac)	None	2.9 ha (7.2 ac)	8	25.58 ha (63.19 ac)	2.3 ha (5.8 ac)	3 properties/ Yes	38 dwellings 16 commercial 2 institutional	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	3	$344.8
$G_{(2)}$	7.93 ha (19.59 ac)	>200 ha - 2 50-200 ha - 4	51.6 ha (127.5 ac)	None	1.1 ha (2.6 ac)	8	21.21 ha (52.40 ac)	1.0 ha (2.4 ac)	2 properties/ Yes	24 dwellings 2 institutional	*No CO violations/ VOC & CO < No Build NO_x > No Build	7	3	$224.6
$H_{(4)}$	4.40 ha (10.87 ac)	>200 ha - 2 50-200 ha - 3	38.1 ha (94.1 ac)	I - 2.98 ha (7.36 ac) II- 0.52 ha (1.28 ac)	3.0 ha (7.3 ac)	8	16.73 ha (41.35 ac)	1.2 ha (3.0 ac)	4 properties/ Yes	28 dwellings 1 commercial	*No CO violations/ VOC & CO < No Build NO_x > No Build	8	14	$113.6
$H_{(2)}$	3.0 ha (7.41 ac)	>200 ha - 2 50-200 ha - 3	28.8 ha (71.1 ac)	I - 2.41 ha (5.95 ac) II- 0.46 ha (1.15 ac)	1.0 ha (2.5 ac)	8	7.40 ha (18.28 ac)	0.6 ha (1.5 ac)	4 properties/ Yes	20 dwellings	*No CO violations/ VOC & CO < No Build NO_x > No Build	8	14	$81.9

1 = State or federal endangered, threatened, special concern or candidate species identified during the 2004-2005 biological surveys. Note: Surveys were not conducted for portions of the W, E, F, G and H alternatives.
2 = Does not include the number of receptors already exceeding criteria (NAC) under existing conditions
3 = Identified through a detailed Corridor Land Use Evaluation for the preferred alternative (includes low, moderate and high risk sites)
4 =Construction cost including estimated ROW acquisition costs; Alternatives in 1999 dollars; Preferred alternative E(4)m-V3 in 2013 year of expenditure dollars
5 = Cost of implementation for Route W only

ES.6 MITIGATION COMMITMENTS

In addition to impact avoidance and minimization measures that were incorporated into the conceptual plan for the preferred alternative, the following actions are planned to mitigate unavoidable project impacts.

Noise

- Provision of two noise barriers for five receptors near the Route 11/I-95/I-395 interchange. Specific site conditions along the alignment will be reassessed, and the noise analysis updated, during the roadway design process, which may result in the addition of noise abatement in other locations.

Biological Diversity, Wetlands and Surface Waters

The following measures were included in the Mitigation and Compensation Framework (Appendix C). The Framework represents a commitment on the part of the ACOE, FHWA, ConnDOT, EPA, FWS and DEP to work together to further develop the conceptual strategies for mitigation and compensation of the direct and indirect wetland impacts during the design and permitting phase of the project. The process for accomplishing this goal is also outlined in the Framework.

- Best management practices will be followed in accordance with Connecticut Guidelines for Soil Erosion and Sedimentation Control to minimize sedimentation impacts on the water quality of perennial and intermittent streams and wetlands, and to protect wetland functions and values as defined in the ACOE *The Highway Methodology Workbook, Supplement* (e.g. fish/shellfish, aquatic invertebrate, and other wildlife habitat, nutrient removal/retention/transformation, sediment/toxicant retention, etc).
- Stormwater systems will be designed in accordance with the DEP Stormwater Quality Manual and ConnDOT Drainage Manual to minimize roadway runoff to streams and wetlands to protect aquatic functions and values (e.g. nutrient production and export, surface water flow patterns and groundwater recharge and discharge, wildlife habitat, etc.).
- Stormwater systems will be designed to provide the level of treatment necessary to ensure that stormwater discharges will not result in degradation of the physical, chemical or biological integrity of the receiving waters.
- Aquatic habitat enhancements will be incorporated to mitigate unavoidable indirect impacts, such as: re-vegetation of stream banks and/or upland buffers, restoration of natural stream channel meanders, and installation of rock weirs, boulders, or J-hook structures for fish habitat.
- Compensatory flood storage features will be incorporated to mitigate floodplain impact.
- Reduced vegetation clearing or prompt replacement with native, non-invasive plantings will be employed.

- Light reduction techniques will be utilized.
- Over-sized culverts that allow wildlife passage will be incorporated.
- To mitigate wildlife mortality caused by collisions with vehicles during roadway crossings an open median will be utilized in areas without bridges or other passages. The design will incorporate a 100 foot wide vegetated median without concrete barrier to provide a safe refuge for wildlife crossings at three locations within existing habitat blocks.
- Direct impacts to 16.6 acres of wetlands will be compensated by the full replacement of permanently lost or degraded wetland functions and values through restoration or establishment of wetlands, either near the impact site or within other ecologically appropriate landscapes. Refer to Appendix C for further detail.
- Indirect impacts to wetlands and wildlife habitat will be compensated by preservation of a minimum of 686 acres of habitat that has high ecological and biodiversity values. This will require acquisition and/or protection of blocks of land of sufficient size to ensure the long-term viability of the high-value habitat to be compensated. Additional acreage may be required if the preservation areas do not meet all the qualities/attributes that characterize the impacted high-value/high-biodiversity habitat. Refer to Appendix C for further detail.

Threatened and Endangered Species

- ConnDOT and FHWA will conduct additional surveys for listed species during the design and permitting phase of the project. If small whorled pogonia is found in the area of direct or indirect effects of the project, FHWA will consult with the FWS and will not authorize or fund any construction contracts or construction prior to completing the required ESA consultation for the project. FHWA will also ensure that appropriate reasonable and prudent conservation measures are implemented for any impact to the small whorled pogonia.
- The status of the FWS ESA candidate species (New England cottontail) that was detected within the project limits, and future changes to listed resources under the ESA and on the DEP list will be monitored during the design, permitting, and construction phases of the project. Any action(s), including possible Section 7 consultation under the ESA, that are determined to be necessary as a result of changes to these lists and/or the identification of listed species within the project limits, will be conducted as required by federal and/or state law or regulation.
- Priorities for habitat preservation described above include acquisition and/or protection of land containing habitat, or has the potential for creation of habitat, for any endangered species impacted by the project.

Topography and Geology

- Minimize and balance the volumes of cut and fill to the greatest extent possible. Any surplus material from excavations would be disposed of in accordance with ConnDOT Standards for Road, Bridges, and Incidental Construction.

- Testing of bedrock to be undertaken in excavation areas identified to have the potential for pyritic (iron sulfide) components that could cause acidic runoff. Implementation of treatment using detention and neutralization of runoff. Restrictions on use of this material in construction.

Floodplains

- Compensatory flood storage features will be incorporated to mitigate floodplain impact.

Land Use

- Relocation assistance for displaced property owners in accordance with state and federal law. Refer to Appendix F for relocation policy information.

Historic and Archaeological Resources

- Stipulations for taking into account the effect of the project on historic and potentially significant archaeological resources are outline in the Memorandum of Agreement (MOA) between FHWA and the SHPO included in Appendix G.

Visual and aesthetics

- Screening of the roadway in residential areas using land berms, minimizing clearing of existing vegetation, plantings of native, non-invasive trees and shrubs.

Construction

Provisions for minimizing construction impacts will be incorporated into the final design; these include:

- Noise limits of 90 dBA at the nearest residence or occupied building.
- Prevention of fugitive dust emissions by wetting and stabilization, cleaning paved roads, and minimizing the amount and duration of exposed earth.
- Compliance with all pertinent state and federal regulations relative to exhaust emission controls and safety for construction equipment.
- Erosion and sediment control measures, as noted above in the Mitigation and Compensation Framework.
- Development of a Maintenance and Protection of Traffic plan.

Under a separate but related project, the Route 11 GAC is developing a greenway that will provide additional mitigation above and beyond that which will be undertaken by ConnDOT and FHWA to mitigate environmental impacts of the roadway project. The greenway will be a corridor of open space located generally parallel to the proposed roadway alignment. The properties to be considered for acquisition are evaluated for their potential use in natural and cultural resources preservation and passive recreation (Route 11 GAC Greenway Development Plan 2005).

ES.7 AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

EPA and FWS do not agree with the ACOE's determination that the preferred alternative is the least environmentally damaging practicable alternative (LEDPA). Further, EPA and FWS disagree that it is necessary to defer certain detailed analyses until the project design stage (e.g. stormwater design, analysis of hydrologic effects of cuts and fills, runoff impacts, development of a compensatory mitigation plan, and additional listed species surveys) FWS has also advised FHWA that they think the purpose and need statement and the range of alternatives studied should be revised.

A general compensatory mitigation plan for project impacts is outlined in the *Compensation and Mitigation Framework*, provided in Appendix C. The development of a specific plan was deferred until the design and permitting phase of the project to allow sufficient time for the location and design of mitigation and compensation sites and for additional state and federal agency coordination.

EPA and FWS have also taken the position that a supplement to the DEIS should have been undertaken before the FEIS was completed to address the aforementioned issues and new information developed since the DEIS was published. The need for a supplement was addressed in the Reevaluations (Appendix A). Written correspondence relative to these issues is included in the Correspondence section.

Another unresolved issue is related to on-going studies of improvement options for I-95 in the vicinity of the proposed Route 11/I-95/I-395 interchange. While the interchange subcommittee concurred on the preferred interchange concept (Section 7.1), the towns of East Lyme and Waterford continued to express concern about the closing of the I-95 Exit 75 northbound off-ramp to Route 1 (see Correspondence March 1, 2002 and ConnDOT reply March 21, 2002).

A financial plan indicating the sources of funding for the Preferred Alternative has yet to be developed. While it has been noted in the Statewide Transportation Improvement Program, it has not yet been programmed or slated for funding in the State Implementation Plan. Both a project management plan and a financial plan will be required, pursuant to Section 106(h) of title 23, United States Code, as amended, prior to the authorization of federal funding for any of the subsequent project phases (preliminary engineering, rights-of-way, or construction).

ES.8 FEDERAL AND STATE ACTIONS REQUIRED FOR THE PROPOSED ACTION

Record of Decision: A ROD must be issued by FHWA following the release of the FEIS and before the initiation of project design in accordance with 23 CFR 771.127. **Note**: FHWA may publish a Notice of Limitation on Claims for Judicial Review in the Federal Register following the issuance of a ROD for this project in accordance with 23 USC §139 (*l*) (1).

Connecticut Environmental Policy Act (CEPA): The Connecticut Office of Policy and Management must approve the content, adequacy and distribution of the FEIS/EIE as required by CEPA (Connecticut General Statutes (CGS) §22a-1 through 13).

Federal Water Pollution Control Act (Clean Water Act) and §404 Wetlands Permit: under the Clean Water Act of 1972 (33 USC§ 1251 *et seq.*) and *Section 10 of the Rivers and Harbors Act of 1899* (33 USC §403).

Clean Air Act Conformity Determination: A "project-level conformity determination" in accordance with 40 CFR 93 is included in Section 5.3.5. The preferred alternative has been determined to be in conformity with the Clean Air Act, as amended, pursuant to all applicable EPA regulations currently in effect as of the date of approval of this FEIS. Conformity re-determinations may be required in the future pursuant to 40 CFR 93.104.

Hazardous Materials Regulations: Compliance will be based on site investigations and environmental audits of candidate hazardous waste sites in order to satisfy due diligence requirements resulting in the declassification of the sites, avoidance, or restoration, prior to construction at those sites.

Historic Preservation Act: Project activities must be coordinated through the State Historic Preservation Officer (SHPO) and the Federal Advisory Council on Historic Preservation in accordance with the stipulations of the Memorandum of Agreement (MOA) executed for this project.

Inland Wetlands and Watercourses Act (IWWA): The IWWA (CGS §22a-36 through §22a-45), as amended, requires that once the project is in the design and permitting phase, DEP will review all findings of fact relative to the identification, function, and value of those wetland and surface water resources that may be directly or indirectly impacted by the final alignment selected as the proposed project.

Water Quality Certification (CWA §401): Under the authority of the Clean Water Act, as amended (§401 33 U.S.C.), the DEP must issue certification that a project will not compromise established state water quality standards. DEP has no longer than one year to process the §401 Certification. Issuance of a §401 Water Quality Certification is part of the DEP unified permit process and it recognizes that issuance by the ACOE of a §404 permit is contingent on the issuance of a §401 Water Quality Certification by DEP.

Tidal Wetlands Act/Permit: DEP's Tidal Wetland Act and regulations are promulgated under the authority of §22a-28 through §22a-35, as amended by Public Acts 79-170 and 80-356, and §22a-6 of the General Statues. The preferred alternative could indirectly impact tidal wetlands and may require a permit.

Coastal Consistency Review: The Connecticut CAM Program was established in 1974 under the auspices of the Federal Coastal Zone Management Act of 1972. To the extent that parts of this project will occur within the area mapped as Coastal Boundary and will affect coastal resources as defined by this regulation, a Coastal Consistency Review will be needed.

National Pollutant Discharge Elimination System (NPDES) Permit: Under §402 of the Clean Water Act (as amended (33 USC § 1251 *et seq*.), DEP is granted responsibility through the Water Discharge Permit Regulations (CGS §22a-430-3, as amended), to establish permit criteria and regulate both direct discharges and nonpoint source (CWA §319) discharges. NPDES/General Stormwater Discharge Permit requirements would have to be addressed

Stormwater and Floodplain Management Certification: Administered by DEP, the pertinent standards are specified in CGS §25-68d and §25-68h of the Regulations of Connecticut State Agencies.

Indirect Sources of Air Pollution Regulations: According to the state regulations for the Abatement of Air Pollution (CGS §22a-174-100), projects that produce an indirect source of air pollution are required to obtain an Indirect Source permit.

Final Design and Rights-of-Way Acquisition: Final roadway and mitigation design and acquisition of lands for rights-of-way and mitigation areas.