New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

JCB
B

Her Excellency, Governor Margaret Wood Hassan
and the Honorable Council
State House
Concord, New Hampshire 03301

Division of Finance
May 16, 2016

REQUESTED ACTION

Pursuant to RSA 6:13-d authorize the State Treasurer, as requested by the Commissioner of the Department of Transportation to enter into a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan from the United States Department of Transportation in the amount of $200,000,000 to provide funding for the widening of Interstate 93 from Salem to Manchester upon the date of Governor and Council approval through June 1, 2034. 100% Agency Income

Loan proceeds usage by state fiscal year (in millions).

FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	TOTAL
$6.1	$50.1	$51.9	$51.5	$33.0	$7.4	$200.0

Funding is available as follows for debt service payments:
04-96-96-963015-8910
SB367 Capital Investment
044-500405 Debt Service

EXPLANATION

The Department requests authorization to enter into a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan in the amount of $200,000,000 to fund the widening of Interstate 93 from Salem to Manchester. The Department is entering into this agreement to secure funding at a more favorable rate than conventional financing would allow. The State received approval for the rural interest rate in May 2015 and is estimated to be approximately 1.10%. Attached is a draft copy of the estimated Debt Service schedule. To secure the favorable terms of the TIFIA loan, the State has deferred principal repayment to provide funding for rural paving and bridge work as funded through the Road Toll Revenue increase in RSA 260:32. The attached loan agreement is in substantially complete form with the expectation that only the interest rate will change on the date of the closing, which is expected to occur on May 24, 2016.

The TIFIA Loan Agreement has been reviewed and approved by the Attorney General's Office as to form and substance. The Attorney General's Office has reviewed and approved the proposed procedure for executing said documents; however, it will conduct a final review at the anticipated May 24, 2016 closing to ensure that the agreement has been properly executed by all parties. At that time, both the Attorney General's Office and outside bond counsel will provide Opinions of Counsel letters which will be consistent with the terms contained in Exhibits H-1 and H-2 of the TIFIA Loan Agreement.

6:13-d Authority to Borrow; Certain Transportation Projects. –
I. The state treasurer, as may be requested from time to time by the commissioner of the department of

transportation, is hereby authorized to borrow upon the credit of the state not exceeding the sum of $200,000,000 and shall issue general obligation or revenue bonds, or both, in the name and on behalf of the state of New Hampshire in accordance with the provisions of RSA 6-A, to provide funds for the widening of Interstate 93 from Salem, New Hampshire to Manchester, New Hampshire. In addition, authorization is hereby granted to enter into the federal credit program known as the Transportation Infrastructure Finance and Innovation Act (TIFIA), 23 U.S.C. sections 601-609, including appropriate covenants and conditions necessary to secure favorable credit terms, including, without limitation, a pledge of revenue collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I, on said revenues and to be used for the purposes set forth in RSA 260:32-b, II(a), III(a), and IV(a).

II. Payment of principal and interest on the bonds issued under paragraph I shall be paid when due from the highway funds collected and appropriated in accordance with RSA 260:32-a for rates that exceed $.18 per gallon and expended in accordance with RSA 260:32-b.

260:32-b Expenditure of Certain Road Toll Revenue. –

I. For the fiscal year ending June 30, 2015, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) $12,000,000 shall be expended for the district rehabilitation program with said funds to be distributed equally among the 6 state highway districts.

(b) $13,200,000 shall be expended for the district resurfacing program with said funds to be distributed equally among the 6 state highway districts.

(c) All remaining funds shall be for the purpose of state bridge aid for municipal bridges under RSA 234.

II. For the fiscal year ending June 30, 2016, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) Up to $8,300,000 shall be appropriated to the department of transportation bureau of highway maintenance.

(d) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

III. For the fiscal year ending June 30, 2017, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) Up to $8,300,000 shall be appropriated the department of transportation bureau of highway maintenance.

(d) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

IV. For the fiscal year ending June 30, 2018 and each fiscal year thereafter, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

Your approval of this resolution is respectfully requested.

Sincerely,

Victoria F. Sheehan
Commissioner

William F. Dwyer
State Treasurer

Interstate I-93 Improvements Project

Detailed TIFIA Debt Service Cash Flows

Federal Fiscal Year	Day Count	Date	TIFIA Starting Balance	TIFIA Draws	Interest* 1.1000%	Balance Repayment	Total DS	Annual DS	TIFIA Ending Balance	TIFIA Issuance/ Ongoing Costs	$0.042 Dedicated Road Toll (NHFY)	Mun. Block C	
2016	366	5/24/2016								300,000	34,425,781	4,118,11	
2017	366	12/1/2016	-	25,235,033	69,831	-	69,831		25,235,033				
2017	365	6/1/2017	25,235,033	19,829,984	199,198	-	199,198	269,029	45,065,017	15,000	34,425,781	4,131,094	
2018	365	12/1/2017	45,065,017	31,815,304	335,167	-	335,167		76,880,321				
2018	365	6/1/2018	76,880,321	20,023,168	483,261	-	483,261	818,427	96,903,489	15,000	34,369,939	4,131,094	
2019	365	12/1/2018	96,903,489	31,982,267	621,798	-	621,798		128,885,756				
2019	365	6/1/2019	128,885,756	19,728,009	767,514	-	767,514	1,389,312	148,613,766	15,000	34,369,837	4,124,393	
2020	365	12/1/2019	148,613,766	28,705,496	904,470	-	904,470		177,319,262				
2020	366	6/1/2020	177,319,262	9,818,944	1,005,423	-	1,005,423	1,909,893	187,138,206	15,000	34,369,736	4,124,380	
2021	366	12/1/2020	187,138,206	12,861,794	1,070,802	-	1,070,802		200,000,000				
2021	365	6/1/2021	200,000,000	-	1,096,986	-	1,096,986	2,167,789	200,000,000	15,000	34,369,635	4,124,368	
2022	365	12/1/2021	200,000,000	-	1,103,014	-	1,103,014		200,000,000				
2022	365	6/1/2022	200,000,000	-	1,096,986	-	1,096,986	2,200,000	200,000,000	15,000	34,369,533	4,124,356	
2023	365	12/1/2022	200,000,000	-	1,103,014	-	1,103,014		200,000,000				
2023	365	6/1/2023	200,000,000	-	1,096,986	-	1,096,986	2,200,000	200,000,000	15,000	34,369,432	4,124,344	
2024	365	12/1/2023	200,000,000	-	1,103,014	-	1,103,014		200,000,000				
2024	366	6/1/2024	200,000,000	-	1,100,000	-	1,100,000	2,203,014	200,000,000	15,000	34,369,330	4,124,332	30
2025	366	12/1/2024	200,000,000	-	1,100,000	-	1,100,000		200,000,000				
2025	365	6/1/2025	200,000,000	-	1,096,986	-	1,096,986	2,196,986	200,000,000	15,000	34,369,229	4,124,320	30,.
2026	365	12/1/2025	200,000,000	-	1,103,014	10,597,781	11,700,795		189,402,219				
2026	365	6/1/2026	189,402,219	-	1,038,858	10,661,937	11,700,795	23,401,589	178,740,282	15,000	34,369,128	4,124,307	30,24
2027	365	12/1/2026	178,740,282	-	985,765	10,715,030	11,700,795		168,025,253				
2027	365	6/1/2027	168,025,253	-	921,607	10,779,188	11,700,795	23,401,589	157,246,065	15,000	34,369,026	4,124,295	30,244
2028	365	12/1/2027	157,246,065	-	867,223	10,833,572	11,700,795		146,412,493				
2028	366	6/1/2028	146,412,493	-	805,269	10,895,526	11,700,795	23,401,589	135,516,967	15,000	34,368,925	4,124,283	30,244,6
2029	366	12/1/2028	135,516,967	-	745,343	10,955,451	11,700,795		124,561,516				
2029	365	6/1/2029	124,561,516	-	683,211	11,017,583	11,700,795	23,401,589	113,543,932	15,000	34,368,824	4,124,271	30,244,55
2030	365	12/1/2029	113,543,932	-	626,203	11,074,592	11,700,795		102,469,340				
2030	365	6/1/2030	102,469,340	-	562,037	11,138,757	11,700,795	23,401,589	91,330,583	15,000	34,368,722	4,124,259	30,244,463
2031	365	12/1/2030	91,330,583	-	503,694	11,197,100	11,700,795		80,133,482				
2031	365	6/1/2031	80,133,482	-	439,527	11,261,268	11,700,795	23,401,589	68,872,214	15,000	34,368,621	4,124,247	30,244,374
2032	365	12/1/2031	68,872,214	-	379,835	11,320,960	11,700,795		57,551,255				
2032	366	6/1/2032	57,551,255	-	316,532	11,384,263	11,700,795	23,401,589	46,166,992	15,000	34,368,519	4,124,235	30,244,284
2033	366	12/1/2032	46,166,992	-	253,918	11,446,876	11,700,795		34,720,116				
2033	365	6/1/2033	34,720,116	-	190,437	11,510,357	11,700,795	23,401,589	23,209,758	15,000	34,368,418	4,124,222	30,244,196
2034	365	12/1/2033	23,209,758	-	128,003	11,572,791	11,700,795		11,636,967				
2034	365	6/1/2034	11,636,967	-	63,828	11,636,967	11,700,795	23,401,590	-	15,000	34,368,317	4,124,210	30,244,107
2035	365	12/1/2034	-	-	-	-	-		-				
2035	365	6/1/2035	-	-	-	-	-	-	-	-	-	-	-
2036	365	12/1/2035	-	-	-	-	-		-				
2036	366	6/1/2036	-	-	-	-	-	-	-	-	-	-	-
Total				200,000,000	25,968,756	200,000,000	225,968,756	225,968,756		570,000	653,126,733	78,369,120	574,757,613	226,5

* Interest is paid as it comes due, without capitalization.

UNITED STATES
DEPARTMENT OF TRANSPORTATION

TIFIA LOAN AGREEMENT

For Up to $200,000,000

With

STATE OF NEW HAMPSHIRE

For the

I-93 IMPROVEMENTS SALEM TO MANCHESTER PROJECT
(TIFIA – 2016-1004A)

Dated as of May ___, 2016

Section 1. Definitions [illegible]
Section 2. [illegible] 13
Section 3. [illegible] 13
Section 4. [illegible] 13
Section 5. [illegible] 14
Section 6. [illegible] 14
Section 7. [illegible] 15
Section 8. [illegible] 15
Section 9. [illegible]
Section 10. [illegible]
Section 11. [illegible]
Section 12. [illegible]
Section 13. [illegible]
Section 14. [illegible] 24
Section 15. [illegible] 31
Section 16. [illegible] 31
Section 17. [illegible]
Section 18. Indemnification [illegible]
Section 19. Sale of TIFIA Loan 42
Section 20. [illegible] 42
Section 21. [illegible] Reports and Records 46
Section 22. [illegible] 48
Section 23. Project [illegible] 51
Section 24. No Personal Recourse 53
Section 25. No Third Party Rights 54
Section 26. Borrower's Authorized Representative 54
Section 27. TIFIA Lender's Authorized Representative 54
Section 28. Servicer 54
Section 29. Fees and Expenses 55
Section 30. Amendments and Waivers 56
Section 31. Governing Law 56
Section 32. Severability 56
Section 33. Successors and Assigns 56
Section 34. Remedies Not Exclusive 56
Section 35. Delay or Omission Not Waiver 56
Section 36. Counterparts 56
Section 37. Notices; Payment Instructions 56
Section 38. Effectiveness 58
Section 39. Termination 58
Section 40. Integration 58

SCHEDULE I – Project Budget
SCHEDULE II – Construction Schedule
SCHEDULE 14(f) – Litigation
SCHEDULE 14(s) – Environmental Compliance

EXHIBIT A – Form of TIFIA Bond
EXHIBIT B – Anticipated TIFIA Loan Disbursement Schedule
EXHIBIT C – Non-Debarment Certification
EXHIBIT D – Requisition Procedures
EXHIBIT E – Compliance With Laws
EXHIBIT F – FHWA Oversight Agreement
EXHIBIT G – TIFIA Debt Service
EXHIBIT H-1 – Opinions Required from Counsel to Borrower
EXHIBIT H-2 – Opinions Required from Bond Counsel
EXHIBIT I – [Reserved]
EXHIBIT J – Form of Borrower's Officer's Certificate
EXHIBIT K – Form of Certificate of Substantial Completion
EXHIBIT L – Principal Project Contracts
EXHIBIT M – Performance Security Instruments
EXHIBIT N – Construction Contracts

TIFIA LOAN AGREEMENT

THIS TIFIA LOAN AGREEMENT (this "**Agreement**"), dated as of the Effective Date, is by and between **STATE OF NEW HAMPSHIRE** (the "**Borrower**"), acting by and through the New Hampshire State Treasurer (the "**Treasurer**") and the New Hampshire Department of Transportation ("**NHDOT**"), with an address of 104 North State Street, Concord, N.H. 03301 and the **UNITED STATES DEPARTMENT OF TRANSPORTATION**, an agency of the United States of America, acting by and through the Federal Highway Administrator (the "**Administrator**"), with an address of 1200 New Jersey Avenue, S.E., Washington, D.C. 20590 (the "**TIFIA Lender**"),

RECITALS:

WHEREAS, the Congress of the United States of America (the "**Congress**") has found that a well-developed system of transportation infrastructure is critical to the economic well-being, health and welfare of the people of the United States of America and, in furtherance thereof, has enacted the Transportation Infrastructure Finance and Innovation Act of 1998 ("**TIFIA**"), § 1501 *et seq.* of Public Law 105-178 (as amended by Public Law 105-206, Public Law 109-59, Public Law 112-141, and Public Law 114-94) (the "**Act**"), codified as 23 U.S.C. §§ 601-609; and

WHEREAS, Section 603 of the Act authorizes the TIFIA Lender to enter into agreements with one or more obligors to make secured loans; and

WHEREAS, the Borrower has requested that the TIFIA Lender make the TIFIA Loan (as defined herein) in a principal amount not to exceed $200,000,000 (excluding interest that is capitalized in accordance with the terms hereof) to be used to pay a portion of the Eligible Project Costs (as defined herein) related to the Project (as defined herein) pursuant to the application for TIFIA credit assistance received March 7, 2016 (the "**Application**"); and

WHEREAS, on May 12, 2016, the Secretary (as defined herein) approved TIFIA credit assistance for the Project in the form of the TIFIA Loan; and

WHEREAS, the TIFIA Lender is prepared to extend credit upon the terms and conditions hereof; and

WHEREAS, the Borrower agrees to repay any amount due pursuant to this Agreement and the TIFIA Bond (as defined herein) in accordance with the terms and provisions hereof and thereof; and

WHEREAS, the TIFIA Lender has entered into this Agreement in reliance upon, among other things, the Base Case Projections (as defined herein) delivered by the Borrower.

NOW, THEREFORE, the premises being as stated above, and for good and valuable consideration, the receipt and sufficiency of which are acknowledged to be adequate, and

intending to be legally bound hereby, it is hereby mutually agreed by and between the Borrower and the TIFIA Lender as follows:

Section 1. Definitions. Unless the context otherwise requires, capitalized terms used in this Agreement shall have the meanings set forth below in this Section 1 (*Definitions*) or as otherwise defined in this Agreement. Any term used in this Agreement that is defined by reference to any other agreement shall continue to have the meaning specified in such agreement, whether or not such agreement remains in effect.

"**Act**" means the Act as defined in the recitals hereto.

"**Additional Project Contracts**" means any contract, agreement, letter of intent, understanding or instrument (other than a Principal Project Contract) with a value of $10,000,000 or more entered into by (or on behalf of) the Borrower after the Effective Date, providing for the design, construction, testing, or start-up of the Project, including any master contract providing goods or services for multiple projects or assets related to the Project.

"**Administrator**" has the meaning provided in the preamble hereto.

"**Agreement**" has the meaning provided in the preamble hereto.

"**Allocable Apportionment A Revenues**" means, for each Borrower Fiscal Year, that portion of Apportionment A Revenues that are collected and distributed by the Borrower from the road tolls collected pursuant to N.H. Revised Statutes § 260:32-a, which distribution is an amount that, as of the Effective Date, is equal to not less than twelve percent (12%) of the road tolls collected pursuant to N.H. Revised Statutes § 260:32-a, in the immediately preceding Borrower Fiscal Year.

"**Anticipated TIFIA Loan Disbursement Schedule**" means the schedule set forth in **Exhibit B**, reflecting the anticipated disbursement of proceeds of the TIFIA Loan, as such schedule may be amended from time to time pursuant to Section 4(c) (*Disbursement Conditions*).

"**Application**" has the meaning provided in the recitals hereto.

"**Apportionment A Revenues**" means for each Borrower Fiscal Year, the portion of Road Toll Revenues collected and distributed by the Borrower as provided by N.H. Revised Statutes § 235:23, I, which distribution is an amount that, as of the Effective Date, is equal to not less than twelve percent (12%) of the Road Toll Revenues collected in the immediately preceding Borrower Fiscal Year.

"Authorizing Legislation" means the Bond Act, the Road Toll Act and the NHDOT Act.

"**Bank Secrecy Act**" means the Bank Secrecy Act of 1970, as amended, and the regulations promulgated thereunder.

"**Bankruptcy Related Event**" means, with respect to any Person:

(a) an involuntary proceeding shall be commenced or an involuntary petition shall be filed seeking:

(i) liquidation, reorganization or other relief in respect of such Person or any of its debts, or of a substantial part of the assets thereof, under any Insolvency Laws; or

(ii) the appointment of a receiver, trustee, liquidator, custodian, sequestrator, conservator or similar official for such Person or for a substantial part of the assets thereof and, in any case referred to in the foregoing subclauses (i) and (ii), such proceeding or petition shall continue undismissed for sixty (60) days or an order or decree approving or ordering any of the foregoing shall be entered.

(b) such Person shall:

(i) apply for or consent to the appointment of a receiver, trustee, liquidator, custodian, sequestrator, conservator or similar official therefor or for a substantial part of the assets thereof;

(ii) generally not be paying its debts as they become due unless such debts are the subject of a bona fide dispute, or become unable to pay its debts generally as they become due;

(iii) solely with respect to the Borrower, fail to make two (2) consecutive payments of TIFIA Debt Service in accordance with the provisions of Section 9 (Payment *of Principal and Interest*);

(iv) make a general assignment for the benefit of creditors;

(v) consent to the institution of, or fail to contest in a timely and appropriate manner, any proceeding or petition with respect to it described in clause (a) of this definition;

(vi) commence a voluntary proceeding under any Insolvency Law, or file a voluntary petition seeking liquidation, reorganization, an arrangement with creditors or an order for relief under any Insolvency Law;

(vii) file an answer admitting the material allegations of a petition filed against it in any proceeding referred to in the foregoing subclauses (i) through (vi), inclusive, of this clause (b); or

(viii) take any action for the purpose of effecting any of the foregoing, including seeking approval or legislative enactment by any Governmental Authority to authorize commencement of a voluntary proceeding under any Insolvency Law.

(c) solely with respect to the Borrower, the proceedings shall be commenced pursuant to which all or a substantial part of the Pledged Revenues may be assigned, transferred or otherwise disposed of other than as provided in this Agreement.

"**Base Case Financial Model**" means a financial model prepared by NHDOT forecasting the revenues and sources of funding to finance the Project and repay the TIFIA Loan for time periods through the Final Maturity Date and based upon assumptions and methodology provided by the Borrower and acceptable to the TIFIA Lender as of the Effective Date, which model shall be provided to the TIFIA Lender as a fully functional Microsoft Excel – based financial model or such other format requested by the TIFIA Lender.

"**Base Case Projections**" means the initial forecast for the Project prepared as of the Effective Date using the Base Case Financial Model.

"**Bond**" or "**Bonds**" means any bonds (including the TIFIA Bond) or any other evidence of indebtedness for borrowed money issued by the Borrower from time to time pursuant to the Bond Act which constitute general obligations of the State for which the State has pledged its full faith and credit.

"Bond Act" means N.H. Revised Statutes § 6-A, as amended and supplemented from time to time.

"**Bondholder**" means, when used with respect to the TIFIA Bond, the TIFIA Lender and, when used with respect to any other Bond, the owner of such Bond.

"**Borrower**" has the meaning provided in the preamble hereto.

"**Borrower Fiscal Year**" means (a) as of the Effective Date, a fiscal year of the Borrower commencing on July 1 of any calendar year and ending on June 30 of the immediately succeeding calendar year or (b) such other fiscal year as the Borrower may hereafter adopt. The Borrower shall give notice of any such new fiscal year in accordance with Section 16(g)(i)(P).

"**Borrower's Authorized Representative**" means any Person who shall be designated as such pursuant to Section 26 (*Borrower's Authorized Representative*).

"**Business Day**" means any day other than a Saturday, a Sunday or a day on which offices of the Government or the State are authorized to be closed or on which commercial banks are authorized or required by law, regulation or executive order to be closed in New York, New York, or Concord, New Hampshire.

"**Calculation Date**" means each June 1 and December 1 occurring after the Effective Date.

"**Calculation Period**" means a twelve (12) month period ending on a Calculation Date.

"**Capital Expenditures**" means expenditures made or liabilities incurred for the acquisition of any assets, improvements or replacements thereof that have a useful life of more than one (1) year and that are capitalized in accordance with GAAP.

"**Certificate**" means a certificate of the Borrower certifying, in writing, as to such matters as the context may require and signed by the Borrower's Authorized Representative.

"**Code**" means the Internal Revenue Code of 1986, as amended from time to time.

"**Congress**" has the meaning provided in the recitals hereto.

"**Construction Agreements**" means those contracts set forth on the list attached hereto as **Exhibit N**.

"**Construction Contractors**" means the counterparties to NHDOT pursuant to each Construction Agreement.

"**Construction Period**" means the period from the Effective Date through the Substantial Completion Date.

"**Construction Schedule**" means (a) the initial schedule or schedules on which the construction timetables for the Project are set forth, attached as **Schedule II**, and (b) any updates thereto included in the Financial Plan most recently approved by the TIFIA Lender pursuant to Section 22(a)(iii)(B) (*Financial Plan*).

"**Contractual Obligation**" means any contractual provision of any Bond outstanding on or issued after the Effective Date.

"**Control**" means, when used with respect to any particular Person, the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities or partnership or other ownership interests, by contract or otherwise, and the terms "**Controlling**" and "**Controlled by**" have meanings correlative to the foregoing.

"**CPI**" means the Consumer Price Index for All Urban Consumers (CPI-U) for the U.S. City Average for All Items, 1982-84=100 (not seasonally adjusted), or its successor, published by the Bureau of Labor Statistics, with, unless otherwise specified herein, January 2016 as the base period.

"**Debt Service Payment Commencement Date**" means December 1, 2016.

"**Default Rate**" means an interest rate equal to the sum of (a) the TIFIA Interest Rate plus (b) 200 basis points.

"**Development Default**" means the Borrower fails to (a) diligently prosecute the work related to the Project or (b) complete the Project by the Projected Substantial Completion Date.

"**Effective Date**" means the date of this Agreement.

"**Eligible Project Costs**" means amounts in the Project Budget, substantially all of which are paid by or for the account of the Borrower in connection with the Project all of which shall arise from the following:

(a) development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, permitting, preliminary engineering and design work and other preconstruction activities;

(b) construction, reconstruction, rehabilitation, replacement and acquisition of real property (including land related to the Project and improvements to land), environmental mitigation, construction contingencies and acquisition of equipment; or

(c) capitalized interest necessary to meet market requirements, reasonably required reserve funds, capital issuance expenses and other carrying costs during construction.

"**Environmental Laws**" has the meaning provided in Section 14(s) (*Environmental Matters*).

"**ERISA**" means the Employee Retirement Income Security Act of 1974, as amended, and any successor statute of similar import, and the regulations thereunder, in each case as in effect from time to time.

"**ERISA Affiliate**" means, with respect to the Borrower or NHDOT, any trade or business (whether or not incorporated) that, together with the Borrower or NHDOT, is treated as a single employer under Section 414(b) or (c) of the Code or, solely for purposes of Section 302 of ERISA and Section 412 of the Code, is treated as a single employer under Section 414 of the Code.

"**Event of Default**" has the meaning provided in Section 20(a) (*Events of Default and Remedies*).

"**Executive Council**" means the Executive Council of the State, and its successors and assigns.

"**Federal Fiscal Year**" or "**FFY**" means the fiscal year of the Government, which is the twelve (12) month period that ends on September 30 of the specified calendar year and begins on October 1 of the preceding calendar year.

"**FHWA**" means the Federal Highway Administration, an agency of the USDOT.

"**FHWA Division Office**" means the New Hampshire Division Office of FHWA.

"**FHWA Oversight Agreement**" means that certain Stewardship and Oversight Agreement for implementation of the Moving Ahead for Progress in the 21st Century Act (MAP-21) P.L.112-141 dated May 14, 2015, by and between FHWA Division Office and NHDOT, attached hereto as **Exhibit F**.

"**Final Maturity Date**" means June 1, 2034.

"**Financial Plan**" means (a) the financial plan to be delivered in accordance with Section 22(a) (*Financial Plan*) and (b) any updates thereto required pursuant to Section 22(a) (*Financial Plan*).

"**Financial Statements**" has the meaning provided in Section 14(z) (*Financial Statements*).

"**Fixed Level Payment**" has the meaning provided in Section 9(d) (*Fixed Level Payments*).

"**GAAP**" means generally accepted accounting principles as defined by the American Institute of Certified Public Accountants or such other nationally recognized professional body, in effect from time to time in the United States of America.

"**Government**" means the United States of America and its departments and agencies.

"**Governmental Approvals**" means all authorizations, consents, approvals, waivers, exceptions, variances, filings, permits, orders, licenses, exemptions and declarations of or with any Governmental Authority.

"**Governmental Authority**" means any federal, state, provincial, county, city, town, village, municipal or other government or governmental department, commission, council, court, board, bureau, agency, authority or instrumentality (whether executive, legislative, judicial, administrative or regulatory), of or within the United States of America or its territories or possessions, including the State and its counties and municipalities, and their respective courts, agencies, instrumentalities and regulatory bodies, or any entity that acts "on behalf of" any of the foregoing, whether as an agency or authority of such body.

"**Highway and Bridge Betterment Account**" means the highway and bridge betterment account established under N.H. Revised Statutes 235:23-a.

"**Highway Maintenance Funding**" means an appropriation by the State to NHDOT's Bureau of Highway Maintenance which, as of the Effective Date, is in an amount not to exceed $8,300,000 per annum as may be amended from time to time.

"**Indemnitee**" has the meaning provided in Section 18 (*Indemnification*).

"**Insolvency Laws**" means the United States Bankruptcy Code, 11 U.S.C. § 101 *et seq.*, as from time to time amended and in effect, and any state bankruptcy, insolvency, receivership, conservatorship or similar law now or hereafter in effect.

"**Level Payment Commencement Date**" means December 1, 2025.

"**Level Payment Period**" means the period commencing on the Level Payment Commencement Date and ending on the Final Maturity Date (or on such earlier date as all amounts due or to become due to the TIFIA Lender hereunder have been irrevocably paid in full in cash).

"**Lien**" means any mortgage, pledge, hypothecation, assignment, mandatory deposit arrangement, encumbrance, attachment, lien (statutory or other), charge or other security interest, or preference, priority or other security agreement or preferential arrangement of any kind or nature whatsoever, including any sale-leaseback arrangement, any conditional sale or other title retention agreement, any financing lease having substantially the same effect as any of the foregoing, and the filing of any financing statement or similar instrument under the UCC or any other applicable law.

"**Loan Amortization Schedule**" means the Loan Amortization Schedule reflected in the applicable column of **Exhibit G**, as amended from time to time in accordance with Section 7 (*Outstanding TIFIA Loan Balance; Revisions to Exhibit G and Loan Amortization Schedule*).

"**Material Adverse Effect**" means a material adverse effect on (a) the Project or the Pledged Revenues, (b) the financial condition, operations or governance of the Borrower, (c) the legality, validity or enforceability of any material provision of any TIFIA Loan Document, (d) the ability of the Borrower to enter into, perform or comply with any of its material obligations under any TIFIA Loan Document, (e) the validity, enforceability or priority of the Liens provided under the Authorizing Legislation, or any TIFIA Loan Document on the Pledged Revenues in favor of the TIFIA Lender, or (f) the TIFIA Lender's rights or remedies available under any TIFIA Loan Document.

"**Nationally Recognized Rating Agency**" means any nationally recognized statistical rating organization identified as such by the Securities and Exchange Commission.

"**NEPA**" means the National Environmental Policy Act of 1969, as amended, and any successor statute of similar import, and regulations thereunder, in each case as in effect from time to time.

"**NEPA Determination**" means the Record of Decision for the Project issued by the FHWA Division Office on June 28, 2005 in accordance with NEPA, as supplemented by the Supplemental Record of Decision issued by the FHWA Division Office on September 20, 2010.

"**Net Cash Flow**" means, with respect to any period, an amount equal to (a) all Pledged Revenues received by the Borrower during such period minus (b) Allocable Apportionment A Revenues during such period.

"**NHDOT Act**" means N.H. Revised Statutes § 21-L:2 through 5, as amended and supplemented from time to time.

"**OFAC**" means the Office of Foreign Assets Control of the United States Department of the Treasury.

"**Organizational Documents**" means: (a) with respect to any Person that is a Governmental Authority, (i) the constitutional and statutory provisions that are the basis for the existence and authority of such Governmental Authority, including any enabling statutes, ordinances or public charters and any other organic laws establishing such Governmental Authority and (ii) the bylaws, code of regulations, operating procedures or other organizational documents of or adopted by such Governmental Authority by which such Governmental

Authority, its powers, operations or procedures or its securities, bonds, notes or other obligations are governed or from which such powers are derived; and (b) with respect to a Person that is not a Governmental Authority, (i) to the extent such Person is a corporation, the certificate or articles of incorporation and the by-laws of such Person, (ii) to the extent such Person is a limited liability company, the certificate of formation or articles of formation or organization and operating or limited liability company agreement of such Person and (iii) to the extent such Person is a partnership, joint venture, trust or other form of business, the partnership, joint venture or other applicable agreement of formation or organization and any agreement, instrument, filing or notice with respect thereto filed in connection with its formation or organization with the applicable Governmental Authority in the jurisdiction of its formation or organization and, if applicable, any certificate or articles of formation or organization or formation of such Person.

"**Outstanding TIFIA Loan Balance**" means the aggregate principal amount drawn by the Borrower and then outstanding (including any capitalized interest) with respect to the TIFIA Loan, as determined in accordance with Section 7 (*Outstanding TIFIA Loan Balance; Revisions to Exhibit G and Loan Amortization Schedule*).

"**Patriot Act**" means the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001, as amended, and all regulations promulgated thereunder.

"**Payment Date**" means each Semi-Annual Payment Date.

"**Payment Default**" has the meaning provided in Section 20(a)(i) (*Payment Default*).

"**Payment Period**" means any period of six (6) months that ends on a Semi-Annual Payment Date, commencing with the six (6) month period ending on the Debt Service Payment Commencement Date.

"**Performance Security Instrument**" means those performance security instruments delivered to or by the Borrower pursuant to any Principal Project Contract as set forth on either the list attached hereto as **Exhibit M** or any schedule to a Requisition delivered pursuant to Section 13(b)(xiii)(*Conditions Precedent to All Disbursements*), each of which shall be (A) in compliance with the requirements for performance security pursuant to the applicable Principal Project Contract, and (B) in full force and effect.

"**Person**" means and includes an individual, a general or limited partnership, a joint venture, a corporation, a limited liability company, a trust, an unincorporated organization and any Governmental Authority.

"**Pledged Revenues**" means (a) all Road Toll Revenues minus Allocable Apportionment A Revenues and (b) any funds or other revenues budgeted and appropriated by the Borrower and payable to the TIFIA Lender.

"**Principal Project Contracts**" means those contracts set forth on either the list attached hereto as **Exhibit L** or any schedule to a Requisition delivered pursuant to Section 13(b)(iv) (*Conditions Precedent to all Disbursements*).

"**Principal Project Party**" means any Person (other than the Borrower or NHDOT) that is party to a Principal Project Contract.

"**Project**" means transportation infrastructure improvements for the I-93 corridor, beginning at the Massachusetts/New Hampshire State line and extending 31.9 km (19.8) miles northerly through Salem, Windham, Derry and Londonderry, and into Manchester, ending at the I-93/I-293 Interchange. The main element involves widening I-93 to a four-lane highway in each direction. The Project also includes infrastructure improvements for five interchanges and local roads within the I-93 corridor, construction of three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4 and new bus terminals at Exits 2, 4 and 5.

"**Project Budget**" means the budget for the Project in the aggregate amount of $811,700,000 attached to this Agreement as **Schedule I** showing a summary of Total Project Costs (excluding financing costs) with a breakdown of all Eligible Project Costs and the estimated sources and uses of funds for the Project, as amended from time to time with the approval of the TIFIA Lender.

"**Projected Substantial Completion Date**" means September 30, 2020, as such date may be adjusted in accordance with Section 22(a)(iii)(B) (*Financial Plan*).

"**Related Documents**" means the TIFIA Loan Documents and the Principal Project Contracts.

"**Requisition**" has the meaning provided in Section 4(a) (*Disbursement Conditions*).

"**Resolution**" means that certain Resolution of the Governor and the Executive Council adopted May 18, 2016, authorizing and approving the issuance of the TIFIA Bond and the terms and conditions of the TIFIA Loan.

"**Resolution Documents**" means, together, the Resolution, and each other agreement, instrument and document executed and delivered pursuant to or in connection with any of the foregoing.

"**Revised Financial Model**" means the Base Case Financial Model, as it may be updated from time to time pursuant to Section 22(a)(ii)(C) (*Financial Plan*).

"**Rights of Acceleration**" means, with respect to any Contractual Obligation or this Agreement, the right to accelerate and to declare immediately due and payable all or any portion of the principal of any Bonds, whether secured or unsecured, as a remedy available upon an event of default of the Borrower.

"**Road Toll Act**" means N.H. Revised Statutes § 260:32 effective July 1, 2014, as amended and supplemented by N.H. Revised Statutes § 260:32-a and § 260:32-b, each effective July 1, 2015, as in effect on the Effective Date.

"**Road Toll Revenues**" means the revenues collected from the road toll imposed on the sale of each gallon of motor fuel sold by distributors thereof collected from adjustments under

the Road Toll Act for road toll rates that exceed $0.18 per gallon, pursuant to N.H. Revised Statutes § 260:32-a.

"**Rural Projects**" means the construction, improvement or rehabilitation of any road or bridge work associated with rural arterials, minor arterials, collectors and local roads within the State.

"**Secretary**" means the United States Secretary of Transportation.

"**Secured Obligations**" means the obligations of the Borrower under this Agreement and the TIFIA Bond.

"**Semi-Annual Payment Date**" means each June 1 and December 1.

"**Servicer**" means such entity or entities as the TIFIA Lender shall designate from time-to-time to perform, or assist the TIFIA Lender in performing, certain duties hereunder.

"**State**" means the State of New Hampshire.

"**State Bridge Aid**" means $6,800,000 to be allocated per annum for state bridge aid for municipal bridges under N.H. Revised Statutes § 234, as required pursuant to Section 260:32-b III (b) of the Road Toll Act for the applicable Borrower Fiscal Year, as may be amended from time to time.

"**Substantial Completion**" means the opening of the Project to vehicular traffic in its final configuration.

"**Substantial Completion Date**" means the date on which Substantial Completion occurs.

"**TIFIA**" has the meaning provided in the recitals hereto.

"**TIFIA Bond**" means the Bond delivered by the Borrower in substantially the form of **Exhibit A**.

"**TIFIA Debt Service**" means with respect to any Semi-Annual Payment Date occurring on or after the Debt Service Payment Commencement Date, the principal portion of the Outstanding TIFIA Loan Balance and any interest payable thereon (including interest accruing after the date of filing by the Borrower of any petition in bankruptcy or the commencement of any bankruptcy, insolvency or similar proceeding with respect to the Borrower), in each case, (a) as set forth on **Exhibit G**, and (b) due and payable on such Semi-Annual Payment Date in accordance with the provisions of Section 9(c) (*Payment of TIFIA Debt Service*) and 9(d) (*Fixed Level Payments*).

"**TIFIA Interest Rate**" has the meaning provided in Section 6 (*Interest Rate*).

"**TIFIA Lender**" has the meaning provided in the preamble hereto.

"**TIFIA Lender's Authorized Representative**" means the Administrator and any other Person who shall be designated as such pursuant to Section 27 (*TIFIA Lender's Authorized Representative*).

"**TIFIA Loan**" means the secured loan made by the TIFIA Lender to the Borrower on the terms and conditions set forth herein, pursuant to the Act, in a principal amount not to exceed $200,000,000 (excluding capitalized interest), to be used in respect of Eligible Project Costs paid or incurred by or on behalf of the Borrower.

"**TIFIA Loan Documents**" means this Agreement, the TIFIA Bond and the Resolution Documents.

"**Total Debt Service Coverage Ratio**" means, for any Calculation Period, the ratio of Net Cash Flow for such Calculation Period to the TIFIA Debt Service for such Calculation Period.

"**Total Project Costs**" means (a) the costs paid or incurred or to be paid or incurred by the Borrower in connection with or incidental to the acquisition, design, construction and equipping of the Project, including legal, administrative, engineering, planning, design, insurance and costs of issuance; (b) amounts, if any, required by the TIFIA Loan Documents to be paid into any fund or account upon the incurrence of the TIFIA Loan; (c) payments when due (whether at the maturity of principal, the due date of interest, or upon optional or mandatory prepayment) during the Construction Period in respect of any indebtedness of the Borrower or any credit facility maintained by the Borrower, in each case in connection with the Project (other than the TIFIA Loan); and (d) costs of equipment and supplies and initial working capital and reserves required by the Borrower for the commencement of operation of the Project, including general administrative expenses and overhead of the Borrower.

"**Uncontrollable Force**" means any cause beyond the control of the Borrower, including: (a) a hurricane, tornado, flood or similar occurrence, landslide, earthquake, fire or other casualty, strike or labor disturbance, freight embargo, act of a public enemy, explosion, war, blockade, terrorist act, insurrection, riot, general arrest or restraint of government and people, civil disturbance or similar occurrence, sabotage, or act of God (provided that the Borrower shall not be required to settle any strike or labor disturbance in which it may be involved) or (b) the order or judgment of any federal, state or local court, administrative agency or governmental officer or body, if it is not also the result of willful or negligent action or a lack of reasonable diligence of the Borrower and the Borrower does not control the administrative agency or governmental officer or body; provided that the diligent contest in good faith of any such order or judgment shall not constitute or be construed as a willful or negligent action or a lack of reasonable diligence of the Borrower.

"**Uniform Commercial Code**" or "**UCC**" means the Uniform Commercial Code, as in effect from time to time in the State.

"**USDOT**" means the United States Department of Transportation.

"**Warranty**" means any warranty or covenant, express or implied, statutory, contractual or otherwise, imposed upon or provided by or obligation undertaken by any contractor,

subcontractor, architect, engineer, consultant, professional, vendor, distributor, supplier or other person or entity performing, providing or furnishing any labor, services, work, supplies, materials, equipment, hardware, software, systems, testing, inspection, licenses or other items, rights or interests rights relating to the title, design, workmanship, materials, fabrication, assembly, construction, installation, quality, durability, reliability, operation, performance, intellectual property rights in and/or, compliance with applicable laws of any or all improvements, facilities, installations, components, elements, systems, items, rights or interests constituting the Project, and any obligation or agreement to correct, repair, remediate, restore or replace during the applicable warranty period any defects, deficiencies, insufficiencies, noncompliances and infringements in breach or violation of such warranty.

Section 2. Interpretation. Unless the context shall otherwise require, the words "hereto", "herein", "hereof", and other words of similar import refer to this Agreement as a whole. Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders and vice versa. Words importing the singular number shall include the plural number and vice versa unless the context shall otherwise require. The words "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation." Whenever the knowledge of the Borrower is implicated in this Agreement or the phrase "to the Borrower's knowledge," to the knowledge of the Borrower" or a similar phrase is used in this Agreement, the knowledge of the Borrower or such phrase(s) shall be interpreted to mean to the best of the Borrower's knowledge after reasonable and diligent inquiry and investigation. Unless the context shall otherwise require, references to any Person shall be deemed to include such Person's successors and permitted assigns. Unless the context shall otherwise require, references to preambles, recitals, sections, subsections, clauses, schedules, exhibits, appendices and provisions are to the applicable preambles, recitals, sections, subsections, clauses, schedules, exhibits, appendices and provisions of this Agreement. The schedules and exhibits to this Agreement, and the appendices and schedules to such exhibits, are hereby incorporated by reference and made an integral part of this Agreement. The headings or titles of this Agreement and its sections, schedules or exhibits, as well as any table of contents, are for convenience of reference only and shall not define or limit its provisions. Unless the context shall otherwise require, all references to any resolution, contract, agreement, lease or other document shall be deemed to include any amendments or supplements to, or modifications or restatements or replacements of, such documents that are approved from time-to-time in accordance with the terms thereof and hereof. Every request, order, demand, application, appointment, notice, statement, certificate, consent or similar communication or action hereunder by any party shall, unless otherwise specifically provided, be delivered in writing in accordance with Section 37 (Notices; Payment Instructions) and signed by a duly authorized representative of such party.

Section 3. TIFIA Loan Amount. The principal amount of the TIFIA Loan shall not exceed $200,000,000. TIFIA Loan proceeds shall be disbursed from time-to-time in accordance with Section 4 (*Disbursement Conditions*) and Section 13(b) (*Conditions Precedent to All Disbursements*).

Section 4. Disbursement Conditions.

(a) TIFIA Loan proceeds shall be disbursed solely in respect of Eligible Project Costs paid or incurred by or on behalf of the Borrower in connection with the Project. If the Borrower intends to utilize the TIFIA Loan proceeds to make progress payments for the Project construction work performed under the Construction Agreements, the Borrower shall demonstrate to the satisfaction of the TIFIA Lender that such progress payments are commensurate with the value of the work that has been completed. Each disbursement of the TIFIA Loan shall be made pursuant to a requisition and certification (a "**Requisition**") in the form set forth in **Appendix One** to **Exhibit D**, along with all documentation and other information required thereby, submitted by NHDOT to, and approved by, the TIFIA Lender, all in accordance with the procedures of **Exhibit D** and subject to the requirements of this Section 4 (*Disbursement Conditions*) and the conditions set forth in Section 13(b) (*Conditions Precedent to All Disbursements*); provided, however, that no disbursements of TIFIA Loan proceeds shall be made on or after the date that is one (1) year after the Substantial Completion Date.

(b) The Borrower shall cause NHDOT to deliver copies of each Requisition to the TIFIA Lender, the FHWA TIFIA Joint Program Office (HITJ), the Servicer (if any) and the FHWA Division Office on or before the first (1st) Business Day of each month for which a disbursement is requested. If the TIFIA Lender shall expressly approve a Requisition or shall not expressly deny a Requisition, disbursements of funds shall be made on the fifteenth (15th) day of the month for which a disbursement has been requested, or on the next succeeding Business Day if such fifteenth (15th) day is not a Business Day. Express TIFIA Lender approval or denial shall be substantially in the form annexed hereto as **Appendix Three** to **Exhibit D**. In no event shall disbursements be made more than once each month. At the time of any disbursement, the sum of all prior disbursements of TIFIA Loan proceeds and the disbursement then to be made shall not exceed the cumulative disbursements through the end of the then-current Federal Fiscal Year set forth in the Anticipated TIFIA Loan Disbursement Schedule, as the same may be amended from time to time in accordance with the terms of this Agreement. Any scheduled disbursement (as reflected in the Anticipated TIFIA Loan Disbursement Schedule) that remain undrawn at the end of any year shall be available for disbursement in subsequent years, subject to Section 4(a) (*Disbursement Conditions*) above.

(c) The Borrower may amend the Anticipated TIFIA Loan Disbursement Schedule by submitting a revised version thereof to the TIFIA Lender no later than thirty (30) days prior to the proposed effective date of such amendment, together with a detailed explanation of the reasons for such revisions. Such revised Anticipated TIFIA Loan Disbursement Schedule shall become effective upon the TIFIA Lender's approval thereof, which approval shall be granted in the TIFIA Lender's sole discretion.

Section 5. Term. The term of the TIFIA Loan shall extend from the Effective Date to the Final Maturity Date or to such earlier date as all amounts due or to become due to the TIFIA Lender hereunder have been irrevocably paid in full in cash.

Section 6. Interest Rate. Except as provided herein, the interest rate with respect to the Outstanding TIFIA Loan Balance (the "**TIFIA Interest Rate**") shall be [___] percent ([__]%) per annum. Interest will be computed on the Outstanding TIFIA Loan Balance (as well as on any past due interest) from time-to-time on the basis of a 365-day or 366-day year, as appropriate, for the actual number of days elapsed and will be compounded semi-annually;

provided, however, in the event of a Payment Default, the Borrower shall pay interest on any overdue amount from (and including) its due date to (but excluding) the date of actual payment at the Default Rate. Upon the occurrence of an Event of Default described in Section 20(a)(iii) (*Development Default*) or Section 20(a)(x) (*Project Abandonment*), the interest rate on the Outstanding TIFIA Loan Balance shall be the Default Rate and shall continue to bear interest at such rate until, (a) with respect to an Event of Default described in Section 20(a)(iii) (*Development Default*), such Development Default has been cured or (b) with respect to an Event of Default described in Section 20(a)(x) (*Project Abandonment*), the Outstanding TIFIA Loan Balance has been irrevocably paid in full in cash. In addition, the interest rate is subject to adjustment as provided in Section 16(t).

Section 7. Outstanding TIFIA Loan Balance; Revisions to Exhibit G and Loan Amortization Schedule.

(a) The Outstanding TIFIA Loan Balance will be (i) increased on each occasion on which the TIFIA Lender disburses loan proceeds hereunder, by the amount of such disbursement of loan proceeds; (ii) increased on each occasion on which interest on the TIFIA Loan is capitalized, by the amount of interest so capitalized; and (iii) decreased upon each payment or prepayment of the Outstanding TIFIA Loan Balance, by the amount of principal so paid. The TIFIA Lender may in its discretion at any time and from time-to-time, or when so requested by the Treasurer or NHDOT, advise the Borrower in writing of the amount of the Outstanding TIFIA Loan Balance as of the date of such notice, and its determination of such amount in any such notice shall be deemed conclusive absent manifest error.

(b) The TIFIA Lender is hereby authorized to modify the Loan Amortization Schedule included in **Exhibit G** from time-to-time, in accordance with the principles set forth below in this clause (b), to reflect (i) any change to the Outstanding TIFIA Loan Balance, (ii) any change to the date and amount of any principal or interest due and payable or to become due and payable by the Borrower under this Agreement, and (iii) such other information as the TIFIA Lender may determine is necessary for administering the TIFIA Loan and this Agreement. Any calculations described above shall be rounded up to the nearest whole cent. Any partial prepayments of the Outstanding TIFIA Loan Balance pursuant to Section 10 (*Prepayment*) shall be applied in accordance with Section 10(c) (*General Prepayment Instructions*). Any adjustments or revisions to the Loan Amortization Schedule as a result of changes in the Outstanding TIFIA Loan Balance other than prepayments shall be applied to reduce future payments due on the TIFIA Bond on a pro rata basis. Absent manifest error, the TIFIA Lender's determination of such matters as set forth on **Exhibit G** shall be conclusive evidence thereof; provided, however, that neither the failure to make any such recordation nor any error in such recordation shall affect in any manner the Borrower's obligations hereunder or under any other TIFIA Loan Document. The TIFIA Lender shall provide the Borrower with a copy of **Exhibit G** as revised, but no failure to provide or delay in providing the Borrower with such copy shall affect any of the obligations of the Borrower under this Agreement or the other TIFIA Loan Documents.

Section 8. Security and Priority; Flow of Funds.

(a) The TIFIA Loan, as evidenced by the TIFIA Bond, shall be a general obligation of the State and the full faith and credit of the Borrower are hereby irrevocably pledged for the payment of the principal of, and interest on, the TIFIA Loan and other payment obligations under the TIFIA Loan Agreement. The TIFIA Loan, as evidenced by the TIFIA Bond, and other payment obligations under the TIFIA Loan Agreement, shall be payable from all funds of the Borrower not otherwise legally committed, and constitute valid, binding and continuing obligations of the Borrower until irrevocably paid in full in accordance with their terms. In addition, the TIFIA Loan, as evidenced by the TIFIA Bond, and other payment obligations under the TIFIA Loan Agreement, shall be secured by a security interest in and first priority Lien on the Pledged Revenues. The Borrower hereby unequivocally grants a first priority lien on and pledge of the Pledged Revenues as security for the payment of the principal of, and interest on, the TIFIA Loan and other payment obligations under the TIFIA Loan Agreement.

(b) The Pledged Revenues will be free and clear of any pledge, Lien, charge or encumbrance thereon or with respect thereto prior to, of equal rank with or subordinate to, the pledge of the Borrower created under this Agreement, and all organizational, regulatory or other necessary action on the part of the Borrower with respect to the foregoing has been duly and validly taken.

(c) The Borrower shall not use Pledged Revenues to make any payments or satisfy any obligations other than in accordance with the provisions of this Section 8 (*Security and Priority; Flow of Funds*) and applicable law, and shall not apply any portion of the Pledged Revenues in contravention of this Agreement or the Road Toll Act or any other law of the State.

(d) The Road Toll Act provides that all Pledged Revenues shall be applied by the Treasurer to the following purposes and in the following order of priority, as more fully described, and in accordance with the requirements specified in Section 260:32-b of the Road Toll Act:

(i) pay TIFIA Debt Service; then to

(ii) pay State Bridge Aid; then

(iii) for the Borrower Fiscal Years ending June 30, 2016 and 2017 only, to pay the appropriated amount for Highway Maintenance Funding.

All Pledged Revenues remaining after application to the foregoing purposes shall be deposited into the Highway and Bridge Betterment Account.

Section 9. Payment of Principal and Interest.

(a) Payment Dates. The Borrower agrees to pay the principal of and interest on the TIFIA Loan by making payments in accordance with the provisions of the TIFIA Loan Documents on each Semi-Annual Payment Date, beginning on the Debt Service Payment Commencement Date, and on each other date on which payment thereof is required to be made hereunder (including the Final Maturity Date and any date on which payment is due by reason of the acceleration of the maturity of the TIFIA Loan or otherwise); provided that if any such date is not a Business Day, payment shall be made on the next Business Day following such date.

Any payment of the TIFIA Bond shall be treated as a payment of the TIFIA Loan and any prepayment of principal of the TIFIA Loan shall be treated as redemption of the TIFIA Bond.

(b) [Reserved].

(c) Payment of TIFIA Debt Service.

(i) On each Semi-Annual Payment Date occurring on or after the Debt Service Payment Commencement Date and prior to the Level Payment Commencement Date, the Borrower shall pay TIFIA Debt Service in the amounts set forth in respect of such Semi-Annual Payment Date on **Exhibit G**, as the same may be revised as provided in Section 7 (*Outstanding TIFIA Loan Balance; Revisions to Exhibit G and Loan Amortization Schedule*), which payments shall be made in accordance with Section 9(f) (*Manner of Payment*).

(ii) On each Semi-Annual Payment Date occurring on or after the Level Payment Commencement Date, the Borrower shall pay TIFIA Debt Service in the amount of one hundred percent (100%) of the Fixed Level Payment, which payments shall be made in accordance with Section 9(d) (*Fixed Level Payments*) and Section 9(f) (*Manner of Payment*).

(d) Fixed Level Payments. On each Semi-Annual Payment Date occurring during the Level Payment Period, the Borrower shall make level payments of principal and interest (each a "**Fixed Level Payment**"), each of which payments shall be approximately equal in amount. The amount of the Fixed Level Payment shall be calculated in such manner that the Outstanding TIFIA Loan Balance as of the Level Payment Commencement Date shall be reduced to $0 on the Final Maturity Date (assuming that interest accrues during such period on the Outstanding TIFIA Loan Balance at the rate per annum set forth in Section 6 (*Interest Rate*) in the absence of an Event of Default, that all Fixed Level Payments are made in a timely manner during such period, and that no additional payments of principal of or interest on the TIFIA Loan are made during such period). Within thirty (30) days prior to the beginning of the Level Payment Period, the TIFIA Lender may (or, at the written request of the Borrower, shall) give written notice to the Borrower of the amount of the related Fixed Level Payment, which amount shall be deemed conclusive absent manifest error, but no failure to provide or delay in providing the Borrower with such notice shall affect any of the obligations of the Borrower under this Agreement or the other TIFIA Loan Documents. To the extent that any prepayments of the TIFIA Loan shall be made during the Level Payment Period in addition to the Fixed Level Payments, such prepayments shall be applied to the remaining Outstanding TIFIA Loan Balance and the resulting Fixed Level Payments shall be recalculated as provided in Section 10(c) (*General Prepayment Instructions*) and reflected in a revised **Exhibit G**.

(e) [Reserved].

(f) Manner of Payment. Payments under this Agreement and the TIFIA Bond shall be made by wire transfer or automated clearing house payment process on or before each Semi-Annual Payment Date in immediately available funds in accordance with payment

instructions provided by the TIFIA Lender pursuant to Section 37 (*Notices; Payment Instructions*), as modified in writing from time-to-time by the TIFIA Lender.

(g) Final Maturity Date. Notwithstanding anything herein to the contrary, the Outstanding TIFIA Loan Balance and any accrued interest thereon shall be due and payable in full on the Final Maturity Date (or on any earlier date on which the maturity of the TIFIA Loan shall be accelerated pursuant to the provisions of Section 20 (*Events of Default and Remedies*)).

(h) TIFIA Bond; Adjustments to Loan Amortization Schedule. As evidence of the Borrower's obligation to repay the TIFIA Loan, the Borrower shall issue and deliver to the TIFIA Lender, on or prior to the Effective Date, the TIFIA Bond substantially in the form of **Exhibit A**, having a maximum principal amount (excluding any capitalized interest) of $200,000,000 (subject to increase or decrease as herein provided) and bearing interest at the rate set forth in Section 6 (*Interest Rate*).

Section 10. Prepayment.

(a) [Reserved].

(b) Optional Prepayments. The Borrower may prepay the TIFIA Loan in whole or in part (and, if in part, the amounts thereof to be prepaid shall be determined by the Borrower; provided, however, that such prepayments shall be in principal amounts of $1,000,000 or any integral multiple of $1.00 in excess thereof), at any time or from time-to-time, without penalty or premium, by paying to the TIFIA Lender such principal amount of the TIFIA Loan to be prepaid, together with the unpaid interest accrued on the amount of principal so prepaid to the date of such prepayment. Each prepayment of the TIFIA Loan shall be made on such date and in such principal amount as shall be specified by the Borrower in a written notice delivered to the TIFIA Lender. In the case of any optional prepayment, such written notice shall be delivered to the TIFIA Lender not less than ten (10) days or more than thirty (30) days prior to the date set for prepayment, unless otherwise agreed by the TIFIA Lender. At any time between delivery of such written notice and the applicable optional prepayment, the Borrower may, without penalty or premium, rescind its announced optional prepayment by further written notice to the TIFIA Lender. Anything in this Section 10(b) (*Optional Prepayments*) to the contrary notwithstanding, the failure by the Borrower to make any optional prepayment shall not constitute a breach or default under this Agreement.

(c) General Prepayment Instructions. Upon the TIFIA Lender's receipt of confirmation that payment in full of the entire Outstanding TIFIA Loan Balance and any unpaid interest and fees with respect thereto has occurred as a result of an optional prepayment, the TIFIA Lender shall surrender the TIFIA Bond to the Borrower or its representative at the principal office of the TIFIA Lender. If the Borrower prepays only part of the unpaid balance of principal of such TIFIA Bond, the TIFIA Lender may make a notation on **Exhibit G** indicating the amount of principal of and interest on such TIFIA Bond then being prepaid. Absent manifest error, the TIFIA Lender's determination of such matters as set forth on **Exhibit G** shall be conclusive evidence thereof; provided, however, that neither the failure to make any such recordation nor any error in such recordation shall affect in any manner the Borrower's obligations hereunder or under any other TIFIA Loan Document. All such partial prepayments

of principal shall be applied to reduce future payments due on the TIFIA Bond on a pro rata basis. If said monies shall not have been so paid on the prepayment date, such principal amount of such TIFIA Bond shall continue to bear interest until payment thereof at the rate provided for in Section 6 (*Interest Rate*).

Section 11. [Reserved].

Section 12. Compliance with Laws. The Borrower shall, and shall require its contractors and subcontractors at all tiers for the Project to, comply in all material respects with all applicable federal and state laws. The list of federal laws attached as **Exhibit E** is illustrative of the type of requirements generally applicable to transportation projects and is not intended to be exhaustive. The FHWA Division Office has oversight responsibility for the Project, including ensuring compliance in all material respects with all applicable provisions of federal law. Pursuant to the FHWA Oversight Agreement, NHDOT may be responsible for certain Project oversight activities. The Borrower acknowledges receipt of the FHWA Oversight Agreement and hereby agrees to cause NHDOT to cooperate with the FHWA Division Office in carrying out its duties under the FHWA Oversight Agreement. The Borrower acknowledges and agrees that any costs incurred in connection with the Project prior to receipt of all necessary authorizations from the USDOT in respect of such costs (which may include approvals of prior-incurred costs) are incurred solely at the Borrower's risk and expense, will not constitute Eligible Project Costs, and no TIFIA Loan proceeds will be disbursed in respect thereof.

Section 13. Conditions Precedent.

(a) Conditions Precedent to Effectiveness. Notwithstanding anything in this Agreement to the contrary, this Agreement shall not become effective until each of the following conditions precedent shall have been satisfied or waived in writing by the TIFIA Lender:

(i) The Borrower shall have duly executed and delivered to the TIFIA Lender this Agreement and the TIFIA Bond, each in form and substance satisfactory to the TIFIA Lender.

(ii) The Borrower shall have delivered to the TIFIA Lender certified, complete, and fully executed copies of each Resolution Document that has been adopted or entered into on or prior to the Effective Date, together with all amendments or supplements thereto, and each such Resolution Document shall be in full force and effect and shall not have been subsequently modified, rescinded or amended, and are the only resolutions adopted or agreements entered into by the Borrower relating to the matters described therein and in form and substance satisfactory to the TIFIA Lender, and all conditions contained in such documents to the closing of the transactions contemplated thereby shall have been fulfilled or effectively waived (provided that for purposes of this Section 13(a)(ii) (*Conditions Precedent to Effectiveness*), any such waiver shall be subject to the TIFIA Lender's consent in its sole discretion).

(iii) Counsel to the Borrower shall have rendered to the TIFIA Lender legal opinions satisfactory to the TIFIA Lender in its sole discretion (including those opinions set forth on **Exhibit H-1**) and bond counsel to the Borrower shall have rendered

to the TIFIA Lender legal opinions satisfactory to the TIFIA Lender in its sole discretion (including those opinions set forth on **Exhibit H-2**).

(iv) The Borrower shall have provided a certificate as to the absence of debarment, suspension or voluntary exclusion from participation in Government contracts, procurement and non-procurement matters substantially in the form attached hereto as **Exhibit C** with respect to itself and its principals (as defined in 2 C.F.R. § 180.995).

(v) The Borrower shall have provided to the TIFIA Lender satisfactory evidence that the Project has been included in (A) the metropolitan transportation improvement program adopted by the Southern New Hampshire Planning Commission, (B) the State transportation plan, and (C) the State transportation improvement program approved by the USDOT or its designated agency, in each case to the extent required by 23 U.S.C. §§ 134 and 135, and 23 U.S.C. § 602(a)(3), as applicable; and the financial plan for each such program or plan shall reflect the amount of the TIFIA Loan and all other federal funds to be used for the Project as sources of funding for the Project.

(vi) The Borrower shall have provided evidence to the TIFIA Lender's satisfaction, no more than thirty (30), but no less than fourteen (14), days prior to the Effective Date, of the assignment by at least two (2) Nationally Recognized Rating Agencies of a public rating on the TIFIA Loan and no such rating has been reduced, withdrawn or suspended as of the Effective Date.

(vii) The Borrower shall have delivered to the TIFIA Lender a Certificate in the form attached hereto as **Exhibit J** (A) as to the satisfaction of certain conditions precedent set forth in this Section 13(a) (*Conditions Precedent to Effectiveness*) as required by the TIFIA Lender, (B) designating the Borrower's Authorized Representative, and (C) confirming such person's position and incumbency.

(viii) The Borrower shall have demonstrated to the TIFIA Lender's satisfaction that as of the Effective Date the aggregate of all committed sources of funds shown in the Base Case Financial Model and in the Project Budget to pay Total Project Costs have been fully and completely committed and allocated to the Borrower by the providers thereof and that such funds shall be sufficient to pay all Total Project Costs necessary to achieve Substantial Completion.

(ix) [Reserved].

(x) The Borrower shall have provided to the TIFIA Lender or the FHWA Division Office complete and fully executed copies of each Principal Project Contract, together with all amendments, waivers or modifications thereto, in each case that has been entered into on or prior to the Effective Date, and each such agreement shall be in full force and effect and in form and substance satisfactory to the TIFIA Lender, and shall not have been amended, amended and restated, modified or supplemented since the date of the last amendment, modification or supplement thereto shown on such documents as provided to the TIFIA Lender or the FHWA Division Office.

(xi) The Borrower shall have demonstrated to the TIFIA Lender's satisfaction that it has obtained all Governmental Approvals necessary to commence construction of the Project and that all such Governmental Approvals are final, non-appealable, and in full force and effect (and are not subject to any notice of violation, breach, or revocation).

(xii) The Borrower shall have delivered to the TIFIA Lender a certified Base Case Financial Model on or prior to the Effective Date, which Base Case Financial Model shall (A) demonstrate that projected Pledged Revenues are sufficient to meet the Loan Amortization Schedule, and (B) otherwise be in form and substance acceptable to the TIFIA Lender.

(xiii) The Borrower shall have (A) provided evidence satisfactory to the TIFIA Lender that the Borrower is authorized, pursuant to the Road Toll Act, to pledge, assign, and grant the Liens on the Pledged Revenues purported to be pledged, assigned, and granted pursuant to the Resolution Documents, without the need for notice to any Person, physical delivery, recordation, filing or further act, (B) recorded or filed, or caused to be recorded or filed, for record in such manner and in such places as are required all documents and instruments, and taken or caused to be taken all other actions, as are necessary or desirable to establish and enforce the TIFIA Lender's Lien on the Pledged Revenues to the extent contemplated by the Resolution Documents, and (C) paid, or caused to be paid, all taxes and filing fees that are due and payable in connection with the execution, delivery or recordation of any Resolution Documents or any instruments, certificates or financing statements in connection with the foregoing.

(xiv) The Borrower shall have paid in full all invoices delivered by the TIFIA Lender to the Borrower as of the Effective Date for the reasonable fees and expenses of the TIFIA Lender's counsel and financial advisors and any auditors or other consultants employed by the TIFIA Lender for the purposes hereof (such reasonableness to be determined in accordance with Part 31 of the Federal Acquisition Regulation).

(xv) The Borrower shall have (A) provided evidence satisfactory to the TIFIA Lender of compliance with NEPA, and (B) complied with all applicable requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601 *et seq.)* and Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*) and shall have provided evidence satisfactory to the TIFIA Lender of such compliance upon request by the TIFIA Lender.

(xvi) The TIFIA Lender shall have delivered its initial TIFIA Lender's Authorized Representative certificate.

(xvii) (A) The Borrower shall have obtained a Federal Employer Identification Number, (B) each of the Borrower and NHDOT shall have obtained a Data Universal Numbering System number, and (C) NHDOT shall have registered with, and obtained confirmation of active registration status from, the federal System for Award Management (www.SAM.gov).

(xviii) The Borrower shall have provided a certificate, in form and substance satisfactory to the TIFIA Lender and signed by the Borrower's Authorized Representative, certifying that the insurance required pursuant to Section 16(f) (*Insurance*) is in full force and effect and that such insurance complies with the requirements thereof.

(xix) The Borrower shall have provided to the TIFIA Lender evidence that the Borrower has full power, authority and legal right to own its properties and carry on its business and governmental functions as now conducted, levy and collect the Pledged Revenues and pledge the full faith and credit of the State, and shall have provided the following documents, each certified by the Borrower's Authorized Representative: (A) a copy of the Authorizing Legislation, as in effect on the Effective Date (and certified by the Secretary of State of the State, to the extent applicable), which Authorizing Legislation shall be in full force and effect and shall not have been amended since the date of the last amendment thereto shown on the certificate, and (B) a copy of such further instruments and documents as are necessary, appropriate or advisable to evidence the Borrower's authority to consummate and implement the transactions contemplated by the TIFIA Loan Documents.

(xx) The Borrower shall have provided the TIFIA Lender records of the Eligible Project Costs incurred prior to the Effective Date, in form and substance satisfactory to the TIFIA Lender and in sufficient time prior to the Effective Date to permit the TIFIA Lender and the FHWA Division Office to review such costs.

(xxi) The Borrower shall have provided to the TIFIA Lender or the FHWA Division Office, complete and fully executed copies of each Performance Security Instrument delivered to or by the Borrower or NHDOT pursuant to any Principal Project Contract as of the Effective Date, each of which is in compliance with the requirements for performance security pursuant to the applicable Principal Project Contract.

(xxii) The representations and warranties of the Borrower set forth in this Agreement (including Section 14 (*Representations and Warranties of Borrower*)) and in each other Related Document shall be true and correct, as of the Effective Date, except to the extent such representations and warranties expressly relate to an earlier date (in which case, such representations and warranties shall be true and correct as of such earlier date).

(xxiii) The Borrower shall have provided the TIFIA Lender with evidence satisfactory to the TIFIA Lender that, as of the Effective Date (A) the maximum principal amount of the TIFIA Loan (excluding any interest that is capitalized in accordance with the terms hereof), together with the amount of any other credit assistance provided under the Act to the Borrower, does not exceed thirty-three percent (33%) of reasonably anticipated Eligible Project Costs and (B) as required pursuant to § 603(b)(9) of the Act, the total federal assistance provided to the Project, including the maximum principal amount of the TIFIA Loan (excluding any interest that is capitalized in accordance with the terms hereof), does not exceed eighty percent (80%) of Eligible Project Costs.

(xxiv) [Reserved].

(xxv) [Reserved].

(xxvi) The Borrower shall have delivered such other agreements, documents, instruments, opinions and other items required by the TIFIA Lender, all in form and substance satisfactory to the TIFIA Lender, including evidence that all other Project funding requirements have been met (including evidence of other funding sources or funding commitments).

(b) Conditions Precedent to All Disbursements. Notwithstanding anything in this Agreement to the contrary, the TIFIA Lender shall have no obligation to make any disbursement of loan proceeds to the Borrower (including the initial disbursement hereunder) until each of the following conditions precedent has been satisfied or waived in writing by the TIFIA Lender:

(i) [Reserved].

(ii) With respect to any disbursement occurring sixty (60) days or more after the Effective Date, the Borrower shall have caused NHDOT to provide the Financial Plan, or the most recent update thereto, in each case in accordance with Section 22(a) (*Financial Plan*).[1]

(iii) To the extent not previously delivered to the TIFIA Lender, the Borrower shall have delivered to the TIFIA Lender certified, complete and fully executed copies of any Resolution Documents entered into after the Effective Date.

(iv) To the extent not set forth on **Exhibit L** hereto or on a schedule to a prior Requisition, NHDOT shall have provided to the TIFIA Lender, in a schedule attached to each Requisition, a certified and complete listing of each Principal Project Contract, as of the date of such Requisition.

(v) NHDOT shall have demonstrated to the TIFIA Lender's satisfaction that all Governmental Approvals necessary as of the time of the applicable disbursement for the development, construction, operation and maintenance of the Project have been issued and are in full force and effect.

(vi) The Borrower shall have provided evidence that the insurance required pursuant to Section 16(f) (*Insurance*) is in full force and effect and that such insurance complies with the requirements thereof.

(vii) At the time of, and immediately after giving effect to, any disbursement of TIFIA Loan proceeds then requested, (A) no Event of Default hereunder or event of default under any other Related Document and (B) no event that, with the

[1] Please note the requirement to update the Financial Plan

giving of notice or the passage of time or both, would constitute an Event of Default hereunder or event of default under any Related Document, in each case, shall have occurred and be continuing.

(viii) [Reserved].

(ix) The representations and warranties of the Borrower set forth in this Agreement (including Section 14 (*Representations and Warranties of Borrower*)) and in each other Related Document shall be true, correct, and complete as of each date on which any disbursement of the TIFIA Loan is made, except to the extent such representations and warranties expressly relate to an earlier date (in which case, such representations and warranties shall be true and correct as of such earlier date).

(x) No Material Adverse Effect, or any event or condition that could reasonably be expected to result in a Material Adverse Effect, shall have occurred since the date the Borrower submitted the Application to the TIFIA Lender.

(xi) NHDOT shall have delivered to the TIFIA Lender a Requisition that complies with the provisions of Section 4 (*Disbursement Conditions*), and the TIFIA Lender shall have approved (or deemed to have approved in accordance with Section 4(b) (*Disbursement Conditions*)) such Requisition.

(xii) The Borrower shall have paid in full all invoices received from the TIFIA Lender as of the date of disbursement of the TIFIA Loan, for the reasonable fees and expenses of the TIFIA Lender's counsel and financial advisors and any auditors or other consultants employed by the TIFIA Lender for the purposes hereof (such reasonableness to be determined in accordance with Part 31 of the Federal Acquisition Regulation).

(xiii) To the extent not set forth on **Exhibit M** hereto or on a schedule to a prior Requisition, the Borrower shall have provided to the TIFIA Lender, in a schedule attached to each Requisition, a certified and complete listing of each Performance Security Instrument, as of the date of such Requisition.

Section 14. Representations and Warranties of Borrower. The Borrower hereby represents and warrants, as applicable, that, as of the Effective Date and, as to each of the representations and warranties below other than those contained in Section 14(b) (*Officer's Authorization*) and Section 14(l) (*Credit Ratings*), as of each date on which any disbursement of the TIFIA Loan is requested or made:

(a) Organization; Power and Authority. The Borrower is a state, has full legal right, power and authority to enter into the Related Documents then in existence, to execute and deliver the TIFIA Bond, and to carry out and consummate all transactions contemplated hereby and thereby and has duly authorized the execution, delivery and performance of the Related Documents.

(b) Officers' Authorization. As of the Effective Date, the officers, designees, and representatives of the Borrower, the Treasurer and NHDOT executing (or that previously

executed) the Related Documents, and any certifications or instruments related thereto, to which the Borrower is a party are (or were at the time of such execution) duly and properly in office, or have been duly appointed or designated and fully authorized to execute the same.

(c) Due Execution; Enforceability. Each of the Related Documents in effect as of any date on which this representation and warranty is made, and to which the Borrower is a party, has been duly authorized, executed and delivered by the Borrower and constitutes the legal, valid and binding agreement of the Borrower enforceable in accordance with its terms, except as such enforceability (i) may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting the rights of creditors generally, and (ii) is subject to general principles of equity (regardless of whether enforceability is considered in equity or at law).

(d) Non-Contravention. The execution and delivery of the Related Documents to which the Borrower is a party, the consummation of the transactions contemplated in the Related Documents and the fulfillment of or compliance with the terms and conditions of the Related Documents will not (i) conflict with the Borrower's Organizational Documents, (ii) conflict in any material respect with, or constitute a violation, breach or default (whether immediately or after notice or the passage of time or both) by the Borrower of or under, any applicable law, administrative rule or regulation, any applicable court or administrative decree or order, or any indenture, mortgage, deed of trust, loan agreement, lease, contract or other agreement or instrument to which the Borrower is a party or by which it or its properties or assets are otherwise subject or bound, or (iii) result in the creation or imposition of any prohibited Lien, charge or encumbrance of any nature whatsoever upon any of the property or assets of the Borrower.

(e) Consents and Approvals. No consent or approval of any trustee, holder of any indebtedness of the Borrower or any other Person, and no consent, permission, authorization, order or license of, or filing or registration with, any Governmental Authority is necessary in connection with (i) the execution and delivery by the Borrower of the Related Documents, except as have been obtained or made and as are in full force and effect, or (ii) (A) the consummation of any transaction contemplated by the Related Documents or (B) the fulfillment of or compliance by the Borrower with the terms and conditions of the Related Documents, except as have been obtained or made and as are in full force and effect or as are ministerial in nature and can reasonably be expected to be obtained or made in the ordinary course on commercially reasonable terms and conditions when needed.

(f) Litigation. As of the Effective Date, except as set forth in **Schedule 14(f)**, there is no action suit, proceeding or, to the knowledge of the Borrower, any inquiry or investigation, in any case before or by any court or other Governmental Authority pending or, to the knowledge of the Borrower, threatened against or affecting the Project or the ability of the Borrower to execute, deliver and perform its obligations under the Related Documents. As of the Effective Date and as of each other date on which the representations and warranties herein are made or confirmed, there is no action, suit, proceeding or, to the knowledge of the Borrower, any inquiry or investigation before or by any court or other Governmental Authority pending, or to the knowledge of the Borrower, threatened against or affecting the Project or which threatens to materially adversely affect the Pledged Revenues or the Borrower's ability to collect the

Pledged Revenues or repay the TIFIA Loan, that in any case could reasonably be expected to result in a Material Adverse Effect. To the knowledge of the Borrower, there are no actions of the type described above pending or, threatened against or affecting any of the Principal Project Parties, except for matters arising after the Effective Date that could not reasonably be expected to (i) result in a Material Adverse Effect or (ii) adversely affect the Borrower's ability to receive Pledged Revenues in amounts sufficient to meet the financial projections contained in the Base Case Financial Model (or any Revised Financial Model, to the extent any Revised Financial Model has been approved by the TIFIA Lender). The Borrower is not in default (and no event has occurred and is continuing that, with the giving of notice or the passage of time or both, could constitute a default) with respect to any Governmental Approval related to the Project, which default could reasonably be expected to result in a Material Adverse Effect.

(g) Security Interests. This Agreement establishes, in favor of the TIFIA Lender, the valid and binding Liens on the Pledged Revenues that they purport to create, irrespective of whether any Person has notice of the pledge and without the need for any physical delivery, recordation, filing, or further act. Such Liens are in full force and effect and are not subordinate or junior to any other Liens in respect of the Pledged Revenues, and not *pari passu* with any obligations. The Borrower has duly and lawfully taken all actions required under this Agreement, the Resolution Documents, and applicable laws for the pledge of the Pledged Revenues pursuant to and in accordance with the Resolution Documents. The Borrower is not in breach of any covenants set forth in Section 16(a) (*Securing Liens*) or in the Resolution Documents with respect to the matters described in such section or documents. As of the Effective Date and as of each other date this representation and warranty is made, (i) all documents and instruments have been recorded or filed for record in such manner and in such places as are required and all other action as is necessary or desirable has been taken to establish a legal, valid, binding, and enforceable Lien on the Pledged Revenues in favor of the TIFIA Lender to the extent contemplated by the Resolution Documents, and (ii) all taxes and filing fees that are due and payable in connection with the execution, delivery or recordation of any Resolution Documents or any instruments, certificates or financing statements in connection with the foregoing, have been paid.

(h) No Debarment. The Borrower has fully complied with its verification obligations under 2 C.F.R. § 180.320 and confirms, based on such verification, that, to its knowledge, neither the Borrower, the Treasurer or NHDOT nor any of their respective principals (as defined in 2 C.F.R. § 180.995) is debarred, suspended or voluntarily excluded from participation in Government contracts, procurement or non-procurement matters or delinquent on a Government debt as more fully set forth in the certificate delivered pursuant to Section 13(a)(iv) (*Conditions Precedent to Effectiveness*).

(i) Accuracy of Representations and Warranties. The representations, warranties and certifications of the Borrower set forth in this Agreement and the other Related Documents are true, correct, and complete, except to the extent such representations and warranties expressly relate to an earlier date (in which case, such representations and warranties shall be true, correct, and complete as of such earlier date).

(j) Compliance with Federal Requirements. The Borrower and NHDOT have each complied, with respect to the Project, with all applicable requirements of NEPA, the

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601 *et seq.*), and Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*).

(k) Transportation Improvement Program. The Project has been included in (i) the metropolitan transportation improvement program adopted by the Southern New Hampshire Planning Commission, (ii) the State transportation plan, and (iii) the State transportation improvement program approved by the USDOT or its designated agency, in each case to the extent required by 23 U.S.C. §§ 134 and 135 and 23 U.S.C. § 602(a)(3), as applicable. The financial plan for each such program or plan reflects the amount of the TIFIA Loan and all other federal funds to be used for the Project as sources of funding for the Project.

(l) Credit Ratings. The TIFIA Loan has received a public rating from at least two (2) Nationally Recognized Rating Agencies, and written evidence of such ratings has been provided to the TIFIA Lender prior to the Effective Date, and no such rating has been reduced, withdrawn or suspended as of the Effective Date.

(m) No Defaults. The Borrower is not in default under the terms of any Related Document, and no event has occurred or condition exists that, with the giving of notice or the passage of time or both, would constitute an Event of Default.

(n) Governmental Approvals. All Governmental Approvals required as of the Effective Date and any subsequent date on which this representation is made (or deemed made) for the undertaking and completion by the Borrower of the Project and for the operation and management thereof, have been obtained or effected and are in full force and effect and there is no basis for, nor proceeding that is pending or threatened that could reasonably be expected to result in, the revocation of any such Governmental Approval.

(o) Principal Project Contracts. Each Principal Project Contract in effect as of any date on which this representation and warranty is made is in full force and effect and all conditions precedent to the obligations of the respective parties under each Principal Project Contract have been satisfied. The Borrower has delivered to the TIFIA Lender or the FHWA Division Office a fully executed, complete and correct copy of each such Principal Project Contract and each Performance Security Instrument (required to be delivered to, or requested by, the TIFIA Lender pursuant to Section 16(b) (*Copies of Documents*)) (including, in each case all exhibits, schedules and other attachments) that is in effect, including any amendments or modifications thereto and any related credit support instruments or side letters. No event has occurred that gives the Borrower, or to the Borrower's knowledge, any Principal Project Party, the right to terminate any such Principal Project Contract. The Borrower is not in breach of any material term in or in default under any of such Principal Project Contracts, and to the knowledge of the Borrower no party to any of such agreements or contracts is in breach of any material term therein or in default thereunder.

(p) Information. The information furnished by the Borrower or NHDOT to the TIFIA Lender, when taken as a whole, does not contain any untrue statement of a material fact or omit to state any material fact necessary to make the statements contained therein not misleading as of the date made or furnished; provided that no representation or warranty is made with regard to projections or other forward-looking statements provided by or on behalf of the

Borrower or NHDOT (including the Base Case Financial Model, any Revised Financial Model, and the assumptions therein) except that the assumptions in the Base Case Financial Model and any Revised Financial Model were reasonable in all material respects when made.

(q) OFAC; Anti-Corruption Laws. Neither the Borrower, NHDOT nor, to the knowledge of the Borrower, any Principal Project Party:

(i) is in violation of or, since the date that is five (5) years prior to the Effective Date, has violated: (A) any applicable anti-money laundering laws, including those contained in the Bank Secrecy Act and the Patriot Act; (B) any applicable economic sanction laws administered by OFAC or by the United States Department of State; or (C) any applicable anti-drug trafficking, anti-terrorism, or anti-corruption laws, civil or criminal; or

(ii) is a Person:

(A) that is charged with, or has received notice from a Governmental Authority that it is under investigation for, any violation of any such laws;

(B) that has been, since the date that is five (5) years prior to the Effective Date, convicted of any violation of, has been subject to criminal or civil penalties pursuant to, had any of its property seized or forfeited under, or has entered into any agreement with the Government or a state or local government related to violations of any such laws;

(C) that is named on the list of "Special Designated Nationals or Blocked Persons" maintained by OFAC (or any successor Government office or list), or any similar list maintained by the United States Department of State (or any successor Government office or list);

(D) with whom any U.S. Person (as defined by the applicable OFAC regulations) is prohibited from transacting business of the type contemplated by this Agreement and the other Related Documents under any other applicable law; or

(E) with respect to a Principal Project Party, that is owned (other than any Person beneficially owning or holding five percent (5%) or less of the equity interests of such Principal Project Party), Controlled by, or affiliated with any Person identified in clause (A), (B), (C) or (D) of this clause (ii).

(r) Compliance with Law. Each of the Borrower and NHDOT is in compliance in all material respects with, and each has conducted (or caused to be conducted) its operational and governmental functions with respect to the Project and the operations of the Project in compliance in all material respects with, all applicable laws (other than Environmental Laws, which are addressed in Section 14(s) (*Environmental Matters*)), including those set forth on **Exhibit E**, to the extent applicable. To the knowledge of the Borrower, each Principal Project Party is, and has caused its respective contractors and subcontractors to be, in compliance

in all material respects with all applicable laws, including those set forth on **Exhibit E**, to the extent applicable. No notices of violation of any applicable law have been issued, entered or received by the Borrower or, to the Borrower's knowledge and solely in respect of the Project or any Principal Project Contract, any Principal Project Party, other than, in each case, notices of violations that are immaterial.

(s) Environmental Matters. Each of the Borrower and NHDOT and, to the knowledge of the Borrower, each Principal Project Party is in compliance with all laws applicable to the Project relating to (i) air emissions, (ii) discharges to surface water or ground water, (iii) noise emissions, (iv) solid or liquid waste disposal, (v) the use, generation, storage, transportation or disposal of toxic or hazardous substances or wastes, (vi) biological resources (such as threatened and endangered species), and (vii) other environmental, health or safety matters, including all laws applicable to the Project referenced in the notice "Federal Environmental Statutes, Regulations, and Executive Orders Applicable to the Development and Review of Transportation Infrastructure Projects," 79 Fed. Reg. 22756 (April 23, 2014) (or any successor Federal Register notice of similar import), which document is available at http://www.transportation.gov/policy/transportation-policy/environment/laws (the "**Environmental Laws**"). **Schedule 14(s)** lists all Governmental Approvals relating to Environmental Laws for the Project. All Governmental Approvals for the Project relating to Environmental Laws have been, or, when required, will be, obtained and are (or, as applicable, will be) in full force and effect. Neither the Borrower nor NHDOT has received any written communication or notice, whether from a Governmental Authority, employee, citizens group, or any other Person, that alleges that the Borrower or NHDOT is not in full compliance with all Environmental Laws and Governmental Approvals relating thereto in connection with the Project and, to the Borrower's or NHDOT's knowledge, there are no circumstances that may prevent or interfere with full compliance in the future by the Borrower or NHDOT with any such Environmental Law or Governmental Approval. The Borrower has provided to the TIFIA Lender all material assessments, reports, results of investigations or audits, and other material information in the possession of or reasonably available to the Borrower or NHDOT regarding the Borrower's or the Project's compliance with (A) Environmental Laws and (B) Governmental Approvals relating to Environmental Laws that are required for the Project.

(t) Sufficient Rights and Utilities. The Borrower possesses either valid legal and beneficial title to, leasehold title in, or other valid legal rights with respect to the real property relating to the Project, in each case as is necessary and sufficient as of the date this representation is made for the construction, operation, maintenance and repair of the Project. As of any date on which this representation and warranty is made, the Principal Project Contracts then in effect and the Governmental Approvals that have been obtained and are then in full force and effect create rights in the Borrower sufficient to enable the Borrower to own, construct, operate, maintain and repair the Project and to perform its obligations under the Principal Project Contracts to which it is a party. All utility services, means of transportation, facilities and other materials necessary for the construction and operation of the Project (including, as necessary, gas, electrical, water and sewage services and facilities) are, or will be when needed, available to the Project and arrangements in respect thereof have been made on commercially reasonable terms.

(u) Insurance. Each Principal Project Party is in compliance with all insurance obligations required under each Principal Project Contract and the other Related Documents as of the date on which this representation and warranty is made.

(v) Title. The Borrower has valid legal and beneficial title to the Pledged Revenues on which it purports to grant Liens pursuant to the Resolution Documents, in each case free and clear of any Lien of any kind.

(w) No Liens. The Borrower has not created, and is not under any obligation to create, and has not entered into any transaction or agreement that would result in the imposition of any Lien on the Pledged Revenues.

(x) Intellectual Property. The Borrower owns, or has adequate licenses or other valid rights to use, all patents, trademarks, service marks, trade names, copyrights, franchises, formulas, licenses and other rights with respect thereto and has obtained assignment of all licenses and other rights of whatsoever nature, in each case necessary for the construction of the Project. To the Borrower's knowledge, there exists no conflict with the rights or title of any third party with respect to the intellectual property described in the preceding sentence. Excluding the use of commercially available "off-the-shelf" software, to the Borrower's knowledge, no product, process, method, substance, part or other material produced or employed or presently contemplated to be produced by or employed by the Project infringes or will infringe any patent, trademark, service mark, trade name, copyright, franchise, formula, license or other intellectual property right of any third party.

(y) Investment Company Act. The Borrower is not, and after applying the proceeds of the TIFIA Loan will not be, required to register as an "investment company" within the meaning of the Investment Company Act of 1940, as amended, and is not "controlled" by a company required to register as an "investment company" under the Investment Company Act of 1940, as amended.

(z) Financial Statements. Each statement of net position, statement of activities, balance sheet, and reconciliation statement (collectively, "**Financial Statements**") delivered to the TIFIA Lender pursuant to Section 22(c) (*Financial Statements*) has been prepared in accordance with GAAP and presents fairly, in all material respects, the financial condition of the Borrower as of the respective dates of the statement included therein and the results of operations of the Borrower for the respective periods covered by the statements of income included therein. Except as reflected in such Financial Statements, there are no liabilities or obligations of the Borrower of any nature whatsoever for the period to which such Financial Statements relate that are required to be disclosed in accordance with GAAP.

(aa) Taxes. The Borrower has filed all required tax returns when due with any Governmental Authority.

(bb) ERISA. Neither the Borrower, NHDOT nor any ERISA Affiliate maintains or otherwise has any liability in respect of any plan or other arrangement that is subject to ERISA or Section 412 of the Code.

(cc) Sufficient Funds. The aggregate of (i) all funds that are undrawn but fully and completely committed under the Resolution Documents, State Transportation Improvement Plan and Ten Year Transportation Improvement Plan, and this Agreement, (ii) all delay payments and insurance proceeds in respect of any casualty loss (other than any proceeds of business interruption insurance, delay-in-start-up insurance and proceeds covering liability of the Borrower to third parties) received by the Borrower or NHDOT or to which the Borrower or NHDOT is entitled in accordance with the Principal Project Contracts, and (iii) all funds available under any other unused funding that is committed and available, will be sufficient to pay all Total Project Costs necessary to achieve Substantial Completion.

(dd) Sovereign Immunity. As provided in N.H. Revised Statutes § 491:8, the Superior Court of the State of New Hampshire has jurisdiction to enter a judgment against the Borrower founded upon any express or implied contract including this Agreement and any other Related Documents and the Borrower does not have immunity from the jurisdiction of such court to enforce the obligations of the Borrower under this Agreement or any of the other Related Documents or the transactions contemplated hereby or thereby, including the obligations of the Borrower hereunder and thereunder.

(ee) Patriot Act. The Borrower is not required to establish an anti-money laundering compliance program pursuant to the Patriot Act.

(ff) Favorable Terms. All of the benefits and terms granted by the Borrower herein are at least as favorable as the benefits and terms granted by the Borrower to any Bondholder holding an outstanding Bond as of the Effective date.

Section 15. Representations and Warranties of TIFIA Lender. The TIFIA Lender represents and warrants that:

(a) Power and Authority. The TIFIA Lender has all requisite power and authority to make the TIFIA Loan and to perform all transactions contemplated by the Related Documents to which it is a party.

(b) Due Execution; Enforceability. The Related Documents to which it is a party have been duly authorized, executed and delivered by the TIFIA Lender, and are legally valid and binding agreements of the TIFIA Lender, enforceable in accordance with their terms.

(c) Officers' Authorization. The officers of the TIFIA Lender executing each of the Related Documents to which the TIFIA Lender is a party are duly and properly in office and fully authorized to execute the same on behalf of the TIFIA Lender.

Section 16. Affirmative Covenants. The Borrower covenants and agrees as follows until the date the TIFIA Bond and the obligations of the Borrower under this Agreement (other than contingent indemnity obligations) are irrevocably paid in full in cash and the TIFIA Lender no longer has any commitment to make disbursements to the Borrower, unless the TIFIA Lender waives compliance in writing:

(a) Securing Liens. The Borrower shall at any and all times, so far as it may be authorized by law, make, do, execute, acknowledge and deliver, all and every such further

resolutions, actions, deeds, conveyances, assignments, transfers and assurances as may be necessary or desirable in connection with assuring, conveying, granting, assigning, securing and confirming the Liens on the Pledged Revenues (whether now existing or hereafter arising) granted to the TIFIA Lender pursuant to the Resolution Documents, or intended so to be granted pursuant to the Resolution Documents, or which the Borrower may become bound to grant, and the Borrower shall at all times maintain the Pledged Revenues free and clear of any pledge, Lien, charge or encumbrance thereon or with respect thereto that has priority over, or equal rank with, the Liens created by this Agreement, other than as permitted by this Agreement, and all organizational, regulatory or other necessary action on the part of the Borrower to that end shall be duly and validly taken at all times. The Borrower shall at all times, to the extent permitted by law, defend, preserve and protect the Liens on the Pledged Revenues granted pursuant to this Agreement and all the rights of the TIFIA Lender under the Resolution Documents against all claims and demands of all Persons whomsoever.

(b) Copies of Documents. The Borrower shall furnish to the TIFIA Lender a copy of any preliminary and final offering documents and cash flow projections prepared in connection with the issuance or incurrence of any indebtedness subject to approval by the TIFIA Lender pursuant to Section 17(a) (*Indebtedness*), in each case, prior to the issuance or incurrence of such other indebtedness, as well as copies of any continuing disclosure documents, prepared by or on behalf of the Borrower in connection with the incurrence of such indebtedness, in each case promptly following the filing thereof.

(c) Use of Proceeds. The Borrower shall, and shall cause NHDOT to, use the proceeds of the TIFIA Loan for purposes permitted by applicable law and as otherwise permitted under this Agreement and the other Related Documents.

(d) Prosecution of Work; Verification Requirements.

(i) The Borrower shall, and shall cause NHDOT to, diligently prosecute the work relating to the Project and complete the Project in accordance with the Construction Schedule, and in accordance with the highest standards of the Borrower's industry.

(ii) The Borrower shall ensure that each Construction Contractor complies with all applicable laws and legal or contractual requirements with respect to any performance security instrument delivered by such Construction Contractor to the Borrower or NHDOT and shall ensure that any performance security instrument provided pursuant to any Construction Agreement meets the requirements therefor set forth in such Construction Agreement.

(iii) The Borrower shall, and shall cause NHDOT to, comply with the verification requirements set forth in 2 C.F.R. §§ 180.300 and 180.320.

(e) Operations and Maintenance. The Borrower shall, and shall cause NHDOT to, (i) operate and maintain the Project (A) in a reasonable and prudent manner and (B) substantially in accordance with the Financial Plan most recently approved by the TIFIA Lender (except as necessary to prevent or mitigate immediate threats to human health and safety or to

prevent or mitigate physical damage to material portions of the Project), and (ii) maintain the Project in good repair, working order and condition and in accordance with the requirements of all applicable laws and each applicable Related Document. The Borrower shall, and shall cause NHDOT to, at all times do or cause to be done all things necessary to obtain, preserve, renew, extend and keep in full force and effect the Governmental Approvals and any other rights, licenses, franchises, and authorizations material to the conduct of its business.

(f) Insurance.

(i) The Principal Project Contracts and any Additional Project Contracts shall provide that the Principal Contract Parties shall at all times maintain or cause to be maintained insurance for the construction of the Project, with responsible insurers, as required by the Principal Project Contracts and as is customarily maintained in the United States of America with respect to works and properties of like character, against accident to, loss of or damage to such works or properties, which shall include liability coverage and pollution coverage. The Borrower shall cause each Principal Project Party to obtain and maintain casualty and liability insurance in accordance with the requirements of the applicable Principal Project Contract.

(g) Notice.

(i) The Borrower shall, within ten (10) Business Days after the Borrower learns of the occurrence (except as otherwise specified in this Section), give the TIFIA Lender notice of any of the following events or receipt of any of the following notices, as applicable, setting forth details of such event:

(A) Substantial Completion: the occurrence of Substantial Completion, such notice to be provided in the form set forth in **Exhibit K**;

(B) Events of Default: any Event of Default or any event that, with the giving of notice or the passage of time or both, would constitute an Event of Default;

(C) Litigation: The Borrower shall give the TIFIA Lender notice of the events contained in this paragraph within ten (10) business days after the State's Attorney General's Office learns of any of the following: (1) the filing of any litigation, suit or action, or the commencement of any proceeding, against the Borrower or NHDOT before any arbitrator, Governmental Authority, alternative dispute resolution body, or other neutral third-party, or the receipt by the Borrower or NHDOT in writing of any threat of litigation, suit, action, or proceeding, or of any written claim against the Borrower or NHDOT that, in each case, could reasonably be expected to have a Material Adverse Effect, and any material changes in the status of such litigation, suit, action or claim; (2) any judgments against the Borrower with award amounts in excess of $250,000,000 or against NHDOT with award amounts in excess of $75,000,000, either individually or in the aggregate, and (3) any material notices or filings in respect of any action, petition, suit or proceeding listed in **Schedule 14(f)**;

(D) Delayed Governmental Approvals: any failure to receive or delay in receiving any Governmental Approval or making any required filing, notice, recordation or other demonstration to or with a Governmental Authority, in each case to the extent such failure or delay will or could reasonably be expected to result in a delay to any major milestone date (including the Projected Substantial Completion Date) set forth in the Construction Schedule, together with a written explanation of the reasons for such failure or delay and the Borrower's plans to remedy or mitigate the effects of such failure or delay;

(E) Environmental Notices: any material notice of violation under any Environmental Law related to the Project or any material changes to the NEPA Determination;

(F) Insurance Claim: any insurance claims made by the Borrower, NHDOT or a Construction Contractor in respect of the Project in excess of $40,000,000[2] either individually or in the aggregate, to the extent related to the Project;

(G) Amendments: except as otherwise agreed by the TIFIA Lender in writing, copies of fully executed amendments to the Resolution Documents within ten (10) days following execution thereof;

(H) Principal Project Contract Defaults: any material breach or default or event of default on the part of the Borrower or any other party under any Principal Project Contract;

(I) Uncontrollable Force: the occurrence of any Uncontrollable Force that could reasonably be expected to result in a Material Adverse Effect;

(J) Project Changes: any (A) change to the Total Project Costs forecasts in excess of five percent (5%) of total forecasted Total Project Costs; or (B) material change to the Construction Schedule;

(K) Ratings Changes: any change in the rating assigned to the Bonds or the TIFIA Loan by any Nationally Recognized Rating Agency that has provided a public rating on such indebtedness, the Borrower, or the Pledged Revenues;

(L) 2 C.F.R. § 180.350 Notices: any notification required pursuant to 2 C.F.R. § 180.350, whether attributable to a failure by the Borrower to disclose information previously required to have been disclosed or due to the Borrower or any of its principals meeting any of the criteria set forth in 2 C.F.R. § 180.335;

(M) Other Adverse Events: the occurrence of any other event or condition, including any notice of breach from a contract counterparty, that could reasonably be expected to result in a Material Adverse Effect;

[2] This amount is consistent with the 5% threshold for Project Changes in (J) below.

(N) Acceleration Rights: the Borrower enters into or otherwise consents to any Contractual Obligation (or amendment thereto) that provides for Rights of Acceleration, or any such Contractual Obligation is released, terminated or otherwise discharged; provided that such notice shall be delivered in accordance with Section 16(u);

(O) Favorable Terms: the Borrower enters into or otherwise consents to any Contractual Obligation (or amendment thereto) that provides for benefits or terms more favorable than those contained in this Agreement, or any such Contractual Obligation is released, terminated or otherwise discharged; provided that such notice shall be delivered in accordance with Section 16(v);

(P) Change in Organizational Documents, Authorizing Legislation or Fiscal Year: the Borrower amends or modifies its or NHDOT's Organizational Documents or the Authorizing Legislation, other than any amendment or modification that is of a ministerial nature or that is not adverse to the interests of the TIFIA Lender under the TIFIA Loan Documents or in the Pledged Revenues, or adopts a new Borrower Fiscal Year; provided, the notice of a change of the Borrower Fiscal Year shall be provided within thirty (30) days after adoption or modification thereof; and

(Q) Additional Project Contracts: the Borrower or NHDOT enter into an Additional Project Contract.

(ii) The Borrower shall provide the TIFIA Lender with any further information reasonably requested by the TIFIA Lender from time to time concerning the matters described in Section 16(g)(i) (*Notice*).

(h) Remedial Action. Within thirty (30) calendar days after the Borrower or NHDOT learns of the occurrence of an event specified in Section 16(g)(i) (*Notice*) (other than in Section 16(g)(i)(A) (*Substantial Completion*), Section 16(g)(i)(G) (*Amendments*) or Section 16(g)(i)(K) (*Ratings Changes*) (in the case of a ratings upgrade)), the Borrower's Authorized Representative shall provide a statement to the TIFIA Lender setting forth the actions the Borrower proposes to take with respect thereto.

(i) [Reserved].

(j) Annual Rating. The Borrower shall, commencing in 2017, no later than the last Business Day of June of each year, or if the Borrower most recently delivered evidence of the public rating on the TIFIA Bond at some time other than the month of June, within twelve (12) months of such latest report or letter, during the term of the TIFIA Bond, at no cost to the TIFIA Lender, provide to the TIFIA Lender a public rating on the TIFIA Bond by a Nationally Recognized Rating Agency, together with the rating report or letter delivered by such Nationally Recognized Rating Agency in connection with each such rating, in each case prepared no earlier than June 1 of such year, or within twelve (12) months of the most recent report or letter, if applicable.

(k) [Reserved].

(l) [Reserved].

(m) [Reserved].

(n) Material Obligations; Liens. The Borrower shall pay its material obligations with respect to the Project promptly and in accordance with their terms and pay and discharge promptly all taxes, assessments and governmental charges or levies imposed upon the Borrower with respect to the Project or upon the Pledged Revenues, before the same shall become delinquent or in default, as well as all lawful and material claims for labor, materials and supplies or other claims which, if unpaid, might give rise to a Lien upon the Pledged Revenues; provided, however, that such payment and discharge shall not be required with respect to any such tax, assessment, charge, levy, claim or Lien so long as the validity or amount thereof shall be contested by the Borrower in good faith by appropriate proceedings and so long as the Borrower shall have set aside adequate reserves with respect thereto in accordance with and to the extent required by GAAP, applied on a consistent basis.

(o) [Reserved].

(p) SAM Registration. The Borrower shall, and shall cause NHDOT to, (i) maintain an active registration status with the federal System for Award Management (www.SAM.gov) (or any successor system or registry) and (ii) within sixty (60) days prior to each anniversary of the Effective Date, provide to the TIFIA Lender evidence of such active registration status with no active exclusions reflected in such registration, in each case until the Final Maturity Date or to such earlier date as all amounts due or to become due to the TIFIA Lender hereunder have been irrevocably paid in full in cash.

(q) [Reserved].

(r) Immunity. The Borrower agrees that, to the extent that any laws promulgated on or after the Effective Date (each a "**Future Law**"), permit it to waive any immunity it may assert as a governmental entity from lawsuits, other actions and claims, and any judgments, with respect to the enforcement of any of its respective obligations under this Agreement or any other TIFIA Loan Document, other than in accordance with N.H. Revised Statutes § 491:8, the Borrower hereby waives any such immunity to the extent permitted by any Future Law.

(s) Patriot Act. If the anti-money laundering compliance program provisions of the Patriot Act become applicable to the Borrower, NHDOT or the Treasurer, then the Borrower will provide written notice to the TIFIA Lender of the same and will promptly establish an anti-money laundering compliance program that complies with all requirements of the Patriot Act.

(t) Rural Projects. In each Borrower Fiscal Year 2017 through the Borrower Fiscal Year 2025, the Borrower shall either expend or encumber all funds appropriated by the State and deposited in the Highway and Bridge Betterment Account under the Road Toll Act to the State-funded portions of Rural Projects. To the extent that the Borrower does not encumber or expend all of the amounts appropriated and deposited in the Highway and Bridge Betterment Account in such Borrower Fiscal Year, then the Borrower shall have until the end of the following Borrower Fiscal Year to encumber or expend such remaining funds ("**Rural Projects**

Funding Deadline"). In the event the Borrower fails to encumber or expend the required amount of funds by a Rural Projects Funding Deadline, then the interest rate on the Outstanding TIFIA Loan Balance shall be increased to an interest rate per annum equal to [_____]% commencing on the day after such Rural Project Funding Deadline and continuing, until (i) the Borrower has encumbered or expended the required amount of funds or (ii) the Outstanding TIFIA Loan Balance has been irrevocably paid in full in cash.

(u) Acceleration.

(i) The Borrower shall promptly, upon entering into or otherwise consenting to any Contractual Obligation (or amendment thereto) that provides for Rights of Acceleration, but not later than five (5) days after execution of any such Contractual Obligation (or amendment thereto), provide written notice of the same to the TIFIA Lender, together with a copy of any loan documents, security agreements, or other agreements evidencing such Contractual Obligation and a Certificate certifying as to all of the Contractual Obligations then in effect and containing Rights of Acceleration; provided that the TIFIA Lender shall maintain the benefit of the Rights of Acceleration hereunder from and after the effective date of any Contractual Obligation that provides for Rights of Acceleration, as provided in Section 20(d)(iv), even if the Borrower fails to provide such notice.

(ii) The Borrower shall promptly, upon the occurrence of (x) an event of default pursuant to any such Contractual Obligation for which the Rights of Acceleration may be exercised by the Borrower's counterparty or (y) the release, termination or other discharge of any such Contractual Obligation (other than this Agreement) that provides for Rights of Acceleration or amendment thereto, but not later than five (5) days after the occurrence of such event, provide written notice of the same to the TIFIA Lender, together with, as applicable, a copy of any notice of event of default or loan documents and security agreements evidencing the removal of such Rights of Acceleration or the release, termination or other discharge of such Contractual Obligation.

(v) Favorable Terms.

(i) In the event that the Borrower enters into any Contractual Obligation after the Effective Date with any other Bondholder which provides for terms more favorable than those contained in this Agreement, then this Agreement shall be deemed to be modified to provide the TIFIA Lender with those more favorable terms for so long as such Contractual Obligation is in effect. The Borrower shall promptly, upon entering into or otherwise consenting to any Contractual Obligation (or amendment thereto) that provides for terms more favorable than those contained in this Agreement, but not later than five (5) days after execution of any such Contractual Obligation (or amendment thereto), provide written notice of the same to the TIFIA Lender, together with a copy of any loan documents, security agreements, or other agreements evidencing such Contractual Obligation and a Certificate certifying as to all of the Contractual Obligations then in effect and containing those more favorable terms; provided that the TIFIA Lender shall maintain the benefit of the more favorable terms hereunder from and

after the effective date of any Contractual Obligation that provides for such more favorable terms even if the Borrower fails to provide such notice.

(ii) If requested by the TIFIA Lender, the Borrower shall, enter into an amendment to this Agreement with the TIFIA Lender which contains the more favorable terms.

(iii) For the avoidance of doubt, "terms more favorable than those contained in this Agreement" shall not include loan amounts, interest rates, payment dates, optional prepayments or sinking fund payments.

(w) Payments Subject to Appropriation by the State. To the extent that any payment obligations (including judgments) pursuant to this Agreement or the TIFIA Bond, or required to be paid by the Borrower in order to comply with this Agreement, are subject to appropriation by the State, the Borrower shall use its best efforts to identify and secure, in good faith, legally available appropriations, to satisfy any such payment obligation and, in the event legally available appropriations are insufficient, present the payment obligation to the legislature of the State for appropriation, as and to the extent permitted by law.

Section 17. Negative Covenants. The Borrower covenants and agrees as follows until the date the TIFIA Bond and the obligations of the Borrower under this Agreement (other than contingent indemnity obligations) are irrevocably paid in full in cash, unless the TIFIA Lender waives compliance in writing:

(a) Indebtedness. The Borrower shall not, without the prior written consent of the TIFIA Lender, issue or incur any indebtedness payable from, secured or supported by the Pledged Revenues.

(b) No Lien Extinguishment or Adverse Amendments. The Borrower shall not, and shall not permit any Person to, without the prior written consent of the TIFIA Lender, either (i) extinguish or impair the Liens on the Pledged Revenues granted pursuant to the Resolution, (ii) amend, modify, replace, or supplement any Related Document to which the Borrower is a party in a manner that could adversely affect the TIFIA Lender (in the TIFIA Lender's determination) in connection with the TIFIA Loan, (iii) waive or permit a waiver of any provision of any Related Document to which the Borrower is a party in a manner that could adversely affect the TIFIA Lender (in the TIFIA Lender's determination) in connection with the TIFIA Loan, or (iv) terminate, assign, amend or modify, or waive timely performance by any party of material covenants under any Principal Project Contract except for termination, assignment, amendment, modification or waiver that could not reasonably be expected to have a Material Adverse Effect (in the TIFIA Lender's determination). Except as otherwise agreed by the TIFIA Lender in writing, the Borrower will provide to the TIFIA Lender (x) copies of any proposed amendments, modifications, replacements of, or supplements to any Related Document at least thirty (30) days prior to the effective date thereof and (y) complete, correct and fully executed copies of any amendment, modification or supplement to any Related Document within five (5) Business Days after execution thereof.

(c) No Prohibited Liens. Except for Liens imposed pursuant to the TIFIA Loan Documents, the Borrower shall not, and shall not permit NHDOT or any other person to, create, incur, assume or permit to exist any Lien on the Pledged Revenues, or the Borrower's respective rights therein. The Borrower shall not, and shall not permit NHDOT to, collaterally assign any of its rights under or pursuant to any Principal Project Contract and shall not permit a Lien to encumber the Borrower's rights or privileges under any Principal Project Contract, unless pursuant to the Resolution Documents in favor of the TIFIA Lender.

(d) [Reserved].

(e) [Reserved].

(f) No Prohibited Sale or Assignment. The Borrower shall not sell, lease or assign its rights in and to the Pledged Revenues or its rights and obligations under any Related Document.

(g) Organizational Documents and Authorizing Legislation. The Borrower shall not at any time (i) amend or modify its Organizational Documents or the Authorizing Legislation (other than any amendment or modification that is of a ministerial nature and that is not adverse to the interests of the TIFIA Lender under the TIFIA Loan Documents or in the Pledged Revenues).

(h) Transactions with other Governmental Authorities. The Borrower shall not (i) sell or transfer any property or assets constituting part of the Project to any other Governmental Authority, or (ii) otherwise engage in any other transactions in connection with the Project with, any other Governmental Authority (including any other Governmental Authority of or in the State), in either case, the terms and provisions of which are materially adverse to the Borrower or the Project or that could reasonably be expected to result in a Material Adverse Effect.

(i) No Payment with Federal Funds. The Borrower shall not pay any portion of TIFIA Debt Service nor any other amount to the TIFIA Lender or the Government pursuant to the TIFIA Loan Documents with funds received directly or indirectly from the Government.

(j) Change in Legal Structure. The Borrower shall not, and shall not agree to, reorganize, consolidate with or merge into another Person unless:

(i) such Person is a successor public authority created by the State laws that succeeds to the assets of the Borrower and assumes the obligations of the Borrower hereunder and under the TIFIA Loan Documents, including the payment of the TIFIA Bond and in each case, including reorganization, does not adversely affect or impair to any extent or in any manner:

(A) the Pledged Revenues or other elements of the Pledged Revenues; or

(B) the availability of the Pledged Revenues for the payment and security of the obligations of the Borrower under this Agreement; and

(ii) the Borrower provides to the TIFIA Lender, no later than sixty (60) days prior to the date of reorganization, consolidation or merger, prior written notice that such reorganization, consolidation or merger does not result in a Material Adverse Effect. The documents authorizing any reorganization, consolidation or merger shall contain a provision, satisfactory in form and substance to the TIFIA Lender, that, following such reorganization, consolidation or merger, the successor will assume, by operation of law or otherwise, the due and punctual performance and observance of all of the representations, warranties, covenants, agreements and conditions of this Agreement and the other Related Documents to which the Borrower is a party. In addition, the Borrower shall provide all information concerning such reorganization, consolidation or merger as shall have been reasonably requested by the TIFIA Lender.

(k) No Defeasance of TIFIA Bond. The Borrower shall not defease the TIFIA Bond without the prior written consent of the TIFIA Lender.

(l) OFAC Compliance. The Borrower shall not, and shall cause NHDOT not, to:

(i) violate (A) any applicable anti-money laundering laws, including those contained in the Bank Secrecy Act and the Patriot Act, (B) any applicable economic sanction laws administered by OFAC or by the United States Department of State, or (C) any applicable anti-drug trafficking, anti-terrorism, or anti-corruption laws, civil or criminal; or

(ii) be a Person (A) that is charged with, or that has received notice from a Governmental Authority that it is under investigation for, any violation of any such laws, (B) that is convicted of any violation of, is subject to civil or criminal penalties pursuant to, has any of its property seized or forfeited under, or enters into any agreement with the Government or a state or local government related to violations of, any such laws, (C) that is named on the list of "Special Designated Nationals or Blocked Persons" maintained by OFAC (or any successor Government office or list), or any similar list maintained by the United States Department of State (or any successor Government office or list), (D) with whom any U.S. Person (as defined in the applicable OFAC regulations) is prohibited from transacting business of the type contemplated by this Agreement and the other Related Documents under any other applicable law, (E) that is owned, Controlled by, or affiliated with any Person identified in clause (A), (B), (C) or (D) of this Section 17(1)(ii) (*OFAC Compliance*), or (F) is in violation of any obligation to maintain appropriate internal controls as required by the governing laws of the jurisdiction of such Person as are necessary to ensure compliance with the economic sanctions, anti-money laundering and anti-corruption laws of the United States of America and the jurisdiction where the Person resides, is domiciled or has its principal place of business. The Borrower shall not, and shall cause NHDOT not to, knowingly make a payment, directly or indirectly, to any Principal Project Party that has violated any of the laws referenced in Section 17(l)(i) (*OFAC Compliance*) or that is a Person described in Section 17(l)(ii) (*OFAC Compliance*).

(m) Hedging. The Borrower shall not enter into any swap or hedging transaction, including inflation indexed swap transactions, "cap" or "collar" transactions, futures, or any other hedging transaction payable from, secured or supported by the Pledged Revenues without the prior written consent of the TIFIA Lender.

Section 18. Indemnification. The Borrower shall indemnify the TIFIA Lender and any official, employee, agent or representative of the TIFIA Lender (each such Person being herein referred to as an "**Indemnitee**") against, and hold each Indemnitee harmless from, any and all losses, claims, damages, liabilities, fines, penalties, costs and expenses (including the fees, charges and disbursements of any counsel for any Indemnitee and the costs of environmental remediation), whether known, unknown, contingent or otherwise, incurred by or asserted against any Indemnitee arising out of, in connection with, or as a result of (a) the execution, delivery and performance of this Agreement or any of the other Related Documents, (b) the TIFIA Loan or the use of the proceeds thereof, or (c) the violation of any law, rule, regulation, order, decree, judgment or administrative decision relating to the environment, the preservation or reclamation of natural resources, the management, release or threatened release of any hazardous material or to health and safety matters; in each case arising out of or in direct relation to the Project; provided that such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities, fines, penalties, costs or related expenses are determined by a court of competent jurisdiction by final and nonappealable judgment to have resulted from the gross negligence or willful misconduct of such Indemnitee. In case any action or proceeding is brought against an Indemnitee by reason of any claim with respect to which such Indemnitee is entitled to indemnification hereunder, the Borrower shall be entitled, at its expense, to participate in the defense thereof; provided that such Indemnitee has the right to retain its own counsel, at the Borrower's expense, and such participation by the Borrower in the defense thereof shall not release the Borrower of any liability that it may have to such Indemnitee. Any Indemnitee against whom any indemnity claim contemplated in this Section 18 (*Indemnification*) is made shall be entitled, after consultation with the Borrower and upon consultation with legal counsel wherein such Indemnitee is advised that such indemnity claim is meritorious, to compromise or settle any such indemnity claim. Any such compromise or settlement shall be binding upon the Borrower for purposes of this Section 18 (*Indemnification*). Nothing herein shall be construed as a waiver of any legal immunity that may be available to any Indemnitee. To the extent permitted by applicable law, neither the Borrower nor the TIFIA Lender shall assert, and each of the Borrower and the TIFIA Lender hereby waives, any claim against any Indemnitee or the Borrower, respectively, on any theory of liability, for special, indirect, consequential or punitive damages (as opposed to direct or actual damages) arising out of, in connection with, or as a result of, this Agreement, any of the other Related Documents, the other transactions contemplated hereby and thereby, the TIFIA Loan or the use of the proceeds thereof, provided that nothing in this sentence shall limit the Borrower's indemnity obligations to the extent such damages are included in any third party claim in connection with which an Indemnitee is entitled to indemnification hereunder. All amounts due to any Indemnitee under this Section 18 (*Indemnification*) shall be payable promptly upon demand therefor. The obligations of the Borrower under this Section 18 (*Indemnification*) shall survive the payment or prepayment in full or transfer of the TIFIA Bond, the enforcement of any provision of this Agreement or the other Related Documents, any amendments, waivers (other than amendments or waivers in writing with respect to this Section 18 (*Indemnification*)) or

consents in respect hereof or thereof, any Event of Default, and any workout, restructuring or similar arrangement of the obligations of the Borrower hereunder or thereunder.

Section 19. Sale of TIFIA Loan. The TIFIA Lender shall not sell the TIFIA Loan at any time prior to the Substantial Completion Date. After such date, the TIFIA Lender may sell the TIFIA Loan to another entity or reoffer the TIFIA Loan into the capital markets only in accordance with the provisions of this Section 19 (*Sale of TIFIA Loan*). Such sale or reoffering shall be on such terms as the TIFIA Lender shall deem advisable. However, in making such sale or reoffering the TIFIA Lender shall not change the terms and conditions of the TIFIA Loan without the prior written consent of the Borrower in accordance with Section 30 (*Amendments and Waivers*). The TIFIA Lender shall provide, at least sixty (60) days prior to any sale or reoffering of the TIFIA Loan, written notice to the Borrower of the TIFIA Lender's intention to consummate such a sale or reoffering; provided, however, that no such notice shall be required during the continuation of any Event of Default. The provision of any notice pursuant to this Section 19 (*Sale of TIFIA* Loan) shall not (x) obligate the TIFIA Lender to sell nor (y) provide the Borrower with any rights or remedies in the event the TIFIA Lender, for any reason, does not sell the TIFIA Loan.

Section 20. Events of Default and Remedies.

(a) An "**Event of Default**" shall exist under this Agreement if any of the following occurs:

(i) Payment Default. The Borrower shall fail to pay any of the principal amount of or interest on the TIFIA Loan (including TIFIA Debt Service required to have been paid pursuant to the provisions of Section 9 (*Payment of Principal and Interest*), when and as the payment thereof shall be required under this Agreement or the TIFIA Bond or on the Final Maturity Date (each such failure, a "**Payment Default**").

(ii) Covenant Default. The Borrower shall fail to observe or perform any covenant, agreement or obligation of the Borrower under this Agreement, the TIFIA Bond or any other TIFIA Loan Document (other than in the case of any Payment Default or any Development Default), and such failure shall not be cured within thirty (30) days after the earlier to occur of (A) receipt by the Borrower from the TIFIA Lender of written notice thereof, or (B) the Borrower's knowledge of such failure; provided, however, that if such failure is capable of cure but cannot reasonably be cured within such thirty (30) day cure period, then no Event of Default shall be deemed to have occurred or be continuing under this Section 20(a)(ii) (*Covenant Default*), and such thirty (30) day cure period shall be extended by up to one hundred fifty (150) additional days, if and so long as (x) within such thirty (30) day cure period the Borrower shall commence actions reasonably designed to cure such failure and shall diligently pursue such actions until such failure is cured, and (y) such failure is cured within one hundred eighty (180) days of the date specified in either (A) or (B) above, as applicable.

(iii) Development Default. A Development Default shall occur, in which case the TIFIA Lender may (A) suspend the disbursement of TIFIA Loan proceeds under this Agreement and (B) pursue such other remedies as provided in this Section 20

(*Events of Default and Remedies*). If so requested by the TIFIA Lender in connection with a Development Default, the Borrower shall immediately repay any unexpended TIFIA Loan proceeds previously disbursed to the Borrower.

(iv) Misrepresentation Default. Any of the representations, warranties or certifications of the Borrower made in or delivered pursuant to the TIFIA Loan Documents (or in any certificates delivered by the Borrower or NHDOT in connection with the TIFIA Loan Documents) shall prove to have been false or misleading in any material respect when made or deemed made (or any representation and warranty that is subject to a materiality qualifier shall prove to have been false or misleading in any respect); provided that no Event of Default shall be deemed to have occurred under this Section 20(a)(iv) (*Misrepresentation Default),* if and so long as:

(A) such misrepresentation is not intentional;

(B) such misrepresentation is not a misrepresentation in respect of Section 14(h) (*No* Debarment), Section 14(j) (*Compliance with Federal Requirements*), Section 14(k) (*Transportation Improvement Program*), Section 14(q) (*OFAC; Anti-Corruption Laws*) or Section 14(ee) (*Patriot Act*);

(C) in the reasonable determination of the TIFIA Lender, such misrepresentation has not had, and would not reasonably be expected to result in, a Material Adverse Effect;

(D) in the reasonable determination of the TIFIA Lender, the underlying issue giving rise to the misrepresentation is capable of being cured;

(E) the underlying issue giving rise to the misrepresentation is cured by the Borrower or NHDOT within thirty (30) days from the date on which the Borrower or NHDOT first became aware (or reasonably should have become aware) of such misrepresentation; and

(F) the Borrower or NHDOT diligently pursues such cure during such thirty (30) day period.

(v) [Reserved].

(vi) [Reserved].

(vii) Judgments. One or more final, non-appealable judgments (A) for the payment of money in an aggregate amount in excess of $75,000,000 (inflated annually by CPI) that are payable from Pledged Revenues and are not otherwise fully covered by insurance (for which the insurer has acknowledged and not disputed coverage) or (B) that would reasonably be expected to result in a Material Adverse Effect shall, in either case, be rendered against the Borrower or NHDOT, and (x) the same shall, in the event appropriations are available, remain undischarged for a period of thirty (30) consecutive days, or, in the event appropriations are insufficient and the attorney general of the State is compelled to present the claim to the legislature of the State for

appropriation, remain undischarged for a period of thirty (30) consecutive days following the legislature of the State's approval of an appropriation, and during either such time period execution shall not be effectively stayed; or (y) any action shall be legally taken by a judgment creditor to attach or levy upon any assets of the Borrower to enforce any such judgment and such action is not, in good faith, being contested by the Borrower or any time periods allowed for the Borrower to contest such action has expired.

(viii) Failure to Maintain Existence. The Borrower shall fail to maintain its existence as a state, unless at or prior to the time the Borrower ceases to exist in such form, a successor state, public agency or governing body has been created pursuant to a valid and unchallenged law and has succeeded to the assets of the Borrower and has assumed all of the obligations of the Borrower under the TIFIA Loan Agreement, including the payment of the TIFIA Loan.

(ix) Occurrence of a Bankruptcy Related Event. (A) A Bankruptcy Related Event shall occur with respect to the Borrower or (B) a Bankruptcy Related Event shall occur with respect to any Principal Project Party, prior to the expiration of any period covered by a Warranty related to a Principal Project Contract to which such Principal Project Party is a party; provided that no Event of Default shall be deemed to have occurred under this clause (ix) if and so long as (I) in the reasonable determination of the TIFIA Lender, such Bankruptcy Related Event has not had, and would not reasonably be expected to result in, a Material Adverse Effect, (II) in the reasonable determination of the TIFIA Lender, the underlying issue giving rise to the Bankruptcy Related Event is capable of being cured, and (III) (1) the underlying issue giving rise to the Bankruptcy Related Event is cured by the Borrower within thirty (30) days from the date on which the Borrower first became aware (or reasonably should have become aware) of such Bankruptcy Related Event or (2) the Borrower provides the TIFIA Lender with a plan to cure such underlying issue that is acceptable in the sole discretion of the TIFIA Lender, and the Borrower diligently pursues such cure and the underlying issue giving rise to the Bankruptcy Related Event is cured by the Borrower during the period specified in such plan; provided further; with respect to a Bankruptcy Related Event of any Principal Project Party that can not be cured within such thirty (30) day period, no such Bankruptcy Related Event shall be deemed to have occurred under this clause (ix) in the event the Principal Project Party is replaced within ninety (90) days after the occurrence of such Bankruptcy Related Event by a new Principal Project Party that (I) possesses similar or greater creditworthiness (including credit support), technical capability and relevant experience as the counterparty being replaced, considered as of the time the applicable Principal Project Contract was executed (or otherwise reasonably acceptable to the TIFIA Lender), (II) is not, at the time of such replacement, suspended or debarred or subject to a proceeding to suspend or debar from bidding, proposing or contracting with any federal or state department or agency, and (III) is bound under a contract containing substantially the same terms and conditions as the Principal Project Contract being replaced (or otherwise reasonably acceptable to the TIFIA Lender).

(x) Project Abandonment. The Borrower shall abandon the Project.

(xi) Invalidity of TIFIA Loan Documents. (A) Any TIFIA Loan Document ceases to be in full force and effect (other than as a result of the termination thereof in accordance with its terms) or becomes void, voidable, illegal or unenforceable, or the Borrower contests in any manner the validity or enforceability of any TIFIA Loan Document; or (B) any Resolution Document ceases (other than as expressly permitted thereunder) to be effective to grant a valid and binding security interest on the Pledged Revenues.

(xii) Cessation of Operations. Operation of the Project shall cease for a continuous period of not less than one hundred eighty (180) days unless such cessation of operations shall occur by reason of an Uncontrollable Force that is not due to the fault of the Borrower (and which the Borrower could not reasonably have avoided or mitigated) and the Borrower shall either be self-insured in an amount sufficient to cover, or shall have in force an insurance policy or policies under which the Borrower is entitled to recover amounts sufficient to restore the operation of the Project.

(b) Upon the occurrence of an Event of Default described in Section 20(a)(iii) (*Development Default*), all obligations of the TIFIA Lender hereunder with respect to the disbursement of any undisbursed amounts of the TIFIA Loan shall immediately be deemed terminated.

(c) Upon the occurrence of any Bankruptcy Related Event with respect to the Borrower, all obligations of the TIFIA Lender hereunder with respect to the disbursement of any undisbursed amounts of the TIFIA Loan shall automatically be deemed terminated, and, subject to Section 20(d)(ii), the Outstanding TIFIA Loan Balance, together with all interest accrued thereon and all fees, costs, expenses, indemnities and other amounts payable under this Agreement, the TIFIA Bond or the other TIFIA Loan Documents, shall automatically become immediately due and payable, without presentment, demand, notice, declaration, protest or other requirements of any kind, all of which are hereby expressly waived.

(d) (i) Upon the occurrence of any other Event of Default, the TIFIA Lender, by written notice to the Borrower, may (A) suspend or terminate all of its obligations hereunder with respect to the disbursement of any undisbursed amounts of the TIFIA Loan, and (B) subject to Section 20(d)(ii) declare the unpaid principal amount of the TIFIA Bond to be, and the same shall thereupon forthwith become, immediately due and payable, together with the interest accrued thereon and all fees, costs, expenses, indemnities and other amounts payable under this Agreement, the TIFIA Bond or the other TIFIA Loan Documents, all without presentment, demand, notice, protest or other requirements of any kind, all of which are hereby expressly waived.

(ii) For so long as (A) there are no Contractual Obligations of the Borrower in effect that provide for Rights of Acceleration or (B) there are Contractual Obligations of the Borrower in effect that provide for Rights of Acceleration, but no event of default has occurred and is continuing pursuant to any such Contractual Obligation for which the Rights of Acceleration may be exercised by the Borrower's counterparty, the TIFIA Lender shall forbear with respect to exercising its Rights of Acceleration hereunder, subject to Section 16(u) (*Acceleration*).

(iii) Section 20(d)(ii) shall be in effect (A) At any time during the term of this Agreement when (1) no Contractual Obligation then in effect (other than this Agreement) provides for Rights of Acceleration, whether by amendment removing all such Rights of Acceleration or by release, termination or other discharge of all such Contractual Obligations, or (2) any such Contractual Obligation then in effect provides for Rights of Acceleration, but no event of default shall have occurred and be continuing pursuant to such Contractual Obligation for which the Rights of Acceleration may be exercised by the Borrower's counterparty, and (B) upon the release, termination or other discharge of all such Contractual Obligations (other than this Agreement) that provide for Rights of Acceleration.

(iv) On and after the date of the initial disbursement of the proceeds of the TIFIA Loan, to the extent the Borrower, directly or indirectly, enters into, otherwise consents to, or is a party to, any Contractual Obligation that includes Rights of Acceleration, then, subject to Section 20(d)(iii) above, Section 20(d)(ii) shall automatically be of no further force and effect and the TIFIA Lender shall immediately and automatically be entitled to exercise any and all Rights of Acceleration hereunder.

(e) Whenever any Event of Default hereunder shall have occurred and be continuing, the TIFIA Lender shall be entitled and empowered to institute any actions or proceedings at law or in equity for the collection of any sums due and unpaid hereunder or under the TIFIA Bond or the other TIFIA Loan Documents, and may prosecute any such judgment or final decree against the Borrower and collect in the manner provided by law out of the property of the Borrower the moneys adjudged or decreed to be payable, and the TIFIA Lender shall have all of the rights and remedies of a creditor, including all rights and remedies of a secured creditor under the Uniform Commercial Code, and may take such other actions at law or in equity as may appear necessary or desirable to collect all amounts payable by Borrower under this Agreement, the TIFIA Bond or the other TIFIA Loan Documents then due and thereafter to become due, or to enforce performance and observance of any obligation, agreement or covenant of the Borrower under this Agreement, the TIFIA Bond or the other TIFIA Loan Documents.

(f) Whenever any Event of Default hereunder shall have occurred and be continuing, the TIFIA Lender may suspend or debar the Borrower from further participation in any Government program administered by the TIFIA Lender and to notify other departments and agencies of such default.

(g) No action taken pursuant to this Section 20 (*Events of Default and Remedies*) shall relieve the Borrower from its obligations pursuant to this Agreement, the TIFIA Bond or the other TIFIA Loan Documents, all of which shall survive any such action.

Section 21. Accounting and Audit Procedures; Inspections; Reports and Records.

(a) Accounting and Audit Procedures. The Borrower shall establish fiscal controls and accounting procedures sufficient to assure proper accounting for all Project-related transactions (including collection of Pledged Revenues, and any other revenues attributable to the Project, and TIFIA Loan requisitions received and disbursements made with regard to the Project), so that audits may be performed to ensure compliance with and enforcement of this

Agreement. The Borrower shall use accounting, audit and fiscal procedures conforming to GAAP, including, with respect to the TIFIA Loan, accounting of principal and interest payments, disbursements, prepayments and calculation of interest and principal amounts outstanding.

(b) Inspections. So long as the TIFIA Loan or any portion thereof shall remain outstanding and until five (5) years after the TIFIA Loan shall have been paid in full, the TIFIA Lender shall have the right, upon reasonable prior notice, to visit and inspect any of the locations or properties of the Borrower, to examine the Borrower's books of account and records, to make copies and extracts therefrom at the Borrower's expense, and to discuss the affairs, finances and accounts of the Borrower that relate to the Project and the TIFIA Loan with, and to be advised as to the same by, their respective officers and employees and their respective independent public accountants (and by this provision the Borrower irrevocably authorizes its independent public accountants to discuss with the TIFIA Lender the affairs, finances and accounts of the Borrower, whether or not any representative of the Borrower is present, it being understood that nothing contained in this Section 21(b) (*Accounting and Audit Procedures; Inspections; Reports and Records*) is intended to confer any right to exclude any such representative from such discussions), all at such reasonable times and intervals as the TIFIA Lender may desire. Subject to appropriation by the State, the Borrower agrees to pay all out-of-pocket expenses incurred by the TIFIA Lender in connection with the TIFIA Lender's exercise of its rights under this Section 21(b) (*Accounting and Audit Procedures; Inspections; Reports and Records*) at any time when an Event of Default shall have occurred and be continuing.

(c) Reports and Records. Unless otherwise required pursuant to 49 C.F.R. § 18.42, the Borrower shall, and shall require the Treasurer and NHDOT to, maintain and retain all files relating to either the Project or the Pledged Revenues and the TIFIA Loan until three (3) years after the later of the date on which (i) all rights and duties hereunder and under the TIFIA Bond (including payments) have been fulfilled and any required audits have been performed and (ii) any litigation relating to the Project, the Pledged Revenues, the TIFIA Loan or this Agreement is finally resolved or, if the TIFIA Lender has reasonable cause to extend such date, a date to be mutually agreed upon by the TIFIA Lender and the Borrower. The Borrower shall, and shall cause the Treasurer and NHDOT to, provide to the TIFIA Lender in a timely manner all records and documentation relating to the Project or the Pledged Revenues that the TIFIA Lender may reasonably request from time to time.

(d) Copies of Debt Related Notices. The Borrower shall provide to the TIFIA Lender, promptly after the sending or receipt thereof, copies of (i) final ratings presentations sent to, and any notices, reports or other written materials (other than those that are ministerial in nature) received from, any Nationally Recognized Rating Agency that has provided, or is being requested to provide, a rating with respect to the Project, Bonds or any indebtedness of the Borrower that is or will be secured by or paid from the Pledged Revenues, (ii) all notices and other written communications, other than those that are non-substantive or ministerial in nature, received by it from any Bondholder, and (iii) all reports, notices and other written materials, other than those that are non-substantive or ministerial in nature, required to be sent to any Bondholder, including all such notices, other than those that are non-substantive or ministerial in nature, relating to any of the Principal Project Contracts; unless, in each case, the TIFIA Lender notifies the Borrower that any such reports, notices and/or other written materials no longer need to be provided.

(e) Required Audit. The Borrower shall have a single or program-specific audit conducted in accordance with 2 C.F.R. Part 200 Subpart F and 31 U.S.C. § 7502 in calendar year 2016 and annually thereafter, except to the extent biennial audits are permitted for the Borrower pursuant to 2 C.F.R. § 200.504 and 31 U.S.C. § 7502(b). Upon reasonable notice, the Borrower shall cooperate fully in the conduct of any periodic or compliance audits conducted by the TIFIA Lender, the USDOT, or designees thereof, pursuant to 49 C.F.R. § 80.19, 31 U.S.C. § 7503(b), or 31 U.S.C. § 6503(h) and shall provide full access to any books, documents, papers or other records that are pertinent to the Project or the TIFIA Loan, to the Secretary, or the designee thereof, for any such project or programmatic audit.

Section 22. Financial Plan, Statements, and Reports.

(a) Financial Plan. The Borrower shall provide to the TIFIA Lender and the FHWA Division Office, annually, not later than ninety (90) days after the beginning of each Federal Fiscal Year, a Financial Plan. The initial and each subsequent Financial Plan delivered hereunder shall be subject to approval by the TIFIA Lender and the FHWA Division Office and, for the period through the Substantial Completion Date, FHWA's Office of Innovative Program Delivery.

(i) The Financial Plan shall be prepared in accordance with recognized financial reporting standards, such as those in the "Guide for Prospective Financial Information" of the American Institute of Certified Public Accountants, shall meet FHWA's Major Project Financial Plan requirements, as amended from time to time, and shall be in form and substance satisfactory to the TIFIA Lender.

(ii) The Financial Plan shall include: (A) a Certificate to the effect that the Financial Plan, including the assumptions and supporting documentation, is accurate and reasonable to the best of the Borrower's knowledge and belief; (B) a Certificate demonstrating that annual projected Pledged Revenues shall be sufficient to meet the Loan Amortization Schedule; and (C) an electronic copy of a Revised Financial Model for the period from the Effective Date through the Final Maturity Date, in substantially the form of the Base Case Financial Model, based upon assumptions and projections with respect to the Pledged Revenues, expenses and other financial aspects of the Project that shall reflect the prior experience and current status of the Project, and the expectations of the Borrower with respect to the Project, as of the most recent practicable date prior to the delivery of such Revised Financial Model.

(iii) For the period through the Substantial Completion Date, the Financial Plan shall:

(A) provide the current estimate of Total Project Costs and the remaining cost to complete the Project, identify any significant cost changes since the previous Financial Plan, discuss reasons for and implications of the cost changes, and include a summary table showing the history of Total Project Costs by major activity or category in comparison to the Base Case Financial Model and the preceding Financial Plan;

(B) provide updates to the Construction Schedule, including an update, if any, to the Projected Substantial Completion Date and an explanation of any such adjustment;

(C) identify major milestones for each phase of the Project and compare current milestone dates with the milestone dates in the Construction Schedule and in the preceding Financial Plan, and discuss reasons for changes in Project milestones;

(D) provide current estimates of sources and uses of funds for the Project, identify any significant funding changes since the preceding Financial Plan, discuss reasons for and implications of the funding changes, and include a summary table showing the history of Project funding in comparison to the Base Case Financial Model and the preceding Financial Plan;

(E) provide an updated cash flow schedule showing annual cash needs versus available revenue and funding to meet those needs and identify any potential revenue and funding shortfalls, and addressing contingency measures that will or may be taken to address any shortfalls;

(F) provide cost containment strategies and risk mitigation plans that have been or may be implemented to address factors that are affecting or could affect the scheduled completion or financial viability of the Project;

(G) provide the total value of approved changes in Project design or scope, and provide a listing of each individual change valued at $5,000,000 or more, setting forth the rationale or need for the proposed change and describing the impact of such change on the Project;

(H) contain, in form and substance satisfactory to the TIFIA Lender, a written narrative executive summary of the topics described in clauses (A) through (G) above since the Effective Date and since the preceding Financial Plan, describing in reasonable detail all material matters that may affect the future performance of the Borrower's obligations under this Agreement, including any adjustment to the Projected Substantial Completion Date, and the causes thereof; and

(I) comply in all respects with FHWA's Major Project Financial Plan requirements. The Financial Plan shall also include information regarding the Borrower's expenditure or appropriation of funds for construction and rehabilitation of State-funded portions of Rural Projects prior to the Level Payment Commencement Date, as required pursuant to Section 16(t) (*Rural Projects*).

(iv) For the period following the Substantial Completion Date until repayment of the TIFIA Loan in full, the Financial Plan shall:

(A) provide an updated cash flow schedule showing annual cash inflows of Pledged Revenues and outflows of TIFIA Debt Service and other uses, with a narrative identifying any potential revenue or funding shortfall and discussing contingency measures that will or may be taken to address any shortfalls;

(B) provide current and estimated amounts of Pledged Revenues received and the amounts deposited into each of the accounts and subaccounts established under the Resolution Documents and the amount disbursed from such funds and accounts and the balance in each of the funds and accounts;

(C) provide an updated schedule of actual and projected Pledged Revenues, showing actual and projected Total Debt Service Coverage Ratios, and report on variances during the prior Borrower Fiscal Year between the Pledged Revenues actually received and the budgeted Pledged Revenues as shown in the Financial Plan for such prior Borrower Fiscal Year, together with a brief narrative explanation of the reasons for any such variance of ten percent (10%) or more;

(D) provide a schedule of then current receipts and all moneys constituting Pledged Revenues and planned increases thereto;

(E) to the extent that the Borrower's obligations pursuant to Section 16(t) (*Rural Projects*) have not been satisfied in full, such that monies designated pursuant to Section 16(t) (*Rural Projects*) have not been applied to Rural Projects prior to the Substantial Completion Date, provide a schedule of the amounts expended for construction and rehabilitation of State-funded portions of Rural Projects, as required pursuant to Section 16(t) (*Rural Projects*), and

(F) contain, in form and substance satisfactory to the TIFIA Lender, a written narrative executive summary of the topics described in clauses (A) through (E) above since the Effective Date and since the preceding Financial Plan, including in reasonable detail (i) an explanation of any variances in costs or revenues in comparison to the Base Case Financial Model and the preceding Financial Plan, and (ii) a description of any material matters that may affect the future performance of the Borrower's obligations under this Agreement and the causes thereof.

(b) Modifications to Total Project Costs. For the period through the Substantial Completion Date, the Borrower shall provide the TIFIA Lender with written notification at least thirty (30) days prior to instituting any increase or decrease to the aggregate Total Project Costs in an amount equal to or greater than five percent (5%), which notification shall set forth the nature of the proposed increase or decrease and an estimate of the impact of such increase or decrease on the capital costs of the Project, and the Financial Plan. The Borrower's notice shall demonstrate that the proposed increase or decrease is consistent with the provisions of this Agreement, is necessary or beneficial to the Project, does not materially impair

the TIFIA Lender's security or the Borrower's ability to comply with its obligations under the Related Documents (including any financial ratios or covenants included therein), and could not reasonably be expected to result in a Material Adverse Effect.

(c) Financial Statements. The Borrower shall furnish to the TIFIA Lender:

(i) [Reserved].

(ii) as soon as available, but no later than one hundred eighty (180) days after the end of each Borrower Fiscal Year, a copy of the audited government wide financial statements including a statement of net position and a statement of activities of the Borrower as of the end of such fiscal year and the related audited governmental fund financial statements containing a balance sheet, a reconciliation of balance sheet-governmental funds to statement of net position, a statement of revenues, expenditures, and changes in fund balances and a reconciliation of the statement of revenues, expenditures, and change in fund balances-government funds to the statement of activities of the Borrower for such fiscal year, setting forth in each case in comparative form the figures for the previous fiscal year, certified without a "going concern" or like qualification or exception, or qualification as to the scope of the audit, by an independent public accounting firm selected by the Borrower and which is reasonably acceptable to the TIFIA Lender.

(iii) All such financial statements shall be complete and correct in all material respects and shall be prepared in reasonable detail and in accordance with GAAP (or in the case of non-U.S. Persons, substantially equivalent principles) applied consistently throughout the periods reflected therein (except for changes approved or required by the independent public accountants certifying such statements and disclosed therein).

(d) Officer's Certificate. The Borrower shall furnish to the TIFIA Lender, together with each delivery of annual audited or interim unaudited financial statements of the Borrower pursuant to Section 22(c) (*Financial Statements*), a certificate signed by the chief executive officer or chief financial officer of the Borrower or any Borrower's Authorized Representative, stating whether or not, to the Borrower's knowledge, during the quarterly or annual period (as the case may be) covered by such financial statements, there occurred any Event of Default or event that, with the giving of notice or the passage of time or both, would become an Event of Default, and, if any such Event of Default or other event shall have occurred during such period, the nature of such Event of Default or other event and the actions that the Borrower has taken or intends to take in respect thereof.

Section 23. Project Oversight and Monitoring.

(a) Project Development, Design and Construction. The TIFIA Lender shall have the right in its sole discretion to monitor (or direct its agents to monitor) the development, including environmental compliance, design, right-of-way acquisition, and construction of the Project. NHDOT shall be responsible for administering construction oversight of the Project in accordance with the FHWA Oversight Agreement. NHDOT's oversight of Project development,

environmental compliance, design, right-of-way acquisition, and construction monitoring shall be conducted pursuant to the FHWA Oversight Agreement, which may be amended from time to time upon mutual agreement of NHDOT and the FHWA Division Office, or when so required by federal statute or otherwise required by the Congress. The Borrower agrees, and shall cause NHDOT to, cooperate in good faith with the TIFIA Lender in the conduct of such monitoring by promptly providing the TIFIA Lender with such reports, documentation or other information as shall be requested by the TIFIA Lender, or its agents, including any independent engineer reports, documentation or information.

(b) Reporting. The Borrower shall furnish to the TIFIA Lender the documentation described below.

(i) Monthly Construction Progress Report. On or before the last Business Day of any calendar month during the Construction Period, a report executed by a Borrower's Authorized Representative that:

(A) specifies the amount of Total Project Costs expended since the Effective Date as well as during the preceding calendar month and the amount of Total Project Costs estimated to be required to complete the Project;

(B) provides a demonstration that the Borrower has sufficient funds (including funds on hand and funds obtainable without undue delay or conditions that cannot reasonably be satisfied by the Borrower as and when such funds are needed) to complete the Project;

(C) provides an assessment of the overall construction progress of the Project since the date of the last report and since the Effective Date, together with an assessment of how such progress compares to the Construction Schedule;

(D) specifies the most recent projections for the Substantial Completion Date as compared to the Projected Substantial Completion Date specified in the Financial Plan most recently approved by the TIFIA Lender;

(E) provides a detailed description of all material problems (including actual and anticipated cost and/or schedule overruns, if any) encountered or anticipated in connection with the construction of the Project since the date of the last report, together with an assessment of how such problems may impact the Construction Schedule and the meeting of critical dates thereunder and a detailed description of the proposed solutions to any such problems;

(F) specifies the delivery status of major equipment and the effect, if any, that the anticipated delivery dates of such equipment has on the overall Construction Schedule;

(G) specifies any proposed or pending change orders;

(H) specifies any material changes or deviations from the Borrower's land procurement plans or schedule;

(I) includes a copy of each report delivered by a Construction Contractor to the Borrower that has not previously been delivered to the TIFIA Lender in a prior report delivered pursuant to this Section 23(b)(i) (*Monthly Construction Progress Report*),

(J) and (J) provides a discussion or analysis of such other matters related to the Project as the TIFIA Lender may reasonably request. The Borrower shall respond, and use commercially reasonable efforts to cause the Construction Contractors to respond, to the TIFIA Lender's inquiries regarding such report, the construction of the Project and any Construction Contractor's performance of its obligations under the Construction Agreement to which such Construction Contractor is a party.

(ii) [Reserved].

(iii) [Reserved].

(iv) Requested Information. The Borrower shall, at any time while the TIFIA Loan remains outstanding, promptly deliver to the TIFIA Lender such additional information regarding the business, financial, legal or organizational affairs of the Borrower or regarding the Project or the Pledged Revenues as the TIFIA Lender may from time to time reasonably request, including copies of agreements related to the acquisition or control of any Project right-of-way.

(c) Project Operations. Subject to Section 21(b) (*Inspections*), for the period following the Substantial Completion Date until the date of termination of this Agreement, the TIFIA Lender shall have the right, in its sole discretion, to monitor (or direct its agents to monitor) the Project's operations and, as the TIFIA Lender may request from time to time, to receive reporting on the operation and management of the Project, and copies of any contracts relating to the operation, maintenance, and safety services for the Project. The Borrower agrees to cooperate in good faith with the TIFIA Lender in the conduct of such monitoring by promptly providing the TIFIA Lender with such reports, documentation, or other information requested by the TIFIA Lender. The TIFIA Lender has the right, in its sole discretion, to retain a financial oversight advisor, under a contract with the TIFIA Lender, to carry out the provisions of this Section 23(c) (*Project Operations*), and the full cost of such monitoring shall be borne by the Borrower. Subject to appropriation by the State, any costs incurred by the TIFIA Lender for such monitoring, including the costs of any financial oversight advisor, shall be promptly reimbursed by the Borrower upon demand therefor in the form of an invoice reasonably acceptable to the Borrower.

Section 24. No Personal Recourse. No official, employee or agent of the TIFIA Lender or the Borrower or any Person executing this Agreement or any of the other TIFIA Loan Documents shall be personally liable on this Agreement or such other TIFIA Loan Documents by reason of the issuance, delivery or execution hereof or thereof.

Section 25. No Third Party Rights. The parties hereby agree that this Agreement creates no third party rights against the Borrower , the Government, or the TIFIA Lender, solely by virtue of the TIFIA Loan, and the Borrower agrees to indemnify and hold the TIFIA Lender, the Servicer (if any), the Administrator, and the Government harmless, to the extent permitted by law and in accordance with Section 18 (*Indemnification*), from any lawsuit or claim arising in law or equity solely by reason of the TIFIA Loan, and that no third party creditor or creditors of the Borrower shall have any right against the TIFIA Lender with respect to the TIFIA Loan made pursuant to this Agreement.

Section 26. Borrower's Authorized Representative. The Borrower shall at all times have appointed a Borrower's Authorized Representative by designating such Person or Persons from time to time to act on the Borrower's behalf pursuant to a written certificate furnished to the TIFIA Lender and the Servicer, if any, containing the specimen signature or signatures of such Person or Persons and signed by the Borrower.

Section 27. TIFIA Lender's Authorized Representative.

(a) The TIFIA Lender shall at all times have appointed the TIFIA Lender's Authorized Representative by designating such Person or Persons from time to time to act on the TIFIA Lender's behalf pursuant to a written certificate furnished to the Borrower and the Servicer, if any, containing the specimen signature or signatures of such Person or Persons and signed by the TIFIA Lender.

(b) Pursuant to a Delegation of Authority dated September 1, 2015, the Administrator delegated to the Director of the TIFIA Joint Program Office the authority to enter into contracts and sign all contractual and funding documents (with the exception of the term sheets and credit agreements) necessary to implement the Act, including entering into technical amendments to, and restatements of, term sheets and credit agreements that do not materially impair the credit quality of the revenues pledged to repay the TIFIA Lender. Pursuant to this delegation, the above named officer may act and serve as the TIFIA Lender's Authorized Representative under this Agreement, in addition to the Administrator for the purposes set forth herein.

Section 28. Servicer. The TIFIA Lender may from time to time designate another entity or entities to perform, or assist the TIFIA Lender in performing, the duties of the Servicer or specified duties of the TIFIA Lender under this Agreement and the TIFIA Bond. The TIFIA Lender shall give the Borrower written notice of the appointment of any successor or additional Servicer and shall enumerate the duties or any change in duties to be performed by any Servicer. Any references in this Agreement to the TIFIA Lender shall be deemed to be a reference to the Servicer with respect to any duties which the TIFIA Lender shall have delegated to such Servicer. The TIFIA Lender may at any time assume the duties of any Servicer under this Agreement and the TIFIA Bond. The Borrower shall cooperate and respond to any reasonable request of the Servicer for information, documentation or other items reasonably necessary for the performance by the Servicer of its duties hereunder.

Section 29. Fees and Expenses.

(a) Commencing in Federal Fiscal Year 2017 and continuing thereafter each year throughout the term of this Agreement, subject to appropriation by the State, the Borrower shall pay to the TIFIA Lender a loan servicing fee on or before the fifteenth (15^{th}) of November. The TIFIA Lender shall establish the amount of this annual fee, and the TIFIA Lender or the Servicer, if any, shall notify the Borrower of the amount, at least thirty (30) days before payment is due.

(b) In establishing the amount of the fee, the TIFIA Lender will adjust the previous year's base amount in proportion to the percentage change in CPI. For the FFY 2017 calculation, the TIFIA Lender will use the FFY 2016 base amount of $12,720.33, which applies to other TIFIA borrowers, as the previous year's base amount. The TIFIA Lender will calculate the percentage change in the CPI, before seasonal adjustment, from August of the previous year to August of the current year and will then adjust the previous year's base amount in proportion to the CPI percentage change. To calculate the amount of the fee, the TIFIA Lender shall round the current year's base amount using increments of $500. Results with the ending integers between 250-499 or between 750-999 shall be rounded upward, and results with the ending integers between 001-249 or between 501-749 shall be rounded downward. The CPI adjustments in the following years shall begin with the base amount, not the rounded fee.

(c) Subject to appropriation by the State, the Borrower agrees, whether or not the transactions hereby contemplated shall be consummated, to reimburse the TIFIA Lender on demand from time-to-time, within thirty (30) days after receipt of any invoice from the TIFIA Lender, for any and all fees, costs, charges, and expenses incurred by it (including the reasonable fees, costs, and expenses of its legal counsel, financial advisors, auditors and other consultants and advisors, such reasonableness determined in accordance with Part 31 of the Federal Acquisition Regulation) in connection with the negotiation, preparation, execution, delivery, and performance of this Agreement and the other TIFIA Loan Documents and the transactions hereby and thereby contemplated, including reasonable attorneys', and engineers' fees and professional costs, including all such fees, costs, and expenses incurred as a result of or in connection with:

(i) the enforcement of or attempt to enforce any provision of this Agreement or any of the other TIFIA Loan Documents;

(ii) any amendment, modification, or requested amendment or modification of, waiver, consent, or requested waiver or consent under or with respect to, or the protection or preservation of any right or claim under, this Agreement, any other Related Document, or the Pledged Revenues, or advice in connection with the administration, preservation in full force and effect, and enforcement of this Agreement or any other Related Document or the rights of the TIFIA Lender thereunder; and

(iii) any work-out, restructuring, or similar arrangement of the obligations of the Borrower under this Agreement or the other TIFIA Loan Documents, including during the pendency of one or more Events of Default.

The obligations of the Borrower under this Section 29 (*Fees and Expenses*) shall survive the payment or prepayment in full or transfer of the TIFIA Bond, the enforcement of any provision of this Agreement or the other TIFIA Loan Documents, any such amendments, waivers or consents, any Event of Default, and any such workout, restructuring, or similar arrangement.

Section 30. Amendments and Waivers. No amendment, modification, termination, or waiver of any provision of this Agreement shall in any event be effective without the written consent of each of the parties hereto.

Section 31. Governing Law. This Agreement shall be governed by the federal laws of the United States of America if and to the extent such federal laws are applicable and the internal laws of the State, if and to the extent such federal laws are not applicable.

Section 32. Severability. In case any provision in or obligation under this Agreement shall be invalid, illegal, or unenforceable in any jurisdiction, the validity, legality and enforceability of the remaining provisions or obligations, or of such provision or obligation in any other jurisdiction, shall not in any way be affected or impaired thereby.

Section 33. Successors and Assigns. This Agreement shall be binding upon the parties hereto and their respective permitted successors and assigns and shall inure to the benefit of the parties hereto and their permitted successors and assigns. Neither the Borrower's rights or obligations hereunder nor any interest therein may be assigned or delegated by the Borrower without the prior written consent of the TIFIA Lender.

Section 34. Remedies Not Exclusive. No remedy conferred herein or reserved to the TIFIA Lender is intended to be exclusive of any other available remedy or remedies, but each and every such remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute.

Section 35. Delay or Omission Not Waiver. No delay or omission of the TIFIA Lender to exercise any right or remedy provided hereunder upon a default of the Borrower (except a delay or omission pursuant to a written waiver) shall impair any such right or remedy or constitute a waiver of any such default or acquiescence therein. Every right and remedy given by this Agreement or by law to the TIFIA Lender may be exercised from time to time, and as often as may be deemed expedient by the TIFIA Lender.

Section 36. Counterparts. This Agreement and any amendments, waivers, consents or supplements hereto or in connection herewith may be executed in any number of counterparts and by the different parties hereto in separate counterparts, each of which when so executed and delivered shall be deemed an original, but all such counterparts together shall constitute one and the same instrument; signature pages may be detached from multiple separate counterparts and attached to a single counterpart so that all signature pages are physically attached to the same document.

Section 37. Notices; Payment Instructions. Notices hereunder shall be (a) in writing, (b) effective as provided below and (c) given by (i) nationally recognized courier service, (ii) hand delivery, or (iii) email, in each case to:

If to TIFIA Lender:	TIFIA Joint Program Office (HITJ) Federal Highway Administration Room E64-426 1200 New Jersey Avenue, SE Washington, D.C. 20590 Attention: Director Email: TIFIAOversight@dot.gov
with copies to:	Federal Highway Administration New Hampshire Division Office J.C. Cleveland Federal Building 53 Pleasant Street, Suite 2200 Concord, NH 03301 Attention: Division Administrator
If to Borrower:	Office of the Treasurer State of New Hampshire 25 Capitol Street Concord, NH 03301 Attention: State Treasurer Email: bdwyer@treasury.state.nh.us New Hampshire Department of Transportation 7 Hazen Drive Concord, NH 03301 Attention: Commissioner Email: vsheehan@dot.state.nh.us

Unless otherwise instructed by the TIFIA Lender's Authorized Representative, all notices to the TIFIA Lender should be made by email to the email address noted above for the TIFIA Lender. Notices required to be provided herein shall be provided to such different addresses or to such further parties as may be designated from time to time by a Borrower's Authorized Representative, with respect to notices to the Borrower, or by the TIFIA Lender's Authorized Representative, with respect to notices to the TIFIA Lender or the Servicer. The Borrower shall make any payments hereunder or under the TIFIA Bond in accordance with Section 9(f) (*Manner of Payment*) and the payment instructions hereafter provided by the TIFIA Lender's Authorized Representative, as modified from time-to-time by the TIFIA Lender. Each such notice, request or communication shall be effective (x) if delivered by hand or by nationally recognized courier service, when delivered at the address specified in this Section 37 (*Notices; Payment Instructions*) (or in accordance with the latest unrevoked written direction from the receiving party) and (y) if given by email, when such email is delivered to the address specified in this Section 37 (*Notices; Payment Instructions*) (or in accordance with the latest unrevoked written direction from the receiving party); provided that notices received on a day that is not a

Business Day or after 5:00 p.m. Eastern Time on a Business Day will be deemed to be effective on the next Business Day.

Section 38. Effectiveness. This Agreement shall be effective on the Effective Date.

Section 39. Termination. This Agreement shall terminate upon the irrevocable payment in full in cash by the Borrower of the Outstanding TIFIA Loan Balance, together with all accrued interest and fees with respect thereto; provided, however, that the indemnification requirements of Section 18 (*Indemnification*), the reporting and record keeping requirements of Section 21(b) (*Inspections*) and Section 21(c) (*Reports and Records*), and the payment requirements of Section 29 (*Fees and Expenses*) shall survive the termination of this Agreement as provided in such sections.

Section 40. Integration. This Agreement constitutes the entire contract between the parties relating to the subject matter hereof and supersedes any and all previous agreements and understandings, oral or written, relating to the subject matter hereof.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and delivered by their respective officers thereunto duly authorized as of the date first written above.

(SEAL)

STATE OF NEW HAMPSHIRE, acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation

By: _____
Name: William F. Dwyer
Title: State Treasurer

By: _____
Name: Victoria F. Sheehan
Title: Commissioner of the Department of Transportation

ATTEST:

_____
Secretary of State

UNITED STATES DEPARTMENT OF TRANSPORTATION, acting by and through the Federal Highway Administrator

By: _____
Name: Gregory G. Nadeau
Title: Administrator

SCHEDULE I

PROJECT BUDGET

I-93 Improvements Salem to Manchester Project
Schedule I
Project Budget

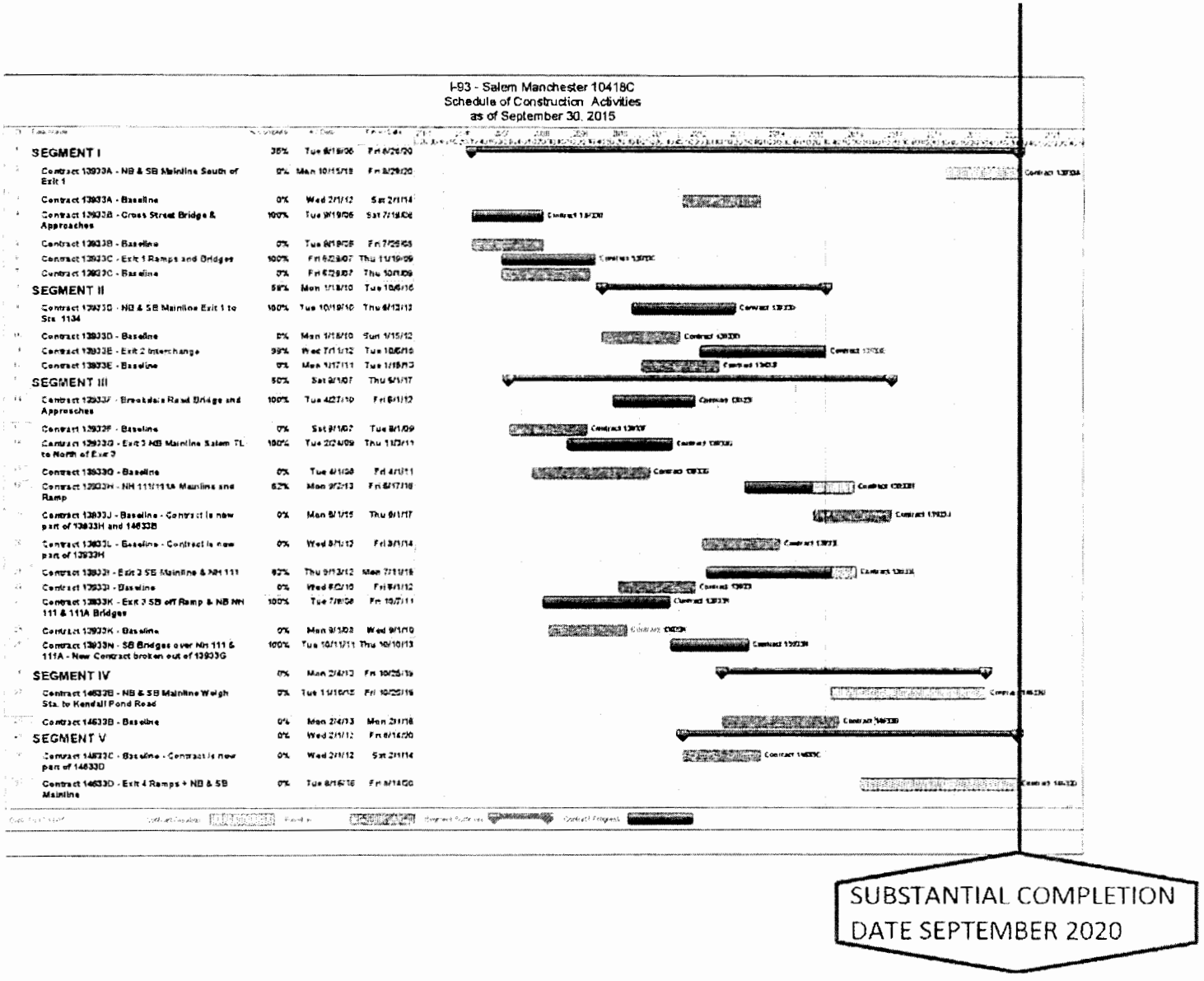
Federal Fiscal Year	Total Sources of Funds: 2010 GARVEE Bond	2012 GARVEE Bond	State Paygo	Federal Paygo	Toll Credit Paygo	TIFIA Loan	Total
Pre 2015	$ 79,225,051	$ 114,520,245	$ 27,029,722	$ 281,703,414	$ 17,733,352	$ -	$ 520,211,783
2015	-	-	609,822	9,899,234	1,266,965	-	11,776,021
2016	-	-	215,838	13,398,515	2,896,615	19,451,288	35,962,256
2017	-	-	62,470	8,527,954	1,889,451	51,588,942	62,068,817
2018	-	-	30,465	5,819,711	1,332,053	52,091,524	59,273,752
2019	-	-	30,465	20,168,277	4,919,194	51,323,650	76,441,585
2020	-	-	30,465	16,410,879	3,979,845	25,544,597	45,965,786
Total Sources of Funds	$ 79,225,051	$ 114,520,245	$ 28,009,246	$ 355,927,983	$ 34,017,475	$ 200,000,000	$ 811,700,000

Federal Fiscal Year	Total Uses of Funds: Segment I	Segment II	Segment III	Segment IV	Segment V	Segment VI	Segment VII	Segment VIII	Preliminary Engineering & Right of Way	Total
Pre 2015	$ 31,057,669	$ 65,404,524	$ 106,307,355	$ -	$ -	$ 50,507,327	$ -	$ 43,146,152	$ 180,036,562	476,459,588
2015	-	11,049,698	20,397,649	-	-	-	-	1,677,772	12,007,153	45,132,273
2016	-	-	18,901,822	10,535,731	-	1,221,105	10,162,081	2,242,496	3,294,965	46,358,200
2017	-	-	-	14,237,474	18,416,052	11,230,099	13,732,542	4,377,650	75,000	62,068,817
2018	-	-	-	14,237,474	18,602,073	11,600,301	13,732,542	1,026,163	75,000	59,273,752
2019	11,617,164	-	-	14,237,474	18,602,073	10,749,798	13,732,542	7,427,535	75,000	76,441,585
2020	9,896,103	-	-	6,074,654	18,788,093	-	3,570,461	7,561,475	75,000	45,965,786
Total Eligible Project Costs	$ 52,570,936	$ 76,454,222	$ 145,606,826	$ 59,322,807	$ 74,408,291	$ 85,308,830	$ 54,930,167	$ 67,459,242	$ 195,638,680	$ 811,700,000
Total Uses of Funds	$ 52,570,936	$ 76,454,222	$ 145,606,826	$ 59,322,807	$ 74,408,291	$ 85,308,830	$ 54,930,167	$ 67,459,242	$ 195,638,680	$ 811,700,000

SCHEDULE II

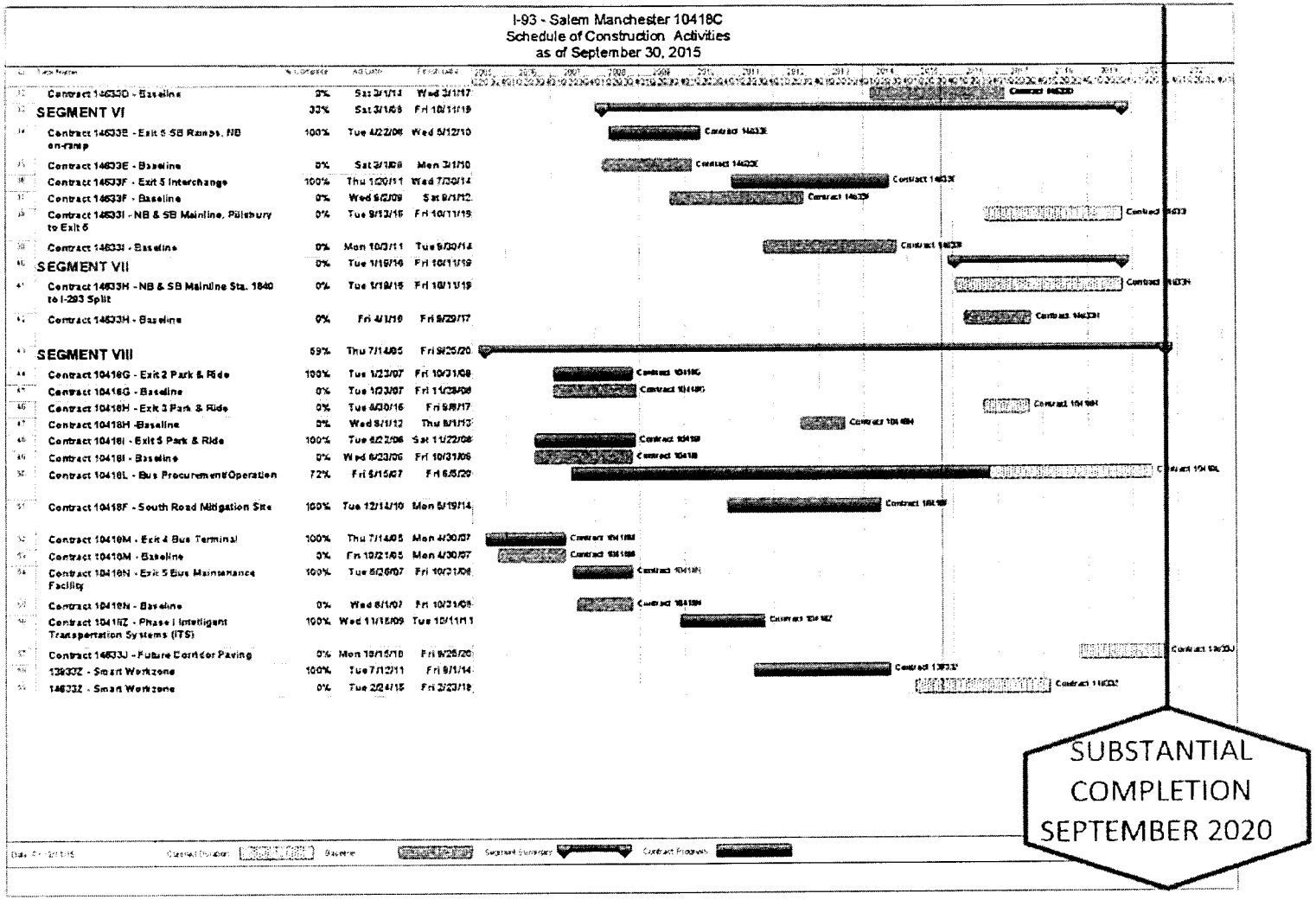
CONSTRUCTION SCHEDULE

TIFIA Loan Documents Item 1 13(a) (i)
Schedule II Construction Schedule



SUBSTANTIAL COMPLETION DATE SEPTEMBER 2020

TIFIA Loan Documents Item 1 13(a) (i)
Schedule II Construction Schedule



SCHEDULE 14(f)

LITIGATION

State of New Hampshire v. New England Pioneer Associates, Rockingham Superior Court-Docket No. 218-2015-CV-01272. This case relates to a Preliminary Objection to a condemnation action filed by a landowner, New England Pioneer Associates, LLC ("Pioneer"). The State filed a declaration of taking on July 29, 2015 acquiring .09 acres in fee from a parcel abutting Interstate 93 North in the Town of Derry. Pioneer filed an answer and preliminary objection alleging that the State failed to identify a net public benefit for a proposed sound barrier which will be erected on the land acquired from the condemnee. The preliminary objection appears defective where (1) it fails to allege fraud or gross mistake as required by law; (2) there is ample evidence of public benefit from the sound barrier based in numerous environmental studies; and (3) Pioneer had no right to light, air or view to or from the highway before the taking and cannot prove infringement on those rights as a result of the erection of the barrier. Pioneer has not asserted any monetary damages. On February 8, 2016, the Court dismissed the condemnee's preliminary objection. The appeal period has now expired and the matter will be remanded to the Board of Tax and Land Appeals for a just compensation hearing.

Cynthia Martin, et al. v. Trinity Highway Products, LLC, Trinity Industries, Inc., C.W. Sliter & Sons, Inc. d/b/a CWS Fence and Guardrail and New Hampshire Department of Transportation. Merrimack Superior Court, Docket No. 217-2016-CV-00144. The Department previously disclosed this matter as a notice of potential litigation. Suit was filed on March 16, 2016. This matter stems from a crash that occurred on June 7, 2014 on I-93 in Ashland. Plaintiffs allege products liability and negligence complaints against the manufacturers and installers of the guardrail, and that NHDOT was negligent in its selection of the vendor and/or installation/maintenance of the guardrail. It is difficult to evaluate the merits of Plaintiffs' claims as discovery as not yet commenced. The State expects to assert all applicable immunities in this matter.

Threatened Litigation

Pillsbury Realty Development, LLC is a land-owner/developer that owns property in Londonderry/Derry along the I-93 widening project corridor. The company has retained counsel in connection with the State's potential acquisition of two parcels: Parcels L155 and L156 of the I-93 Project #14633D. Although no formal threat of litigation has been filed with the State, Pillsbury's counsel has levied two potential claims against the State. First, he argues that the State has intentionally delayed the construction of Exit 4A on I-93 in an attempt to keep acquisition costs down for the I-93 widening project. Alternatively, counsel asserts that the State has misappropriated the funds set aside for Exit 4A and delayed the construction of that project in order to "conceal the misappropriation." It is possible that such claims could be raised in the form of a preliminary objection to a condemnation proceeding or as a separate action for injunctive relief. Pillsbury has not elaborated on any facts or legal arguments that form the basis of these claims. Our office, in conjunction with the Governor's office, conducted an inquiry into these claims. Based on the information available to us to date, we have concluded that these claims are without merit and neither present credible challenge to the project as a whole. At this

stage, it would be inappropriate to consider the impact that Exit 4A would have on Pillsbury's property values since that project is still contingent on Federal environmental approval and appropriate funding. Also, pursuant to the State's Ten Year Plan, the Exit 4A project isn't slated to begin until 2024, after the completion of the I-93 widening. If, and when, the Exit 4A project moves forward, and to the extent that Pillsbury's land is impacted, the entity would be entitled to additional "just compensation" which would, arguably, include an estimate of the property value after Exit 4A is built. With respect to Pillsbury's "misappropriation" claim, our office has concluded that no funds have been misappropriated, nor was the Exit 4A project delayed in order to conceal any such activity.

Kristen Petch filed a notice of claim in September 2013. She was injured while driving on I-93 around Exit 2 when a tripod sign went through the windshield of the vehicle she was driving. She sustained minor injuries as was evidenced by her interview with the local news. This area was an active construction site. She was referred to the responsible contractor. It is unknown at this time if she will pursue a claim against the Department of Transportation.

SCHEDULE 14(s)

ENVIRONMENTAL COMPLIANCE

The project was the subject of a Federal lawsuit filed by The Conservation Law Foundation against the project and the adequacy of the Final Environmental Impact Statement (FEIS) issues on April 28, 2004. The Federal court issued a decision on August 30, 2007 in favor of the plaintiff. In the ruling, the judge ordered a Supplementary Environmental Impact Statement (SEIS) to further evaluate the effectiveness of the 8-lane alternative and how indirect effects of induced population growth will impact air quality and traffic on secondary roads. The Final SEIS was published on May 3, 2010 and the Supplemental Record of Decision was issued on September 22, 2010.

NHDOT has secured all necessary environmental permits, extensions and approvals, as noted in the table below. All known cultural, archaeological, and historical studies have been performed. All environmental mitigation has been completed. There are presently no known hazardous waste impediments.

Table 1: I-93 Reconstruction –Permits and Approvals Secured

Permits and Approvals	Permit Number	Date Issued/ Approved
Cultural Effects Memo	N/A	August 8, 2002
Memorandum of Agreement with FHWA and the NH State Historic Preservation Office	N/A	February 6, 2004
Final Environmental Impact Statement (FEIS), Wetlands Finding, and Flood Plain Finding	N/A	April 28, 2004
FHWA Record of Decision (ROD) and Section 4(f) Determination (concluded NEPA process)	N/A	June 28, 2005
NHDES Water Quality Certification	WQC #2002-007	May 2, 2006
Supplemental Environmental Impact Statement (SEIS)	N/A	May 3, 2010
NHDES Wetlands and Non-Site Specific Permit	2002-02033	May 2, 2006
Army Corp of Engineers Permit	199201232/ NAE-2004-00233	March 29, 2007
Cultural Effects Memo (Update)	N/A	July 16, 2009
FHWA Supplemental Record of Decision (SROD)	N/A	September 22, 2010
Wetlands and Non-Site Specific Permit (Time Extension)	2002-02033	May 2, 2011
Army Corp of Engineers Permit (Time Extension)	199201232/ NAE-2004-00233	February 6, 2012
NHDES Wetlands and Non-Site Specific Permit	2014-03446	July 10, 2015
Environmental re-evaluation is completed	N/A	August 25, 2015
Army Corp of Engineers Permit (Amendment)	199201232/ NAE-2004-00233	March 18, 2016

EXHIBIT A

FORM OF TIFIA BOND

STATE OF NEW HAMPSHIRE

I-93 IMPROVEMENTS SALEM TO MANCHESTER PROJECT

(TIFIA 2016-1004A)

TIFIA BOND

Maximum Principal Amount: $200,000,000

Effective Date: May ___, 2016 **Due: June 1, 2034**

STATE OF NEW HAMPSHIRE (the "**Borrower**") for value received, hereby promises to pay to the order of the **UNITED STATES DEPARTMENT OF TRANSPORTATION**, acting by and through the Federal Highway Administrator, or its assigns (the "**TIFIA Lender**"), the lesser of (x) the Maximum Principal Amount set forth above and (y) the aggregate unpaid principal amount of all disbursements (the "**Disbursements**") made by the TIFIA Lender (such lesser amount, together with any interest that is capitalized and added to principal in accordance with the provisions of the TIFIA Loan Agreement (as defined below), being hereinafter referred to as the "**Outstanding Principal Sum**"), together with accrued and unpaid interest (including, if applicable, interest at the Default Rate, as defined in the TIFIA Loan Agreement) on the Outstanding Principal Sum and, subject to appropriation by the State, all fees, costs and other amounts payable in connection therewith, all as more fully described in the TIFIA Loan Agreement. The principal hereof shall be payable in the manner and at the place provided in the TIFIA Loan Agreement in accordance with **Exhibit G** to the TIFIA Loan Agreement, as revised from time to time in accordance with the TIFIA Loan Agreement, until paid in full. The TIFIA Lender is hereby authorized to modify the Loan Amortization Schedule included in **Exhibit G** to the TIFIA Loan Agreement from time to time in accordance with the terms of the TIFIA Loan Agreement to reflect the amount of each disbursement made thereunder and the date and amount of principal or interest paid by the Borrower thereunder. Absent manifest error, the TIFIA Lender's determination of such matters as set forth on **Exhibit G** to the TIFIA Loan Agreement shall be conclusive evidence thereof; provided, however, that neither the failure to make any such recordation nor any error in such recordation shall affect in any manner the Borrower's obligations hereunder or under any other TIFIA Loan Document.

Payments hereon are to be made in accordance with Section 9(f) (*Manner of Payment*) and Section 37 (*Notices; Payment Instructions*) of the TIFIA Loan Agreement as the same become due. Principal of and interest on this TIFIA Bond shall be paid in funds available on or before the due date and in any lawful coin or currency of the United States of America that at the date of payment is legal tender for the payment of public and private debts.

This TIFIA Bond has been executed under and pursuant to that certain TIFIA Loan Agreement, dated as of the date hereof, between the TIFIA Lender and the Borrower, acting by and through the New Hampshire State Treasurer and the Commissioner of the New Hampshire Department of Transportation (the "**TIFIA Loan Agreement**") and is issued to evidence the obligations of the Borrower under the TIFIA Loan Agreement to repay the loan made by the TIFIA Lender and any other payments of any kind required to be paid by the Borrower under the TIFIA Loan Agreement or the other TIFIA Loan Documents referred to therein. Reference is made to the TIFIA Loan Agreement for all details relating to the Borrower's obligations hereunder. All capitalized terms used in this TIFIA Bond and not defined herein shall have the meanings set forth in the TIFIA Loan Agreement.

This TIFIA Bond may be prepaid at the option of the Borrower in whole or in part (and, if in part, the principal installments and amounts thereof to be prepaid are to be determined in accordance with the TIFIA Loan Agreement; provided, however, such prepayments shall be in principal amounts of at least $1,000,000 or any integral multiple of $1.00 in excess thereof), at any time or from time to time, without penalty or premium, by paying to the TIFIA Lender all or part of the principal amount of the TIFIA Bond in accordance with the TIFIA Loan Agreement.

Payment of the obligations of the Borrower under the TIFIA Loan Agreement as evidenced by this TIFIA Bond is secured pursuant to the terms of the TIFIA Loan Agreement. This TIFIA Bond is being issued by the Borrower pursuant to Chapters 6-A and 6:13-d of the New Hampshire Revised Statutes Annotated and that certain resolution of the Governor and Executive Council of the State adopted on May 18, 2016, as a general obligation of the State of New Hampshire and the full faith and credit of the State of New Hampshire is pledged for the payment of principal of and interest on this TIFIA Bond as the same shall become due and payable, and, subject to appropriation by the State, all other payment obligations under the TIFIA Loan Agreement. The TIFIA Loan, as evidenced by this TIFIA Bond, and other payment obligations under the TIFIA Loan Agreement, are additionally secured by a security interest in and first priority Lien on and pledge of the Pledged Revenues.

Any delay on the part of the TIFIA Lender in exercising any right hereunder shall not operate as a waiver of any such right, and any waiver granted with respect to one default shall not operate as a waiver in the event of any subsequent default.

All acts, conditions and things required by the Constitution and laws of the State to happen, exist, and be performed precedent to and in the issuance of this TIFIA Bond have happened, exist and have been performed as so required. This TIFIA Bond is issued with the intent that the federal laws of the United States of America shall govern its construction to the extent such federal laws are applicable and the internal laws of the State shall govern its construction to the extent such federal laws are not applicable.

[Signature Page Follows]

IN WITNESS WHEREOF, State of New Hampshire has caused this TIFIA Bond to be executed in its name and its seal to be affixed hereto and attested by its duly authorized officer, all as of the Effective Date set forth above.

STATE OF NEW HAMPSHIRE

By: _____
William F. Dwyer
State Treasurer

(SEAL)

ATTEST:

Countersigned:

_____
Secretary of State

By: _____
Margaret W. Hassan
Governor

(FORM OF ASSIGNMENT)

FOR VALUE RECEIVED, the Undersigned hereby unconditionally sells, assigns and transfers unto_____

(*Please Insert Social Security or other identifying number of Assignee(s)*): _____

the within bond and all rights thereunder.

Dated: _____

NOTICE: The signature to this assignment must correspond with the name as it appears upon the face of the within bond in every particular, without alteration or enlargement or any change whatever.

EXHIBIT B

ANTICIPATED TIFIA LOAN DISBURSEMENT SCHEDULE

(US Dollars)

Federal Fiscal Year (October 1 - September 30)		**Amount**		**Cumulative Draws** (Federal Fiscal Year)
2016	$	15,216,677.46	$	15,216,677.46
2017	$	51,124,259.54	$	66,340,937.00
2018	$	52,045,742.80	$	118,386,679.80
2019	$	51,393,595.97	$	169,780,275.77
2020	$	27,892,839.01	$	197,673,114.78
2021	$	2,326,885.22	$	200,000,000.00
Total	**$**	**200,000,000.00**	**$**	**200,000,000.00**

EXHIBIT C

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS — PRIMARY COVERED TRANSACTIONS

The undersigned, on behalf of State of New Hampshire, hereby certify that the State of New Hampshire, has fully complied with its verification obligations under 2 C.F.R. § 180.320 and hereby further confirms, based on such verification, that, to the undersigned's knowledge, the Borrower, the New Hampshire State Treasurer and the New Hampshire Department of Transportation and their respective principals (as defined in 2 C.F.R. § 180.995):

(a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any federal department or agency;

(b) have not within a three (3) year period preceding the Effective Date been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and

(d) have not within a three (3) year period preceding the Effective Date had one or more public transactions (federal, state or local) terminated for cause or default.

Capitalized terms used in the certificate and not defined shall have the respective meanings ascribed to such terms in the TIFIA Loan Agreement, dated as of May ___, 2016, between the TIFIA Lender and the Borrower, as the same may be amended from time to time.

Dated: May ___, 2016

(SEAL)

STATE OF NEW HAMPSHIRE, acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation

By: _____
Name: William F. Dwyer
Title: State Treasurer

By: _____

Name: Victoria F. Sheehan
Title: Commissioner of the
Department of Transportation

EXHIBIT D

REQUISITION PROCEDURES

This **Exhibit D** sets out the procedures which the Borrower agrees to follow in submitting Requisitions for the disbursement of TIFIA Loan proceeds in respect of the Eligible Project Costs incurred in connection with the Project. Section 1 sets out the manner in which Requisitions are to be submitted and reviewed. Sections 2 through Section 4 set out the circumstances in which the TIFIA Lender may reject or correct Requisitions submitted by the Borrower or withhold a disbursement. The Borrower expressly agrees to the terms hereof, and further agrees that (i) the rights of the TIFIA Lender contained herein are in addition to (and not in lieu of) any other rights or remedies available to the TIFIA Lender under the TIFIA Loan Agreement, and (ii) nothing contained herein shall be construed to limit the rights of the TIFIA Lender to take actions including administrative enforcement action and actions for breach of contract against the Borrower if it fails to carry out its obligations under the TIFIA Loan Agreement during the term thereof.

Section 1. General Requirements. All requests by the Borrower for the disbursement of TIFIA Loan proceeds shall be made by electronic mail or overnight delivery service by submission to the TIFIA Lender, in accordance with Section 37 (*Notices; Payment Instructions*) of the TIFIA Loan Agreement, of a Requisition, in form and substance satisfactory to the TIFIA Lender and completed and executed by the Borrower's Authorized Representative. The form of Requisition is attached as Appendix One to this **Exhibit D**. Supporting documentation should be submitted with the requisition.

The TIFIA Lender agrees to promptly send to the Borrower in accordance with Section 37 (*Notices; Payment Instructions*) of the TIFIA Loan Agreement, an acknowledgement of receipt of each Requisition in the form attached as Appendix Two to this **Exhibit D** setting forth the date of receipt by the TIFIA Lender of such Requisition and setting forth the Business Day on which disbursement will be made absent denial by the TIFIA Lender. All disbursement requests must be received by the TIFIA Lender at or before 5:00 P.M. (EST) on the first (1^{st}) Business Day of a calendar month in order to obtain disbursement by the fifteenth (15^{th}) day of such calendar month or, if either such day is not a Business Day, the next succeeding Business Day. If a Requisition is approved by the TIFIA Lender, the TIFIA Lender will notify the Borrower of such approval and of the amount so approved.

Section 2. Rejection. A Requisition may be rejected in whole or in part by the TIFIA Lender if it is:

(a) submitted without signature;

(b) submitted under signature of a Person other than a Borrower's Authorized Representative;

(c) submitted after prior disbursement of all proceeds of the TIFIA Loan; or

(d) submitted without adequate documentation of Eligible Project Costs incurred or paid. Such documentation shall include invoices for costs incurred or paid and

the most recent certificate of or report prepared by the Independent Engineer relating to the construction of the Project (to the extent not previously delivered to the TIFIA Lender).

The TIFIA Lender will notify the Borrower of any Requisition so rejected, and the reasons therefor. Any Requisition rejected for the reasons specified in (a), (b) or (d) above must be resubmitted in proper form in order to be considered for approval. If a Requisition exceeds the balance of the TIFIA Loan proceeds remaining to be disbursed, the request will be treated as if submitted in the amount of the balance so remaining, and the TIFIA Lender will so notify the Borrower.

Section 3. Correction. A Requisition containing an apparent mathematical error will be corrected by the TIFIA Lender, after telephonic or email notification to the Borrower, and will thereafter be treated as if submitted in the corrected amount.

Section 4. Withholding. The TIFIA Lender shall be entitled to withhold approval (in whole or in part) of any pending or subsequent requests for the disbursement of TIFIA Loan proceeds if:

(a) an Event of Default or event that, with the giving of notice or the passage of time or both, would constitute an Event of Default under the TIFIA Loan Agreement shall have occurred and be continuing; or

(b) the Borrower:

(i) knowingly takes any action, or omits to take any action, amounting to fraud or violation of any applicable federal or local criminal law, in connection with the transactions contemplated hereby; or

(ii) fails to construct the Project in a manner consistent with the Governmental Approvals with respect to the Project, or with good engineering practices, where such failure prevents or materially impairs the Project from fulfilling its intended purpose, or prevents or materially impairs the ability of the TIFIA Lender to monitor compliance by the Borrower with applicable federal or local law pertaining to the Project or with the terms and conditions of the TIFIA Loan Agreement; or

(iii) fails to observe or comply with any applicable federal or local law, or any term or condition of the TIFIA Loan Agreement;

(iv) fails to satisfy the conditions set forth in Section 4 (*Disbursement Conditions*) and Section 13(b) (*Conditions Precedent to All Disbursements*) of the TIFIA Loan Agreement; or

(v) fails to deliver documentation satisfactory to the TIFIA Lender evidencing Eligible Project Costs claimed for disbursement at the times and in the manner specified by the TIFIA Loan Agreement; provided, that in such case the TIFIA Lender may, in its sole discretion, partially approve a disbursement request in respect of any amounts for which adequate documentation evidencing Eligible Project Costs has been provided and may, in its sole discretion, disburse in respect of such properly documented amounts.

APPENDIX ONE TO EXHIBIT D

FORM OF REQUISITION

United States Department of Transportation
c/o Director, TIFIA Joint Program Office (HITJ)
Federal Highway Administration
Room E64-426
1200 New Jersey Avenue, SE,
Washington, D.C. 20590

Federal Highway Administration
New Hampshire Division Office
James C. Cleveland Federal Building
53 Pleasant Street, Suite 2200
Concord, NH 03301
Attention: Division Administrator

Re: I-93 IMPROVEMENTS SALEM TO MANCHESTER PROJECT

(TIFIA # 2016-1004A)

Ladies and Gentlemen:

Pursuant to Section 4 (*Disbursement Conditions*) of the TIFIA Loan Agreement, dated as of May ___, 2016 (the "**TIFIA Loan Agreement**"), by and between STATE OF NEW HAMPSHIRE (the "**Borrower**"), acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation, and the UNITED STATES DEPARTMENT OF TRANSPORTATION, acting by and through the Federal Highway Administrator (the "**TIFIA Lender**"), we hereby request disbursement in the amount of $[_____] in respect of Eligible Project Costs paid or incurred by or on behalf of the Borrower. Capitalized terms used but not defined herein have the meaning set forth in the TIFIA Loan Agreement. In connection with this Requisition the undersigned does hereby represent and certify the following:

1. This Requisition is Requisition number [_____.]

2. The requested date of disbursement is [_____]15, 20[__] (the "**Disbursement Date**"), which is the first Business Day following [_____] 15, 20[__.]

3. The amounts previously disbursed under the TIFIA Loan Agreement equal, in the aggregate, [$_____.] The amounts previously disbursed and to be disbursed under the TIFIA Loan Agreement as of the date of the requested disbursement equal, in the aggregate, $[_____].

4. The amounts hereby requisitioned have been paid or incurred by or on behalf of the Borrower for Eligible Project Costs and have not been paid for or reimbursed by any previous disbursement from TIFIA Loan proceeds.

5. The amount of this Requisition, together with all prior Requisitions, does not exceed the amount of the TIFIA Loan, and the amount of this Requisition together with the sum of all disbursements of TIFIA Loan proceeds made and to be made for the current year will not exceed the cumulative disbursements through the end of the current year as set forth in the Anticipated TIFIA Loan Disbursement Schedule.

6. All documentation evidencing the Eligible Project Costs to be reimbursed by the above-requested disbursement has been delivered by the Borrower at the times and in the manner specified by the TIFIA Loan Agreement.

7. The Borrower has all Governmental Approvals necessary as of the date hereof and as of the Disbursement Date (immediately after giving effect to the above-requested disbursement of TIFIA Loan proceeds), for the development, construction, operation and maintenance of the Project and each such Governmental Approval is in full force and effect (and is not subject to any notice of violation, breach or revocation).

8. The insurance required to satisfy the condition in Section 13(a)(xviii) (Conditions Precedent to Effectiveness) of the TIFIA Loan Agreement is in full force and effect, and no notice of termination thereof has been issued by the applicable insurance provider.

9. The Project has been, and is being, constructed in a manner consistent with all plans, specifications, engineering reports and facilities plans previously submitted to and approved by the TIFIA Lender and the FHWA Division Office and with good engineering practices.

10. The representations and warranties of the Borrower set forth in the TIFIA Loan Agreement and in each other Related Document are true and correct as of the date hereof and as of the Disbursement Date, except to the extent such representations and warranties expressly relate to an earlier date (in which case, such representations and warranties shall be true and correct as of such earlier date).

11. As of the date hereof and on the Disbursement Date (immediately after giving effect to the above-requested disbursement of TIFIA Loan proceeds), (i) no Event of Default or event of default under any other Related Document and (ii) no event that, with the giving of notice or the passage of time or both, would constitute an Event of Default or event of default under any Related Document, in each case, has occurred and is continuing.

12. No Material Adverse Effect, or any event or condition that could reasonably be expected to have a Material Adverse Effect, has occurred or arisen since the Application Date.

13. A copy of the monthly construction progress report pursuant to Section 23(b)(i) (*Monthly Construction Progress Report*) of the TIFIA Loan Agreement for the month preceding the date of the applicable Requisition has been delivered to each of the above named addresses.

14. Pursuant to Section 13(b)(iv) (*Conditions Precedent to All Disbursements*), to the extent not set forth on Exhibit L to the TIFIA Loan Agreement or set forth in a previous Requisition, a listing of each Principal Project Contract, as of the date of this Requisition, is attached hereto.

15. Pursuant to Section 13(b)(xiii) (*Conditions Precedent to All Disbursements*), to the extent not set forth on Exhibit M to the TIFIA Loan Agreement or set forth in a previous Requisition, a listing of each Performance Security Instrument, as of the date of this Requisition, is attached hereto.

16. The undersigned acknowledges that if the Borrower makes a false, fictitious, or fraudulent claim, statement, submission, or certification to the Government in connection with the Project, the Government reserves the right to impose on the Borrower the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l)(1), to the extent the Government deems appropriate.

17. A copy of this requisition has been delivered to each of the above named addressees.

18. The undersigned is duly authorized to execute and deliver this requisition on behalf of the Borrower.

Date:

_____

STATE OF NEW HAMPSHIRE,
acting by and through the New Hampshire Department of Transportation

On behalf of the New Hampshire Department of Transportation's Authorized Representative

Name:_____

Title:_____

APPENDIX TWO TO EXHIBIT D

FORM OF ACKNOWLEDGMENT OF RECEIPT OF

REQUISITION FOR DISBURSEMENT OF TIFIA LOAN PROCEEDS

Office of the Treasurer
State of New Hampshire
25 Capitol Street
Concord, NH 03301
Attention: State Treasurer William F. Dwyer
Email: bdwyer@treasury.state.nh.us

New Hampshire Department of Transportation
7 Hazen Drive
Concord, NH 03301
Attention: Director of Finance Marie A. Mullen
Email: mmullen@dot.state.nh.us

Re: Receipt of Requisition for Disbursement of TIFIA Loan Proceeds

Ladies and Gentlemen:

Pursuant to Section 4 (*Disbursement Conditions*) of the TIFIA Loan Agreement, dated as of May ___, 2016, by and between STATE OF NEW HAMPSHIRE (the "**Borrower**"), acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation and the UNITED STATES DEPARTMENT OF TRANSPORTATION, acting by and through the Federal Highway Administrator (the "**TIFIA Lender**"), the undersigned authorized representative of the TIFIA Lender hereby acknowledges receipt of the attached Requisition for Disbursement of TIFIA Loan proceeds (the "**Requisition**") from the Borrower. Capitalized terms used but not defined herein have the meaning set forth in the TIFIA Loan Agreement. In connection therewith, we hereby represent and certify the following:

1. The date of receipt of the Requisition is [_____].

2. Unless this Requisition is denied, disbursement shall be made on or before [_____].

Date: _____

_____
On behalf of the TIFIA Lender's Authorized Representative
Name: _____
Title: _____

APPENDIX THREE TO EXHIBIT D

[APPROVAL/DISAPPROVAL] OF THE TIFIA LENDER

(To be delivered to the Borrower)

Requisition Number [_____] is [approved in the amount of $[_____] [approved in part in the amount of $[_____] [not approved][1] by the TIFIA Lender (as defined herein) pursuant to Section 4 (*Disbursement Conditions*) of the TIFIA Loan Agreement, dated as of ____ ___, 2016, by and between State of New Hampshire (the "**Borrower**"), acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation and the United States Department of Transportation, acting by and through the Federal Highway Administrator (the "**TIFIA Lender**").

Any determination, action or failure to act by the TIFIA Lender with respect to the Requisition set forth above, including any withholding of a disbursement, shall be at the TIFIA Lender's sole discretion, and in no event shall the TIFIA Lender be responsible for or liable to the Borrower for any and/or all consequence(s) which are the result thereof.

UNITED STATES DEPARTMENT OF TRANSPORTATION, acting by and through the Federal Highway Administrator

By: _____
TIFIA Lender's Authorized Representative
Name:_____
Title:_____
Dated:_____

[1] Attached hereto as Exhibit A are reasons for any partial and full denial of approval.

EXHIBIT A TO APPENDIX THREE TO EXHIBIT D

[Insert reasons for any partial or full denial of approval.]

EXHIBIT E

COMPLIANCE WITH LAWS

The Borrower shall, and shall require its contractors and subcontractors at all tiers for the Project to, comply in all material respects with any and all applicable federal and state laws. The following list of federal laws is illustrative of the type of requirements generally applicable to transportation projects. It is not intended to be exhaustive.

(i) The Americans With Disabilities Act of 1990 and implementing regulations (42 U.S.C. § 12101 *et seq.*; 28 C.F.R. § 35; 29 C.F.R. § 1630);

(ii) Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. § 2000d *et seq.*) and 49 C.F.R. § 21;

(iii) The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. § 4601 *et seq.*), with the understanding that the requirements of said Act are not applicable with respect to utility relocations except with respect to acquisitions by the Borrower of easements or other real property rights for the relocated facilities;

(iv) Equal employment opportunity requirements under Executive Order 11246 dated September 24, 1965 (30 F.R. 12319), any Executive Order amending such order, and implementing regulations (29 C.F.R. §§ 1625-27, 1630; 28 C.F.R. § 35; 41 C.F.R. § 60; and 49 C.F.R. § 27);

(v) Restrictions governing the use of federal appropriated funds for lobbying (31 U.S.C. § 1352; 49 C.F.R. § 20);

(vi) The Clean Air Act, as amended (42 U.S.C. § 7401 *et seq.*);

(vii) The National Environmental Policy Act of 1969 (42 U.S.C. § 4321 *et seq.*);

(viii) The Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 *et seq.*, as amended by Pub. L. 92-500);

(ix) The environmental mitigation requirements and commitments made by the Borrower that result in TIFIA Lender's approval of the Final Environmental Impact Statement (issued pursuant to 42 U.S.C. § 4332(2)(C)) and issuance of the Record of Decision for the Project;

(x) The Endangered Species Act, 16 U.S.C. § 1531, *et seq.*;

(xi) 23 U.S.C. § 138 and 49 U.S.C. § 303, as applicable;

(xii) The health and safety requirements set forth in 23 C.F.R. § 635.108;

(xiii) The prevailing wage requirements set forth in 40 U.S.C. § 276a, 23 U.S.C. § 113, as supplemented by 29 C.F.R. § 5, 23 C.F.R. §§ 635.117(f) and 635.118, and FHWA Form 1273 §§ IV and V for those contracts that involve construction of highway improvements;

(xiv) The Buy America requirements set forth in 23 U.S.C. § 313 and implementing regulations (23 C.F.R. § 635.410);

(xv) The requirements of 23 U.S.C. § 101 *et seq.* and 23 C.F.R.; and

(xvi) The applicable requirements of 49 C.F.R. § 26 relating to the Disadvantaged Business Enterprise program.

EXHIBIT F

FHWA OVERSIGHT AGREEMENT

STEWARDSHIP and OVERSIGHT AGREEMENT

FOR IMPLEMENTATION OF THE MOVING AHEAD FOR PROGRESS IN THE 21st CENTURY ACT (MAP-21) P.L. 112-141

BETWEEN

New Hampshire DOT
Department of Transportation

AND

U.S.Department of Transportation
Federal Highway Administration

May 14, 2015

Table of Contents

Page

Section I: BACKGROUND AND INTRODUCTION 3

Section II: INTENT AND PURPOSE OF S&O AGREEMENT 4

Section III: ASSUMPTION OF RESPONSIBILITIES FOR FEDERAL-AID PROJECTS ON THE NATIONAL HIGHWAY SYSTEM 4

Section IV: ASSUMPTION OF RESPONSIBILITIES FOR FEDERAL-AID PROJECTS OFF THE NATIONAL HIGHWAY SYSTEM 5

Section V: ASSUMPTION OF RESPONSIBILITIES FOR LOCALLY ADMINISTERED PROJECTS 5

Section VI: AREAS OF ASSUMPTION UNDER 23 U.S.C. 106(c) 5

Section VII: FEDERAL APPROVALS AND RELATED RESPONSIBILITIES THAT MAY NOT BE ASSUMED BY THE NHDOT 6

Section VIII: PROJECT ACTION RESPONSIBILITY MATRIX 7

Section IX: HIGH RISK CATEGORIES 7

Section X: FHWA OVERSIGHT PROGRAM UNDER 23 U.S.C. 106(g) 8

Section XI: NHDOT OVERSIGHT AND REPORTING REQUIREMENTS 9

Section XII: IMPLEMENTATION AND AMENDMENTS 15

Section XIII: ISSUE RESOLUTION PROCESS 16

Section XIV: WASTE, FRAUD, AND ABUSE 16

ATTACHMENT A – PROJECT ACTION RESPONSIBILITIES LIST 18
ATTACHMENT B – PROGRAM ACTION RESPONSIBILITIES LIST 28
ATTACHMENT C – FHWA/NHDOT Manuals and Operating Agreements 56
ATTACHMENT D – Project Oversight Designation Requirement in the Fiscal Management Information System (FMIS) 58
ATTACHMENT E – PROGRAM SPECIFIC TOPICS 59
ATTACHMENT F – PODI PROJECT SELECTION PROCESS 96
ATTACHMENT G – PERFORMANCE/COMPLIANCE INDICATORS 98
ATTACHMENT H – GLOSSARY 102

STEWARDSHIP AND OVERSIGHT AGREEMENT
ON PROJECT ASSUMPTION AND PROGRAM OVERSIGHT
BY AND BETWEEN
FEDERAL HIGHWAY ADMINISTRATION, NEW HAMPSHIRE DIVISION
AND THE
STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

SECTION I. BACKGROUND AND INTRODUCTION

The Federal-aid Highway Program (FAHP) is a federally-assisted program of State-selected projects. The Federal Highway Administration (FHWA) and the State Departments of Transportation have long worked as partners to deliver the FAHP in accordance with Federal requirements. In enacting 23 U.S.C. 106(c), as amended, Congress recognized the need to give the States more authority to carry out project responsibilities traditionally handled by FHWA. Congress also recognized the importance of a risk-based approach to FHWA oversight of the FAHP, establishing requirements in 23 U.S.C. 106(g). This Stewardship and Oversight (S&O) Agreement sets forth the agreement between the FHWA and the State of New Hampshire Department of Transportation (NHDOT) on the roles and responsibilities of the FHWA and the NHDOT with respect to Title 23 project approvals and related responsibilities, and FAHP oversight activities.

The scope of FHWA responsibilities, and the legal authority for NHDOT assumption of FHWA responsibilities, developed over time. The U.S. Secretary of Transportation delegated responsibility to the Administrator of the FHWA for the FAHP under Title 23 of the United States Code, and associated laws. (49 CFR 1.84 and 1.85) The following legislation further outlines FHWA's responsibilities:

- Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991;
- Transportation Equity Act for the 21st Century (TEA-21) of 1998;
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005; and
- Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012 (P.L. 112-141).

The FHWA may not assign or delegate its decision-making authority to a State Department of Transportation unless authorized by law. Section 106 of Title 23, United States Code (Section 106), authorizes the State to assume specific project approvals. For projects that receive funding under Title 23, U.S.C., and are on the National Highway System (NHS) including projects on the Interstate System, the State may assume the responsibilities of the Secretary of the U.S. Department of Transportation under Title 23 for design, plans, specifications, estimates, contract awards, and inspections with respect to the projects unless the Secretary determines that the assumption is not appropriate. (23 U.S.C. 106(c)(1)) For projects under Title 23, U.S.C. that are not on the NHS, the State shall assume the responsibilities for design, plans, specifications,

estimates, contract awards, and inspections unless the State determines that such assumption is not appropriate. (23 U.S.C. 106(c)(2))

For all other project activities which do not fall within the specific project approvals listed in Section 106 or are not otherwise authorized by law, the FHWA may authorize a NHDOT to perform work needed to reach the FHWA decision point, or to implement FHWA's decision. However such decisions themselves are reserved to FHWA.

The authority given to the NHDOT under Section 106(c)(1) and (2) is limited to specific project approvals listed herein. Nothing listed herein is intended to include assumption of FHWA's decision-making authority regarding Title 23, U.S.C. eligibility or Federal-aid participation determinations. The FHWA always must make the final eligibility and participation decisions for the Federal-aid Highway Program.

Section 106(c)(3) requires FHWA and the NHDOT to enter into an agreement relating to the extent to which the NHDOT assumes project responsibilities. This Stewardship and Oversight Agreement (S&O Agreement), includes information on specific project approvals and related responsibilities, and provides the requirements for FHWA oversight of the FAHP (Oversight Program), as required by 23 U.S.C. 106(g).

SECTION II. INTENT AND PURPOSE OF S&O AGREEMENT

The intent and purpose of this S&O Agreement is to document the roles and responsibilities of the FHWA's New Hampshire Division Office (FHWA or Division) and New Hampshire Department of Transportation (NHDOT) with respect to project approvals and related responsibilities, and to document the methods of oversight which will be used to efficiently and effectively deliver the FAHP.

The Project Action Responsibility Matrix, Attachment A to this S&O Agreement and as further described in Section VIII of this S&O Agreement, identifies FHWA FAHP project approvals and related responsibilities New Hampshire DOT assumes from FHWA on a program-wide basis pursuant to 23 U.S.C. 106(c) and other legal authorities. Upon execution of this agreement, Attachment A shall be controlling and except as specifically noted in Attachment A, no other agreements, attachments, or other documents shall have the effect of delegating or assigning FHWA approvals to New Hampshire DOT on a program-wide basis under 23 U.S.C 106 or have the effect of altering Attachment A.

SECTION III. ASSUMPTION OF RESPONSIBILITIES FOR FEDERAL-AID PROJECTS ON THE NATIONAL HIGHWAY SYSTEM

A. The NHDOT *may assume* the FHWA's Title 23 responsibilities for design; plans, specifications, and estimates (PS&E); contract awards; and inspections, with respect to *Federal-aid projects on the National Highway System (NHS)* if both the *NHDOT* and *FHWA* determine that assumption of responsibilities is appropriate.

B. Approvals and related activities for which the NHDOT has assumed responsibilities as shown in Attachment A will apply program wide unless project specific actions for which the Division will carry out the approval or related responsibilities are documented in

accordance with the FHWA Project of Division Interest/Project of Corporate Interest Guide (FHWA PoDI/PoCI Guide) and Attachment F. FHWA PoDI/PoCI Guide is located at: http://www.fhwa.dot.gov/federalaid/stewardship/

C. The NHDOT may not assume responsibilities for Interstate projects that are in high risk categories. (23 U.S.C. 106(c)(1))

D. The NHDOT is to exercise any and all assumptions of the Secretary responsibilities for Federal-aid projects on the NHS in accordance with Federal laws, regulations and policies.

SECTION IV. ASSUMPTION OF RESPONSIBILITIES FOR FEDERAL-AID PROJECTS OFF THE NATIONAL HIGHWAY SYSTEM

A. The NHDOT *shall assume* the FHWA's Title 23 responsibilities for design, PS&Es, contract awards, and inspections, with respect to *Federal-aid projects off the NHS (non-NHS)* unless the *NHDOT* determines that assumption of responsibilities is not appropriate. (23 U.S.C. 106(c)(2))

B. Except as provided in 23 U.S.C.109(o), the NHDOT is to exercise the Secretary's approvals and related responsibilities on these projects in accordance with Federal laws.

C. The NHDOT, in its discretion, may request FHWA carry out one or more non-NHS approvals or related responsibilities listed as "State" in Attachment A on a program-wide basis. For a project specific request, the State may request FHWA carry out any approval or related responsibility listed in Attachment A off the NHS. Such project-specific requests shall be documented in accordance with the FHWA PoDI/PoCI Guide.

D. Pursuant to 23 U.S.C. 109(o), non-NHS projects shall be designed and constructed in accordance with State laws, regulations, directives, safety standards, design standards, and construction standards.

SECTION V. ASSUMPTION OF RESPONSIBILITIES FOR LOCALLY ADMINISTERED PROJECTS

The NHDOT may permit local public agencies (LPAs) to carry out the NHDOT's assumed responsibilities on locally administered projects. The NHDOT is responsible and accountable for LPA compliance with all applicable Federal laws and requirements.

SECTION VI. PERMISSABLE AREAS OF ASSUMPTION UNDER 23 U.S.C. 106(c)

An assumption of responsibilities under 23 U.S.C. 106(c) may cover only activities in the following areas:

A. Design which includes preliminary engineering, engineering, and design-related services directly relating to the construction of a FAHP-funded project, including engineering, design, project development and management, construction project management and inspection, surveying, mapping (including the establishment of temporary and permanent geodetic control in accordance with specifications of the National Oceanic and Atmospheric Administration), and architectural-related services.

B. PS&E which represents the actions and approvals required before authorization of construction. The PS&E package includes geometric standards, drawings, specifications, project estimates, certifications relating to completion of right-of-way acquisition and relocation, utility work, and railroad work.

C. Contract awards which include procurement of professional and other consultant services and construction-related services to include advertising, evaluating, and awarding contracts.

D. Inspections which include general contract administration, material testing and quality assurance, review, and inspections of Federal-aid contracts as well as final inspection/acceptance.

E. Approvals and related responsibilities affecting real property as provided in 23 CFR 710.201(i) and any successor regulation in 23 CFR Part 710.

SECTION VII. FEDERAL APPROVALS AND RELATED RESPONSIBILITIES THAT MAY NOT BE ASSUMED BY THE NHDOT

A. Any approval or related responsibility not listed in Attachment A cannot be assumed by the State without prior concurrence by FHWA Headquarters. The following is a list of the most frequently-occurring approvals and related responsibilities that may not be assumed by the NHDOT:

- Civil Rights Program approvals;
- Environmental approvals, except those specifically assumed under other agreements. (23 U.S.C. 326 and 327; programmatic categorical exclusion agreements);
- Federal air quality conformity determinations required by the Clean Air Act;
- Approval of current bill and final vouchers;
- Approval of federally-funded hardship acquisition, protective buying, and 23 U.S.C. 108(d) early acquisition;
- Project agreements and modifications to project agreements and obligation of funds (including advance construction);
- Planning and programming pursuant to 23 U.S.C. 134 and 135;
- Special Experimental Projects (SEP-14 and SEP-15);
- Use of Interstate airspace for non-highway-related purposes;
- Any Federal agency approval or determination under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, and implementing regulations in 49 CFR Part 24;
- Waivers to Buy America requirements;

- Approval of Federal participation under 23 CFR 1.9(b);
- Provide pre-approval for preventive maintenance project (until FHWA concurs with NHDOT procedures);
- Requests for credits toward the non-Federal share of construction costs for early acquisitions, donations, or other contributions applied to a project;
- Functional replacement of property;
- Approval of a time extension for preliminary engineering projects beyond the 10-year limit, in the event that actual construction or acquisition of right-of-way for a highway project has not commenced;
- Approval of a time extension beyond the 20-year limit for right of way projects, in the event that actual construction of a road on the right-of-way is not undertaken;
- Determine need for Coast Guard Permit;
- Training Special Provision – Approval of New Project Training Programs; and
- Any other approval or activity not specifically identified in Attachment A unless otherwise approved by the FHWA, including the Office of Chief Counsel.

B. For all projects and programs, the NHDOT will comply with Title 23 and all applicable non-Title 23, U.S.C. Federal-aid program requirements, such as metropolitan and statewide planning; environment; procurement of engineering and design related service contracts (except as provided in 23 U.S.C. 109(o)); Civil Rights including Title VI of the *Civil Rights Act*, and participation by Disadvantaged Business Enterprises; prevailing wage rates; and acquisition of right-of-way, etc.

C. This Agreement does not modify the FHWA's non-Title 23 program approval and related responsibilities, such as approvals required under the Clean Air Act; National Environmental Policy Act, Executive Order on Environmental Justice (E.O. 12898), and other related environmental laws and statutes; the Uniform Act; and the Civil Rights Act of 1964 and related statutes.

SECTION VIII. PROJECT ACTION RESPONSIBILITY MATRIX

Attachment A, Project Action Responsibility Matrix, to this S&O Agreement identifies FAHP project approvals and related responsibilities. The Matrix specifies which approvals and related responsibilities are assumed by the NHDOT under 23 U.S.C. 106(c) or other statutory or regulatory authority, as well as approvals and related responsibilities reserved to FHWA. Deviations from Attachment A will be documented on a project by project basis with the development of a PODI oversight plan. The PODI selection process is described in Attachment F.

SECTION IX. HIGH RISK CATEGORIES

A. In 23 U.S.C. 106(c), Congress directs that the Secretary shall not assign any approvals or related responsibilities for projects on the Interstate System if the Secretary determines the project to be in a high risk category. Under 23 U.S.C. 106(c)(4)(B), the Secretary may define high risk categories on a national basis, State-by-State basis, or national and State-by-State basis.

B. Per the date of this Agreement, the Division has determined there are no high risk categories for the NHDOT.

SECTION X. FHWA OVERSIGHT PROGRAM UNDER 23 U.S.C. 106(g)

A. In 23 U.S.C. 106(g), Congress directs that the Secretary shall establish an oversight program to monitor the effective and efficient use of funds authorized to carry out the FAHP. This program includes FHWA oversight of the NHDOT's processes and management practices, including those involved in carrying out the approvals and related responsibilities assumed by the NHDOT under 23 U.S.C. 106(c). Congress defines that, at a minimum, the oversight program shall be responsive to all areas relating to financial integrity and project delivery.

B. The FHWA shall perform annual reviews that address elements of the NHDOT's financial management system in accordance with 23 U.S.C. 106(g)(2)(A). FHWA will periodically review the NHDOT's monitoring of subrecipients pursuant to 23 U.S.C. 106(g)(4)(B).

C. The FHWA shall perform annual reviews that address elements of the project delivery systems of the NHDOT, which elements include one or more activities that are involved in the life cycle of project from conception to completion of the project. The FHWA will also evaluate the practices of the NHDOT for estimating project costs, awarding contracts, and reducing costs. 23 U.S.C. 106(g)(2) and (3).

D. To carry out the requirements of 23 U.S.C. 106(g), the FHWA will employ a risk management framework to evaluate financial integrity and project delivery, and balance risk with staffing resources, available funding, and the State's transportation needs. The FHWA may work collaboratively with the NHDOT to assess the risks inherent with the FAHP and funds management, and how that assessment will be used to align resources to develop appropriate risk response strategies.

Techniques the Division and NHDOT may use to identify and analyze risks and develop response strategies include the following:

- Program Assessments;
- FIRE Reviews;
- Program Reviews;
- Certification Reviews;
- Recurring or periodic reviews such as the Compliance Assessment Program (CAP); and
- Inspections of project elements or phases.

These techniques will be carried out in a manner consistent with applicable Division Standard Operating Procedures or other control documents relating to program assessments, FIRE, program reviews, CAP, etc. Reviews may be conducted by individual FHWA staff or by teams including NHDOT staff.

E. Program Responsibility Matrix

Attachment B to this S&O Agreement is the Program Responsibility Matrix example that identifies all relevant FHWA program actions, and New Hampshire Division and NHDOT program contact offices.

F. Manuals and Operating Agreements

NHDOT manuals, agreements and other control documents that have been approved for use on Federal-aid projects are listed in Attachment C to this S&O Agreement. Any new or updated manuals for use on the Federal-aid program require FHWA review and approval/concurrence.

G. Stewardship and Oversight Indicators

The New Hampshire Division and NHDOT have jointly established Stewardship and Oversight Indicators (Indicators). The Indicators assist to identify if implementation of countermeasures and actions are needed when the data is moving away from the desired targets or trends. Indicators also provide documented evidence that the NHDOT assumption of responsibilities is functioning appropriately. The Stewardship and Oversight Indicators are risk-based and will be reviewed on an annual basis. The Indicators are incorporated by reference to this S&O Agreement, Attachment G.

SECTION XI. NHDOT OVERSIGHT AND REPORTING REQUIREMENTS

A. NHDOT Oversight and Reporting Requirements

The NHDOT is responsible for demonstrating to the FHWA how it is carrying out its responsibilities in accordance with this S&O Agreement. In order to fulfill this responsibility, the NHDOT will:

- Follow all processes and procedures as documented in the NHDOT Manuals approved by the New Hampshire Division for use on Federal-aid projects.
- Maintain individual Federal-aid project files that will include documentation of all required FHWA actions and NHDOT's assumed project approvals as set forth in this Agreement. NHDOT will provide FHWA access to the project files when requested.
- Provide the information, as noted in Section X. G. above to analyze the agreed upon set of Stewardship and Oversight Indicators.
- Conduct program and project reviews, as needed
- Complete quarterly/annual reports and provide program and project information, as needed.
- Work with the New Hampshire Division to implement the Supercircular (2 CFR 200) and the FHWA Project Funds Management Guide for State Grants.

- NHDOT and the New Hampshire Division, as part of the annual Risk Assessment, will assess the Program to determine if there are opportunities to improve the processes outlined.

B. NHDOT Oversight of Locally Administered Projects

B.1. NHDOT is required to provide adequate oversight of subrecipients including oversight of any assumed responsibilities the NHDOT delegates to a LPA.

NHDOT will assign a Program Manager to oversee each program that provides funding to LPA's for transportation projects. A Project Manager (PM) will be assigned to oversee each individual project. The PM's will seek input from other NHDOT bureaus with special expertise as needed including but not limited to: Environment, Traffic, Highway Design, Bridge Design, Right-of-Way, Materials and Research, Public Works, Construction, Highway Maintenance, and Bridge Maintenance. All aspects of the projects are reviewed for compliance with the NHDOT LPA Manual and other NHDOT standards as defined in NHDOT design manuals and the NHDOT Standard Specifications for Road and Bridge Construction.

B.2. Pursuant to 23 U.S.C. 106(g)(4), the NHDOT shall be responsible for determining that subrecipients of Federal funds have adequate project delivery systems for locally administered projects and sufficient accounting controls to properly manage such Federal-aid funds. The State DOT is also responsible for ensuring compliance with reporting and other requirements applicable to grantees making sub-awards, such as monthly reporting requirements under the Federal Funding Accountability and Transparency Act of 2006, PL 109-282 (as amended by PL 110-252).

As required by the process defined in the LPA Manual, the sub-recipients or LPA Project sponsors will be required to designate "a Person in Responsible Charge (PiRC)". The PiRC will be required to obtain LPA Program Certification by attending training offered by NHDOT Bureau of Planning and Community Assistance. If the LPA engages a consultant to assist with design and construction of the project, the consultant's Project Manager and Contract Administrator will be LPA Program Certified. The LPA will be required to submit a Single Audit Report or municipal financial report in compliance with OMB circular A133. LPA project will be required to follow a process through the entire project development process that includes numerous points of contact and meetings with the project sponsor, submission of documents for review and approval, and authorizations to proceed at each step. The LPA will be required to submit monthly status reports and requests for reimbursement. The LPA will be required to execute an LPA Project Agreement with NHDOT that outlines each parties' responsibilities and requirements.

B.3. The NHDOT acknowledges that it is responsible for sub-recipient awareness of Federal grant requirements, management of grant awards and sub-awards, and is familiar with and comprehends pass through entity responsibilities (2 C.F.R 200.331 Requirements for Pass-thru Entities). The NHDOT shall carry out these responsibilities using the following actions, programs, and processes:

NHDOT administers the day-day activities of the LPA subrecipients to ensure that federal-aid is used for authorized purposes, in compliance with Federal statutes, regulations, and follow the terms and conditions of the project agreement.

NHDOT assigns a State Project Manager (PM) to each locally administered project with the authority to enforce all requirements. The PM is responsible for project oversight in accordance with NHDOT's LPA Manual and all other actions necessary to ensure the proper performance of the NHDOT/LPA Project Agreement.

NHDOT's LPA Certification Course certifies individuals. To administer federal-aid projects in New Hampshire, LPAs must employ someone with decision-making authority who has LPA certification.

LPA requests to administer projects are sent to the NHDOT Program Manager with documentation of the following:

- Experience carrying out projects of similar size/complexity
- Staff experience and qualifications
- Ability to manage and track federal and state funds

B.4. The NHDOT shall assess whether a sub-recipient has adequate project delivery systems and sufficient accounting controls to properly manage projects, using the following actions, programs, and processes:

As outlined in LPA Manual v 2.0, Section 11 Single Audit Requirements, NHDOT has the following responsibilities as the pass-through entity:

- Send out request for certified audit reports
- Maintain a file of single audit reports, annual financial reports, and correspondence received form sub-recipients
- Evaluate single audit reports and send a copy of the single audit report to FHWA
    - For single audit reports with findings, the NHDOT Bureau of Finance & Contracts conducts additional investigations and coordination with the sub-recipient.
    - The sub-recipient must provide access to the records and financial statements as necessary.

- NHDOT Bureau of Finance & Contracts issues a management decision on audit findings within six months after receipt of the sub-recipient's audit report to ensure that the sub-recipient takes appropriate and timely corrective action. NHDOT is only responsible for preparing and issuing a management decision for finding related to the federal program with CFDA 20.205.

B.5. The NHDOT shall assess whether a sub-recipient is staffed and equipped to perform work satisfactorily and cost effectively, and that adequate staffing and supervision exists to manage the Federal project(s), by using the following actions, programs, and processes:

As outlined in the LPA Manual v. 2.0 Section 4 and 5 the project sponsor is required to designate a Person-in-Responsible Charge (PiRC) for the project who is a full-time employee of the project sponsor. That person shall be NHDOT LPA certified by attending the NHDOT LPA Certification Training. If the project sponsor hires a consultant, the consultant's Project Manager shall be fully certified and any contract administrators shall be certified for Construction. NHDOT will monitor the status of certifications for the PiRC and consultant staff. NHDOT will continue to maintain the list of currently certified individuals.

NHDOT will continue to approve the consultant selected through a Qualification-based selection (QBS) process based on review of submitted documentation summarizing the QBS process. NHDOT will continue to approve the contractor selected by a competitive bidding process prior to the contract being awarded and after review of the bidding process and bid tabulation.

NHDOT will continue to require scoping meetings with the project sponsor and their Person-in-Responsible Charge at the beginning of the project.

B.6. The NHDOT shall assess whether sub-recipient projects receive adequate inspection to ensure they are completed in conformance with approved plans and specifications, by using the following actions, programs, and processes:

NHDOT Project Managers (PM) or their representatives shall attend key project meetings including Pre-construction Meeting, final inspection and project progress meetings as required. The NHDOT Project Manager shall visit the project as needed during construction and oversee construction activities and records as deemed appropriate. The NHDOT PM will review and approve any change orders required during construction. The NHDOT also requires all projects to have a "Person in Responsible Charge".

B.7. The NHDOT shall ensure that when LPAs elect to use consultants for engineering services, the LPA, as provided under 23 CFR 635.105(b), shall provide a full-time employee of the agency to be in responsible charge of the project. The NHDOT's process to ensure compliance with this requirement is documented by the following actions, programs, and processes:

NHDOT will continue to enforce the requirements of the LPA Manual, Sections 1 and 5 that require the project sponsor to provide a qualified full-time public employee to be the person in responsible charge. That person is required to have a current LPA certification by attending the training offered by NHDOT. One of the responsibilities of that person is to oversee the activities of the design consultant.

The LPA Manual outlines the QBS process which is required by NH State and Federal regulations for procuring Engineering, Architectural or Surveying consultant services. NHDOT also reviews and approves the QBS process and NTP for LPA's to begin negotiations over scope of work and fee proposals.

B.8. The NHDOT shall ensure that project actions will be administered in accordance with all applicable Federal laws and regulations. The NHDOT will use the following process on required approvals on sub-recipient projects and approved on sub-recipient administered projects.

The activities for ensuring compliance are based on the most current version of the LPA Manual and shall include the following:

a. Consultant selection and management shall be in compliance with Sections 12, 13 and 14 of the LPA Manual in particular and any references therein plus other pertinent references in other sections. Section 13 outlines the requirements for the qualification-based consultant selection process. Section 14 outlines the requirements and process for developing contracts including independent government estimates. Section12 outlines the reimbursement process including invoice requirements.

b. Environment shall be in compliance with Section 17 of the LPA Manual and any references therein plus other pertinent references in other sections. In particular, NHDOT shall require an environmental review process that meets the requirements outlined in the LPA Manual resulting in an approved environmental classification including commitments prior to completing final design. The environmental classification memo with commitments shall be included in the PS&E package submitted as part of the process seeking authorization of federal aid for construction.

c. Design shall be in compliance with Sections 15, 16, 20, and 25 of the LPA Manual and any references therein plus other pertinent references in other sections. In particular, the design shall be done by a Professional Engineer licensed in the State of NH. The design shall meet all pertinent design requirements of NHDOT unless design exceptions are granted. The design shall be done in three phases as outlined in the LPA Manual including engineering study, preliminary plans, and final contract plans or PS&E. All phases will be reviewed and approved by NHDOT to ensure compliance. The design documents will be reviewed as necessary by other bureaus with special

expertise as needed including highway design, bridge design, environment, geotechnical, materials, traffic, rail and transit, highway and bridge maintenance, office of federal compliance, and any others as needed. The design process shall include coordination with utilities as needed for projects resulting in a utility certificate to be included as part of the PS&E submission.

d. Civil Rights shall be in compliance with Section 22 of the LPA Manual and any references therein plus other pertinent references in other sections. In particular, NHDOT shall review with the assistance of the Office of Federal Compliance the bidding documents to ensure that the required documents are included. The LPA Project Agreement executed by NHDOT and the project sponsor will continue to include the most current civil rights requirements.

e. Financial management including audits and indirect cost allocation plans shall be in compliance with Section 11 of the LPA Manual and any references therein plus other pertinent references in other sections. See Section B.4 for additional information. Any parties including project sponsors or consultants shall have indirect cost rates approved by NHDOT prior to notice-to-proceed on pre-approved work defined in contracts.

e. Right-of-way shall be in compliance with Section 19 of the LPA Manual and any references therein plus other pertinent references in other sections. In particular, right-of-way (ROW) process for a federal aid LPA project shall be done in compliance with the current NHDOT Right-of-way Manual. A ROW certificate and all related ROW documents shall be submitted by the project sponsor to NHDOT for review and approval prior to the submission of the PS&E for authorization of funds for construction.

f. Construction monitoring, including Quality Control/Quality Assurance (QC/QA) shall be in compliance with the NHDOT Quality Assurance Program and any requirements listed therein. The project sponsor and their consultant shall engage qualified persons to conduct the QA program. NHDOT shall conduct assurance testing as needed to monitor that the individuals are qualified.

h. Contract administration including the NHDOT's responsibility to approve a sub-recipient to pursue a contract procurement method other than competitive bidding shall be handled in accordance with the LPA Manual Section 15 that outlines the process for force account and public interest findings.

B.9. The NHDOT shall document its oversight activities for LPA-administered projects and findings, and how it will share this information with the FHWA.

The NHDOT shall continue oversight activities for LPA-administered projects based on the most current version of the LPA Manual. NHDOT has developed specific guidance, checklists, and tools as needed for specific elements of

oversight activities. These currently include the Single Audit Report procedures, invoice review checklist, PS&E checklist, environmental review checklists, project closeout checklist, etc. Projects will continue to be reviewed throughout the design process with the oversight summarized by the documents assembled as part of the PS&E submission in ProMIS and made available to FHWA for review as part of authorization of funds through FMIS. In addition, NHDOT will:

- Maintaining individual Federal-aid project files that include documentation of all required FHWA actions and NHDOT's assumed project approvals as set forth in this Agreement. NHDOT will provide FHWA access to the project files when requested.
- Conduct and document all program and project reviews, as needed
- Complete quarterly/annual reports and provide program and project information, as needed
- Work with the New Hampshire Division to implement the Supercircular (2 CFR 200) and the FHWA Project Funds Management Guide for State Grants.
- NHDOT and the New Hampshire Division, as part of the annual Risk Assessment, will assess the LPA Program to determine if there are opportunities to improve the processes outlined.

SECTION XII. IMPLEMENTATION AND AMENDMENTS

A. This S&O Agreement will take effect as of the effective date of the signature of the FHWA New Hampshire Division Administrator, who shall sign this S&O Agreement last.

B. The Division and NHDOT agree that updates to this Agreement will be considered periodically on a case-by-case basis or when:

- Significant new legislation, Executive orders, or other initiatives affecting the relationship or responsibilities of one or both parties to the S&O Agreement occurs;
- Leadership, or leadership direction, changes at the NHDOT or FHWA; or
- Priorities shift as a result of audits, public perception, or changes in staffing at either the NHDOT or Division Office.

C. The Division and NHDOT agree that changes may occur to the contents of the Attachments to this S&O Agreement and documents incorporated by reference into the S&O Agreement. Except as provided in paragraph XII.D and E, changes to the Attachments and documents incorporated by reference will not require the Division and NHDOT to amend this S&O Agreement. The effective date of any revisions to one of these documents shall be clearly visible in the header of the revised document. This Agreement and any revised document shall be posted on the Division's S&O Agreement internet site within five (5) business days of the effective date.

D. Any changes to the high risk categories must be documented by an amendment to this S&O Agreement.

E. Any changes to the Project Action Responsibility Matrix must be approved by the FHWA Office of Infrastructure in writing and documented by an amendment to this S&O Agreement.

SECTION XIII. ISSUE RESOLUTION PROCESS

The FHWA New Hampshire Division and NHDOT work as partners in delivering the Federal-aid transportation program in New Hampshire. It is recognized, however, that there may be times when consensus cannot be achieved between the two agencies. Whenever these situations arise, the FHWA New Hampshire Division and NHDOT agree to work together to resolve disputes in a timely manner. In those cases where a solution cannot be identified, NHDOT and the FHWA New Hampshire Division may elevate the issue to the next level in the "chain of command." It has been agreed that only the NHDOT Commissioner or NHDOT Assistant Commissioner/Chief Engineer will make NHDOT appeals to FHWA Headquarters' offices.

SECTION XIV. FRAUD, WASTE, AND ABUSE

The reporting of fraud, waste, and abuse is everyone's responsibility, specifically, those involved in the delivery of the Federal Aid Highway Program and for all public servants in general. As stewards of public funds, our duties involve verifying that work performed by private contractors meets the required specifications, both in materials used and in construction practices rendered. On behalf of the FHWA and NHDOT, it is expected that fraudulent activities will not be tolerated and will be reported immediately to the appropriate authorities. Proactive and effective fraud prevention and detection is a collateral duty of all public employees and citizens of the state. Pursuant to the Inspector General Act of 1978, the Office of the Inspector General (OIG) Office of Investigations, the U.S. Department of Transportation (USDOT) is responsible for conducting investigations of fraud, waste, and abuse involving FHWA programs. Any suspected fraudulent activities by federal or state employees, contractors, subcontractors, and any other participants on federally funded highway construction projects, should be reported to the FHWA New Hampshire Division and OIG.

The OIG maintains a hotline to facilitate the reporting of allegations of fraud, waste, abuse, or mismanagement in USDOT program or operations. Per the OIG Web site; "Confidentiality is established by Section 7(b) of the Inspector General Act of 1978, which precludes the IG from disclosing the identity of a DOT employee who reports an allegation or provides information, without the employee's consent, unless the IG determines that disclosure is unavoidable during the course of the investigation. Non-Department of Transportation employees who report allegations may specifically request confidentiality."

Contact Information:
OIG National Hotline **(800) 424-9071**
OIG Regional Office-Cambridge, MA **(617) 494-2701**

EXECUTION BY THE FHWA NEW HAMPSHIRE DIVISION OFFICE

Executed this 14th day of May, 2015.

Signature

Patrick A. Bauer
Division Administrator

EXECUTION BY THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

Executed this 14th day of May, 2015.

Signature

William Cass
Acting Commissioner

ATTACHMENT A
PROJECT ACTION RESPONSIBILITY MATRIX
(As of February 6, 2015)

The following matrix identifies Federal-aid highway program (FAHP) project approvals and related responsibilities. The matrix specifies which actions are subject to State assumption under the provisions of 23 U.S.C. 106(c) or other statutory or regulatory authority, as well as those which are reserved to FHWA.

In the column entitled "Projects on the NHS" if an item is marked "FHWA or State," it means the State may assume the specified approval and related responsibilities if the Division determines the assumption is appropriate. For projects on the NHS, the FHWA may retain any approval or related action in any box marked "FHWA or State" as deemed appropriate by the Division. If the FHWA retains any approval or related action in any box marked "FHWA or State", the project is a PoDI, and will require a PoDI plan.

For the column marked "Projects off the NHS", the State must assume all items marked "State" unless the State determines the assumption of a particular item by the State is not appropriate.

Except as expressly stated in notes to the matrix below, the State cannot assume any item marked only as "FHWA" in either column. Any item marked only "FHWA" is reserved to FHWA because it is outside the scope of 23 U.S.C. 106(c), or otherwise is reserved to FHWA by law. The NHDOT is responsible for ensuring all individual elements of the project are eligible for FAHP funding, but all final eligibility and participation determinations are retained by FHWA. While FHWA may not delegate decision-making authority to a State unless authorized by law, FHWA may authorize a NHDOT to perform work needed to reach the decision point, or to implement the decision.

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	**AGENCY RESPONSIBLE**	
	PROJECTS ON THE NHS	**PROJECTS OFF THE NHS**
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	**Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority**
PROGRAMMING (All phases)		
Ensure project in Statewide Transportation Improvement Program (STIP)/Transportation Improvement Program (TIP)	STATE	STATE
Identify proposed funding category	STATE (1)	STATE (1)

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
FINANCIAL MANAGMENT (All phases)		
Obligate funds/approve Federal-aid project agreement, modifications, and project closures (project authorizations) (Note: this action cannot be assumed by State)	FHWA	FHWA
Authorize current bill (Note: this action cannot be assumed by State)	FHWA	FHWA
Review and Accept Financial Plan and Annual Updates for Federal Major Projects over $500 million [23 U.S.C. 106(h)] (Note: this action cannot be assumed by State)	FHWA	FHWA
Review Cost Estimates for Federal Major Projects over $500 million [23 U.S.C. 106(h)] (Note: this action cannot be assumed by State)	FHWA	FHWA
Develop Financial Plan for Federal Projects between $100 million and $500 million. [23 U.S.C. 106(i)]	STATE	STATE
ENVIRONMENT (All phases)		
All EA/FONSI, EIS/ROD, 4(f), 106, 6(f) and other approval actions required by Federal environmental laws and regulations. (Note: this action cannot be assumed by STATE except under 23 U.S.C. 327)	FHWA (2)	FHWA (2)
Categorical Exclusion approval actions (Note: this action cannot	FHWA (2)	FHWA (2)

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
be assumed by the State except through an assignment under 23 U.S.C. 326 or 327, or through a programmatic agreement pursuant to Section 1318(d) of MAP-21 and 23 CFR 771.117(g))		
Exempt bridge from Coast Guard permit requirements (23 CFR 650.805)	FHWA	FHWA
PRELIMINARY DESIGN (Design Phase)		
Consultant Contract Selection	STATE (3)	STATE (3)
Sole source Consultant Contract Selection	FHWA (3)	STATE (3)
Approve hiring of consultant to serve in a "management" role (Note: this action cannot be assumed by State) [23 CFR 172.9]	FHWA	FHWA
Approve consultant agreements and agreement revisions (Federal non-Major Projects) [23 CFR 172.9]	STATE	STATE
Approve consultant agreements and agreement revisions on Federal Major Projects [23 CFR 172.9] (Note: this action cannot be assumed by State)	FHWA	FHWA
Approve exceptions to design standards [23 CFR 625.3(f)]	STATE	STATE
Interstate System Access Change [23 USC 111] (Note: this action cannot be assumed by State)	FHWA	N/A
Interstate System Access Justification Report [23 USC 111] (Note: action may be assumed by	FHWA	N/A

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
State pursuant to 23 USC 111(e))		
Airport highway clearance coordination and respective public interest finding (if required) [23 CFR 620.104]	STATE	STATE
Approve Project Management Plan for Federal Major Projects over $500 million [23 USC 106(h)] (Note: this action cannot be assumed by State)	FHWA	FHWA
Approve innovative and Public-Private Partnership projects in accordance with SEP-14 and SEP-15 (Note: this action cannot be assumed by State)	FHWA	FHWA
Provide pre-approval for preventive maintenance project (until FHWA concurs with STATE procedures) (Note: this action cannot be assumed by State)	FHWA	FHWA
DETAILED / FINAL DESIGN (Design Phase)		
Provide approval of preliminary plans for unusual/complex bridges or structures on the Interstate. [23 USC 109(a) and FHWA Policy]	FHWA (4)	N/A
Provide approval of preliminary plans for unusual/complex bridges or structures (non-Interstate). [23 USC 109(a) and FHWA Policy]	STATE (4)	STATE
Approve retaining right-of-way encroachments [23 CFR 1.23 (b) & (c)]	STATE	STATE

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
Approve use of local force account agreements [23 CFR 635.104 & 204]	STATE	STATE
Approve use of publicly owned equipment [23 CFR 635.106]	STATE	STATE
Approve the use of proprietary products, processes [23 CFR 635.411]	STATE	STATE
Concur in use of publicly furnished materials [23 CFR 635.407]	STATE	STATE
RIGHT-OF-WAY (Design and Operational Phases)		
Make feasibility/practicability determination for allowing authorization of construction prior to completion of ROW clearance, utility and railroad work [23 CFR 635.309(b)]	FHWA for Interstate STATE for Non-Interstate	STATE
Make public interest finding on whether State may proceed with bid advertisement even though ROW acquisition/relocation activities are not complete for some parcels [23 CFR 635.309(c)(3)]	FHWA for Interstate STATE for Non-Interstate	STATE
Ensure compliant ROW certificate is in place [23 CFR 635.309(c)]	STATE	STATE
Approve Hardship and Protective Buying [23 CFR 710.503] (If a Federal-aid project) (Note: this action cannot be assumed by State)	FHWA	FHWA
Approve Interstate Real Property	FHWA	N/A

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
Interest Use Agreements [23 CFR 710.405] (Note: this action cannot be assumed by State)		
Approve non-highway use and occupancy [23 CFR 1.23(c)]	FHWA for Interstate STATE for Non-Interstate (3)	STATE (3)
Approve disposal at less than fair market value of federally funded right-of-way, including disposals of access control [23 U.S.C. 156] (Note: this action cannot be assumed by State)	FHWA	FHWA
Approve disposal at fair market value of federally funded right-of-way, including disposals of access control [23 CFR 710.409] (Note: 23 CFR 710.201 authorizes FHWA and STATE to agree to scope of property-related oversight and approvals for all actions except those on the Interstate System)	FHWA for Interstate STATE for Non-Interstate (3)	STATE (3)
Requests for credits toward the non-Federal share of construction costs for early acquisitions, donations or other contributions applied to a project (Note: this action cannot be assumed by State)	FHWA	FHWA
Federal land transfers [23 CFR 710, Subpart F] (Note: this action cannot be assumed by State)	FHWA	FHWA
Functional replacement of property [23 CFR 710.509] (Note: this action cannot be assumed by State)	FHWA	FHWA

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
SYSTEM OPERATIONS AND PRESERVATION (Design Phase)		
Accept Transportation Management Plans (23 CFR 630.1012(b))	STATE	STATE
Approval of System Engineering Analysis (for ITS) [23 CFR 940.11]	STATE	STATE
PS&E AND ADVERTISING (Design Phase)		
Approve PS&E [23 CFR 630.201]	STATE	STATE
Authorize advance construction and conversions [23 CFR 630.703 & 709] (Note: this action cannot be assumed by State)	FHWA	FHWA
Approve utility or railroad force account work [23 CFR 645.113 & 646.216]	STATE	STATE
Approve utility and railroad agreements [23 CFR 645.113 & 646.216]	STATE	STATE
Approve use of consultants by utility companies [23 CFR 645.109(b)]	STATE	STATE
Approve exceptions to maximum railroad protective insurance limits [23 CFR 646.111]	STATE	STATE
Authorize (approve) advertising for bids [23 CFR 635.112, 309]	STATE	STATE
CONTRACT ADVERTISEMENT AND AWARD (Design Phase) **All contracts to be done by competitive bidding unless otherwise authorized by law**		
Approve cost-effectiveness determinations for construction work performed by force account or by contract awarded by other than competitive bidding	FHWA	STATE

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	**AGENCY RESPONSIBLE**	
	PROJECTS ON THE NHS	**PROJECTS OFF THE NHS**
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	**Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority**
[23 CFR 635.104 &.204]		
Approve emergency determinations for contracts awarded by other than competitive bidding [23 CFR 635.104 &.204]	FHWA	STATE
Approve construction engineering by local agency [23 CFR 635.105]	STATE	STATE
Approve advertising period less than 3 weeks [23 CFR 635.112]	STATE	STATE
Approve addenda during advertising period [23 CFR 635.112]	STATE	STATE
Concur in award of contract [23 CFR 635.114]	STATE	STATE
Concur in rejection of all bids [23 CFR 635.114]	STATE	STATE
Approval of Design-Build Requests-for-Proposals and Addenda [23 CFR 635.112]	FHWA	STATE
CONSTRUCTION (Construction Phase)		
Approve changes and extra work [23 CFR 635.120]	STATE	STATE
Approve contract time extensions [23 CFR 635.120]	STATE	STATE
Concur in use of mandatory borrow/disposal sites [23 CFR 635.407]	STATE	STATE
Accept materials certification [23 CFR 637.207]	STATE	STATE
Concur in settlement of contract claims [23 CFR 635.124]	STATE	STATE
Concur in termination of construction contracts	FHWA	STATE

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	AGENCY RESPONSIBLE	
	PROJECTS ON THE NHS	PROJECTS OFF THE NHS
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority
[23 CFR 635.125]		
Waive Buy America provisions [23 CFR 635.410] (Note: this action cannot be assumed by State)	FHWA	FHWA
Final inspection/acceptance of completed work [23 USC 114(a)]	STATE	STATE
CIVIL RIGHTS (All phases)		
Approval of Disadvantaged Business Enterprise (DBE) Project Contract Goal set by the NHDOT under 49 CFR 26.51(d). [49 CFR 26.51(e)(3)]	STATE	STATE
Acceptance of Bidder's Good Faith Efforts to Meet Contract Goal [49 CFR 26.53] or of Prime Contractor's Good Faith Efforts to Find Another DBE Subcontractor When a DBE Subcontractor is Terminated or Fails to Complete Its Work [49 CFR 26.53(g)] (Note: this action cannot be performed by the FHWA)	STATE	STATE
Equal Employment Opportunity (EEO) Contract Compliance Review [23 CFR Part 230, Subpart D]).	STATE	STATE
Training Special Provision – Approval of Project Goal for training slots or hours [23 CFR Part 230, Subpart A]	STATE	STATE
Training Special Provision – Approval of New Project Training Programs (Note: this action cannot be assumed by State)	FHWA	FHWA

PROJECT ACTION RESPONSIBILITY MATRIX (as of February 6, 2015) (Excluding PoDIs, which are subject to separate PoDI Plans)		
ACTION	**AGENCY RESPONSIBLE**	
	PROJECTS ON THE NHS	**PROJECTS OFF THE NHS**
	Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority	**Assumption of FHWA Responsibilities under 23 U.S.C. 106(c) or other statutory or regulatory authority**
[23 CFR 230.111(d), (e)]		

FOOTNOTES:

(1) State is responsible for ensuring that all individual elements of the project are eligible. FHWA will check that the scope of the project as described in submitted project agreement is eligible for the category of funding sought. All final eligibility and participation determinations are retained by FHWA.

(2) If there is a 23 U.S.C. 326 or 325 assignment or PCE agreement, decisions are handled in accordance with those assignments or agreements.

(3) State's process and modifications to, or variation in process, require FHWA approval.

(4) Unusual/Complex bridges and structures are those that the Division determines to have unique foundation problems, new or complex designs, exceptionally long spans, exceptionally large foundations, complex hydrologic (including climate change and extreme weather events) aspects, complex hydraulic elements or scour related elements, or that are designed with procedures that depart from currently recognized acceptable practices (i.e., cable-stay, suspension, arch, segmental concrete, moveable, truss, tunnels, or complex geotechnical walls or ground improvement systems)

ATTACHMENT B
PROGRAM RESPONSIBILITY MATRIX

PROGRAM ACTION RESPONSIBILITY

The following matrix is an example list of program actions. The Division should refer to http://our.dot.gov/office/fhwa.hq/OfficeofInfrastructure/hipa/SO/Resources/for the latest updated version which can be incorporated into the agreement or referenced as a control document. Modify the matrix to reflect the Division and State "Responsible Program Office." The primary office of contact should be listed, rather than an individual or the approving official.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Appropriations, Allotments, Obligations	31 USC 1341(a)(1)(A)& (B); 31 USC 1517(a); 23 USC 118(b), 23 USC 121	As needed	Not Applicable	Office of Chief Financial Officer	Finance	Budgets	State will monitor appropriations, allotments and obligations to ensure that all funding is used efficiently within each quarter and use all Obligation Authority (OA) by the end of the year.
Approval of Indirect Cost Allocation Plans (ICAPs)	2 CFR Part 200 Subpart E, ASMBC-10	As needed	Not Applicable	Office of Chief Financial Officer	Finance	Finance	The State will certify that the ICAP was prepared in accordance with 2 CFR 200 Subpart E.

[1] All actions taken on or after December 26, 2014, shall be governed by the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards in 2 CFR Part 200. Part 200 of 2 CFR supersedes 49 CFR Parts 18 and 19, and requirements from OMB Circulars A-21, A-87, A-110, and A-122 (which have been placed in OMB guidances); Circulars A-89, A-102, and A-133; and the guidance in Circular A-50 on Single Audit Act follow-up.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
FIRE Program Activities	FHWA Order 4560.1C (or as superseded)	Ongoing		Office of Chief Financial Officer	Finance	Finance and Contracts	State will continue to provide oversight and conduct reviews to ensure Federal-aid compliance. FHWA will review and monitor. State responsibilities include multiple tasks in support of risk assessments, conducting reviews and implementation of recommendations.
Audit Coordination/FHWA Financial Statement Audit/State External Audit Reviews/State Internal Audit Reviews	FMFIA, 2 CFR Part 200 Subpart F; GAAP, CFO Act of 1990; DOT Order 8000.1C	As needed	Not Applicable	Office of Chief Financial Officer	Finance	Audits & Investigations/ Finance and Contracts	State assures corrective action is taken to resolve audit findings and FHWA will monitor activities to ensure implementation.
Improper Payments Review	Improper Payments Information Act of 2002, PL 107-300, Improper Payments Elimination and Recovery Act of 2010, PL 111-204, Improper Payments Elimination and Recovery Improvement Act of 2012, PL 112-248	Annually		Office of Chief Financial Officer	Finance	Finance and Contracts	State will provide all information necessary to document sampled payments and FHWA offices will review and complete appropriate data submittal forms.
Transfer of Funds between programs or to other FHWA offices or agencies as requested by State	23 USC 126, 23 USC 132, and FHWA Order 4551.1	As needed	Not Applicable	Office of Chief Financial Officer	Finance	Finance and Contracts	State will submit requests for transfer and FHWA approves and processes the funding transfers between programs, to other States, to other agencies, and to FHWA HQ, Federal Lands, or Research offices.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Reviews of State Transportation Departments Financial Management Systems - Financial Integrity	23 USC 106(g)(2)(A)	Annually	Not Applicable	Office of Chief Financial Officer	Finance	Finance and Contracts / DoIT	23 USC 106(g)(2)(A) states that the Secretary shall perform annual reviews that address elements of the State transportation departments' financial management systems that affect projects approved under subsection (a).
Review Adequacy of Sub-recipient Project Delivery Systems and Sufficient Accounting Controls to Manage Federal Funds	23 USC 106(g)(4)(A)(i)	As needed	Not Applicable	Office of Chief Financial Officer	Finance	Planning and Community Assistance	
Periodic Reviews of States Monitoring of sub-recipients	23 USC 106(g)(4)(B)	As needed	Not Applicable	Office of Infrastructure	LPA Program Engineer	Planning and Community Assistance	
Approval of Increased Federal Share Agreement (Sliding Scale)	23 USC 120(b)(2)	As determined by the Federal Share Agreement	Not Applicable	Office of Chief Financial Officer	Finance	Finance and Contracts	A State must enter into an agreement with FHWA for use of the increased Federal share allowable under this section, which must be reviewed and updated periodically as agreed to in the agreement. States must demonstrate that they are in compliance with the statute and the agreement.
Prepare / Review Title VI Plan Accomplishments and Next Year's Goals	23 CFR 200.9(b)(10)	Annually	1-Oct	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews and comments.
Prepare / EEO Contractor Compliance Plan accomplishments and next year's goals	23 CFR 230, Subpart C, Attachment A, Part I, III	Annually	1-Oct	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews and comments.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Prepare / Review State Internal EEO Affirmative Action Plan (Title VII) Accomplishments and Goals	23 CFR 230.311	Annually	1-Oct	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Courtesy copy to HQ.
Review DBE Program Ravisions	49 CFR 26.21(b)(2)	As needed	Not Applicable	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division sends to HCR for review and approval as
Prepare / DBE Uniform Awards and Commitment Report	49 CFR 26, Attachment B	Semi-Annual	June 1st December 1st	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division Office reviews and sends to HCR
Prepare / Annual Analysis and Corrective Action Plan (if necessary)	49 CFR 26.47(c)	Annual (as necessary)	December 31st	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division Office approves sends copy to HCR
Prepare / State DBE Program Goals	49 CFR 26.45(f)(1)	Triennial	August 1st	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division reviews and approves; HCC provides legal sufficiency review and approval sends copy to HCR
Prepare / Review On-the-Job-Training (OJT) goals & accomplishments	23 CFR 230.111(b)	Annually	TBA	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews and comments.
Approval of OJT and DBE Supportive Services fund requests	23 CFR 230.113 & 23 CFR 230.204	Annual	TBA	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division recommends approval submits to HCR for final approval
Return of any unused discretionary grant program funding	23 CFR 230.117(2)	Annual	TBA	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division works with HCR and CFO
Prepare / Review of Report on Supportive Services (OJT & DBE)	23 CFR 230.113(g), 230.121(e), 230.204(g)(6)	Quarterly		Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews and comments.
Prepare / Review Annual Contractor Employment Report (Construction Summary of Employment Data (Form PR-1392)	23 CFR 230.121(a); Attachment D to Subpart A, Part 230, General Information and Instructions	Annually	1-Dec	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Recommendation sent to HQ for approval.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Prepare / Review NHDOT Employment Statistical Data (EEO-4)	23 CFR, Subpart C, Attachment A	Biannual	1-Dec	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Report sent to HQ quarterly for informational purposes and recommendation sent to HQ annually for approval.
Prepare / Review Annual Federal Projected Awards Reports - Historically Black Colleges & Universities/Tribal Colleges & Universities/Hispanic Serving Institutes, American Indian Alaskan Native, Asian Pacific & American Islander.	Presidential Executive Orders: 13230, 13256,13270, 13361, 13515	Annual	TBA	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Divisions submit data to HCR who prepares report for DOCR
Prepare / Review ADA Complaint Reports of Investigation	28 CFR 35.190	As needed	Not Applicable	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews, FHWA HQ approves and issues finding.
Review Americans with Disabilities Act (ADA) /Sec. 504 Program Plan accomplishments and next year's goals	49 CFR 27.11(c), EO 12250	Annually	1-Oct	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Division office reviews and comments.
Return of unexpended funds used for Summer Transportation Institutes	23 CFR 230.117(2)	Annual	August 30; however, State procurement rules may govern	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Divisions work with HCR and CFO
Prepare / Review Request for National Summer Transportation Institute (NSTI) Proposals (SOWs)	23 USC 140(b)	Annual	TBA	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Divisions recommend approval. HCR gives final approval
Prepare / Review NSTI Report (questionnaire)	23 USC 140(b)	Annual	October 15th	Office of Civil Rights	Civil Rights Specialist	Office of Federal Compliance	Divisions provide to HCR

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Receipt of State Consultation Process with Tribal Governments	23 CFR 450.210(c)	As needed	Not Applicable	Office of Federal Lands Highway	Planning/Env Coordinator	Planning and Community Assistance	Informational Purposes.
Approval of Contracting Procedures for Consultant Selection	23 CFR 172.5 & 172.9	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Commissioner's Office/Design/Bridge/Planning/ Community Assistance	FHWA Division Office Approval.
Determination of High Risk Categories - Limitation on Interstate Projects	23 USC 106(c)(4)(B)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Commissioner's Office/Design/Project Management	Office of Program Administration determines national categories and must concur on any State designations.
Approval of State 3R Program	23 CFR 625.4(a)(3), 23 USC 109(n)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval.
Verify adoption of Design Standards (National Highway System, including Interstate)	23 CFR 625, 23 USC 109(b), 23 USC 109(c)(2), 23 USC 109(o)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design/Bridge	FHWA HQ regulatory action to adopt NHS standards.
Approval of preliminary plans of Major and Unusual Bridges on the Interstate Highway System	(M1100.A)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design/Bridge	Director of HIBT has approval of preliminary plans of Major and Unusual Bridges on the Interstate Highway System (M1100.A)
Approval of State Standard Specifications	23 CFR 625.3	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Construction/ Highway Design	FHWA Division Office Approval.
Verify State Design Exception Policy complies with FHWA Policy	23 CFR 625.3	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval.
Approval of State Standard Detail Plans	23 CFR 625.3	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Construction/ Highway Design	FHWA Division Office Approval.
Approval of Pavement Design Policy	23 CFR 626.3	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Materials & Research	FHWA Division Office Approval.
Review of Value Engineering Policy and Procedures	23 CFR 627.1(b)&(c), 23 CFR 627.7 FHWA Order 1311.1B	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Review.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Review of Value Engineering Annual Report	23 CFR 627.7, FHWA Order 1311.1B	Annual	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office collects, reviews, and submits to HQ for review and reporting.
Review and Approval of Interstate Access Requests	23 USC 111, 23 CFR 710, 74 FR 43743-43746 (Aug. 27, 2009)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office approval with concurrence from HQ on more complex access requests.
Approval of Liquidated Damages Rate	23 CFR 635.127	Every 2 years	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval.
Approval of Quality Assurance Program	23 CFR 637.205	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Materials & Research	State administers, with programmatic agreement by the Division Office, as part of their materials testing and construction quality assurance/acceptance program.
Assure Central Laboratory accredited by AASHTO Accreditation Program or FHWA approved comparable program	23 CFR 637.209	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Materials & Research	State administers, with programmatic agreement by the Division Office, as part of their materials testing and construction quality assurance/acceptance program.
Assure Non-STD designated lab performing Independent Assurance sampling and testing accredited by AASHTO Accreditation Program or FHWA approved comparable program	23 CFR 637.209	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Materials & Research	State administers, with programmatic agreement by the Division Office, as part of their materials testing and construction quality assurance/acceptance program.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Assure Non-STD designated lab used in dispute resolution accredited by AASHTO Accreditation Program or FHWA approved comparable program	23 CFR 637.209	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Materials & Research	State administers, with programmatic agreement by the Division Office, as part of their materials testing and construction quality assurance/acceptance program.
Review Independent Assurance Annual Report	23 CFR 637.207	Annually	1-Mar	Office of Infrastructure	Engineering & Operations	Materials & Research	State administers, with programmatic agreement by the Division Office, as part of their materials testing and construction quality assurance/acceptance program.
Assure Labor Compliance - Prevailing Wage Rate	23 USC 113	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Office of Federal Compliance	FHWA Division Office Review and Approval
Determination of Eligible Preventive Maintenance Activity - Cost-Effective Means of Extending Useful Life Determination	23 USC 116(e)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval
Approval of Utility Agreement / Alternate Procedure	23 CFR 645.119	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval
Approval of Utility Accommodation Policy	23 CFR 645.215, 23 USC109(l), 23 USC123	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Highway Design	FHWA Division Office Approval
Review Bridge Construction, Geotechnical, and Hydraulics	23 CFR 650	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Bridge Design	
Review Plans of Corrective Action established to address NBIS compliance issues	23 CFR 650, 23 USC 144	Annually		Office of Infrastructure	Engineering & Operations	Bridge Design	Division office performs annual compliance review and reports results to HQ.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Review NBI Data Submittal	23 CFR 650 Subpart C, Annual Memo from HQ, 23 USC 144	Annually	1-Apr	Office of Infrastructure	Engineering & Operations	Bridge Design	Division resolve errors with States; States submit to HQ.
Review structurally deficient bridge construction Unit Cost submittal	23 USC 144	Annually	1-Apr	Office of Infrastructure	Engineering & Operations	Bridge Design	Submit to HQ.
Review Section 9 of the Rivers and Harbors Act Submittals (Bridge Permits)	23 CFR 650 Subpart H; 33 CFR 114 & 115	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Bridge Design	
Approval for reduction of expenditures for off-system bridges	23 USC 133(g)(2)(B)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Bridge Design	The FHWA Administrator may reduce the requirement for expenditures for off-system bridges if the FHWA Administrator determines that the State has inadequate needs to justify the expenditure.
Determination on Adequacy of State's Asset Management Plan	23 USC 119(5)	Annually beginning second fiscal year after establishment of the process		Office of Infrastructure	Engineering & Operations	Asset Management, Performance, & Strategies	
Certification and Recertification of States Process for Development of State Asset Management Plan	23 USC 119(6)	Recertification every four years after establishment of the process		Office of Infrastructure	Engineering & Operations	Asset Management, Performance, & Strategies	
Review Reporting on Performance Targets	23 USC 150(e)	Beginning four years after enactment of MAP-21 and biennially thereafter		Office of Infrastructure	Engineering & Operations	Asset Management, Performance, & Strategies	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Review National Highway System Performance Achievement Plan for Actions to achieve the targets (when State does not achieve or make significant progress toward achieving)	23 USC 119(7)	Required if State does not achieve targets (or significant progress) for 2 consecutive reports		Office of Infrastructure	Engineering & Operations	Asset Management, Performance, & Strategies	
States and sub-recipient failure to maintain projects - Notice and withholding Federal-aid Funds	23 USC 116(d)	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations and LPA Program Engineer	Project Management/Project Programming	
Emergency Relief (ER) Damage Assessments and Reports	23 CFR 668 23 USC 120 and 125	As needed	Not Applicable	Office of Infrastructure	Engineering & Operations	Maintenance/Highway Design	Perform with State.
Toll Credit and Maintenance of Effort (MOE) Calculation and Agreement	23 USC 120(i)	Annually		Office of Infrastructure	Finance	Finance and Contracts	State will calculate the amount of eligible toll credit and submit for approval. FHWA will review and approve the request.
Local Public Agency (LPA) Oversight	2 CFR 200.331; 23 USC 106(g)(4)	As needed	Not Applicable	Office of Infrastructure	LPA Program Engineer	Planning and Community Assistance	States are responsible to ensure that LPAs are aware of all the applicable Federal-aid Program requirements; States are responsible to ensure monitoring and oversight to assure compliance with Federal requirements. 23 USC further reinforces stressing accountability on "project delivery systems" and "accounting controls."

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
TIFIA Credit Program	23 USC 601-609	As needed	Not Applicable	Office of Innovative Program Delivery	Finance	Finance and Contracts	Project sponsors submit requests for credit assistance to the TIFIA JPO for review; approval by the Secretary
GARVEEs	23 USC 122; GARVEE Guidance 3/14	As needed	Not Applicable	Office of Innovative Program Delivery	Finance	Finance and Contracts	MOUs strongly suggested for each GARVEE issue. FM contacts OIPD for review/concurrence before final approval
State Infrastructure Banks	NHS Act Section 308; 23 USC 610; SIB Guidance 3/14	Annual Report	Not Applicable	Office of Innovative Program Delivery	Finance	Finance and Contracts	Division sends copy of report to OIPD. SIB submits annual report to Division Office.
Section 129 Tolling Authority Requests	23 USC 129(a)	As needed	Not Applicable	Office of Innovative Program Delivery	Finance	Finance and Contracts	At the option of the project sponsor, may execute a Tolling Eligibility MOU with the Division Office; HIN coordinates FHWA HQ review
Section 166 HOV/HOT Lanes Tolling Authority Requests	23 USC 166(d)	As needed	Not Applicable	Office of Innovative Program Delivery	Engineering & Operations	Highway Design	At the option of the project sponsor, may execute a Tolling Eligibility MOU with the Division Office; HIN coordinates FHWA HQ review
Value Pricing Pilot Program Tolling Authority Requests	ISTEA Section 1012(b)	As needed	Not Applicable	Office of Innovative Program Delivery	Engineering & Operations	Highway Design	Requests submitted to HIN to coordinate review; approval by the Administrator
Interstate System Reconstruction and Rehabilitation Pilot Program Tolling Authority Requests	TEA-21 Section 1216(b)	As needed	Not Applicable	Office of Innovative Program Delivery	Engineering & Operations	Highway Design	Applications submitted to HIN to coordinate review; approval by the Administrator

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Annual Audit of Toll Facility Records and Certification of Adequate Maintenance - Report Submittal	23 USC 129(a)(3)(B); TEA-21 Section 1216(b)(5)(B); SAFETEA-LU Section 1604(b)(3)(A); ISTEA Section 1012(b)(3)	Annually		Office of Innovative Program Delivery	Finance	Finance and Contracts	Division Office to receive the reports.
Project Management Plan (Major Projects)	23 U.S.C. 106(h)(2)	Prior to first federal authorization of construction funds for a Major Project	Not Applicable	Office of Innovative Program Delivery	Division Office will conduct concurrent review with HQ Office of Innovative Program Delivery.	NHDOT or Project Sponsor will prepare and submit Project Management Plan.	Division Office will provide approval after receiving concurrence from HQ Office of Innovative Program Delivery.
Financial Plan (Major Projects)	23 U.S.C. 106(h)(3)	Prior to first federal authorization of construction funds for a Major Project and then annually.	Annually as noted in the approved Initial Financial Plan	Office of Innovative Program Delivery	Division Office will conduct concurrent review with HQ Office of Innovative Program Delivery.	NHDOT or Project Sponsor will prepare and submit annual Financial Plans.	Division Office will provide approval after receiving concurrence from HQ Office of Innovative Program Delivery.
Financial Plan (Other Projects)	23 U.S.C. 106(i)	Prior to first federal authorization of construction funds for an Other Project and then annually.	Annually as noted in the approved Initial Financial Plan	Office of Innovative Program Delivery	Division Office will review and approve Financial Plans for Other Projects in accordance with its stewardship and oversight agreement with the NHDOT or Project Sponsor.	NHDOT or Project Sponsor will prepare and submit annual Financial Plans to the Division Office, only upon request.	Other Projects are defined as projects with an estimated total cost of $100 million or more that have not been designated as Major Projects.
Review Designation and Re-designation of Primary Freight Network	23 USC 167(d)	One year after enactment of MAP-21 and every ten years thereafter		Office of Operations	Planning	Planning	Under development, initial PFN designation scheduled for Spring 2014 completion.
Review Development and Update of National Freight Strategic Plan	23 USC 167(f)	Three years after enactment of MAP-21 and every five years thereafter		Office of Operations	Planning	Aeronautics, Rail, & Transit	OST lead

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Review Freight Transportation Conditions and Performance Report	23 USC 167(g)	Two years after enactment of MAP-21 and every two years thereafter		Office of Operations	Planning	Aeronautics, Rail, & Transit	OST lead
Review HOV Operations Report for Tolled Use and Low-Emission and Energy-Efficient Vehicle Use	23 USC 166(d)	Annually		Office of Operations	Engineering & Operations	Traffic Operations	
Congestion Partnerships Assessment	Annual Memo from HQ	Annually	1-Jul	Office of Operations	Engineering & Operations	Traffic Operations	Complete with partners and forward to HQ.
Traffic Incident Management Self-Assessment	Annual Memo from HQ	Annually	1-Jul	Office of Operations	Engineering & Operations	Maintenance	Complete with partners and forward to HQ.
Work Zone Self-Assessment	Annual Memo from HQ	Annually	7/1/2013, This project is currently on hiatus and has not been determined whether it will be reestablished or not.	Office of Operations	Engineering & Operations	Traffic Operations	Complete with partners and forward to HQ.
Approval of State-Prepared Manual on Uniform Traffic Control Devices - State Traffic Control Manuals	23 CFR 655.603, 23 USC 109(d)	As needed	Not Applicable	Office of Operations	Engineering & Operations	Traffic Operations	
Review Vehicle Size & Weight Enforcement Plan	23 CFR 657.11, 23 USC 127	Annually	1-Oct	Office of Operations	Engineering & Operations	NHDOS	
Review Vehicle Size & Weight Enforcement Certification	23 CFR 657.13, 23 USC 141	Annually	1-Jan	Office of Operations	Engineering & Operations	NHDOS	
Approval of National Network Modifications	23 CFR 658.11	As needed	Not Applicable	Office of Operations	Engineering & Operations	Planning	
Intelligent Transportation System Architecture &	23 CFR Part 940	As needed	Not Applicable	Office of Operations	Engineering & Operations	ITS Operations	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Standards							
Approval of Work Zone Significant Project Determination	23 CFR 630.1010	As needed		Office of Operations	Engineering & Operations	Traffic Operations	
Approval of Exceptions to Work Zone Procedures for Interstate Projects	23 CFR 630.1010	As needed		Office of Operations	Engineering & Operations	Traffic Operations	
Approval of Work Zone Policy and Procedures Conformance Review	23 CFR 630.1014	At appropriate intervals		Office of Operations	Engineering & Operations	Traffic Operations	
Process Review of Work Zone Safety and Mobility Procedures	23 CFR 630.1008, 23 USC 109(e)(2), 23 USC 112(g)	Every 2 years		Office of Operations	Engineering & Operations	Traffic Operations	
Approval of State Planning Work Program and Revisions (Part 1)	23 CFR 420.111, 23 CFR 420.115, and 23 CFR 420.209	Annually	Prior to Program Period	Office of Planning, Environment & Realty	Planning	Planning	FHWA Division Office Approval.
Approval of State Research and Development Work Program (Part 2)	23 CFR 420.111, 23 CFR 420.115, and 23 CFR 420.209	Annually	Prior to Program Period	Office of Planning, Environment & Realty	Engineering & Operations	Materials & Research	FHWA Division Office Approval.
Approval of State's Distribution of Planning Funds Formula - Allocation Formulas for PL Funds	23 CFR 420.109, 23 USC 104(d)(2)(A)(i)	When Revised	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	FHWA Division Office Approval.
Review of State Public Involvement Procedures	23 CFR 450.210(a)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning/Civil Rights	Planning	FHWA Division Office Review to Assure Compliance.
Receipt of State Consultation Process for Non- metropolitan Local Officials	23 CFR 450.210(b)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Informational Purposes.
Review of Long-range Statewide Transportation Plan	23 CFR 450.214	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	FHWA Division Office Review to Assure Compliance.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Approval of Statewide Transportation Improvement Program (STIP)	23 CFR 450.216, 23 CFR 450.218(a) & (c), 23 USC 135(g)(7)	At least every 4 years	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Joint FHWA and FTA approval.
Approval of STIP Amendments	23 CFR 450.218(a) & (c)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Joint FHWA and FTA approval.
Finding of Consistency of Planning Process with Section 134 and 135	23 USC 135(g)(8), 23 CFR 450.218(b)	Concurrent with STIP approval	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	FHWA and FTA issue a joint finding concurrent with STIP approval.
Review of State Self-certification that Planning Process is in Accordance with Applicable Requirements	23 CFR 450.218(a)	Submitted with proposed STIP or STIP amendments	Not Applicable	Office of Planning, Environment & Realty	Planning/Civil Rights	Planning	Received with STIP.
Approval of Transportation Management Area (TMA) MPO Unified Planning Work Programs (UPWP)	23 CFR 450.308(b) and 23 CFR 420 (Subpart A)	Prior to Program End	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Approval of Non-TMA UPWA	23 CFR 450.308(b) and 23 CFR 420 (Subpart A)	Prior to Program End	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	May use simplified work statement.
Approval of UPWP Revisions and Amendments (All MPO's)	23 CFR 420.115	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Review of UPWP Performance and Expenditure Reports (All MPO's)	23 CFR 420.117(b)	Not more frequently than quarterly	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Approval of Report Before Publication (All MPO's)	23 CFR 420.117(e)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Waiver may be granted.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Approval to use Planning Funds outside Urbanized Areas for States Receiving Minimum Apportionment	23 USC 104(d)(1)(A)(ii)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Review of Metropolitan Planning Area Boundary (Establishment and Changes)	23 CFR 450.312	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Approval by MPO and the Governor, shape files forwarded to HQ. (Comment: No action is required by FHWA/FTA).
Review of Metropolitan Transportation Planning Organizations (MPO) Designation and Re-designation	23 CFR 450.310	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Require agreement between Governor and local governments.
Review of Metropolitan Planning Agreements (MPA) for Attainment or Entire Nonattainment Area	23 CFR 450.314(a)	When Completed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Between MPO/NHDOT/Transit Operator. Included in UPWP or Prospectus (23 CFR 450.314(d)).
Review of MPA - for MPA that do not include the entire nonattainment or maintenance area	23 CFR 450.314(b), 23 USC 109(j)	When Completed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Between MPO/NHDOT/State AQ Agency.
Review of MPO Public Participation Procedures	23 CFR 450.316(a)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Must be developed and published.
Review of Metropolitan Transportation Plan (MTP) in Attainment Areas (and Updates)	23 CFR 450.322	Every 4 years	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Review of MTP in Non-Attainment and Maintenance Areas (and Updates)	23 CFR 450.322	Every 5 years	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Review of MTP Amendments	23 CFR 450.322(c)	As Needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Air Quality Conformity Determination on LRTP in Non-attainment and Maintenance Areas	23 CFR 450.322(d)	Concurrent with LRTP updates at least every 4 years and as needed on amendments	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	After receipt of MPO determination; Joint FHWA and FTA determination; In consultation with the Environmental Protection Agency (EPA).
Review of Transportation Improvement Program (TIP)	23 CFR 450.300(a); 23 CFR 450.324(b); 23 CFR 450.328(a), 23 USC 134(j)(1)(D)	Prior to Program Period	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	No succinct Federal approval action is required for the TIP. FHWA/FTA approval of the TIP is through the STIP approval process.
Review of TIP Amendments	23 CFR 450.324(a); 23 CFR 450.328(b)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	No succinct Federal approval action is required for the TIP. FHWA/FTA approval of the TIP is through the STIP approval process.
Approval of Air Quality Conformity Determination on TIP	23 CFR 450.326; 23 CFR 450.328	At least every 4 years, or when the TIP has been modified (unless exempt projects)	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Applies to non-attainment and maintenance areas only. After receipt of MPO determination, joint determination with FTA (in cooperation with EPA).
Federal Finding of Consistency of Planning Process with Section 134 and 135	23 CFR 450.218(b); 23 CFR 450.334(a)	Concurrent with (S)TIP submittal	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	At least every four years, joint finding with FTA when TIP is submitted.
In Metropolitan Planning Areas, Review of State and MPO Self-certification that Planning Process is in Accordance with Applicable Requirements	23 CFR 450.334 (a), 23 CFR 218(a)	Annually or concurrent with the STIP/TIP cycle	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Required for all MPO's. May be included in the STIP, TIP, or UPWP, at least every 4 years.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
In TMA's, Certification that Planning Process is in Accordance with Applicable Requirements	23 CFR 450.334(b), 23 USC 134(k)(5)	Every 4 years		Office of Planning, Environment & Realty	Planning/Civil Rights	Planning	Joint FHWA and FTA Certification.
Approval of Federal-Aid Urban Area Boundaries	23 CFR 470.105 (a), 23 USC 101(a)(33)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Approval of Revision of Functional Classification	23 CFR 470.105 (b)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Approval by Administrator of Interstate Additions & Revisions	23 USC 103(c)(1)(D), 23 CFR 470.111, 23CFR 470.115 (a)	As needed	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Highway Design	Approval by HQ – Administrator.
Approval by Office Director of National Highway System (NHS) Additions and Revisions	23 USC 103(b)(3), 23 CFR 470.113 and 470.115(a)	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	Approved by HQ - Office Director.
Review of CMAQ Annual Report	CMAQ Guidance Memo October 31, 2006	Annually	1-Mar	Office of Planning, Environment & Realty	Planning	Planning	Division provides information on CMAQ projects including: amount of obligation, project description and location, and air quality benefits. The report must be submitted via the web-based CMAQ Tracking System.
Tribal Government Consultation Process(es)	23 CFR 450.210(c)	As needed or as revised by State	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Annual Listing of Obligated Projects	23 CFR 450.332	Annually, no later than 90 days after September 30	30-Dec	Office of Planning, Environment & Realty	Planning	Programming	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Transportation Planning Excellence Awards		Annually	1-Feb	Office of Planning, Environment & Realty	Planning	Planning	Call for entries for the FHWA FTA Transportation Planning and Excellence Awards.
Approval of Local Technical Assistance Program (LTAP) Centers Work Plan and Budget	FHWA LTAP Field Manual	Annually	31-Mar	Office of Planning, Environment & Realty	Engineering & Operations	Planning	FHWA HQ approval.
Approval of Public Involvement Program Procedures	23 CFR 771.111(h), 23 USC 128	As needed	Not Applicable	Office of Planning, Environment & Realty	Planning	Planning	
Approval of NEPA Procedures, including Section 4(f)	23 CFR 771; 23 CFR 774; SAFETEA-LU 6007 & 6009, 23 USC 109(h)	As needed	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Approval of Noise Policies	23 CFR 772.7, 772.9, and 772.13, 23 USC 109(i)	As needed	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	FHWA approves State' noise abatement policy.
EIS Status Updates	FHWA Strategic Goal - EIS Timeliness	Quarterly	(Fiscal Year - Oct, Jan, Apr, Jul)	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	Monitor time required to complete EIS's. Determine projects which have exceeded recommended timeline (3 years). Identify projects which should be listed as dormant. Submit to HEPE.
Endangered Species Act Cost Report		Annually	1-Mar	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Exemplary Ecosystem Initiatives Applications		Annually	1-Apr	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Bicycle Transportation and Pedestrian Walkways	23 USC 217	As needed or requested by State	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Design/Community Assistance	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Environmental Justice	FHWA Order 6640.23	As needed or required	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Environmental Review Process	SAFETEA-LU Section 6002	As required for EISs and as needed for EAs	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Planning and Environmental Linkages	23 CFR 450.212; 23 CFR 450.318; Appendix A to 23 CFR 450	As needed	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Planning/Environment	
Public involvement/Public Hearing Program	23 CFR 771.111(h)(1)	As revised by State	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment/ Design/Project Management	
Section 106 of the National Historic Preservation Act	23 CFR 800	As needed or required	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Section 404 of the Clean Water Act	23 CFR 777; NEPA/404 MOU	As needed or required	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Section 6(f) of the Land and Water Conservation Fund Act	36 CFR 59	As needed or required	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Environment	
Tribal Government Consultation	36 CFR 800.16(m)	As needed or required	Not Applicable	Office of Planning, Environment & Realty	Environmental Coordinator	Planning/Environment	
Approval of Acquisitions, Appraisals, and Relocations Program and Procedures	49 CFR Part 24, The UA	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Early Acquisitions	23 CFR 710.501	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Local Public Agency Oversight	49 CFR 24.4(b); 23 CFR 710.201	As needed	Not Applicable	Office of Planning,	LPA Program Engineer	Planning and Community Assistance	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
				Environment & Realty			
Approval of Highway Facility Relinquishment	23 CFR 620.203	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of ROW Disposal Authorization Request	23 CFR 710.409	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of ROW Operations Manual (Organization, Policies and Procedures), Updates, and Certification	23 CFR 710.201	January 1, 2001 and every 3 years thereafter or as required by changes in State law or Federal regulation or law	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Exception to Charging Fair Market Value	23 CFR 710.403 and 23 CFR 710.409	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Interstate Real Property Use Agreements	23 CFR 710.405	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Request for Federal Land Transfer	23 CFR 710.601	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Request for Direct Federal Acquisition	23 CFR 710.603	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Outdoor Advertising Policies and Procedures, and Regulation and Procedure Approval	23 CFR 750.304, 23 CFR 750.705, 23 USC 131	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Approval of Requests to Exempt Certain Nonconforming Signs, Displays, and Devices	23 CFR 750.503	As needed	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Traffic Operations	
Approval of Railroad Agreement Alternate Procedure	23 CFR 646.220	As needed	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Design Services	
Approval of Uniform Act Waivers and Waivers from Availability of Comparable Replacement Dwelling before Displacement	49 CFR 24.7, 49 CFR 24.204(b)	As needed	Not Applicable	Office of Planning, Environment & Realty	ROW Program Manager	ROW	Requests reviewed and approved by HEPR Office Director.
Review of Uniform Relocation Assistance & Real Property Acquisition Report - (OMB Form 2125-0030)	49 CFR 24.9c & Attachment B 49 CFR 24.603	Annually	15-Nov	Office of Planning, Environment & Realty	ROW Program Manager	ROW	Submitted to FHWA Headquarters (HQ).
Review of Real Property Acquisition Statistical Report	FHWA Order 6540.1	Annually	15-Nov	Office of Planning, Environment & Realty	ROW Program Manager	ROW	
Approval of Management Process and Project Selection Procedures and Certification for Research, Development & Technology Transfer Program and Revisions to Process	23 CFR 420.115 and 23 CFR 420.209	As needed	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Materials & Research	FHWA Division Office Approval.
Periodic Review of States Management Process of the Research, Development & Technology Transfer Program	23 CFR 420.209	Periodic	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Materials & Research	FHWA Division Office Periodic Review.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Approval of Performance and Expenditure Reports for SPR Research Work Programs	23 CFR 420.117	No less frequentiy than annual and no more frequently than quarterly	90 Days After End Of Period	Office of Planning, Environment & Realty	Engineering & Operations	Materials & Research	FHWA Division Office Approval.
Approval of SPR research reports	23 CFR 420.117	Prior to publication unless prior approval is waved	Not Applicable	Office of Planning, Environment & Realty	Engineering & Operations	Materials & Research	FHWA Division Office Approval unless waived.
Annual Traffic Reports	Traffic Monitoring Analysis System and Traffic Monitoring Guide reporting	When Published	As needed	Office of Highway Policy information	Engineering & Operations	Traffic Operations	When Published
Approval of Annual Field Review Report	HPMS Field Review Guidelines (June 2001) Continuous Process Improvement Model for HPMS(February 2003)	Annually	1-Nov	Office of Highway Policy information	Program Management Analyst	Planning	Review memo to HQ.
Approval of Certified Public Road Mileage	23 CFR 460.3(b)	Annually	1-Jun	Office of Highway Policy information	Program Management Analyst	Planning	Each year, the Governor of each State and territory or a designee must certify Public Road Mileage. FHWA division reviews the Mileage and sends to HQ with division review /concurrence. This is reported to NHTSA for Apportionment of Safety Funds.
Approval of Data Submittal	23 CFR 420.105(b), HPMS Field Manual	Annually	15-Jun	Office of Highway Policy information	Program Management Analyst	Planning	NHDOT sends directly to Division Office and HQ.
Highway Statistics Reports	Guide to Reporting Highway Statistics			Office of Highway Policy information	Program Management Analyst	Planning	NHDOT or Division Office sends directly to HQ.
Motor Fuels Report	A Guide to Reporting Highway Statistics, Chapter 2	Due 60 days after end of each reporting month		Office of Highway Policy information	Program Management Analyst	NHDOS	

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Vehicles and Drivers (561, 562, 566, and 571)	A Guide to Reporting Highway Statistics, Chapters 3, 4, 5, and 6	1-Apr	1-Apr	Office of Highway Policy information	Program Management Analyst	NHDOS	
Finance (531, 532, 541, 542, and 543 (optional)	A Guide to Reporting Highway Statistics, Chapters 8 and 9	1-Apr	1-Apr	Office of Highway Policy information	Program Management Analyst	Finance and Contracts	
Transportation Bond Referendums	A Guide to Reporting Highway Statistics, Chapter 9	When Published	When Published	Office of Highway Policy information	Finance	Finance and Contracts	
NHDOT / Toll Authority Audits and Published Annual Reports and Form 539 (optional)	A Guide to Reporting Highway Statistics, Chapter 10	When Published	When Published	Office of Highway Policy information	Finance	Finance and Contracts/ Planning	Annually, Due as soon as available.
Finance (536)	A Guide to Reporting Highway Statistics, Chapter 11	30-Sep	30-Sep	Office of Highway Policy information	Program Management Analyst	Planning	Biennially for odd-numbered years. Due nine months after end of reporting year
Finance (534)	A Guide to Reporting Highway Statistics, Chapter 12	15-Jun	15-Jun	Office of Highway Policy information	Program Management Analyst	Finance and Contracts	Annually for State, Biennially for local
Highway Finance and Tax Legislation	A Guide to Reporting Highway Statistics, Chapter 13	When Published	When Published	Office of Highway Policy information	Program Management Analyst	Finance and Contracts	
NHDOT Budgets and Published Annual Reports	A Guide to Reporting Highway Statistics, Chapter 13	When Published	When Published	Office of Highway Policy information	Program Management Analyst	Finance and Contracts	
Motor Fuel Oversight Review	July 24, 2001 HQ Memo	Initial baseline reports no later than December 31, 2003		Office of Highway Policy information	Program Management Analyst	NHDOS	Annual progress reports and statement of verification by June 30. Submitted via UPACS.
Review of Biennial - Toll Facilities in the United States	23 CFR 450.105(b) HPMS Field Manual	Biennially - Odd Years	June 15 (Odd Years)	Office of Highway Policy information	Program Management Analyst	Planning	Division Office sends to HQ.
State Highway Maps (Tourist)		When Published	When Published	Office of Highway Policy information	Administrative Assistant	DRED	Two copies to each Division Office and 100 copies to HQ.
Traffic Flow Maps		When Published		Office of Highway Policy information	Planning	Planning/Traffic	When Published.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Vehicle Classification Data	MAP-21, HPMS Field Manual, Traffic Monitoring Guide	15-Jun	15-Jun	Office of Highway Policy information	Program Management Analyst	Traffic	Part of Annual HPMS submittal.
Highway Use Tax Evasion Grant Awards	23 USC 143	Annual	Not Applicable	Office of Highway Policy information	Finance	NHDOS	FHWA along with the IRS will review applications and select awardees for projects designed to reduce or eliminate fuel tax evasion. FHWA will also review annual progress reports on projects.
Heavy Vehicle Use Tax (HVUT) – Certification of verifying proof-of-payment of HVUT	23 CFR 669.7	1-Jul	1-Jul	Office of Highway Policy information	Finance	NHDOS	Each year, the Governor of each State, or a designee must certify that the State is verifying that the HVUT has been paid before they issue or renew registrations on vehicles over 55,000 lbs. The HVUT program is administered by the Internal Revenue Service.
Heavy Vehicle Use Tax (HVUT) – Certification of verifying proof-of-payment of HVUT	23 CFR 669	Annual	1-Jan	Office of Highway Policy information	Finance	NHDOS	Each year, the Governor of each State, or a designee must certify that the State is verifying that the HVUT has been paid before they issue or renew registrations on vehicles over 55,000 lbs. The HVUT program is administered by the Internal Revenue Service.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Heavy Vehicle Use Tax (HVUT) – Triennial review of State program	23 CFR 669.21	Triennial	Not Applicable	Office of Highway Policy information	Finance	NHDOS	Every 3 years, the local Division Office will perform a review of the State process for verifying that the HVUT has been paid before a registration can be issued or renewed for vehicles over 55,000 lbs. The HVUT program is administered by the IRS
Permanent ATR Data	Heavy Vehicle Travel Information System Field Manual	Monthly	Monthly	Office of Highway Policy information	Engineering & Operations	Traffic	Submit monthly, within 20 days after the close of the month for which the data were collected.
Continuous Automatic Vehicle Classifier Data	Heavy Vehicle Travel Information System Field Manual	Monthly	Monthly	Office of Highway Policy information	Engineering & Operations	Traffic	Send up to one week of data per quarter
Weight and Vehicle Classification Data Collected at Weigh-in-motion sites	Heavy Vehicle Travel Information System Field Manual	15-Jun	As needed	Office of Highway Policy information	Engineering & Operations	Planning	WIM data collected at non-continuous sites during a year should be submitted by June 15 of the following year. If continuous WIM data are available, then up to one week of data per quarter.
Approval of MAP-21 compliant SHSP update within the legislatively required timeframe.	23 U.S.C. 148 (d)(2)(B)	Non Recurring	By Aug. 1 of the fiscal year after the HSIP final rule is established	Office of Safety	Engineering & Operations	Highway Design	FHWA Division Offices provide copy of SHSP process approval letter to HQ.
Highway Safety Improvement Program (HSIP) and Railway-Highway Crossing Program (RHCP) Reports	23 USC 148(h), 23 CFR 924.15	Annually	31-Aug	Office of Safety	Engineering & Operations	Highway Design	As per MAP-21 guidance, reports are due to FHWA Division Office by August 31st and to the Office of Safety by September 30.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Transportation Performance Management (TPM) for Safety	23 USC 150, 23 USC 134, 23 USC 135, 23 USC 148(i)	Annually	31-Aug	Office of Safety	Engineering & Operations	Highway Design	Per MAP-21, States and MPOs must set targets for established measures. Targets must be assessed for achievement
Review Drug Offender Driver's License Suspension Law & Enforcement Certification (Section 159)	23 USC 159 23, CFR 192.5	Annually	1-Jan	Office of Safety	Engineering & Operations	Executive Office/Highway Design/NHDOS	Certifications due to the Division Office by January 1.
Section 154/164 Compliance Status - Funds Reservation	23 USC 154 and 23 USC 164	Annually	30-Oct	Office of Safety	Engineering & Operations	Highway Design	States must submit a Shift letter to the Division Office by Oct. 30 indicating how to apply the penalty. New penalty states have additional time. The Office of Safety processes the compilation of information in a memo to the CFO.
Review Safety Belt Compliance Status	23 USC 153, 23 CFR 1215.6	Annually	Annually	Office of Safety	Engineering & Operations	Highway Design	NHTSA
High Risk Rural Roads (HRRR) Special Rule	23 USC 148(g)(1)	Annually	Annually	Office of Safety	Engineering & Operations	Highway Design	After the final FARS and HPMS data are available, FHWA HQ will inform the States if the HRRR Special Rule applies for the following FY.

Activity	Authority [1]	Frequency	Due Date	FHWA HQ Program Office	FHWA Division Responsible Program Office	NHDOT Responsible Program Office	Remarks
Older Drivers and Pedestrians Special Rule	23 USC 148 (g)(2)	Annually	31-Aug	Office of Safety	Engineering & Operations	Highway Design	States should include in their annual HSIP reports (due August 31st) the calculations performed, verifying whether the Older Driver Special Rule applies in the State. If the Special Rule applies to a State in a given year, the State must include in its subsequent SHSP strategies to address the increases in the fatality and serious injury rates for drivers and pedestrians over the age of 65.
FHWA Emergency Preparedness Program	Executive Order 12656 and FHWA Order 1910.2C	As needed	Not Applicable	Office of Operations	Engineering & Operations	Highway Design/Maintenance	National Programs.

ATTACHMENT C
MANUALS AND OPERATING AGREEMENTS

NHDOT Manuals Applicable State Standards approved or accepted by FHWA for use on Federal-aid projects:

NHDOT Bridge Design Manual
NHDOT Highway Design Manual
NHDOT Right-of-way Manual
NHDOT Drainage Manual
NHDOT Environmental Process Manual
NHDOT Consultant Selection and Service Agreement Procedures
NHDOT Utility Accommodation Manual
NHDOT supplements to the MUTCD
NHDOT Standard Specifications for Road and Bridge Construction, includes Materials Manual
NHDOT Supplemental Specifications
NHDOT Special Provisions
NHDOT Standard Plans for Road and Bridge Construction
NHDOT Qualified Products List Criteria
NHDOT Work Zone Traffic Control Standard Plans
NHDOT Construction Manual
NHDOT Quality Assurance Program
NHDOT Highway Traffic Noise Assessment and Abatement Policy
Strategic Highway Safety Plan
Highway Safety Improvement Plan
Policy for the Permitting of Driveways and Other Accesses to the State Highway System
Work Zone Safety & Mobility Policy and Procedures
NHDOT Guidelines for Temporary Erosion and Sediment Control and Stormwater Management
NHDOT Local Public Agency Manual for the Development of Projects
Policy on Flagger and Uniformed Officer Use in Work Zones
NHDOT Public Involvement Procedures
STIP Revision Procedures
NHDOT Quality Assurance Program for Municipally Managed Federal-aid Projects
GARVEE Bond Procedures
Current Bill System Procedures
ITS Project Mainstreaming Procedures
Affirmative Action Plan
Contract Compliance Plan
Disadvantaged Business Enterprise (DBE) Plan
Title VI Plan
Indirect Cost Allocation Plan (Cost Pool Composition/Eligibility)

Operating (Programmatic) Agreements

Memorandum of Understanding, State of New Hampshire Department of Transportation and the US Department of Transportation Federal Highway Administration – Project Estimate Reviewing & Processing Procedures
Programmatic Categorical Exclusion Approvals
Programmatic Wetland Finding for Categorical Exclusions
Programmatic Floodplain Findings for Categorical Exclusions
Programmatic Section 4(f) Agreements
Guidance for Determining DeMinimis Impacts to Section 4(f) Resources
Programmatic Section 106 Process Agreement
Memorandum of Understanding, State of New Hampshire Department of Transportation and the US Department of Transportation Federal Highway Administration – Post Construction Funding for Implementation of Long Term Environmental Commitments
List of Recurring Planning Activities and Statistical Reporting Requirements
Memorandum of Agreement Between the Federal Highway Administration Division Offices in Connecticut, NH, Massachusetts, New Hampshire, Rhode Island and Vermont and the Federal Transit Administration, Region I

Work Programs

Local/Tribal Technical Assistance Program (LTAP/TTAP)
Statewide Planning and Research I and II
Transportation Management Area/Metropolitan Planning Organization (TMA/MPO)

ATTACHMENT D
Project Oversight Designation Requirement in the Fiscal Management Information System (FMIS)

PoDI/State Administered – Projects of Division Interest that are administered by the NHDOT. If specific 106(c) responsibilities are assumed by the NHDOT, the responsibilities assumed should be noted in the project description and/or remarks fields. (Projects where all six 106(c) responsibilities are retained by FHWA would need no such notation.) These are projects where FHWA will review and approve actions pertaining to one or more of the following (design; plans, specifications, and estimates; contract awards; and project inspections) and may also include additional areas of focus by the division.

PoDI/Locally Administered – Projects of Division Interest that are locally administered. If specific 106(c) responsibilities are assumed by the NHDOT, the responsibilities assumed should be noted in the project description and/or remarks fields. (Projects where all six 106(c) responsibilities are retained by FHWA would need no such notation.) These are projects where FHWA will review and approve actions pertaining to one or more of the following (design; plans, specifications, and estimates; contract awards; and project inspections) and may also include additional areas of focus by the division.

Assumed/State Administered – Projects where *responsibility for all six Section 106(c) items* is assumed by the NHDOT and the project is administered by the NHDOT. These are projects where the NHDOT has assumed responsibility for review and approval actions pertaining to all of the following: design; plans, specifications, and estimates; contract awards; and project inspections.

Assumed/Locally Administered - Projects where *responsibility for all Section 106(c) items* is assumed by the NHDOT and the project is administered by a local agency. These are projects where the NHDOT has assumed responsibility for review and approval actions pertaining to all of the following: design; plans, specifications, and estimates; contract awards; and project inspections.

Other – There may be situations that do not fit the previous categories. In cases where the project is identified as "Other," additional details should be provided in the project description and/or remarks fields. Examples could include non-NHDOT direct recipients.

ATTACHMENT E
PROGRAM SPECIFIC TOPICS

1. AIR QUALITY

Transportation Conformity

Transportation conformity is required under the Clean Air Act (CAA) Section 176(c) to ensure that Federally supported transportation activities are consistent with ("conform to") the purpose of a State's air quality implementation plan, or SIP. Transportation conformity establishes the framework for improving air quality to protect public health and the environment. Conformity to the purpose of the SIP means FHWA and Federal Transit Administration (FTA) funding and approvals are given to highway and transit activities that will not cause new air quality violations, worsen existing air quality violations, or delay timely attainment of the relevant air quality standard, or any interim milestone. The conformity process applies to areas of the State that are designated as nonattainment or maintenance areas for criteria pollutants, and is applied to MPO Transportation Improvement Programs or TIPs and long-range transportation plans in nonattainment or maintenance areas, and to certain transportation improvement projects that may impact air quality. Under current law, conformity requirements apply in areas that either do not meet or previously have not met national ambient air quality standards (NAAQS) for ozone (O_3), carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$) or nitrogen dioxide (NO_2).

A conformity determination demonstrates that implementation of the metropolitan transportation plan, TIP, or project, will not cause any new violations of the air quality standard, increase the frequency or severity of violations of the standard, or delay timely attainment of the standard or any interim milestone. For metropolitan transportation plan and TIP conformity, the determination shows that the total emissions from on-road travel on an area's transportation system are consistent with goals for air quality found in the SIP. Before a SIP is available, other tests of conformity are used. For project-level conformity, the determination shows that the project is consistent with the regional conformity determination and that potential localized emissions impacts are addressed. All federally funded or approved highway and public transportation projects subject to conformity are required to meet project-level conformity requirements. To demonstrate project-level conformity, a project must come from a conforming metropolitan transportation plan and TIP; its design concept and scope must not have changed significantly from that in the metropolitan transportation plan and TIP; the analysis must have used the latest planning assumptions and latest emissions model; and in PM areas, there must a demonstration of compliance with any control measures in the SIP. In carbon monoxide and particulate matter nonattainment and maintenance areas, additional analysis may be necessary to determine if a project has localized air quality impacts. This localized air analysis is referred to as a "hot-spot" analysis, and is often undertaken as part of the NEPA review process.

Planning-level conformity determinations are made by FHWA/FTA. MPO policy boards make initial conformity determinations for metropolitan transportation plans and TIPs in metropolitan areas, while State Departments of Transportation (DOTs) usually do so in areas without MPOs, and typically conduct the analyses associated with project-level conformity. A formal interagency consultation process is required for developing SIPs, metropolitan transportation plans, TIPs, and making conformity determinations, and includes the

Environmental Protection Agency (EPA), FHWA, FTA, and State and local transportation and air quality agencies. Conformity determinations must be made at least every four years, but may occur more often if metropolitan transportation plans or TIPs are updated more frequently or amended with non-exempt projects. Also, conformity determinations must be made within 24 months after SIP motor vehicle emissions budgets are found adequate or approved, whichever is first. Project-level conformity must be determined prior to the first time a non-exempt Federal project is adopted, accepted, approved, or funded. In addition, conformity determinations must be made within 12 months of an area being designated by EPA as nonattainment for ozone, carbon monoxide, particulate matter, or nitrogen dioxide. By recent EPA actions, as of July 20, 2013 all of New Hampshire was classified as unclassifiable/attainment for the 2008 8-Hour Ozone National Ambient Air Quality Standard (the 2008 ozone standard). Also, as of July 20, 2013, the 1997 8-Hour Ozone National Ambient Air Quality Standard (the 1997 ozone standard) was revoked for transportation conformity purposes in the Boston-Manchester-Portsmouth (SE), NH area.

As a result, in New Hampshire, only the following areas are currently in maintenance status for transportation conformity purposes:

- The Boston-Manchester-Portsmouth (Southeast) New Hampshire 8-hour ozone non-attainment area;
- The Manchester carbon monoxide attainment area, with a maintenance plan; and
- The Nashua carbon monoxide attainment area, with a maintenance plan.

Thus, only the Manchester (SNHPC) and Nashua (NRPC) MPOs are now located in the carbon monoxide maintenance area and are subject to planning-level conformity requirements, and projects located in Manchester or Nashua may also require localized, hot-spot analyses.

The FHWA Division Office and FTA Region 1, in consultation with US Environmental Protection Agency (USEPA) Region 1, make joint conformity determinations on the MPO long-range transportation plans and TIPs, and updates and amendments to these documents and the STIP. Roles and responsibilities for each agency are outlined in the August 9, 2004 Memorandum Of Agreement Between The Federal Highway Administration Division Offices In Connecticut, NH, Massachusetts, New Hampshire, Rhode Island, Vermont, and The Federal Transit Administration, Region 1. Project-level conformity determinations for highway projects are typically incorporated into the NEPA process.

Interagency Consultation

New Hampshire has established an interagency consultation process for planning-level conformity that takes place monthly, and is also documented in New Hampshire's STIP Revision Procedures. The Division Office is an active participant in these monthly consultations. Meetings or conference calls are coordinated by NHDOT and include all of New Hampshire's MPOs, the State Air Quality Agency (NHDES), EPA, FHWA, and FTA. The air quality exempt or non-exempt status of projects, project regional significance, and the triggering of determinations of conformity and the need to update the air quality regional emissions analysis versus relying on the previous analysis are all discussed through the interagency consultation process to support joint FHWA conformity determinations for MPO long-range plan and S/TIP updates and S/TIP amendments.

Congestion Mitigation and Air Quality (CMAQ) Program
The purpose of the CMAQ program is to fund transportation projects or programs that will contribute to attainment or maintenance of the National Ambient Air Quality Standards (NAAQS). The FHWA New Hampshire Division Office, jointly with FTA Region 1, advises and determines eligibility for inclusion in this funding program on a project-by-project basis using criteria contained in the 2008 Program Guidance issued jointly by the FHWA Office of Planning and Environment and the FTA Office of Planning. Key Division actions include participation in an advisory capacity on New Hampshire's Statewide CMAQ Advisory Committee, project eligibility determinations, and submittal of the annual State CMAQ Report to FHWA headquarters.

NHDOT will monitor MPO Plans and TIP development activities to ensure that the work is being managed and performed satisfactorily, and that conformity requirements are being met. FHWA and NHDOT will consult with EPA and the NHDES, and will work closely with each MPO in nonattainment and maintenance areas to assure the timely delivery and approval of documents relative to program delivery schedules.

FHWA will review and take action on CMAQ eligibility determinations within 30 business days of receipt. FHWA will review and comment on the draft and final conformity documentation for Metropolitan Transportation Plans and the TIP as necessary, and will work together with FTA and EPA to provide joint FHWA/FTA conformity determinations for associated MPO TIP/STIP and MPO Plan amendments and updates within a 30-60 day timeframe. This includes time for coordination with FTA and the United States Environmental Protection Agency (EPA). NHDOT will involve FHWA in decisions involving special and unusual circumstances at the earliest reasonable time to ensure that thorough and appropriate decisions can be made.

NHDOT will assist the FHWA Hampshire Division Office in preparing the annual report of each fiscal year's CMAQ program that meets the requirements of 23 USC 149 by January 31 of each calendar year. Additional guidance for preparing the annual report is discussed in the 2008 Program Guidance issued jointly by the FHWA Office of Planning and Environment, and the FTA Office of Planning.

2. BRIDGES AND STRUCTURES

National Bridge Inspection Program (NBIS)
FHWA Division Office will conduct an annual review to assess key areas of the NHDOT's Bridge Inspection Program for compliance with the NBIS regulations. Twenty-three (23) metrics founded in the NBIS regulations will be assessed using random statistical based sampling of bridge files, field review of bridges, review of operating policies and procedures, interviews of personnel, and review of personnel qualifications. 23 USC 151 National Bridge Inspection Program: Statutory authority for establishment of the National Bridge Inspection Standards and bridge inspector training program. 23 CFR Part 650, Subpart C establishes National Bridge Inspection Standards (NBIS) that apply to all bridges carrying vehicular traffic that are greater than 20 feet in length and located on a public road.

Highway Bridge Program (HBP)
Eligibility for this program is based on bridge condition and inventory data that NHDOT submits annually to FHWA Division Office. NHDOT also annually submits bridge construction unit cost data to FHWA Division Office. The HBP funds apportioned to each State are based on the relative area of deficient bridges and the relative bridge construction unit costs. Not less than 15 percent of the apportioned funds shall be expended for projects located off the Federal-aid system. A waiver request must be approved by the FHWA Division Office for all bridges that do not meet the eligibility requirements for rehabilitation or replacement. 23 USC 144 Highway Bridge Program: Statutory authority for establishment and requirements of the Federal-Aid Highway Bridge Program, which provides funding for rehabilitation, replacement, preventive maintenance, inventory, inventory management, and inspection. It also includes Historic Bridge Program requirements. 23 CFR Part 650, Subpart D establishes the procedures for administering the Highway Bridge Program (HBP). The program was established to replace, rehabilitate, and preserve deficient bridges. While MAP-21 eliminated this program, unobligated funds which were apportioned under the HBP will continue to follow the requirements of 23 U.S.C. 144 as it existed prior to the enactment of MAP-21.

Innovative Bridge Research and Deployment Program (IBRD)
Grants are distributed annually based on competitive application. NHDOT, in coordination with FHWA Division Office, identifies potential projects, prepares applications and submits them to FHWA Division Office. The FHWA Division Office reviews the applications and submits them to FHWA Headquarters with endorsement. If grant is awarded, the FHWA Division Office handles it as a non-exempt project. NHDOT prepares and submits report to FHWA Headquarters on evaluation of the innovative technology. 23 USC 503(b) establishes the Innovative Bridge Research and Deployment Program (IBRD) to demonstrate the application of innovative material technology in the construction of bridges and other structures. While MAP-21 eliminated this program, unobligated funds which were apportioned under the IBRD will continue to follow the requirements of Section 5202 (b)(2) of SAFETEA-LU as it existed prior to the enactment of MAP-21.

National Historic Covered Bridge Preservation Program (NHCBP)
Grants are distributed annually based on competitive application. NHDOT, in coordination with FHWA, identifies potential projects, prepares applications and submits them to FHWA Division Office. The FHWA Division Office reviews the applications and submits them to FHWA Headquarters with endorsement. If grant is awarded, the FHWA Division Office handles as a non-exempt project. SAFETEA-LU Section 1804 continues the National Historic Covered Bridge Program (NHCBP) by providing funds to assist the States in the rehabilitation, repair, or preservation of the Nation's historic covered bridges. While MAP-21 eliminated this program, unobligated funds which were apportioned under the NHCBP will continue to follow the requirements of Section 1804 of SAFETEA-LU as it existed prior to the enactment of MAP-21.

Bridge Preventive Maintenance Program
The NHDOT Bridge Preventive Maintenance Program is evaluated during the annual NBIS compliance reviews. The FHWA Division Office will review the NHDOT Annual Bridge Preventive Maintenance Work Schedule to ensure the eligibility of the proposed preservation activities. 23 USC 116 Maintenance: Establishes eligibility of title funds for preventive

maintenance. It also includes the requirement to maintain facilities constructed using Federal-aid funds and authority to withhold funds if not put in proper condition after finding of improper maintenance.

3. CIVIL RIGHTS

FHWA and NHDOT are committed to effectively implementing and enforcing the Civil Rights programs within the Federal-aid Highway Program. NHDOT is obligated to ensure nondiscrimination in all programs and activities, and in the provisions of all services and benefits, as a basis for continued receipt of FHWA funds according to Titles VI and VII of the Civil Rights Act of 1964 and the codified Federal regulations that implement these acts.

FHWA and NHDOT review all Civil Rights programs work plans and program documents. FHWA will review and approve NHDOT programs on an ongoing basis through process and program reviews as well as ongoing program assessments and various program management activities. The NHDOT Office of Federal Compliance (OFC) administers the following Civil Rights programs:

- Title VI/Nondiscrimination including Limited English Proficiency and Environmental Justice
- Disadvantaged Business Enterprise (DBE) including the Small Business Element
- Equal Employment Opportunity
    - Part I – Contractor Compliance
    - Part II – State Internal Equal Employment Opportunity
- Americans with Disabilities Act/Section 504
- Supportive Services
    - DBE
    - On-the-Job Training (OJT)

FHWA Civil Rights Program Recurring Actions/Standard Reports					
Program Item	Authority	Due Date	Frequency	Actions	Contact Information
NHDOT Civil Rights Program Manuals and Documents					
Affirmative Action Program; Contractor Compliance Program; DBE Program; State Internal EEO; and Title VI Program	Various	Various	Various	When the STA submits any CR Program Document for approval, the Division Office will review the document, make a recommendation to HCR, and if HCR concurs with recommendation, provide an electronic copy of the approval letter to HCR. These programs primarily reside in Divisions, but subject to HCR sampling audits	Contact Specific HQ Program Manager
HCR Dashboard	Various	Dec 1	Annual	Division Office will submit the HCR Dashboard annually after coordination with the STA	Darren Kaihlanen (405) 254-3312

State Internal EEO/Contractor Compliance					
Annual Federal-Aid Highway Construction Employment Data Report (FHWA-1392)	23 CFR 230.121(a); App. D to Subpart A, Part 230, General Info. & Instructions	Sept. 25	Annual	State will submit to Division office for review and verification of data. Division Office will submit to HCR when review is complete. Forms are available at: http://www.fhwa.dot.gov/eforms/.	Joyce Gottlieb (202) 366-3664
NHDOT Employment Statistical Data (EEO-4)	23 CFR, Subpart C, Attachment A	In conjunction with STA's annual EEO/AAP document	Biennial	Submitted as part of the STA's annual Equal Employment Opportunity/Affirmative Action Program document	Joyce Gottlieb (202) 366-3664
Disadvantaged Business Enterprise (DBE)					
DBE Uniform Awards and Commitment Report	49 CFR 26, Attachment B	June 1 Dec 1	Semi-Annual	Division office review, verify information, concur and forward to HCR	Martha Kenley (202) 366-8110
Annual Analysis and Corrective Action Plan (if necessary)	49 CFR 26.47(c)	Dec. 31	Annual (as needed)	Division office review and forward to HCR with a recommendation.	Martha Kenley (202) 366-8110
State DBE Program Goals	49 CFR 26.45(f)(1)	August 1 (every 3 years based on schedule provided by HCR)	Triennial	Division office reviews goals and methodology, forward explanation of goals and methodology to the as appropriate HCC regional office and copy HCR for legal sufficiency review. The Division Office will send the date the NHDOT goal was received by the Division, a copy of the approved decision document and a copy of the Division's letter to the NHDOT approving the methodology to HQ Office of Civil Rights.	Martha Kenley (202) 366-8110
Civil Rights Program Assessments					
Civil Rights Program Assessments/Annual Progress Report/Summaries	Memo from CR Assoc. Admin.	Dec 1 beginning 2013	Annual	Division Offices will work with STAs to evaluate, triennially, the implementation status of the State's core civil rights programs: Title VI/Nondiscrimination, ADA/504, Contractor Compliance, State Internal/EEO, and DBE. Through an electronic survey instrument submitted directly to HCR, Division Offices will work with the STA to evaluate the programs and provide information on progress made during the previous year. The Division Office will work with the STA to address identified deficiencies, with a priority focus on those issues receiving a red color indicator. An electronic, survey instrument will replace the annual program assessments/progress reports.	Candace Groudine (202) 366-4634
Discretionary Grant Program Funding					
OJT and DBE Supportive Services fund requests	23 CFR 230.204	Dec 1	Annual	Upon notification from HCR, Division will notify State to submit work statement for approval in accordance the most recent guidelines issued by HCR.	Martha Kenley (202) 366-8110
Return of any unused discretionary grant program funding	23 CFR 230.117(2)	Dec 1	Annual	Division Office will send confirmation to HCR of State's commitment to obligate all funding or if funds are to be returned to HCR.	Martha Kenley (202) 366-8110

4. CONSTRUCTION AND CONTRACT ADMININSTRATION

In general, NHDOT is responsible for the construction of all Federal-aid projects and for ensuring that such projects receive adequate supervision and inspection to ensure that projects are completed in conformance with approved plans & specifications. The primary objectives of the FHWA construction-monitoring program are:

- To evaluate NHDOT's control of the projects, the quality, and progress of work.
- To maintain a close working relationship with NHDOT construction staff.
- To promote quality improvements.
- To promote work zone safety and mobility.
- To ensure that projects are completed in reasonably close conformance with the approved plans, specifications, and approved changes.
- To ensure incorporation of environmental commitments.

To better address identified risk areas and to leverage FHWA's limited resources, the FHWA NH Division will implement an annual risk-based, statistical Construction Monitoring Plan (CMP) to assure that projects are completed in reasonably close conformance to the plans and specifications (PS&E), to evaluate the quality of construction, and to promote appropriate improvements in construction quality. The implementation will include: construction inspections, reviews, and training through visible monitoring, enhanced financial oversight, and communication and outreach. A key component of the CMP is also implementation of the new Compliance Assessment Program (CAP). The CAP replaces the current requirement to conduct reviews on 10% of "delegated" active construction projects. Annually, FHWA HQ will provide a random sample of projects for the Division's review.

As a contract administration reminder, Title 23 requirements apply to all projects on the NHS, regardless of oversight process. Non-Title 23 requirements (e.g., Environmental, Civil Rights, Davis-Bacon wage rates, Disadvantaged Business Enterprises, etc.) apply to all projects and are subject to review, regardless of oversight process.

Public Interest Finding
FHWA continues to support the principle of competition in the selection of materials whenever more than one equally suitable product exists to fulfill project requirements. NHDOT may specify proprietary products when they certify that there is no suitable alternative product (such as an innovative product offering better performance) or that the product is needed for synchronization. FHWA must approve, through a public interest finding (PIF), the specification of a proprietary product when other equally suitable alternatives exist.

Per Attachment A, FHWA must approve, for projects on the NHS, the cost-effectiveness determinations for construction work performed by force account or by contract awarded by other than competitive bidding.

A public interest finding of cost effectiveness (or a determination that an emergency exists) must be made, as required by 23 U.S.C. 112, when construction by some method other than competitive bidding is to be used.

A public interest finding of cost effectiveness must be made for any Federal-aid participating State force account work, except for routine minor work (≤$20,000) performed by State forces (i.e. Bureau of Traffic signs, pavement markings, signals; minor eligible maintenance work).

A public interest finding must be made for any Federal-aid participating proprietary products and State Furnished equipment or materials.

A public interest finding approval will designate the period of time it is valid for, which will typically be two years.

FHWA Final Inspection/Final Acceptance

The FHWA Division Office and NHDOT will follow jointly developed Standard Operating Procedures (SOPs) established to satisfy the requirements of 23 USC 121, requiring final payments to states for projects completed under a Federal-aid project agreement, and to provide assurances that safeguards are in place that the project was completed in compliance with the terms of that agreement. The procedures will outline the two-step process used to close out Federal-aid projects: final acceptance of a Federal-aid project and the approval of the final voucher between the New Hampshire Department of Transportation (NHDOT) and FHWA.

Typically, Final Acceptance will entail a letter/memo from FHWA PoDI Projects or NHDOT Delegated Projects citing completed compilation and acceptance of the following project information:

1. NHDOT Final Acceptance Report
2. Final Construction Estimate from State PM
3. Final Inspection Report (State) with certification that punch list items have been fulfilled.
4. Materials Cert per 23 CFR 637.
5. Copies of all Approved Change Orders
6. Documentation of all claims, arbitration, and mediation
7. Verification and / or Status of Environmental Commitments
8. Utilization of DBEs.
9. Contract Time used, extensions or reductions granted, liquidated damages and/or incentives/disincentives.
10. Identification of all non-participating work.

On FHWA PoDI projects, the above information will be aggregated by NHDOT over the life of the project and submitted to the FHWA Division Office to issue a letter of final acceptance. On Delegated projects, NHDOT will aggregate the information for their own project files and only send a letter/memo of final acceptance to the Division Office with or before their request for Final Voucher.

Final Voucher will entail the following:

1. Final reconciliation of projects costs with the NHDOT and FHWA FMIS system.
2. Verification that required documentation is received in the Division Office.
3. Closing a project removes it from the "active" projects in the FHWA FMIS system.

Contracting: Change Orders, Supplemental Agreements and Extra Work Orders
FHWA PoDI Projects – For all FHWA oversight (PoDI) projects or programs, FHWA shall ensure that all necessary approvals and activities are in accordance with Federal policies, practices, and standards, and Title 23, U.S.C. On PoDI projects, FHWA personnel will approve changes in contract (change orders, supplemental agreements, time extensions, claims, etc.), conduct project inspections, final inspections, and project acceptance.

Following authorization to proceed with a project, all major changes in the plans and contract provisions, and all major extra work, shall have formal approval by the Division in advance of their effective dates. However, when emergency or unusual conditions justify, the Division may give tentative advance approval orally to such changes or extra work and ratify such approval with formal approval as soon thereafter as practicable.

Furthermore, in accordance with 23 CFR 635.109, when a major item of work, as defined in the contract, is increased in excess of 125% or decreased below 75% of the original contract quantity, an adjustment excluding anticipated profit will be made to the contract. Any allowance for an increase in quantity shall apply only to that portion in excess of the 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed. The basis for the adjustment shall be agreed upon prior to the performance of the work.

On PoDI projects, FHWA's prior verbal or written approval will be sought for contract changes (including item variances), supplemental agreements, and extra work orders for those actions or independent items in excess of $25,000 (increase or decrease to the contract). Formal written approval by FHWA of the executed document is also required.

For the purposes of this part, a major change is defined as being greater than $25,000 (see above) or in accordance with any of the following:

If changes to the contract could potentially impact commitments made in the approved NEPA document; FHWA's approval should be obtained regardless of the dollar value.
On FHWA PoDI projects, the FHWA must formally approve, in writing, all change orders, supplemental agreements, and extra work orders prior to the work being performed when the change has an impact on:

a) The scope of the project
b) Material modifications
c) Adding a feature to the project
d) Designer's intent, assumptions, calculations, etc.
e) The original contract bid amount
f) Contract time extensions (not pertaining to weather delays)

Appropriate independent government analysis and review should occur on all actions to ensure that the basis for comparison and determination of reasonableness is justified and documented. Actions on all projects should be reviewed by the appropriate NHDOT personnel and compared to average unit prices for similar work, prior to approval.

In establishing the method of payment for contract changes or extra work orders, force account procedures shall only be used when strictly necessary, such as when agreement cannot be reached with the contractor on the price of a new work item, or when the extent of work is unknown or is of such character that a price cannot be determined to a reasonable degree of accuracy. The reason or reasons for using force account procedures shall be documented.

Informational copies of all Change Orders, Supplemental Agreements, and Extra Work Orders on FHWA PoDI projects will be transmitted to FHWA. Project personnel are encouraged to engage in open and timely communication with FHWA throughout the life of the project, and in particular when such actions occur.

No FHWA approval is required for Supplemental Agreements, Extra Work Orders, or Change Orders on projects delegated as NHDOT oversight.

Experimental Features

The Research Section acts as coordinator to NHDOT units that incorporate experimental features and "problem solving" research into their projects. The Section also acts as a clearinghouse to disseminate the information learned from the use of experimental features. The FHWA will work with NHDOT, as appropriate, to disseminate information and encourage the implementation of successfully used experimental features.

The FHWA exercises oversight for experimental features through review of the project applications prior to approval actions.

The FHWA Division Research and Technology Specialist oversees the administrative aspects and coordinates with the Division Office specialists for technical aspects.

5. CONSULTANT PROCUREMENT

Pursuant to 23 CFR 1.9, Federal funds shall not be paid on account of any cost incurred prior to authorization by the Administrator to the State Highway Department to proceed with the project or part thereof involving such cost. As such, NHDOT will consult, coordinate, and seek concurrence from FHWA on PoDI projects when contemplating scope changes necessary during the engineering phase of a contract. Formal written approval for such changes during the engineering phase will be required prior to exceeding previously authorized contract amounts. This approval must be in writing and supported by the necessary documentation needed to make the approval. This provision applies to all types of contracts and work performed by State or others acting on behalf of the State, regardless of the phase of the project.

For all FHWA Oversight projects (PoDI) or programs, FHWA shall also ensure that projects or programs comply with certain non-Title 23, U.S.C. Federal-aid program requirements,

such as procurement of engineering and design related service contracts and construction procurement procedures (competitive bidding). On PoDI projects FHWA personnel will concur in consultant selection, agreements, and modifications.

6. DESIGN

Design Exceptions – Design exceptions for FHWA PoDI projects may be requested by NHDOT to FHWA, per the PoDI oversight agreement. NHDOT has assumed the responsibility to approve and document design exceptions for State Administered projects. The determination to approve a project design exception is made after due consideration is given to all project conditions and parameters. Additionally, NHDOT should document design variances where the NHDOT standard(s) is (are) not being met; however, the design satisfies the applicable AASHTO standard(s).

Interstate Access

In accordance with Title 23, USC, Section 111, "the State will not add any points of access to, or exits from, the project in addition to those approved by the Secretary in the plans for such project, without the prior approval of the Secretary." (Secretary refers to the Secretary of the US Department of Transportation.) Interstate Access Requests may take the form of either an Interstate Justification Report (IJR) or an Interstate Modification Report (IMR). An IJR is a request for approval to add a new interchange, new partial interchange, or new ramps to-from frontage roads on the Interstate System. An IMR is a request for approval to add or modify access points to an existing Interstate interchange. The NHDOT will prepare an Interstate Access Request for FHWA's approval for the following actions:

1. New Interchange
2. Major modification of an existing interchange
   a. Adding new ramp(s)
   b. Removing ramp(s)
   c. Changing the interchange configuration
   d. Completing basic movements at a partial interchange
3. New partial interchanges or new ramps to-from frontage roads
4. Instituting locked gate access
5. Abandonment or closure of ramps or interchanges
6. Access requests and interchange modifications on the Turnpike System

An access point is defined as each entrance to or exit from the Interstate mainline including "locked gates."

All Interstate Access Requests should demonstrate good design practice, constructability, and operational and safety acceptability. The formal request must come from the NHDOT with supporting documentation commensurate with the scope of the proposed access approval.

All Interstate Access Requests must address the eight (8) policy points below:

1. The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design year traffic demands while at the same time providing the access intended by the proposal.

2. All reasonable alternatives for design options, locations, and transportation system management type improvements (such as ramp metering, mass transit and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.

3. The proposed access point does not have a significant adverse impact on the safety and operation of the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in urbanized areas, include analysis of sections of Interstate to and including at least the first adjacent existing or proposed interchange on either side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with new or revised access points.

4. The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" for special purpose access for transit vehicles, for HOV's, or into park and ride lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed current standards for Federal-aid projects on the Interstate System.

5. The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must be consistent with the metropolitan and/or statewide transportation plan, as appropriate, the applicable provisions of 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.

6. In areas where the potential exists for future multiple interchange additions, all requests for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan.

7. The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and related or otherwise required transportation system improvements.

8. The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal.

Preliminary Design

In 2010, FHWA issued Order 6640.1A clarifying the FHWA's policy regarding the permissible project-related activities that may be advanced prior to the conclusion of the National Environmental Policy Act (NEPA) process. Preliminary design activities include, but are not limited to:

1. Activities listed in the definition of preliminary design: environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue

estimates, hazardous materials assessments, general estimates of the types and quantities of materials.

2. Other activities: design and engineering activities to be undertaken for the purposes of defining project alternatives; completing the NEPA alternatives analysis and review process; complying with other related environmental laws and regulations; environmental justice analyses; supporting agency coordination, public involvement, and permit applications; development of environmental mitigation plans; development of typical sections, grading plans, geometric alignment (horizontal alignment, vertical alignment, and any clearances necessary to meet approved design criteria), noise wall justifications, bridge type/size/location studies, temporary structure requirements, staged bridge construction requirements, structural design (substructure and superstructure), retaining wall design, noise wall design, design exceptions, guardrail length/layout, existing property lines, title and deed research, soil borings, cross sections with flow line elevations, drainage, ditch designs, intersection design/configuration, interchange design/configuration, pavement design, storm/sanitary sewer design (plan/profile), culvert design, identification of removal items, quantity estimates, pavement details/elevation tables, and preliminary traffic control plans to be maintained during construction.

Plan Reviews and Approvals – PS&E

On FHWA PoDI Projects, the Plans, Specification & Estimate (PS&E) Reviews are the last Design reviews done by the FHWA Division Office allowing project authorization to take place. The reviews generally utilize a checklist approach and involve a cursory design review if there was adequate FHWA involvement during the intermediate reviews leading up to the final plans. These reviews are required on all FHWA PoDI projects to assure that the project is ready for authorization. Please plan for allowing 10 working days/two weeks for Division Office review and comment. Half-size plans are preferred.

Preliminary Plan, Specifications & Estimate (PPS&E) Reviews will be done by the FHWA Division Office when plans have been developed to about 60% following slope and drain. These reviews are appropriate during the time the design concepts and major design features are being developed and finalized. The purposes of PPS&E reviews are to assure that appropriate design considerations are used during layout development, to assure that environmental commitments are observed, to assure cost-effective design alternates are considered, to maintain communication with the highway agency, and to evaluate the quality of the product.

Delegated Projects - Incidental PS&E/PPS&E reviews will be done as part of Program/Process Reviews that are in keeping with the Division's Risk Based Stewardship and Oversight Initiatives. Reviews will be done in cooperation with NHDOT timelines to the maximum extent possible.

Local Publically Administered Projects - Incidental PS&E/PPS&E reviews will be done as part of Program/Process Reviews that are in keeping with the Division's Risk Based Stewardship and Oversight Initiatives. Reviews will be done in cooperation with NHDOT timelines to the maximum extent possible.

Value Engineering (VE)
Per MAP-21, as a minimum, NHDOT will perform Value Engineering Analyses on Federal-aid projects estimated to cost $50 million or more, and for Federal-aid bridge projects expected to exceed $40 million. The FHWA Division Administrator – or NHDOT at its discretion - may designate other projects for which a Value Engineering Analysis is needed. In addition, VE analyses are no longer required for non-NHS bridges and Design-Build projects.

NHDOT will include a Value Engineering Change Proposal (VECP) clause in their construction contracts to encourage contractors to propose changes in contract requirements which will:

1. Reduce project cost(s) or improve value or service at no increase or a minor increase in cost, and
2. Provide New Hampshire with innovative contractor ideas or techniques to be considered when preparing plans, specifications, and estimates on future projects.

The net savings of each proposal will be shared with the contractor at a stated reasonable rate. Reimbursement for such share is eligible for pro-rata reimbursement with Federal-aid funds. NHDOT retains the right to accept or reject all proposals and acquire all rights to use accepted VE proposals in current and future projects without restriction.

For maximum benefit, VE should be employed as early as possible in the project development/design process so that valid VE recommendations can be implemented without delaying the progress of the project or causing significant rework of completed designs.

7. EMERGENCY RELIEF

Congress authorized in Title 23, United States Code, Section 125, a special program from the Highway Trust Fund for the repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of: (1) natural disasters or (2) catastrophic failures from an external cause. This program, commonly referred to as the emergency relief or ER program, supplements the commitment of resources by States, their political subdivisions, or other Federal agencies to help pay for unusually high expenses resulting from extraordinary conditions. See the Emergency Relief Manual (Federal-aid Highways) for more detail on the ER program.

1. The FHWA and NHDOT agree to each have a person/position (collateral duty) identified as the point of contact and emergency coordinator for ER events. Should an event occur, these individuals would be responsible for organizing and carrying through the appropriate agency responses and documentation.
2. The NHDOT will complete a reasonable survey of the damage (Damage Survey Summary Report) with associated program for projects with estimates of cost within 4 to 6 weeks of the event. This may vary depending on the area of impact of the disaster.
3. NHDOT is responsible for identifying, inspecting, documenting, and ensuring that all Emergency Relief (ER) Projects comply with all Federal and State requirements. ER projects for permanent repairs are subject to the project oversight criteria found in this agreement and to the following two conditions:

a. Any "betterment" to be incorporated into the project, for which ER funding is requested, must receive prior FHWA approval.
b. Any permanent repairs done incidentally with Emergency Repairs must have FHWA prior approval.
c. Approved permanent repair projects must follow standard federal-aid authorization procedures, including NEPA review and classification, inclusion in the STIP, uniform act compliance, etc.
d. With two weeks advance notice, the FHWA Division Office should be notified and invited to all final inspections on ER Projects.
e. The FHWA Division Office reserves the right to conduct independent final inspections on all ER projects.

8. ENVIRONMENTAL

Whether the project is FHWA Oversight (PoDI) or State Administered, where federal funding is involved, FHWA will have involvement through the environmental analysis and documentation, through NEPA approval. It is important to understand that there will be some cases where no federal funds are being used but a federal approval is required, such as Interstate access modification, which invokes NEPA. FHWA will always have approval authority for any accompanying NEPA approval, even though the project may not use federal funding.

In addition, FHWA has agreed, in coordination with the NHDOT, to delegate consultant task orders/agreements less than $10,000 that are issued and administered through the Bureau of Environment in accordance with their internal procedures.

FHWA is required to consider the social and natural environment in accordance with the National Environmental Policy Act of 1969 (NEPA) prior to making any decisions on projects that have federal involvement; that is, federal funding or federal action (e.g. Interstate Access modifications, permitting). FHWA has a direct oversight role in implementing NEPA. FHWA and NHDOT will work together to ensure that social, environmental, and economic factors are given proper consideration along with engineering factors, in program and project decision-making. In general, under environmental actions:

- FHWA's primary role is to provide guidance and independently evaluate the adequacy of the NEPA process performed for all Federal-aid transportation projects.
- NHDOT is responsible for the environmental analyses for all Federal-aid transportation projects in the state. NHDOT will maintain qualified professional staff to conduct environmental reviews.
- NHDOT maintains documentation on environmental activities.
- FHWA assures that appropriate analyses are conducted, approval actions are timely, and public involvement is an element of NHDOT's environmental program.
- FHWA and NHDOT will continue to work together to streamline the environmental process.

9. FINANCIAL MANAGEMENT

The New Hampshire Division has implemented the Financial Integrity Review and Evaluation (FIRE) program to ensure that Federal-aid funds are properly managed and effectively used in accordance with Federal policies, and that safeguards are in place to minimize fraud, waste, and abuse. In addition, the FIRE program ensures that proper internal controls are established and followed, with objectivity and a separation of financial duties in conducting the Agency's day-to-day operations. The Division's Financial Management Team is responsible for completing the FIRE activities on an annual basis, and they coordinate with NHDOT personnel and Division staff, as necessary.

The FIRE activities consist of the following:

1) Financial Quality Improvement Reviews
2) Improper Payment Reviews
3) Inactive Federal-aid Projects Reviews
4) Single Audit Review
5) Other Federal Audit Findings Review (as applicable)
6) Annual Certification & Certification Validation
7) Administrative Reviews [Fund Authority; Purchase Orders & Administrative Contracts; Travel-Related Transactions; Credit Cards & Convenience Checks; Property Inventories & Capitalized Assets; and Collections & Sensitive/Controlled Documents].

NHDOT conducts various financial audits (involving respective program staff, as applicable) of external agencies receiving Federal-aid funds to ensure the proper use of these funds and that Federal and State requirements are met.

GARVEE Bonds
In 2010 and 2012, NHDOT and FHWA entered into separate MOAs for the GARVEE Bond funding of the I-93 Salem to Manchester PoDI major project. Under the FAHP, once a project is selected for debt financing:

- The project is submitted to the Division Office for approval as an Advance Construction project under Section 115 of Title 23. This designation ensures that the project will follow federal-aid procedures and will preserve the eligibility to reimburse debt-related costs through future federal-aid fund obligations.
- When the project agreement is signed, a state may elect to seek reimbursement for debt service and/or related issuance costs, in lieu of reimbursement for construction costs. If a state elects to receive debt service reimbursements, a debt service schedule will be included in the project agreement. When multiple projects are funded with the proceeds of a debt issue, each project will be assigned a prorated share of the debt-related costs.
- To comply with the intent of the fiscally constrained planning process, the federal share of the debt-related costs anticipated to be reimbursed with federal-aid funds over the life of the debt obligations should be designated as Advanced Construction. The planned amount of federal-aid reimbursements (Advance Construction conversion) should be included in the STIP, in accordance with FHWA procedures.

- Periodic debt service payments (federal-aid reimbursements) on the debt obligations would represent partial conversion of designated Advanced Construction amounts to federal aid. A state can obligate such federal aid annually over the life of the permanent financing or a state can make the conversion in one lump sum upon completion to help take out construction financing. This would follow the normal procedures for conversion of an Advance Construction project.
- FHWA has, pursuant to the terms of the 2010 Memorandum of Agreement and the 2012 Memorandum of Agreement, approved the I-93 Project as a "debt-financed" project.

Monitoring

Debt service and bond issuance payments will be made by the State through the New Hampshire State Treasurer's Office twice per year and pro-rated to each Individual Construction Project based upon the estimated project debt service schedule, which will be attached to the payment request. As authorized amounts change with project modifications and final bond issuance, debt service payments will be adjusted accordingly. NHDOT will submit requests and supporting documentation to FHWA at least three weeks prior to submitting the request to convert the Advance Construction and use Obligational Authority sufficient to cover the scheduled debt service payments within a fiscal year, subject to the availability of Federal-aid contract and obligation authority. In the event that only a portion of the annual Obligational Authority is provided, NHDOT will reserve a pro-rata share of the Obligational Authority for debt service payments until the full Obligational Authority is available; provided that, in any event, NHDOT will set aside each year obligation authority sufficient for scheduled payments of debt service on the Bonds and other Bond-related costs during such year. Debt service costs will be billed to FHWA through the NHDOT Current Billing System to FMIS billing process. The debt service payments can be billed to FHWA up to 4 business days (in accordance with Federal Cash Management Improvement Act (CMIA)) in advance of the payment due date. The State may request that debt service payments be paid directly to the trustee for the Bonds.

The NHDOT recognizes and acknowledges the FHWA's authority to review the NHDOT's accounting procedures and process to ensure that the NHDOT's accounting system can support the allocation of eligible principal, interest and issuance expenses back to the individual Federal-aid projects being financed under 23 U.S.C. 115 and 122 on an annual basis.

The NHDOT agrees to authorize an audit of the Federal-aid projects being financed under 23 U.S.C. § 115 and § 122 by an independent auditor, which shall be charged to Federal-aid and eligible for participation at the Federal share as authorized under 23 U.S.C. 101 (a)(3) no less than every two years, but as frequently as on an annual basis.

10. INTELLIGENT TRANSPORTATION SYSTEMS (ITS) Program

Program Overview

NHDOT, in consultation and cooperation with FHWA, will lead the development of ITS initiatives ITS deployments, integrations, research, and operations. NHDOT and FHWA will work cooperatively with MPOs to promote ITS planning, regional architecture development

and use, and to facilitate the adoption and integration of ITS elements at the local level as may be appropriate.

NHDOT will adhere to the provision of 23 CFR 940, Intelligent Transportation System Architecture and Standards, for ITS initiatives and deployments with Federal-aid funding associated.

Per 23 CFR 940.3, an ITS project is any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS User Services as defined in the National ITS Architecture. It is understood that:

- Traffic signal projects that create or modify an interconnected traffic signal system or have automated communication with other systems are ITS Projects.
- Projects or activities that utilize interconnected technology in detecting incidents and dispatching response vehicles are ITS Projects.

ITS Regional Architecture
23 CFR 940.9 states that Regional ITS architectures for each of the MPO areas and statewide shall be developed and maintained to document the ITS integration strategies and guide the development of specific projects and programs. FHWA will serve as a technical resource during the development, maintenance, and use of the regional architectures, and shall be furnished a copy of the adopted regional architectures and any amendments. Regional architectures will conform to the latest version of the National ITS Architecture and comply with the provisions of 23 CFR 940.9. FHWA will make an acceptance determination based on these requirements.

Systems Engineering Analysis
All ITS projects shall be based on a systems engineering analysis and shall be developed to be consistent with the accepted regional architecture. The systems engineering analysis will be on a scale commensurate with the project scope. NHDOT shall make a determination of compliance of ITS Projects with the systems engineering analysis requirement, with FHWA concurrence.

Project Administration
Prior to authorization of Federal-aid funds for construction or implementation, NHDOT shall demonstrate that ITS projects conform to the National ITS Architecture and were developed using standard systems engineering practices for highway projects as may be found in FHWA's publication, 'System Engineering for Intelligent Transportation System' and other guidance acceptable to FHWA. NHDOT shall demonstrate that there is a commitment to the operation, management, and maintenance of the overall system. All ITS projects shall use applicable ITS standards and interoperability tests that have been officially adopted by the USDOT, and will use to the extent practical other ITS standards under development that have general industry acceptance or use. NHDOT shall make a determination, with FHWA concurrence, of ITS project compliance with these requirements.

NHDOT will document and maintain an ITS project development and implementation process that standardizes the Department procedures for compliance with the fore mentioned requirements of both Federal and State ITS projects. The document will include policies, guidance, and procedures that will be used internally within the NHDOT, and externally with

FHWA. FHWA will review and approve all associated documents and amendments thereto. FHWA and NHDOT will jointly conduct process reviews, as appropriate, of the ITS program.

FHWA and NHDOT will establish criteria that will be used to categorize all ITS projects as either a lower-risk or higher-risk projects. Lower-risk projects will be overseen by NHDOT only and higher-risk projects will be considered FHWA PoDI Projects. For projects not clearly fitting into either category, or that may have some components of a higher-risk project while otherwise being considered lower-risk, NHDOT will obtain FHWA concurrence on the ultimate categorizing of the project. All ITS projects will comply with the requirements of this section, however, only oversight projects will require FHWA involvement and approval of design, development, and implementation. The Departments procedures for ITS project development and implementation described earlier in this section will include any procedures for both oversight and non-oversight ITS projects.

For Congressional ITS earmark projects, FHWA will monitor pre-award activities to ensure that the project being pursued meets program purposes and other requirements and implementation processes issued by FHWA Headquarters. Congressional ITS earmark projects shall comply with the other provisions stated in this agreement unless otherwise determined by FHWA to be inapplicable.

11. INNOVATIVE PROJECT DELIVERY

Innovative Program Delivery methods are new to NHDOT and the NH Division. As such, all projects utilizing innovative program delivery methods such as Design-Build, CMGC, PPP, ATC's, etc. will be FHWA Oversight. Once established procedures are in place for the innovative program delivery method, and the NH Division and NHDOT have developed a comfort level with using the method, the parties may agree to revisit the oversight designation.

FHWA supports awarding at least one project every year utilizing an innovative program delivery method.

12. LOCAL PUBLIC AGENCY PROGRAM AND PROJECTS

Local Public Agency (LPA) administered Federal-aid projects are those which are, at a minimum, managed through design or construction or both, by an entity delegated to do so by a State Transportation Agency (STA). In many cases, the LPA may also manage environmental studies and documentation, appraisal and acquisition of right-of-way, the bid and award process, and the billing process.

The LPA program in New Hampshire consists mainly of programs now administered under the MAP-21 Transportation Alternatives Program (TAP). The program includes most activities previously eligible as Transportation Enhancement, Recreational Trails, CMAQ, and Safe Routes To School. We should note there are several Transportation Enhancement activities that are no longer eligible under TAP funding. Such as:

- Safety and educational activities for pedestrians and bicycles
- Acquisition of scenic easements and scenic or historic sites

- Scenic or historic highway programs (including visitor and welcome centers)
- Historic preservation as an independent activity unrelated to historic transportation facilities
- Operation of historic transportation facilities
- Archaeological planning and research undertaken for proactive planning
- Transportation museums

Although some LPA projects may be selected as FHWA PoDI projects, the majority of these projects are administered by the NHDOT. By written agreement with the local agency, NHDOT may delegate all or some project activities to local agencies, whether or not Federal-aid is used for the activity. Those activities include, but are not limited to:

- Environmental studies
- Surveying
- Procurement of consultant services
- Preliminary design
- Right-of-way acquisition
- Work by local forces (limited, as program allows) or utility companies
- Preparation of plans, specifications, and estimates
- Preparation of bid proposal package
- Advertisement for letting
- Contract administration
- Construction inspection

NHDOT is responsible, under Federal law and regulations, for all delegated activities. NHDOT will provide the necessary processes, approvals, oversight, and review to ensure that delegated projects receive adequate supervision and inspection, and that they are completed in conformance with approved plans and specifications and applicable Federal requirements. The following activities will not be delegated to local agencies:

- NEPA review and approval
- Design exception approval
- Sole source justification approval
- Plan, specification, and estimate approval
- Right-of-way certification
- DBE Goals
- Labor compliance enforcement
- Final inspection and acceptance

In the event that a Municipality holds the consultant design agreement, or does its own design and the NHDOT administers the construction contract, then this section is only valid through final design. From the PS&E forward, the State-Administered Project Development and Project Construction delegations apply as outlined in **Attachment E sections 4 and 6.** Also, if a Municipal Project is determined to have federal oversight (PoDI), it is administered like any other FHWA PoDI project.

Project Development Oversight for Municipalities Summary

Work Activity	LPA (Municipal) ACTION	NHDOT ACTION	FHWA ACTION
Project Scope/Concept	Prepare & Submit	Review& Approve	None, opportunity to comment
Project Authorization for Preliminary Engineering	Prepare& Submit	Review & Submit	Approve in FMIS
Addenda	Prepare & Submit	Review & Approve	None
Concurrence in Contract Award	Prepare & Submit	Review & Concur	None
Consultant Agreement and Selection	Prepare & Submit	Review & Approve	Information
Design Exceptions	Prepare& Submit	Review& Approve	Opportunity to Comment
PS&E Approval	Prepare & Submit	Review& Approve	None
NEPA Approvals[3]	Prepare& Submit	Review & Submit	Approve
Value Engineering[4]	Prepare& Submit	Review& Approve	None
Project Authorization for Right-of-Way	Prepare& Submit	Review & Submit	Approve in FMIS
Project Authorization for Construction	Prepare& Submit	Review & Submit	Approve in FMIS
Concurrence in Contract Award	Prepare & Submit	Review & Concur	None
Rejection of Low Bidder	Prepare& Submit	Review& Endorse	Review & Concur

[1]All of the NHDOT Action items which indicate that the NHDOT shall submit to the FHWA must be endorsed by the NHDOT prior to submission to the FHWA, as applicable.
[2]A municipal project requiring Interstate Access Modification would be rare but could also include developer's projects.
[3]Approvals of Programmatic CE's have been delegated to NHDOT
[4]Value Engineering for a municipal project is rare and only applies to Structures over $40M and projects on the National Highway System over $50M (for all phases.).

Project Construction for Municipalities Summary

Work Activity	LPA(Municipality) ACTION	NHDOT ACTION	FHWA ACTION
Notification of Pre-construction Meeting	Prepare& Submit	Review & Attend	Information
Change Orders	Prepare& Submit	Review& Approve	None (FHWA Authorizes the funds in FMIS)
Claims[5]	Prepare& Submit	Review& Approve	None
Time Extensions	Prepare& Submit	Review& Approve	None
Suspension of Work	Prepare& Submit	Review& Approve	None
Termination	Prepare& Submit	Review& Approve	Approve (projects on the NHS). Information (projects off the NHS)
Certificate of Compliance	Prepare& Submit	Review& Approve	None
Certificate of Final Acceptance	Prepare& Submit	Review& Approve	None
Materials Certification	Submit	Prepare& Approve	None

Project Development Oversight for Municipalities Summary			
Buy America Waiver[6]	Prepare& Submit	Review & Concur	Approve
Value Engineering Change Proposals	Prepare& Submit	Review& Approve	None
Errors & Omissions	Prepare& Submit	Review& Approve	None
Public Interest Finding	Prepare& Submit	Review& Submit	Review for information only

[5] Claims that may set legal precedence should be coordinated with the FHWA.
[6] Not needed when minimal use of foreign steel and iron materials does not exceed 0.1 percent or $2,500, whichever is greater.

Local Technical Assistance Program (LTAP)

LTAP was created to provide training and technical assistance to rural, small urban governments, and contractors that do work for local agencies on roads, bridges, and public transportation. The LTAP program is regulated under 23 U.S.C. 504(b). The Technology Transfer (T2) Center at the University of New Hampshire was established in 1986. T2 Center is the local entity that works with NHDOT and FHWA to administer LTAP to communities and organizations throughout the state.

The T2 Advisory Committee determines the direction for the New Hampshire LTAP. The Committee, consisting of UNH personnel, federal, state, and local government representatives, typically meets quarterly. The Quarterly Committee meetings review, modify, and approve the content of New Hampshire's annual local training and assistance plan, and monitor progress, discuss opportunities and needs, develop plans for future programs, and associated budget needs. New Hampshire's LTAP annual training schedule typically consists of more than ten courses. T2 Center coordinates with NHDOT and the FHWA to adapt an LTAP Management Plan based on a calendar year.

FHWA exercises its oversight responsibilities through the review and approval of the annual work plan prior to approval actions, review of work plan amendments prior to approval, participation in the T2 Steering Committee, and participation or planning of various LTAP-related activities.

NHDOT, T2 Center, and FHWA coordinate to process amendments to LTAP. FHWA also coordinates with NHDOT for program development, eligibility, and fiscal issues.

13. MAJOR PROJECTS

Major Projects are those projects receiving Federal financial assistance with an estimated cost of $500 million or more, or projects that have been identified by the United States Department of Transportation Secretary as being "Major" because of special interest. The NEPA decision for each project defines the project scope, limits, and cost for each category of project.

Projects Costing greater than $500 million – These projects will be designated as FHWA oversight projects regardless of the system on which they occur. In the early development of each Major Project, NHDOT shall submit to FHWA an initial Project Management Plan (PMP). The purpose of the PMP is to define the roles, responsibilities, processes, and

activities, which will result in the Major Project being completed on time, within budget, with the highest degree of quality and safety, and in a manner in which the public trust, support, and confidence in the project is maintained.

The preparation of an initial PMP during the project's environmental study is critical to ensure that the project is delivered in an efficient and effective manner. The initial PMP shall be prepared by NHDOT and submitted to the FHWA prior to the submission of the NEPA decision document for the project. The PMP is to be a living document in which revisions will be issued as the project progresses in order to add, modify, or delete provisions, with the result being the most effectively managed project. PMP guidance is posted on the FHWA Major Project Web site.

Major Project Cost Estimates are required to be prepared and updated by NHDOT. To validate the Cost Estimates, FHWA will perform at least one review prior to approving the NEPA decision document, and another review prior to authorization of the first mainline construction contract. Additional reviews may be required any time an update of the Financial Plan or PMP shows a significant change to the Cost Estimates or schedule. Details for developing Cost Estimates can be found on the FHWA Major Project web site.

Every Major Project also requires the development and submittal of a Financial Plan. A Financial Plan is a comprehensive document that reflects the Project's cost estimate and revenue, and provides reasonable assurance that there will be sufficient financial resources available to implement and complete the project as planned. The plan should clearly explain the assumptions about both cost and revenue upon which the plan is based. Financial Plans for Major Projects shall be prepared by NHDOT and submitted to the FHWA.

The initial Financial Plan should be prepared as early in the project development process as practical. In all cases, the initial Financial Plan must be submitted and approved by FHWA before authorization of Federal-aid funding for project construction. Financial Plans are to be updated annually. The annual updates of the Financial Plan should provide information on actual costs, expenditures, and dedicated revenue in comparison to initial estimates. Additionally, updated estimates of future years' costs, expenditures, and dedicated revenue will be included. Identified funding shortfalls should be highlighted along with proposed resource solutions. Financial Plan guidance is posted on the FHWA Major Project web site.

Projects Costing $100 - $500 million – These projects are also required to have Financial Plans and annual updates of the Financial Plans prepared by the project owner. The Financial Plan should address the same items as those for Major Projects. The initial Financial Plan should be prepared as early in the project development process as practical. In all cases, the initial Financial Plan must be completed before authorization of Federal-aid funding for project construction. These projects will be designated as FHWA PoDI projects regardless of the system on which they occur. Any amount of federal funding used to reach the project threshold amount, such as federal earmarks, would invoke the Initial Financial Plan requirement.

Major Projects that have been approved for Operational Independence and Non-Concurrent Construction (per FHWA Major Project Guidance) will be treated in accordance with the new dollar amounts of each approved phase.

A Value Engineering study is required for any Federal-aid project meeting thresholds described in current legislation, excluding non-NHS bridges and Design-Build projects. The Division Administrator may require more than one Value Engineering analysis for those projects.

14. PREVENTIVE MAINTENANCE AND SYSTEM PRESERVATION

Per the June 13, 2003 Agreement between NHDOT and FHWA New Hampshire, these projects remain State Administered:

NHS Preventive Maintenance
This type of project includes all NHS roadways, including Interstate Highways. Preventive Maintenance projects consist of work proposed to preserve, rather than improve, the structural integrity of the pavement and/or structure. Examples of preventive maintenance activities include ACP overlays (maximum 2" thick, excluding level-up); seal coats; cleaning and sealing joints and cracks; shoulder repair; scour countermeasures; cleaning and painting steel members to include application of other coatings; steel beam repair; repair or replacement of slopes and/or riprap, restore drainage systems; cleaning and sealing bridge joints; microsurfacing; bridge deck protection; milling or bituminous level-up; pavement inlay; clean, lubricate, and reset bearings; clean rebar/strand and patch structural concrete, and seal cracks. Projects that increase the capacity of a facility or address major deficiencies along a facility are not considered preventive maintenance.

In general, all preventive maintenance projects should consider appropriate ways to maintain or enhance the current level of safety and accessibility. Isolated or obvious deficiencies should always be addressed. Safety enhancements such as the installation or upgrading of bridge rail , guardrails, and end treatments, installation or replacement of traffic signs and pavement markings, removal or shielding of roadside obstacles, mitigation of edge drop offs, the addition of paved or stabilization of unpaved shoulders, or installation of milled rumble strips, should be included in projects where they are determined to be a cost effective way to improve safety. To maintain preservation program flexibility, and in accordance with 23 U.S.C. 109(q), safety enhancements can be deferred and included within an operative safety management system or included in a future project in the STIP. In no way shall preventive maintenance type projects adversely impact the safety of the traveled way or its users.

15. PAVEMENTS AND MATERIALS

The FHWA New Hampshire Division is committed to assisting NHDOT in development and implementation of their Pavement Management System (PMS). FHWA will participate in various meetings to ensure that pavement related activities, including new and rehabilitated pavement design and construction, pavement management, research, technology transfer, etc., to provide readily available support to NHDOT through our HQ and Resource Center, as well as coordination among other functional/administrative areas of the division office.

In general, FHWA will monitor the implementation, operation, and effectiveness of the PMS through joint reviews and on-going involvement.

Materials Quality Assurance Monitoring Program
The FHWA Division Office monitoring of NHDOT Quality Assurance (QA) Program is structured around 23 CFR 637. The overall purpose of the monitoring program is to ensure the quality of materials incorporated into Federal-aid highway projects on the National Highway System (NHS).

For Federal-aid highway projects on the NHS, the primary objectives of the monitoring program are:

- Maintain a close working relationship with NHDOT Materials and Construction staff,
- Promote improvements when new approaches or technologies are developed and where deficiencies are identified,
- Ensure that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing, are in conformity with the approved plans, specifications, special provisions, and the NHDOT standard specifications,
- Provide oversight of construction materials and compliance with Federal requirements on a statewide basis, and
- Ensure there is adequate and qualified NHDOT staff to maintain NHDOT QA and Independent Assurance (IA) programs.

Oversight Activities
The FHWA Division Office will review and approve NHDOT Materials QA Program on an on-going basis. The NHDOT Materials QA Program includes the Acceptance Program, the IA Program, the Materials Certification of projects located on the NHS, the AASHTO Accreditation Inspection Reports, the Qualified Laboratory Program, and the Qualified Sampling and Testing Personnel Program. Additionally, the FHWA Division Office will have an ongoing involvement in the development and implementation of the NHDOT's Materials QA Program. In general, the FHWA Division Office will monitor the implementation and effectiveness of the QA Program through process reviews.

ASSET MANAGEMENT
Asset management is a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost. (23 U.S.C. 101(a)(2), MAP-21 § 1103)
Per MAP-21, each State is required to develop a risk-based asset management plan for the National Highway System (NHS) to improve or preserve the condition of the assets and the performance of the system. To avoid a reduction in the Federal share under National Highway Performance Program (NHPP), States are required to have developed and implemented an NHS asset management plan by the second fiscal year beginning after the USDOT Secretary establishes by regulation the process for asset management plan development. (23 U.S.C. 119(e)(1), MAP-21 § 1106)

Not less than once every 4 years, FHWA will review and recertify that the process the State used to develop and maintain the State asset management plan for the NHS meets requirements established under 23 U.S.C. 119(e)(8), MAP-21 § 1106.

16. PLANNING AND PROGRAMMING OVERVIEW

Work Programs: Title 23 CFR, Part 420, Planning and Research Program Administration contains the policies and procedures for administering activities and studies undertaken by States and Metropolitan Planning Organizations (MPO) funded through their respective Work Program or as separate projects not included in a Work Program.

1. Statewide Planning and Research (SPR) Work Program: NHDOT prepares the Work Program every two years. FHWA provides pre-program guidance, planning emphasis areas, draft review comments, approves the Work Program, and authorizes SPR funds. FHWA monitors the work throughout the cycle using day-to-day involvement as appropriate. NHDOT submits annual progress reports to FHWA consistent with 23 CFR 420.117.

2. MPO Unified Planning Work Program (UPWP): The UPWP is prepared every two years by each MPO and is reviewed by NHDOT, FHWA, and Federal Transit Administration (FTA). FHWA authorizes Planning Funds upon joint FHWA/FTA approval of the UPWPs. These funds are traditionally referred to as "PL" funds. NHDOT and FHWA monitor the Work Program through participation in MPO meetings, pre-UPWP meetings, and annual reports.

Statewide Transportation Planning: Title 23 CFR, Part 450, Subpart B, addresses the requirements of the statewide transportation planning process:

1. Statewide Long Range Transportation Planning: NHDOT develops a Statewide Long Range Transportation Plan (Transportation Plan) which considers all modes of transportation. The Transportation Plan covers at least a 20-year planning horizon, considers the planning factors as outlined in the CFR, provides an opportunity for consultation and participation by interested parties, and is coordinated with the Metropolitan Transportation Plans of each MPO.

2. Statewide Transportation Improvement Program (STIP): NHDOT develops a STIP containing all projects proposed to be funded by FHWA and FTA for a four-year period. The STIP is amended, modified, or updated by NHDOT and submitted to FHWA and FTA on an agreed-to schedule, but updates shall happen at least every four years. Projects contained in the STIP must be consistent with the Statewide Transportation Plan and the MPO plans, and must provide reasonable opportunity for consultation and participation by interested parties. Along with the STIP, NHDOT will certify that the projects in the STIP are based on a planning process that meets the requirements of 23 CFR 450.218.

Metropolitan Transportation Planning: Title 23, CFR Part 450, Subpart C, addresses metropolitan planning requirements:

1. MPO Transportation Plan: Each MPO must update its Metropolitan Transportation Plan every four years in non-attainment and maintenance areas, and every five years for

attainment areas. The plan is project-specific, must be financially constrained, and must cover at least a 20-year planning horizon; include long range and short range strategies which lead to an integrated intermodal plan; include a financial plan which compares estimated revenues with costs of construction, maintenance, capital purchases, and operations; consider the planning factors as outlined in the CFR; and provide opportunity for public participation and comment.

2. MPO Transportation Improvement Program (TIP): Contains all projects proposed to be funded by FHWA and FTA for a four year period. The TIP is amended, modified, or updated by the MPO and submitted to FHWA and FTA on an agreed-upon schedule, but updates shall happen at least every four years. The TIP shall include all required information as outlined in 450.324. The TIP development process must provide a reasonable opportunity for public participation and comment. Along with the STIP, NHDOT will certify that the projects in the TIP are based on a planning process that meets the requirements of 23 CFR 450.334.

3. Traffic Monitoring: Title 23 CFR, Part 500, Subpart B provides the regulatory guidance for the development and operation of a traffic monitoring system for highways, including traffic counting, vehicle classification, and weigh-in-motion programs. The system is guided by the AASHTO Guidelines for Traffic Data Programs, augmented by the FHWA Traffic Monitoring Guide and the Highway Performance Monitoring System Field Manual. The required traffic data is collected by NHDOT (with some assistance from local agencies) and are reported electronically to FHWA through the Traffic Monitoring Analysis System (TMAS) and through the Highway Performance Monitoring System (HPMS). Some data, such as the Automatic Traffic Recorder counts, are submitted monthly, while other data, such as coverage counts are submitted annually. The FHWA works with NHDOT to ensure that the applicable regulations are being followed and that the required information is submitted in an accurate and timely fashion. FHWA conducts periodic quality control reviews and works with NHDOT to resolve any issues that might arise.

4. Highway Performance Monitoring System (HPMS): Title 23 CFR, Part 420 addresses the policy for states to provide data that support FHWA responsibilities to the Congress and to the public. The Highway Performance Monitoring System Field Manual provides instructions for collecting and reporting quality and timely data on the condition and performance of the highways and streets. The required data is collected by NHDOT (with some assistance from local agencies) and is submitted electronically to FHWA on an annual basis. The FHWA works with NHDOT to ensure that the applicable regulations are being followed and that the required information is submitted in an accurate and timely fashion. FHWA conducts periodic quality control reviews and works with NHDOT to resolve issues that might arise. FHWA must annually attest to the accuracy of the HPMS data used in the apportionment process.

5. Certification of Public Road Mileage: Title 23 CFR, Part 460 addresses the policies and procedures for identifying and reporting public road mileage for utilization in the statutory formula for the apportionment of Highway Safety funds under 23 USC 402(C). Submitted to FHWA Headquarters by June 1 of each year, the Governor or NHDOT Commissioner certifies the public road mileage in the State as of the end of the previous calendar year. In New Hampshire, the NHDOT Commissioner has been selected as the Governor's designee.

The NHDOT submits it to the FHWA New Hampshire Division Office, which in turn submits it to FHWA headquarters.

6. National Functional Classification: Title 23 CFR, Part 470 describes the Federal aid Highway System, its designation, and description. NHDOT will have the primary responsibility for developing and updating a statewide highway functional classification in rural and urban areas. NHDOT shall cooperate with responsible local officials, or appropriate federal agency in the case of areas under federal jurisdiction, in developing and updating the functional classification. Proposed changes to the National Functional Classification shall be mapped and submitted to FHWA for approval.

7. Other areas of interest: Title 23 CFR requires states to compile and submit to FHWA: (1) a Highways Statistics Report, (2) a Certification of Enforcement of Heavy Vehicle Use Tax Certification, (3) the Vehicle (Truck) Size and Weight Enforcement Certification and supporting information on related activities, and (4) a report outlining the Annual Truck Weight Characteristics Data.

Approved Procedures, Agreements, and Manuals

NHDOT is required to submit to FHWA and FTA, for joint approval, a Statewide Transportation Improvement Program (STIP). Under MAP-21, NHDOT is required to update the STIP and submit for approval to FHWA and FTA at least every four years.

NHDOT and the MPO shall certify to FHWA that the planning process is addressing the major issues facing the area and is being conducted in accordance with all applicable requirements. This certification is submitted with the STIP update.

Under MAP-21, the NHDOT is required to provide for 50% statewide suballocation of funds under the Surface Transportation Program (STP) and Transportation Alternatives Program (TA). In addition, there will be STP funds suballocated for the Nashua urbanized area (UZA) due to its current Transportation Management Area (TMA) designation. MAP-21 also requires that an MPO serving a TMA select all projects except those on the NHS, which are selected by the State with MPO cooperation.

Under MAP-21, projects carried out in areas having less than 50,000 persons shall be selected from the approved STIP (excluding NHS projects, Bridge program, IM program, or under sections 5310 and 5311 of title 49) by the State in cooperation with the affected non-metropolitan local officials with responsibility for transportation, or, if applicable, through Regional Transportation Planning Organizations (RTPOs).

NHDOT will work with FHWA and New Hampshire's MPOs and non-MPO RPCs to establish procedures and agreements as necessary to ensure that these suballocation and project selection requirements are in place by May 31, 2015, at the latest.

NHDOT will monitor all SPR and UPWP activities to assure the work is being managed and performed satisfactorily and that time schedules are being met. NHDOT will submit a report annually to FHWA documenting the results of its monitoring process.

NHDOT will periodically review its statewide long-range transportation plan to assure its goals and objectives are still relevant, and that the plan still meets the requirements of 23 CFR 450.214. As NHDOT and FHWA deems it necessary, NHDOT will update or reaffirm the long-range transportation plan.

FHWA and NHDOT periodically monitor MPO plans and activities to ensure they are in conformance with all applicable federal and state guidelines.

FHWA and FTA conduct certification reviews of Transportation Management Areas (TMA) and MPO planning reviews for non-TMA areas on a four-year cycle. NHDOT will participate as a partner agency in these reviews.

NHDOT will provide FHWA (and FTA and EPA, where appropriate, at least 30 business days to review and comment on the draft and final Statewide Transportation Improvement Program, Metropolitan Transportation Improvement Program, State Planning and Research Work Program, the Metropolitan Planning Organization Unified Planning and Work Program, and the Statewide and Metropolitan Transportation Plans.

NHDOT will involve FHWA in decisions involving special and unusual circumstances at the earliest reasonable time to ensure thorough and appropriate decisions can be made cooperatively.

NHDOT will comply with all sub-grantee reimbursement requirements for PL and SPR funds in a timely manner, including the 15 business day turnaround that is required under MAP-21 for metropolitan planning funds that are requested for reimbursement by a MPO.

As a condition for receipt of Federal aid funds, NHDOT agrees to develop plans and work programs for statewide transportation planning activities, as required in 23 CFR, Parts 420 and 450, and in cooperation with Metropolitan Planning Organizations. FHWA will review these plans and programs to assure they meet applicable laws and regulations.

Programs requiring oversight include:
1) SPR Part 1 Program and MPO UPWPs: The SPR Part 1 Program and amendments, and MPO UPWPs and amendments, are reviewed and approved by FHWA for the SPR Program, and USDOT (FHWA/FTA) for the MPO UPWPs, the latter consistent with the current Memorandum of Agreement between the FHWA New Hampshire Division Office and FTA Region I. The SPR Part I Program is prepared on a 2 year cycle by NHDOT's Bureau of Planning and Community Assistance. A UPWP is the MPO's transportation planning work program, including all activities supported by FHWA and FTA planning funds. NHDOT will schedule SPR Part 1 Program and UPWP Review Meetings with FHWA and FTA as appropriate for the review of draft program updates. UPWP Review Meetings will include the participation of MPO staff. The purpose of having UPWP Review Meetings with each New Hampshire MPO is to help enhance interagency coordination and communication, and as such, they are attended by staff from the MPO, NHDOT, FHWA, and FTA. The meetings provide MPOs with an opportunity to highlight accomplishments from the current UPWP cycle, and present goals and activities that are planned for the upcoming UPWPs. Typically, review of any comments on the draft UPWPs from the federal agencies or NHDOT occurs at these meetings, and also provides FHWA and FTA an opportunity to discuss planning

emphasis areas and answer questions. Issues discussed range from the more practical aspects of funding eligibility and billing, to actual planning activities listed in the UPWP documents. As the UPWPs in New Hampshire are also on a 2 year update cycle, the SPR Part 1 and UPWP Review Meetings should occur on a 2 year cycle, at least 2 months before SPR Part 1 and UPWP adoption, during the update process.

2) Statewide transportation planning process, including the STIP: New Hampshire DOT prepares the STIP and STIP revisions, including amendments and updates requiring FHWA approval. Sometimes FHWA approval will be provided jointly with FTA consistent with terms of approval identified in the current Memorandum of Agreement between the Federal Highway Administration Division Offices in Connecticut, NH, Massachusetts, New Hampshire, Rhode Island, Vermont, and the Federal Transit Administration, Region I. STIP revisions will be processed and approved by FHWA (and FTA) as necessary consistent with current approved STIP Revision Procedures (March 25, 2008). These procedures also document the activities and role of New Hampshire's interagency consultation process, also referenced under the Air Quality section of this document.

3) Metropolitan transportation planning process: MPO long-range transportation plans and TIPs are prepared by New Hampshire's MPOs. While no approval actions are required by FHWA or NHDOT for these documents, NHDOT and FHWA will work together to ensure that New Hampshire's MPOs understand and are in compliance with requirements related to these products. This in turn will ensure that Federal STIP approval actions occur in a timely manner. NHDOT and FHWA will regularly attend monthly MPO Technical Advisory Committee (TAC) meetings to provide oversight.

4) Other: NHDOT also must submit other planning-related reports to FHWA. The reports include information on public road mileage for apportionment of highway safety funds; information collected from the Highway Performance Monitoring System; and information relating to the identification of Federal aid highways, the functional classification of roads and streets, the designation of urban area boundaries, and the designation of routes on the Federal aid highway systems.

17. RESEARCH, DEVELOPMENT and TECHNOLOGY PROGRAM

The purpose of the program is to implement the provisions of 23 U.S.C. 307 for research, development and technology transfer programs and studies undertaken with FHWA planning and research funds.

State Planning and Research (SPR) Program

The main requirements under 23 CFR 420 are to create a SPR Work Program, monitor planning and research activities, submit performance and expenditure reports, conduct peer reviews, develop and maintain an FHWA approved research and development manual, and maintain program certification. The SPR Work Program consists of two parts: (1) Part I, Planning, which is prepared by NHDOT's Bureau of Planning and Community Assistance and (2) Part II, Research, which is prepared by NHDOT's Research Section of the Bureau of Materials and Research.

New Hampshire DOT prepares the Work Program biennially. FHWA provides pre-program guidance, draft review comments, if any, approves the Work Program, and authorizes SPR funds. FHWA monitors the work throughout the year using day-to-day involvement as appropriate. New Hampshire DOT submits Annual Accomplishments and Expenditure Reports to FHWA.

SPR Part I
Title 23 CFR, Part 420, Planning and Research Program Administration contains the policies and procedures for administering activities and studies undertaken by States and Metropolitan Planning Organizations (MPOs) funded through their respective Work Program or as separate projects not included in a Work Program.

SPR Part II
NHDOT is responsible for preparation and overall coordination of the Work Program in accordance with 23 CFR 420. The SPR program operates on a biennial state fiscal-year basis. NHDOT considers how to address research needs and may, at its option: 1) conduct research with in-house personnel or contracted researchers, including university, federal, or private organizations, 2) conduct research through a transportation pooled fund project wherein NHDOT or another NHDOT or FHWA is the lead agency, or 3) participate in one of the regional or national cooperative transportation research programs.

FHWA exercises its oversight responsibilities through review and approval of the biennial SPR Work Program prior to approval actions, review of SPR Work Program amendments prior to approval, and ongoing participation of its technical specialists in study technical panels. As appropriate, FHWA personnel participate in peer exchanges.

The FHWA Division Research and Technology Specialist oversees the administrative aspects and coordinates with the Division Office specialists for technical aspects.

FHWA reviews and approves an updated version of the *NHDOT RD&T^2 Primer - Official Manual of the Research, Development and Technology Transfer Program* when there are significant changes in the management process or new Federal regulation/policy are enacted.

Eligible SPR funded activities include:

- Engineering and economic surveys and investigations
- Planning of future highway programs and local public transportation systems, and planning of the financing of such programs and systems, including metropolitan and statewide planning
- Development and implementation of management systems, plans, and processes under the NHPP, HSIP, CMAQ, and the National Freight Policy
- Studies of the economy, safety, and convenience of surface transportation systems, and the desirable regulation and equitable taxation of such systems
- Research, development, and technology transfer activities necessary in connection with the planning, design, construction, management, and maintenance of highway, public transportation, and intermodal transportation systems
- Study, research, and training on the engineering standards and construction materials for transportation systems described in the previous bullet, including the evaluation

and accreditation of inspection and testing, and the regulation and taxation of their use
- Conduct of activities relating to the planning of real-time monitoring elements
- Implementation by the Secretary of the findings and results of the Future Strategic Highway Research Program

18. RIGHT-OF-WAY

All recipients of Federal assistance must comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), and its amendments, on programs and projects that require real property acquisition. The Uniform Act applies whenever Federal funds are used in any phase of the program or project. The Uniform Act encourages agencies to negotiate with property owners in a prompt and amicable manner in order to avoid litigation.

While there are no oversight exemptions in the Right of Way (ROW) program, there are essentially two levels of Federal interest. On Federal-aid projects where ROW is acquired without federal funds, the Federal concern is to ensure that the rights of property owners and displaced persons are protected. On Federal-aid projects where ROW is acquired with federal funds, there is a dual Federal concern for the rights of property owners and displaced persons, as well as the stewardship of federal dollars.

49 CFR 24 provides the implementing regulations for the Uniform Act regarding appraisal, acquisition, and relocation. 23 CFR 710 provides requirements concerning the ROW operations manual, direct and indirect costs, ROW project agreements, Interstate and NHS air rights, airspace leases and joint use agreements, transfers of excess ROW, early acquisition, protective buying, hardship acquisitions, donations, functional replacements, and Federal land transfers. 23 CFR 750 provides requirements for highway beautification; 23 CFR 751 provides requirements for junkyard control; and 23 CFR 752 has requirements for roadside development.

The Division will conduct regular reviews of specific ROW activities to ensure compliance with Uniform Act requirements. The Division will also conduct process reviews and program evaluations as needed. These will be typically conducted jointly with the NHDOT.

The NHDOT is responsible for ensuring that ROW acquisitions and relocations by local agencies on Federal-aid projects are made in compliance with Federal and State requirements.

The NHDOT and the Division agree to the following roles and responsibilities regarding the listed actions. Typically, 5-7 day review times, after receipt by the Division, should be adequate.

Outdoor Advertising Control
The Highway Beautification Act requires States to provide effective outdoor advertising control along certain Federal-aid highway systems. Prior to MAP-21, these highway systems were the Interstate system, the Federal-aid primary system (as it existed on June 1, 1991), and the National Highway System (NHS). Effective October 1, 2012, MAP-21 Section 1104

amended 23 U.S.C. 103 to incorporate additional routes not previously included in the NHS and created an enhanced NHS. This enhanced NHS is now subject to outdoor advertising control. The penalty for not providing effective control of outdoor advertising remains at 10 percent.

Junkyard Control
Effective October 1, 2012, MAP-21 Section 1404(b) amended 23 U.S.C. 136 to require States to now provide effective junkyard control in areas adjacent to the enhanced NHS. Section 1404(b) also amended 23 USC 136 by reducing the penalty for not providing effective control of junkyards from 10 to 7 percent.

19. SAFETY

Highway Safety Improvement Program (HSIP)
The HSIP is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. States shall fund safety projects or activities that are most likely to achieve fatality and serious injury performance targets.

The program and policy language for implementing the Highway Safety Improvement Program (HSIP) is codified as 23 USC 148, with related policies in 23 CFR 924. Specific provisions related to the Highway Safety Improvement Program (HSIP) are also provided under section 1112 of MAP-21. Each State is required to develop, implement, and evaluate on an annual basis a comprehensive HSIP that has the objective of significantly reducing fatalities and serious injuries resulting from crashes on all public roads. Further guidance on implementing the HSIP is given through various FHWA HSIP program guidance documents.

NHDOT has the responsibility for carrying out the State's HSIP. FHWA exercises its oversight responsibilities through review of the annual program of projects, review of program processes, and review of annual reports, as well as through various approval and acceptance actions in accordance with 23 USC 148, 23 CFR 924 and other guidance as released by FHWA.

NHDOT will maintain a documented process, approved by FHWA, for programming projects that conforms to 23 USC 148 and 23 CFR 924. This documented process will be updated by NHDOT as needed. All changes to this process will be approved by FHWA.

The NHDOT will establish and maintain a multi-disciplined HSIP Steering Committee that includes local representation for the purpose of establishing program guidance and HSIP project selection and prioritization criteria; FHWA will have representation on that committee. The Committee will meet regularly throughout the year and as needed to address issues.

The NHDOT, in cooperation and consultation with FHWA, will establish and maintain an HSIP Guidance document that aligns with Federal regulation and guidance on administering a State HSIP program. The Guidance will include the methodology for establishing HSIP project selection, reevaluation of projects throughout development, and project prioritization. The Guidance will also include the tracking of goals and established measures. This

guidance document will be used by the NHDOT and HSIP Committee in administering the HSIP program of projects.

In addition, NHDOT will provide project analysis/selection information to FHWA for review at the time a Federal-aid Project Agreement for an HSIP funded project is submitted to FHWA and/or during HSIP Committee meetings where projects are to be included in the HSIP program. Oversight of HSIP projects will be determined using risk based criteria determined through cooperative agreement with NHDOT, and as may be determined for any other Federal-aid highway projects as described in other sections of this Agreement.

NHDOT will manage the overall HSIP in accordance with 23 USC 148 and 23 CFR 924. NHDOT will prepare an annual report on the progress made and on the effectiveness of the HSIP. The report will be submitted to FHWA on or before August 31st of each year. The report contents will substantially follow the HSIP Reporting Guidance document developed by FHWA for this program.

Strategic Highway Safety Plan (SHSP)
23 USC 148 states that safety projects funded with HSIP funds must be consistent with the SHSP. NHDOT has met the requirement to develop an SHSP. NHDOT and the SHSP steering committee will evaluate the effectiveness of the SHSP annually using the HSIP reporting process. NHDOT will revise the SHSP every three to five years, or earlier as needed.

As part of the SHSP, safety emphasis areas will be established based on safety data. FHWA and NHDOT will ensure that action plans and strategies are developed and tracked for each emphasis area and where appropriate projects are implemented that will significantly reduce the number of fatal and serious injury highway crashes.

FHWA and NHDOT will ensure that SHSP implementation efforts are developed and tracked for each emphasis area. Through crash and other safety data analysis the SHSP will be utilized to identify, prioritize, and program appropriate highway safety related projects that will correct hazardous road locations, sections, and elements.

Crash Data Systems and Analysis
23 USC Section 148(c) provides that States, as part of their Strategic Highway Safety Plans, shall have crash data systems capable of identifying and determining the relative severity of hazardous locations on all public roads using criteria that the States deem most appropriate. Therefore, NHDOT and FHWA will continue to actively participate in the New Hampshire State Traffic Records Coordinating Committee (TRCC) to assist in the development of comprehensive, statewide safety data systems. NHDOT will assist the TRCC in efforts to improve Statewide system crash data. NHDOT will work with FHWA and other agencies, cities, local municipalities, and State regional planning organizations to develop a process to analyze safety data from all public roads to be included as part of the annual reporting process, by the deadline documented by FHWA. NHDOT and FHWA will actively participate in reviews of traffic records efforts.

23 USC 148 outlines specific requirements for identifying and prioritizing projects. NHDOT will continue to use crash data analysis as the foundation of the HSIP and as a major factor when making funding decisions and allocating resources. Federal-aid Safety funds will be

focused on the most effective treatments at the locations with the greatest needs and potential.

Rail-Highway Crossing Safety
The NHDOT will continue to administer the Rail-Highway Grade Crossing Program per 23 USC 130 and 23 USC 148. The FHWA will review this program in conjunction with the annual HSIP reporting process.

USC Section 130(g) requires each State to submit an annual report to the Secretary of Transportation on the progress being made to implement the railway-highway crossings program, the effectiveness of such improvements, an assessment of the costs of the various treatments employed, and subsequent crash experience at improved locations. MAP-21 Section 148(g) requires States to submit to the Secretary a report that describes how improvements contributed to reducing fatalities and serious injuries at railway-highway crossings, which may be included in the Section 130 report. NHDOT will submit a report(s) annually at the time of the HSIP report submission that meets the above requirements. FHWA will review and take acceptance action on the report(s).

Required Safety Programs – NHDOT and FHWA will maintain a written agreement on how safety will be addressed on 3R and preventive maintenance projects in accordance with FHWA requirements. FHWA will review the use of the safety planning factor as part of our HSIP reviews and MPO certification process. FHWA and NHDOT will perform process improvement reviews of other safety program elements as needed, such as Safe Routes to School, High Risk Rural Roads, design standards, MUTCD compliance, work zones, etc.

Additional Highway Safety-Related Activities:

Safety Considerations in the Statewide and MPO 3C Planning Process
FHWA will review NHDOT and MPO compliance with 23 CFR 450.206 (2) and 23 CFR 450.306 (2) during the MPO certification reviews and HSIP related review and reporting activities.

Section 159 Certification (Drug Offender's Driver's License Suspension)
23 USC 159 and 23 CFR 192 encourage States to enact and enforce drug offender's driver's license suspensions. By January 1 of each year, the Governor shall submit written notification to the FHWA Division Administrator whether the State has enacted and is enforcing a law or whether the State opposes such a law. The NHDOT will coordinate the submission of this certification with the NH Department of Safety to FHWA.

Reports
NHDOT will annually submit required reports on the progress made and on the effectiveness of the highway safety program. These reports are comprised of the HSIP report, and the highway-railway crossing report. All of these reports are to be submitted on or before August 31st of each year.

Process Reviews
The FHWA, with assistance from NHDOT and through the annual FHWA risk assessment, will perform process improvement reviews as needed of the various safety programs.

20. TRAFFIC OPERATIONS

Traffic Control and Standards

The NHDOT will adopt in a timely manner the latest version of the national Manual on Uniform Traffic Control Devices (MUTCD) as required by 23 CFR 655.603 and will submit all NHDOT proposed supplements to the FHWA for approval of substantial conformance with the MUTCD prior to implementation. NHDOT will provide and update traffic control devices on Federal-aid routes to meet the standards of the MUTCD, and approved supplements. NHDOT will develop, implement, and maintain a program acceptable to FHWA for maintaining the minimum retroreflectivity requirements in the MUTCD and for maintaining traffic control devices in an acceptable condition on Federal-aid highways. Projects on Federal-aid highways, as well as those funded with Federal-aid funds, shall only include traffic control devices in compliance with the MUTCD and approved NHDOT supplements.

NHDOT will develop and maintain a policy and guidance on the use of Changeable Message Signs and the messages thereby put on them. The NHDOT policy and guidance shall substantially conform to the MUTCD and associated FHWA policy and guidance. The FHWA will work with the NHDOT on any updates to the policy and guidance and shall concur in any changes made thereto.

Work Zone Safety and Mobility (23 CFR 630 Subpart J)

23 CFR 630 Subpart J provides guidance and establishes requirements for systematically addressing the safety and mobility impacts of work zones, and developing strategies to help manage these impacts on all Federal-aid highway projects through the development of project level Traffic Management Plans (TMP). The NHDOT and FHWA will partner in the development, implementation, and maintenance of policies, procedures, and processes to address work zone impacts both early on and throughout the project delivery process, and to expand work zone planning beyond the project work zone itself to address corridor, network, and regional issues. This effort also includes expanding work zone management beyond traffic safety and control, to encompass broader solutions that address the need for continued mobility during road construction, including operational and public outreach plans on project considered 'Significant' per NHDOT policy.

The NHDOT will maintain a Traffic Control Committee (TCC) for the purpose of administering the Departments work zone safety and mobility program in conformance with 23 CFR 630 Subpart J and K. FHWA will maintain an active presence on the TCC. NHDOT will conduct a process review, at a minimum of every two years, of the Departments work zone safety and mobility procedures as required by and in conformance with 23 CFR 630.1006(e).

NHDOT will participate with appropriate personnel in the FHWA facilitated annual Work Zone Self-Assessment. The Self-Assessment will use the FHWA Work Zone Self-Assessment Tool and results will be reported to FHWA Headquarters office for general analysis with other States, but will not be released to other States.

Temporary Traffic Control Devices (23 CFR 630 Subpart K)
The NHDOT and FHWA will partner in the development and implementation of policies and procedures for the appropriate use of, and expenditure of funds for, uniformed law enforcement officers, positive protective measures between workers and motorized traffic, and installation and maintenance of temporary traffic control devices during construction, utility, and maintenance operations. FHWA will review the NHDOT's policies and procedures, and revision thereto, for conformance with appropriate regulations.

Real-Time System Management Information Program (23 CFR 511)
NHDOT, with participation from public safety agencies, transit operators, and other operating agencies necessary to sustain mobility through the region and/or municipality, will establish a 'Real-time Information Program' as required by 23 CFR 511, by which they will gather and make available data for traffic and travel conditions. The program shall be consistent with the parameters defined under 23 CFR 511.309, 311, and 313.

Traffic Incident Management (TIM)
NHDOT, in partnership with FHWA, will maintain a program to address traffic incidents on major highways in the State for the purpose of reducing the impact of non-recurring delays. NHDOT will partner with NH Department of Safety (State Police), NH Department of Environmental Services, NH Department of Health and Human Services, private towing associations, and others as may be appropriate, and to the extent practical, to establish statewide and regional policies and procedures for safely and quickly clearing highways of such incidents. The NHDOT, FHWA, and other partners will meet on a regular basis to address TIM issues, plan and implement training, and administer post incident reviews as may be desired.

ATTACHMENT F
Projects of Division Interest (PODI) Selection Process

Two-step process

Annually, FHWA and NHDOT will meet in the Fall to review the current list of PoDIs and select additional projects to be designated as PoDIs based FHWA or NHDOT goals and/or have an elevated potential to either pose a risk or present an opportunity to advance key initiatives.

Step 1: Using Table 1 to initially screen projects, FHWA and NHDOT will jointly identify oversight projects based on risk. These projects could also be candidates for Projects of Corporate Interest which are submitted annually for FHWA HQ approval. Please note that PoCIs are a subset of the PoDIs.

Step 2: Document project oversight activities that are deemed higher risk via a concise Project S&O Plan. This step can also verify activities that are of lower risks to the program or individual project (formerly known as Inherently Low Risk Projects).

NHDOT and FHWA staff will also discuss new projects as they become active to determine if they are selected as PoDI. Risk-based projects may not necessarily be what are traditionally known as Full Oversight. A risk-based example could include the selection of locally administered projects or non-NHS projects typically administered by the NHDOT that could be designated as a PoDI for FHWA oversight due to implementation of an EDC innovation. In addition, and most importantly, within that same PoDI, FHWA may only be involved in targeted areas such as PS&E, consultant procurement, etc. Furthermore, the NHDOT may, at any time, invite FHWA to participate on assumed projects.

The provisions of this Agreement do not modify FHWA's non-Title 23 program oversight and project approval responsibilities for activities such as required under the Clean Air Act as amended in 1970; the National Environmental Policy Act of 1969 (NEPA) and other related environmental laws and statutes; the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970; and the Civil Rights Act of 1964 and related statutes, unless expressly permitted by SAFETEA-LU Section 6004 and 6005, and MAP-21. Also, under Title 23, Planning functions cannot be delegated. In addition, since the NHDOT does not have Assumption of Responsibility for Categorical Exclusions, NEPA functions cannot be delegated.

Interstate Projects	New/Reconstruction ≥ $10 million[1]	FHWA	Meet or Exceed AASHTO
	New/Reconstruction < $10 million	State	
	3R & Other	State	
	Turnpike[2]	State	
	EIS Projects[3]	FHWA	
	Major or Unusual Structures	FHWA	
	Lower Risk Projects[1]	State	
Non-Interstate/ NHS Projects	≥$30 million	FHWA	Meet or Exceed AASHTO
	Major or unusual structures	FHWA	
	EIS Projects[3]	FHWA	
	All Others	State	Meet or Exceed AASHTO or FHWA Approved Standards
Non-NHS Projects	Major or unusual structures	FHWA	Meet or Exceed AASHTO or FHWA Approved Standards
	All Others	State	
Bi-State Projects	All projects > $5M with NH as the lead state	FHWA	Meet or Exceed AASHTO
Innovative Project Delivery	Design-Build, PPP, CMGC, or Alternate Technical Concepts, see APP. A section 11	FHWA	Meet or Exceed AASHTO
Direct Recipients	Such as TIGER projects[4]	FHWA	Meet or Exceed AASHTO or FHWA Approved Standards
Special Congressional Programs	All Projects[5]	FHWA	Meet or Exceed AASHTO or FHWA Approved Standards
ITS Projects	Higher Risk ITS Projects	FHWA	FHWA Approved Standards and 23 CFR 940
	Lower Risk (All Others)	State	

*Note: FHWA and NHDOT may agree at any time to select other NHS or non-NHS high priority corridors or portions thereof for FHWA oversight (PoDI), including Federal-aid projects on the Turnpike System.

[1] Section 1503 of MAP-21 and FHWA memo *Interim Revised Guidance on Stewardship and Oversight Agreements, April 2, 2013* eliminated the prohibition on State assumption of responsibilities for new construction and reconstruction projects on the Interstate System exceeding $1 million in cost. The memo also rescinds the inherently low risk oversight projects programmatic agreement.

[2] Interstate Turnpike Projects are defined as projects on Interstate signed toll sections of the NH Turnpike system, including concurrent sections of the Interstate System which are not built with federal funds. The NHDOT agrees to provide FHWA with a set of half sized plans of projects with construction estimates greater than $1M (for informational purposes). NHDOT agrees to notify FHWA if design exceptions are being contemplated for the 13 controlling geometric elements and when Interchange Modifications are planned.

[3] These projects will be reviewed for FHWA oversight, based on risk, for final design and construction pending completion of the Record of Decision.

[4] Once a project is identified, FHWA will discuss oversight roles with NHDOT.

[5] Projects resulting from congressional actions such as the Recovery Act, of high political interests, or community interest.

ATTACHMENT G
PERFORMANCE/COMPLIANCE INDICATORS

This section of the Agreement identifies performance/compliance indicators that will be an integral part of the joint Federal/State stewardship/oversight agreement (See Table below). FHWA and the NHDOT jointly developed a broad set of performance/compliance indicators that both parties will use to gauge the effectiveness of the FAHP. These indicators should be used to track performance trends and to implement countermeasures/actions when the data is not moving in the desired direction. For example, countermeasures may include raising the attention level of the issue, instituting additional data and trend analysis, developing new processes or procedures, initiating additional targeted oversight activities, or implementing additional program review activities. These indicators may be revised and the targets refined more frequently as capabilities mature, asset management plans are developed, and National Performance Management Rules and requirements are advanced.

The NHDOT will generally provide the performance/compliance indicator data to the FHWA on a schedule (TBD), although some indicator data may be provided less frequently, as agreed. The agreed upon performance/compliance indicators are identified in the table below:

ID	Program Area	Indicator	Description	Target
1	Planning	STIP	% of construction projects (including Grouped Projects) listed in the FY baseline Statewide Transportation Improvement Program (STIP) which is advanced (authorized in FMIS).	80%
2	Environment	Environmental Streamlining	Number of NEPA/Environmental Documents Processed	#
			% of Categorical Exclusions Processed	%
			% of Programmatic Categorical Exclusions Processed	%
			% Projects Processed Utilizing the Section 106 Programmatic Agreement	%
3	Right-of-Way (R/W)	Clear R/W Certifications	% of Federal-aid construction projects with clear R/W certifications at time of construction authorization.	100%
4a	Design & Construction	Engineer's Estimate	% of advertised projects > $1million that are within ±10% of the low bid amount at time of contract award.	>50%

ID	Program Area	Indicator	Description	Target
4b		Advertising Schedule	% of Advertised Projects ($ and #) Advertised On Time (within 30 days)	>75%
4c		Project Cost Growth Bid vs. Final Amounts	% Projects with Final Construction Cost within 5% of Construction Bid	>90%
4d		Contract Duration	% of Federal-aid construction projects with work completed by established contract completion date at time of award.	> 95%
4e			Number of days from substantial completion to final voucher	< 1 yr
4f		Change Orders	Average CO's per project	< 5
4g		Project Audits	% Avg dollars difference from Construction Costs vs Engineering Audits (less fuel or asphalt adjustment)	< 5%
4h			Avg Engineering Audit Score of CA records	> 70
5a	Safety & Operations	Roadway Departure Fatality Rate	Roadway departure fatalities per 100 million vehicle miles traveled. (5 year rolling average).	50% reduction by 2030 from 2010 base year
5b		Highway Fatalities	# of highway related fatalities (5 year rolling average)	50% reduction by 2030 from 2010 base year
5c		Motorcycle Crash Fatalities	# of Motorcycle Crash Fatalities per year. (5 year rolling average)	50% reduction by 2030 from 2010 base year
5d		Bike/Ped Fatalities	Number of Bike and Pedestrian fatalities	Less than the National Average
6a	System Preservation	3R & Pavement Preservation	% of Total Program dollars authorized for System Preservation type projects on the Interstate.	TBD

ID	Program Area	Indicator	Description	Target
6b			Ride Comfort Index/IRI for the Interstate	PSR > 3.5
6c			Pavement Condition Surveys completed on the NHS system every year.	(Yes)
6D			Number of lane miles per year receiving a preservation treatment both inclusive and exclusive of crack sealing.	10% of Network
7	Finance	Inactive Obligations	% of obligated but unexpended balance for all inactive projects compared to total annual apportionments.	2%
8a	Civil Rights	DBE Goal	% DBE goal met for all completed Federal-aid construction projects.	5.63%
8b		Program Management	• Number of completed subrecipient Title VI reviews • Number of completed Contract Compliance reviews • Number of graduated OJT Program trainees • Number of completed subrecipient ADA/Section 504 reviews • Number of PROW deficiencies corrected	TBD
9a	Structures	NBIP Compliance	% Full compliance with all 23 NBIP metrics	80%
9b			Element Level inspections on NHS Bridges due for inspection	100%
9c		Red List Bridges	% Structurally Deficient by Deck Area (State)	< 10% of NHS SD
9d			% of Deficient Bridges (State)	< 7%
10	MAP-21 Safety and Operations	Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.	TBD
11	MAP-21 System Preservation	Infrastructure Condition	To maintain the highway infrastructure asset system in a state of good repair	TBD
12a	MAP-21 Planning	Congestion Reduction	To achieve a significant reduction in congestion on the National Highway System	TBD
12b		System Reliability	To improve the efficiency of the surface transportation system. W33	TBD
12c		Freight Movement and Economic Vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development	TBD

ID	Program Area	Indicator	Description	Target
13	MAP-21 Environment	Environmental Sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment	TBD
14	MAP-21 Design and Construction	Reduced Project Delivery Delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.	TBD

ATTACHMENT H
GLOSSARY

3R:	Resurfacing, Rehabilitation, and Restoration	**N/A:**	Not Applicable
4R:	Resurfacing, Rehabilitation, Restoration and Reconstruction	**NBIS:**	National Bridge Inspection Standards
AASHTO:	American Association of State Highway and Transportation Officials	**NEPA:**	National Environmental Policy Act of 1969
A/C	Advance Construction	**NHDOT:**	New Hampshire Department of Transportation
CAP:	Compliance Assessment Program	**NHS:**	National Highway System
CE:	Construction Engineering	**NHTSA:**	National Highway Traffic Safety Administration
CMGC:	Construction Manager/General Contractor	**PE:**	Preliminary Engineering
CPIS:	Continuous Process Improvement Study	**PoCI**	Projects of Corporate Interest
D/B:	Design/Build	**PoDI**	Projects of Division Interest
DBE:	Disadvantaged Business Enterprise Program	**PR/PE:**	Process Review/Product Evaluation
FAHP:	Federal-aid Highway Program	**PS&E:**	Plans, Specifications and Estimate
FHWA:	Federal Highway Administration	**ROW:**	Right-of-Way
FIRE:	Financial Integrity Review and Evaluation Program	**SAFETEA -LU:**	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005
FTA:	Federal Transit Administration	**SHSP**	Strategic Highway Safety Plan
HPMS:	Highway Performance Monitoring System	**SPR:**	Statewide Planning and Research
HSIP:	Highway Safety Improvement Program	**STIP:**	State Transportation Improvement Program
HSP:	Highway Safety Program	**STP:**	Surface Transportation Program
I:	Interstate	**TEA-21:**	Transportation Equity Act for the 21st Century of 1998
IM:	Interstate Maintenance	**TS&L:**	Type, Size, and Location
ISTEA:	Intermodal Surface Transportation Efficiency Act of 1991	**USCFR:**	United States Code of Federal Regulations
ITS:	Intelligent Transportation Systems	**USEPA:**	United States Environmental Protection Agency
LPA:	Local Public Agency	**VE:**	Value Engineering
MAP-21:	Moving Ahead for Progress in the 21st Century of 2012	**VECP:**	Value Engineering Change Proposal
MPO:	Metropolitan Planning Organization		

3R Project – A type of project typically intended to extend the service life of existing highways, bridges, and related appurtenances; and/or restore safe, efficient travel on an existing facility. 3R projects are typically constructed within existing right-of-way, or require only minor acquisitions necessary to enhance safety.

Advanced Construction (A/C) – An authorization technique which allows a State to initiate a project using non-federal funds while preserving eligibility for future Federal-aid funds. Eligibility means that FHWA has determined that the project technically qualifies for Federal-aid; however, no present or future Federal funds are committed to the project. After an advance construction project is authorized, the State may convert the project to regular Federal-aid funding when Federal funds are made available for the project or when additional obligation authority is allocated to it. This can be accomplished as one action, or the project may be partially converted over time. For clarification, FHWA authorization of Advance Construction does not constitute any commitment of Federal funds and the FHWA shall not reimburse the State until the project is converted.

Apportionments - The distribution of funds using a formula provided in law is called an apportionment. An apportionment is usually made on the first day of the Federal fiscal year (October 1) for which the funds are authorized. At that time, the funds are available for obligation by the State in accordance with the State's approved transportation improvement program.

Assumption of Responsibilities – The act of NHDOT to accept responsibility for carrying out and approving certain actions in the place of the FHWA. Such actions are to be taken by the NHDOT in conformance with Federal laws, regulations, and policies.

Assumed Projects – Federal projects that the NHDOT reviews in the place of the FHWA and has the authority to approve certain specified actions pertaining to design; plans, specifications, and estimates; contract awards; and inspections. (formerly known as Exempt or Delegated)

Authorization – Also known as Project Agreement per 23 CFR 630.108. Approval by the FHWA to the State Highway Department to proceed with the project or program, and thereby obligating federal funds. FHWA authorizes all federal funds regardless of oversight responsibilities. This typically occurs through a Fiscal Management Information System (FMIS) transaction. Care should be taken as 23 CFR 1.9 states "Federal funds shall not be paid on account of any cost incurred prior to authorization".

The NHDOT and its subrecipients must obtain approval and authorization to proceed prior to beginning work on activities to be undertaken with federal funds. Authorization to proceed with the FHWA funded work in whole or in part is a contractual obligation of the Federal Government.

The Federal-aid share of eligible project costs shall be established at the time the project agreement is executed as Pro-rata or Lump Sum. The pro-rata or lump sum share may be adjusted before or shortly after contract award to reflect any substantive change in the bids received as compared to the NHDOT's estimated cost at the time of authorization.

Betterment (Emergency Relief Program) – With respect to Emergency Relief projects, a betterment is defined as: (i) added protective features or upgrades to existing features, such as the rebuilding of roadways at a higher elevation, the lengthening of bridges, and increasing the size of

a drainage structure, or (ii) changes which modify the function or character of a highway facility from what existed prior to the disaster or catastrophic failure, such as additional lanes or added access control.

Certification Reviews – A review that formalizes the continuing oversight and day-to-day evaluation of the planning process.

Change Order – An order covering changes in the plans or quantities or both, within the scope of the contract, and establishing the basis of payment and time adjustments for the work affected by the changes.

Compliance Assessment Program (CAP) – The CAP uses a statistical approach to establish minimum compliance review requirements for Federal-aid highway project inspections. The CAP replaces the current requirement to conduct reviews on 10% of "delegated" active construction projects.

Construction Engineering – For funding purposes, the phase of a project following the Preliminary Engineering phase that begins at the time of Construction Award through project completion.

Construction Manager/General Contractor (CMGC) – An innovative procurement delivery method in which the owner of a project contracts with a general contractor to serve as the construction manager by providing the owner with constructability, pricing, and scheduling information during the design process. As the design nears completion, if the owner and the construction manager are able to agree on a price for construction, they sign a construction contract and the construction manager then becomes the general contractor. CM/GC allows NHDOTs to remain active in the design process while assigning risks to the parties most able to mitigate them.

Control Document – Applicable laws, regulations, standards, policies, and standard specifications approved by FHWA for use on Federal-aid highway projects.

Core Functions – Activities that make up the primary elements of the division office's Federal-aid oversight responsibilities based on regulations and national policies. Core functions in the division office are Planning, Environment, Right-of-Way, Design, Construction, Finance, Operations, System Preservation, Safety, and Civil Rights.

Design-Build (D/B) – An innovative procurement delivery method in which the designer-builder assumes responsibility for the majority of the design work and all construction activities. This provides the designer-builder with increased flexibility to be innovative, along with greater responsibility and risk.

Locally Administered Projects – For the purpose of the S&O Agreement, a Federal-aid project in which an entity other than a traditional NHDOT is a sub-recipient and this entity is administering the particular phase being authorized, i.e., Preliminary Engineering, ROW, or Construction. These would include projects where the non-traditional entity will either perform the work itself or enter into a contract for services or construction. NHDOT remains responsible for the local public agency's compliance on locally administered projects.

Local Public Agency (LPA) – Any organization, other than a traditional NHDOT, with administrative or functional responsibilities that are directly or indirectly affiliated with a governmental body of any Tribal Nation, State, or local jurisdiction. LPAs would most often include cities or counties. However, an LPA, as defined here, could also include a State entity as well, perhaps even a part of a NHDOT. An example could include a Port Authority or Toll Authority that had not traditionally worked with the Federal-aid highway program (FAHP).

Major ITS Projects – Any ITS project that implements part of a regional ITS initiative that is multi-jurisdictional, multi-modal, or otherwise affects regional integration of ITS systems.

Major Projects – Projects with an estimated total cost greater than $500 million (in year of expenditure dollars), or projects approaching $500 million with a high level of interest by the public, Congress, or the Administration. The NEPA decision for each project or program of projects, defines the project scope, limits, and cost for each project.

Major or Unusual Structure – A major or unusual structure involves difficult or unique foundations, longer than usual spans, or design practices that depart from current practice. Examples include segmental concrete, arch, suspension, cable stayed, movable, and bridges with individual spans exceeding 500'.

National Highway System (NHS) - The National Highway System, as defined in 23 CFR 470 which includes the Interstate Highway System.

New or Reconstruction (4R) Project – A type of highway-oriented project that is designed to add capacity, modify and/or create new access points, reconstruct existing pavements and structures, or create new facilities on new location. 4R (resurfacing, rehabilitation, restoration and reconstruction) work includes the placement of additional surface material and other work necessary to return an existing roadway to a condition of structural or functional adequacy. This may include improving geometric features such as flattening curves, improving sight distance and minor roadway and/or shoulder widening.

Obligation - An obligation is a commitment. The Federal government's promise to pay a State for the Federal share of a project's eligible cost. This commitment occurs when the project is approved and the project agreement is executed. Obligation is a key step in financing. Obligated funds are considered "used" even though no cash is transferred.

Oversight – The act of ensuring that the FAHP is delivered consistent with laws, regulations, and policies.

Performance/Compliance Indicators – These indicators track performance trends, health of the Federal-aid Highway Program, and compliance with Federal requirements.

Preliminary Design - defines the general project location and design concepts. It includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design. Prior to completion

of the NEPA review process, any such preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the NEPA review process

Preliminary Engineering – For funding purposes, preliminary engineering is defined as the phase of a project beginning with project initiation through award of the construction contract.

Preservation Projects – Projects employing planned, cost effective strategies to an existing roadway system and its appurtenances that preserve the system, retards future deterioration, and maintains or improves the functional condition of the system without increasing structural capacity.

Program Assessments – This evaluation technique may take many forms, including joint risk assessments and self-assessments. These tools are based on the common concepts of identifying strengths, weaknesses, and opportunities and the identification and sharing of "best" practices to continually improve the program.

Program Reviews – A thorough analysis of key program components and the processes employed by the NHDOT in managing the program. The reviews are conducted to: 1) ensure compliance with Federal requirements; 2) identify areas in need of improvement; 3) identify opportunities for greater efficiencies and cost improvement to the program; and/or 4) identify exemplary practices.

Programmatic Categorical Exclusion (PCE) – Projects which fall under the NHDOT/FHWA PCE Agreement whereby FHWA concurs in advance with the classification of those types of Categorical Exclusions (CEs), identified in 23 CFR Part 771.117(d) with no environmental impacts.

Programmed – Federal-aid and other regionally significant projects and their funding sources are listed in the STIP, and also the Metropolitan Planning Organization (MPO) TIP and long-range transportation plan for projects located in metropolitan urbanized areas. A project is programmed when it is included in such documentation, and this programming is required for transportation projects to be eligible for funding under Title 23 USC and Title 49 USC Chapter 53.

Project – The scope of the project is defined in the Record of Decision (ROD), Finding of No Significant Impact (FONSI), or Categorical Exclusion document (CE), and includes all work and phases associated with implementing the project. Multiple contracts developed for bidding by the Owner for contract administration purposes or due to funding shortfalls are generally not considered to be operationally independent. The termini for a "project" shall be as defined in the NEPA document. It is understood in the case of large NEPA corridors that the corridor may be split into smaller projects for construction. These are termed "construction projects".

Projects of Corporate Interest (PoCI) – PoCIs are projects that are identified by program offices and/or Division Offices that require additional resources at a corporate level because of their impact on FHWA's strategic success. They will receive focused, strategic, agency-wide attention, and an increased level of S&O.

Projects of Division Interest (PoDIs) – PoDIs are those projects that have an elevated risk, contain elements of higher risk, or present a meaningful opportunity for FHWA involvement to enhance meeting project objectives. For PoDIs, FHWA has made a risk-based decision to retain

project approval actions or conduct stewardship and oversight activities for the project as provided for in 23 USC 106.

Reconstruction – Projects that rebuild infrastructure, such as a bridge or section of roadway, in or close to current location.

Recurring Reviews – Reviews that the division office conducts annually or on a regular periodic basis. Examples include NBIS, HPMS, HVUT, etc.

Responsible Charge – Administers inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality, and scope of Federal-aid projects; makes or participated in decisions on change orders, contract modifications, etc.; maintains a current awareness of the project conditions, and is held accountable for completion of all aspects of the federal-aid project. The persons or persons in responsible charge must be a full time employee of the contracting agency. For NHDOT administered projects, this person must also be an engineer.

Right-of-Way - Real property and rights therein used for the construction, operation, or maintenance of a transportation or related facility funded under title 23 of the United States Code.

Risk Assessment – The process of identifying a risk event, determining the likelihood of the event happening, determining the impact (positive or negative) of the event on the delivery of the FAHP, and identifying an appropriate risk response strategy.

Risk-Based Approach – Incorporating risk assessment and risk management into investment and strategic decision making (the means by which limited resources are focused).

Risk Management – The systematic identification, assessment, planning, and management of threats and opportunities faced by FHWA projects and programs.

Scope Change - a programmatic change in the work to be performed under a grant or cooperative agreement that is outside the range of work contemplated at the time of award.

Statewide Transportation Improvement Program (STIP) – A statewide prioritized listing/program of transportation projects covering a period of four years that is consistent with the long-range statewide transportation plan, metropolitan transportation plans, and Transportation Improvement Programs (TIPs), and required for projects to be eligible for funding under Title 23 USC and Title 49 USC Chapter 53. Projects are typically listed by phase (Preliminary Engineering (P), Right of Way (R), or Construction (C), and are programmed with a dollar amount and a fiscal year. Preliminary Engineering can include environmental analysis and classification work under NEPA, as well as PS&E, preliminary, and final design work. Planning activities that are funded with formula-based Statewide Planning and Research (SPR) or metropolitan planning funds, such as PL or 5303 dollars, are also programmed via New Hampshire's SPR Program or MPO Unified Planning Work Programs (UPWP) documents. Planning funding or planning activities that receive other/discretionary Title 23 or Title 49 authorized funds are programmed as Preliminary Engineering phase work in the STIP.

Stewardship – The efficient and effective management of the public funds that have been entrusted to the FHWA.

Supplemental Agreement – A written agreement between the Contractor and the Engineer for the performance of work by the Contractor at agreed prices under items not originally included in the contract.

Value Engineering – The systematic application of recognized techniques by a multi-disciplined team to identify the function of a product or service, establish a worth for that function, generate alternatives through the use of creative thinking, and provide the needed functions to accomplish the original purpose of the project, reliably, and at the lowest life-cycle cost, without sacrificing safety, necessary quality, and environmental attributes of the project.

Value Engineering Change Proposal (VECP) Clause – This is a construction contract provision which encourages the contractor to propose changes in the contract requirements which will accomplish the project's functional requirements at less cost or improve value or service at no increase or a minor increase in cost. The net savings of each proposal is usually shared with the contractor at a stated reasonable rate.

Unit Performance Plan – The annual performance plan prepared by an individual FHWA unit that address unit responsibilities and priorities taking into account the National Performance Objectives and National Initiatives identified in the FHWA's Strategic Implementation Plan (SIP) as well as specific initiatives identified at the unit level based on risk.

EXHIBIT G

TIFIA DEBT SERVICE

EXHIBIT H-1

OPINIONS REQUIRED OF COUNSEL TO BORROWER

An opinion of the counsel of the Borrower, dated as of the Effective Date, to the effect that: (a) the Borrower is a state; (b) the Borrower has all requisite power and authority to conduct its business and to execute and deliver, and to perform its obligations under the Related Documents to which it is a party; (c) the execution and delivery by the Borrower of, and the performance of its respective obligations under, the Related Documents to which it is a party, have been duly authorized by all necessary governmental or regulatory action; (d) the Borrower has duly executed and delivered each Related Document to which it is a party and each such Related Document constitutes the legal, valid and binding obligation of the Borrower; enforceable against the Borrower in accordance with their respective terms; (e) no authorization, consent, or other approval of, or registration, declaration or other filing with any governmental authority of the United States of America or of the State is required on the part of the Borrower for the execution and delivery by the Borrower of, and the performance of the Borrower under, any Related Document to which it is a party other than authorizations, consents, approvals, registrations, declarations and filings that have already been timely obtained or made by the Borrower; (f) the Road Toll Act authorizes the assignment and pledge of the Pledged Revenues to secure the payment of the principal of, interest on, and other amounts payable in respect of, the TIFIA Bond, (g) the execution and delivery by the Borrower of, and compliance with the provisions of, the Related Documents to which it is a party, in each case, do not (1) violate the law of the United States of America or of the State or (2) conflict with or constitute a breach of or default under any material agreement or other instrument known to such counsel to which the Borrower is a party, or to the best of such counsel's knowledge, after reasonable review, any court order, consent decree, statute, rule, regulation or any other law to which the Borrower is subject; (h) the Borrower is not an investment company required to register under the Investment Company Act of 1940, as amended; and (i) to our knowledge after due inquiry, there are no actions, suits, proceedings or investigations against the Borrower by or before any court, arbitrator or any other Governmental Authority in connection with the Related Documents or the Project that are pending.

EXHIBIT H-2

OPINIONS REQUIRED FROM BOND COUNSEL

An opinion of bond counsel, dated as of the Effective Date, to the effect that: (a) the Resolution has been duly adopted by the Borrower in compliance with all Organizational Documents and in accordance with all applicable laws; (b) the TIFIA Bond has been duly authorized, executed, and delivered by the Borrower in accordance with all applicable laws (c) each of the TIFIA Bond and the Resolution, is in full force and effect and constitutes the legal, valid, and binding obligation of the Borrower, enforceable, under the laws of the State, in accordance with its respective terms and conditions without any further action by the Borrower or any other Person; (d) the TIFIA Bond is a general obligation of the State and the full faith and credit of the State is pledged for the payment of TIFIA Debt Service and, subject to appropriation by the State, other obligations under the TIFIA Loan Agreement; (e) the TIFIA Bond is further secured by the Pledged Revenues to pay the TIFIA Debt Service and other obligations under the TIFIA Loan Agreement; (f) the TIFIA Loan Agreement creates the valid and binding assignment and pledge of the Pledged Revenues to secure the payment of the principal of, interest on, and other amounts payable in respect of, the TIFIA Bond, irrespective of whether any party has notice of the pledge and without the need for any physical delivery, recordation, filing or further act; (g) all actions by the Borrower that are required for the use of Pledged Revenues as required under the Resolution and under the TIFIA Loan Agreement have been duly and lawfully made; (h) the Borrower has complied with the requirements of the laws of the State to lawfully pledge and use the Pledged Revenues as required by the terms of the Resolution and the TIFIA Loan Agreement; (i) the Borrower is not eligible to be a debtor in either a voluntary or involuntary case under the United States Bankruptcy Code; and (j) as provided in NH Revised Statutes §491:8, the Superior Court of the State of New Hampshire has jurisdiction to enter a judgment against the Borrower founded upon any express or implied contract, including the TIFIA Loan Agreement or the TIFIA Bond; any judgment against the Borrower may require a legislative appropriation.

EXHIBIT I

[RESERVED]

EXHIBIT J
FORM OF BORROWER'S OFFICER'S CERTIFICATE

Reference is made to that certain TIFIA Loan Agreement, dated as of May ___, 2016 (the "TIFIA Loan Agreement"), by and between State of New Hampshire (the "**Borrower**"), acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation and the United States Department of Transportation, acting by and through the Federal Highway Administrator (the "TIFIA Lender"). Capitalized terms used in this certificate and not defined shall have the respective meanings ascribed to such terms in the TIFIA Loan Agreement.

1. The undersigned, William F. Dwyer, State Treasurer, and Victoria F. Sheehan, Commissioner of Department of Transportation, as Borrower's Authorized Representatives, do hereby certify on behalf of the Borrower and not in our personal capacity, as of the date hereof:

   (a) pursuant to Section 13(a)(ii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, attached hereto as Exhibit A are complete and fully executed copies of each Resolution Document that has been adopted or entered into on or prior to the Effective Date, together with all amendments or supplements thereto, if any. No such document has been subsequently modified, rescinded or amended. Each such Resolution Document is in full force and effect and the attached are the only resolutions adopted or agreements entered into by the Borrower relating to the matters described therein. All conditions contained in such documents to the closing of the transactions contemplated thereby have been fulfilled or effectively waived by the TIFIA Lender in its sole discretion;

   (b) pursuant to Section 13(a)(vii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, attached hereto as Exhibit B is an incumbency certificate that lists all persons, together with their positions and specimen signatures, who are duly authorized by the Borrower to execute the Related Documents to which the Borrower is or will be a party, and who have been appointed a Borrower's Authorized Representative in accordance with Section 26 (*Borrower's Authorized Representative*) of the TIFIA Loan Agreement;

   (c) pursuant to Section 13(a)(x) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, the Borrower has provided to the TIFIA Lender or the FHWA Division Office, complete and fully executed copies of each Principal Project Contract, together with all amendments, waivers or modifications thereto, in each case that has been entered into on or prior to the Effective Date. Each such agreement is in full force and effect and in form and substance satisfactory to the TIFIA Lender, and has not been amended, amended and restated, modified or supplemented since the date of the last amendment, modification or supplement thereto shown on such documents, as provided to the TIFIA Lender or the FHWA Division Office except as listed below and attached hereto as part of Exhibit C;

(d) pursuant to Section 13(a)(xi) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, the Borrower has obtained all Governmental Approvals necessary to commence construction of the Project and each such Governmental Approval is final, non-appealable and in full force and effect (and is not subject to any notice of violation, breach or revocation);

(e) pursuant to Section 13(a)(xii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, attached hereto as Exhibit D is the Base Case Financial Model, which Base Case Financial Model demonstrates that projected Pledged Revenues are sufficient to meet the Loan Amortization Schedule;

(f) pursuant to Section 13(a)(xiii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, (i) the Borrower is authorized, under the Road Toll Act, to pledge, assign, and grant the Liens on the Pledged Revenues purported to be pledged, assigned, and granted pursuant to the TIFIA Loan Documents, without the need for notice to any Person, physical delivery, recordation, filing or further act, and (ii) the Borrower has (A) recorded or filed, or caused to be recorded or filed, for record in such manner and in such places as are required all documents and instruments, and taken or caused to be taken all other actions, as are necessary or desirable to establish and enforce the TIFIA Lender's Lien on the Pledged Revenues to the extent contemplated by the Resolution Documents, and (B) paid, or caused to be paid, all taxes and filing fees that are due and payable in connection with the execution, delivery or recordation of any Resolution Documents or any instruments, certificates or financing statements in connection with the foregoing;

(g) pursuant to Section 13(a)(xv) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, attached hereto as Exhibit E is a true, correct and complete copy of the final NEPA Determination, which document has not been revoked or amended on or prior to the date hereof;

(h) pursuant to Section 13(a)(xvii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, (i) the Borrower's Federal Employer Identification Number is 02-6000618 and attached hereto as Exhibit F-1 is evidence thereof, (ii) the Borrower's Data Universal Numbering System number is 066760232, (iii) NHDOT's Data Universal Numbering System number is 808591697, and (iv) NHDOT has registered with, and obtained confirmation of active registration status from, the federal System for Award Management (www.SAM.gov), and attached hereto as Exhibit F-2 is evidence of each of (ii), (iii) and (iv);

(i) pursuant to Section 13(a)(xviii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, the insurance required pursuant to Section 16(f) (*Insurance*) of the TIFIA Loan Agreement is in full force and effect and such insurance complies with the requirements thereof;

(j) pursuant to Section 13(a)(xix) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement; the Borrower has full power, authority and legal right to

own its properties and carry on its business and governmental functions as now conducted, levy and collect the Pledged Revenues and pledge the full faith and credit of the State. Attached hereto as Exhibit G is a copy of the Authorizing Legislation, as in effect on the Effective Date, certified by the Secretary of State of the State, which Authorizing Legislation is in full force and effect and has not been amended since the date of the last amendment thereto shown on the certificate;

(k) pursuant to Section 13 (a)(xxi) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, the Borrower has provided to the TIFIA Lender or the FHWA Division Office complete and fully executed copies of each Performance Security Instrument delivered to or by the Borrower or NHDOT pursuant to any Principal Project Contract as of the Effective Date, each of which is in compliance with the requirements for performance security pursuant to the applicable Principal Project Contract;

(l) pursuant to Section 13 (a)(xxii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, the representations and warranties of the Borrower set forth in the TIFIA Loan Agreement and in each other Related Document to which the Borrower is a party are true and correct on and as of the date hereof, except to the extent that such representations and warranties expressly relate to an earlier date, in which case such representations and warranties were true and correct as of such earlier date; and

(m) pursuant to Section 13 (a)(xxiii) (*Conditions Precedent to Effectiveness*) of the TIFIA Loan Agreement, (i) the maximum principal amount of the TIFIA Loan (excluding any interest that is capitalized in accordance with the terms thereof), together with the amount of any other credit assistance provided under the Act to the Borrower, does not exceed thirty-three percent (33%) of reasonably anticipated Eligible Project Costs and (ii) as required pursuant to § 603(b)(9) of the Act, the total federal assistance provided to the Project, including the maximum principal amount of the TIFIA Loan (excluding any interest that is capitalized in accordance with the terms hereof), does not exceed eighty percent (80%) of Eligible Project Costs.

IN WITNESS WHEREOF, the undersigned have executed this certificate as of the date first mentioned above.

(SEAL)

STATE OF NEW HAMPSHIRE, acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation

By: _____
Name: William F. Dwyer
Title: State Treasurer

By: _____
Name: Victoria F. Sheehan
Title: Commissioner of the Department of Transportation

ATTEST:

_____
Secretary of State

Exhibit A
(Exhibit J Form of Borrower's Officer's Certificate)

The Governor and Council hereby certify that the attached resolutions were adopted at their meeting on May 18, 2016.

_____
Governor

_____
Councilor

_____
Councilor

_____
Councilor

_____
Councilor

_____
Councilor

A true copy

Attest:

_____
Secretary of State

Resolved: that the State Treasurer, upon request of the Commissioner of the Department of Transportation (the "Commissioner") is hereby authorized, pursuant to and in accordance with RSA 6-A and RSA 6:13-d, to borrow up to $200,000,000 on behalf of the State to provide funds for the improvement of Interstate 93 from Salem, New Hampshire to Manchester, New Hampshire.

Further Resolved: that the Commissioner and the State Treasurer, on behalf of the State, are hereby authorized pursuant to RSA 6:13-d, I, to execute, deliver and perform under the TIFIA Loan Agreement (the "TIFIA Loan Agreement") between the State of New Hampshire and the United States Department of Transportation (the "TIFIA Lender"), and in connection therewith, the State Treasurer is hereby further authorized to issue to the TIFIA Lender, on behalf of the State, the TIFIA Bond attached to the TIFIA Loan Agreement as Exhibit A (the "TIFIA Bond"), in each case in substantially the form presented to this meeting, with such changes as the Commissioner and the State Treasurer shall determine to be necessary and desirable and in the best interests of the State, and the execution thereof pursuant to this resolution shall constitute conclusive evidence of the approval thereof by the Commissioner and the State Treasurer, on behalf of the State, and the approval thereof by the Governor and Council thereof.

Further Resolved: that the Commissioner and the State Treasurer, on behalf of the State, are hereby further authorized pursuant to RSA 6:13-d, I, in order to secure the State's payment obligations under the TIFIA Loan Agreement, to pledge the Pledged Revenues, as defined in the TIFIA Loan Agreement, for the benefit of the TIFIA Lender, which pledge shall be evidenced in the TIFIA Loan Agreement and, at any time and from time to time upon the request of the TIFIA Lender, the Commissioner and the State Treasurer, on behalf of the State, are further authorized to give, execute, deliver, file and record any notice, statement, document, agreement, certificate or other instrument as the TIFIA Lender may reasonably request in order to effect fully the creation, preservation or validation of the lien on and security interest of the TIFIA Lender in the Pledged Revenues, and the execution of the TIFIA Loan Agreement shall constitute conclusive evidence of the approval of the pledge by the Commissioner and the State Treasurer, on behalf of the State, and the approval of the pledge by the Governor and Council.

Further Resolved: that the Commissioner and the State Treasurer are hereby further authorized and directed to do all acts and things, and to execute and deliver any and all documents, certificates and other instruments necessary or desirable to effectuate the transactions set forth in the TIFIA Loan Agreement and contemplated by this resolution for the full, punctual and complete performance of all terms, covenants and agreements contained in this resolution, the TIFIA Bond and the TIFIA Loan Agreement, in each such case on behalf of the State.

EXHIBIT B TO EXHIBIT J

INCUMBENCY CERTIFICATE

The undersigned certifies that he is the Secretary of State of the State of New Hampshire and as such he is authorized to execute this certificate and further certifies that the following persons have been elected or appointed, are qualified, and are now acting as officers or authorized persons of the State of New Hampshire (the "Borrower") in the capacity or capacities indicated below, and that the signatures set forth opposite their respective names are their true and genuine signatures. He further certifies that any of the officers listed below is authorized to sign agreements and give written instructions with regard to any matters pertaining to the TIFIA Loan Documents as the Borrower's Authorized Representative (each as defined in that certain TIFIA Loan Agreement, dated as of the date hereof, between the Borrower, acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation and the United States Department of Transportation, acting by and through the Federal Highway Administrator):

Name	Title	Signature
William F. Dwyer	State Treasurer	_____
Victoria F. Sheehan	Commissioner of the Department of Transportation	_____
William J. Cass	Assistant Commissioner of the Department of Transportation	_____
Christopher M. Waszczuk	Deputy Commissioner of the Department of Transportation	_____
Rachel K. Miller	Chief Deputy State Treasurer	_____
Marie A. Mullen	Director of Finance of the Department of Transportation	_____
Leonard L. Russell	Financial Reporting Administrator II of the Department of Transportation	_____
Richard M. Bowen	Assistant State Treasurer	_____

IN WITNESS WHEREOF, the undersigned has executed this certificate as of this May day of ____, 2016.

STATE OF NEW HAMPSHIRE

By: _____
Name: William M. Gardner
Title: Secretary of State of the State of New Hampshire

Interstate I-93 Improvements Project

Detailed TIFIA Debt Service Cash Flows

Exhibit D (Exhibit J Form of Borrower's Officer's Certificate)

Federal Fiscal Year	Day Count	Date	TIFIA Starting Balance	TIFIA Draws	Interest* 1.1000%	Balance Repayment	Total DS	Annual DS	TIFIA Ending Balance	TIFIA Issuance/ Ongoing Costs	$0.042 Dedicated Road Toll (NHFY)	Municipal Block Grant Aid	Remaining Toll Revenue	TIFIA Payment	Remaining Toll Revenue	GO Credit Support	State Aid for Municipal Bridges	DOT Operating Budget	TIFIA Pledged Paving and Bridge Repair
2016	366	5/24/2016								300,000	34,425,781	4,118,110	30,307,671	300,000	30,007,671	-	6,800,000	8,300,000	14,907,671
2017	366	12/1/2016	-	25,235,033	69,831	-	69,831		25,235,033										
2017	365	6/1/2017	25,235,033	19,829,984	199,198	-	199,198	269,029	45,065,017	15,000	34,425,781	4,131,094	30,294,687	284,029	30,010,658	-	6,800,000	8,300,000	14,910,658
2018	365	12/1/2017	45,065,017	31,815,304	335,167	-	335,167		76,880,321										
2018	365	6/1/2018	76,880,321	20,023,168	483,261	-	483,261	818,427	96,903,489	15,000	34,369,939	4,131,094	30,238,845	833,427	29,405,418	-	6,800,000	-	22,605,418
2019	365	12/1/2018	96,903,489	31,982,267	621,798	-	621,798		128,885,756										
2019	365	6/1/2019	128,885,756	19,728,009	767,514	-	767,514	1,389,312	148,613,766	15,000	34,369,837	4,124,393	30,245,444	1,404,312	28,841,132	-	6,800,000	-	22,041,132
2020	365	12/1/2019	148,613,766	28,705,496	904,470	-	904,470		177,319,262										
2020	366	6/1/2020	177,319,262	9,818,944	1,005,423	-	1,005,423	1,909,893	187,138,206	15,000	34,369,736	4,124,380	30,245,356	1,924,893	28,320,462	-	6,800,000	-	21,520,462
2021	366	12/1/2020	187,138,206	12,861,794	1,070,802	-	1,070,802		200,000,000										
2021	365	6/1/2021	200,000,000	-	1,096,986	-	1,096,986	2,167,789	200,000,000	15,000	34,369,635	4,124,368	30,245,267	2,182,789	28,062,478	-	6,800,000	-	21,262,478
2022	365	12/1/2021	200,000,000	-	1,103,014	-	1,103,014		200,000,000										
2022	365	6/1/2022	200,000,000	-	1,096,986	-	1,096,986	2,200,000	200,000,000	15,000	34,369,533	4,124,356	30,245,177	2,215,000	28,030,177	-	6,800,000	-	21,230,177
2023	365	12/1/2022	200,000,000	-	1,103,014	-	1,103,014		200,000,000										
2023	365	6/1/2023	200,000,000	-	1,096,986	-	1,096,986	2,200,000	200,000,000	15,000	34,369,432	4,124,344	30,245,088	2,215,000	28,030,088	-	6,800,000	-	21,230,088
2024	365	12/1/2023	200,000,000	-	1,103,014	-	1,103,014		200,000,000										
2024	366	6/1/2024	200,000,000	-	1,100,000	-	1,100,000	2,203,014	200,000,000	15,000	34,369,330	4,124,332	30,244,998	2,218,014	28,026,984	-	6,800,000	-	21,226,984
2025	366	12/1/2024	200,000,000	-	1,100,000	-	1,100,000		200,000,000										
2025	365	6/1/2025	200,000,000	-	1,096,986	-	1,096,986	2,196,986	200,000,000	15,000	34,369,229	4,124,320	30,244,909	2,211,986	28,032,923	-	6,800,000	-	21,232,923
2026	365	12/1/2025	200,000,000	-	1,103,014	10,597,781	11,700,795		189,402,219										
2026	365	6/1/2026	189,402,219	-	1,038,858	10,661,937	11,700,795	23,401,589	178,740,282	15,000	34,369,128	4,124,307	30,244,821	23,416,589	6,828,231	-	6,828,231	-	-
2027	365	12/1/2026	178,740,282	-	985,765	10,715,030	11,700,795		168,025,253										
2027	365	6/1/2027	168,025,253	-	921,607	10,779,188	11,700,795	23,401,589	157,246,065	15,000	34,369,026	4,124,295	30,244,731	23,416,589	6,828,141	-	6,828,141	-	-
2028	365	12/1/2027	157,246,065	-	867,223	10,833,572	11,700,795		146,412,493										
2028	366	6/1/2028	146,412,493	-	805,269	10,895,526	11,700,795	23,401,589	135,516,967	15,000	34,368,925	4,124,283	30,244,642	23,416,589	6,828,052	-	6,828,052	-	-
2029	366	12/1/2028	135,516,967	-	745,343	10,955,451	11,700,795		124,561,516										
2029	365	6/1/2029	124,561,516	-	683,211	11,017,583	11,700,795	23,401,589	113,543,932	15,000	34,368,824	4,124,271	30,244,553	23,416,589	6,827,964	-	6,827,964	-	-
2030	365	12/1/2029	113,543,932	-	626,203	11,074,592	11,700,795		102,469,340										
2030	365	6/1/2030	102,469,340	-	562,037	11,138,757	11,700,795	23,401,589	91,330,583	15,000	34,368,722	4,124,259	30,244,463	23,416,589	6,827,874	-	6,827,874	-	-
2031	365	12/1/2030	91,330,583	-	503,694	11,197,100	11,700,795		80,133,482										
2031	365	6/1/2031	80,133,482	-	439,527	11,261,268	11,700,795	23,401,589	68,872,214	15,000	34,368,621	4,124,247	30,244,374	23,416,589	6,827,785	-	6,827,785	-	-
2032	365	12/1/2031	68,872,214	-	379,835	11,320,960	11,700,795		57,551,255										
2032	366	6/1/2032	57,551,255	-	316,532	11,384,263	11,700,795	23,401,589	46,166,992	15,000	34,368,519	4,124,235	30,244,284	23,416,589	6,827,695	-	6,827,695	-	-
2033	366	12/1/2032	46,166,992	-	253,918	11,446,876	11,700,795		34,720,116										
2033	365	6/1/2033	34,720,116	-	190,437	11,510,357	11,700,795	23,401,589	23,209,758	15,000	34,368,418	4,124,222	30,244,196	23,416,589	6,827,606	-	6,827,606	-	-
2034	365	12/1/2033	23,209,758	-	124,003	11,572,791	11,700,795		11,636,967										
2034	365	6/1/2034	11,636,967	-	63,828	11,636,967	11,700,795	23,401,590	-	15,000	34,368,317	4,124,210	30,244,107	23,416,590	6,827,517	-	6,827,517	-	-
2035	365	12/1/2034	-	-	-	-	-		-										
2035	365	6/1/2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	365	12/1/2035	-	-	-	-	-		-										
2036	366	6/1/2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total				200,000,000	25,968,756	200,000,000	225,968,756	225,968,756		570,000	653,126,733	78,369,120	574,757,613	226,538,756	348,218,857	-	129,450,865	16,600,000	202,167,991

* Interest is paid as it comes due, without capitalization.

Exhibit E
(Exhibit J Form ...

FHWA-NH-EIS-02-01-FS

Final Supplemental Environmental Impact Statement and Reevaluation/Section 4(f) Evaluation

Interstate 93 Improvements Salem to Manchester IM-IR-93-1(174)0, 10418-C

I-93
salem to manchester

New Hampshire Department of Transportation and Federal Highway Administration

New Hampshire DOT

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

May 2010

FHWA-NH-EIS-02-01-FS

Salem-Manchester
IM-IR 93-1(174)0
10418-C
Interstate 93 Improvements
Hillsborough and Rockingham Counties, New Hampshire

Final
Supplemental Environmental Impact Statement and Reevaluation/Section 4(f) Evaluation

Submitted Pursuant to 42 U.S.C. 4332 (2)(c) and
49 U.S.C. 303, 16 U.S.C. 470(f), 33 U.S.C. 1344
by the
U.S. Department of Transportation,
Federal Highway Administration
and
New Hampshire Department of Transportation

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

Mr. Jamie Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
(603) 228-3057, x107
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, New Hampshire 03302
(603) 271-2171
PStamnas@dot.state.nh.us

Abstract: The proposed project involves a 19.8-mile segment of Interstate 93 (I-93) from the Massachusetts/New Hampshire state line northward through the Towns of Salem, Windham, Derry, and Londonderry, and ending at the I-93/I-293 interchange in the City of Manchester. The purpose of the project is to increase transportation efficiency within the corridor by reducing congestion and enhancing safety. The proposed project involves widening I-93 from the existing limited access two-lane highway in each direction to a limited access four-lane highway in each direction. Five existing interchanges and cross roads within the project corridor will be reconstructed. The project also includes new park-and-ride facilities, bus service, and ride-sharing opportunities to Boston and Northern Massachusetts.

This Final Supplemental Environmental Impact Statement (FSEIS) and reevaluation serves as a supplement to the April 2004 Interstate 93 Improvements Salem to Manchester Final Environmental Impact Statement (2004 FEIS) (FHWA-NH-EIS-02-01-F). This FSEIS was prepared to meet the requirements of the August 30, 2007 decision of the U.S. District Court for the District of New Hampshire in the case Conservation Law Foundation v. Federal Highway Administration and New Hampshire Department of Transportation (Civ. No. 06-cv-45-PB (D.N.H)). The District Court directed the New Hampshire Department of Transportation and the Federal Highway Administration to prepare a SEIS specifically addressing the effects of induced population and employment growth estimates on: 1) the effectiveness of the Selected Alternative from the 2004 FEIS in reducing traffic congestion, 2) traffic on secondary roads, and 3) air quality issues. This FSEIS also provides a comprehensive reevaluation of the environmental impacts and mitigation associated with the Selected Alternative, including changes resulting from design refinements, changes in existing conditions, changes in the relevant environmental regulations or laws, changes in mitigation measures or other environmental commitments and changes in analysis methods and potential impacts based on the Court order.

Federal Highway Administration
Date: 5/3/10
Kathleen O. Laffey
New Hampshire Division Administrator

New Hampshire Department of Transportation
Date: 5/3/10
William J. Cass
Director of Project Development

EXECUTIVE SUMMARY

A. Project Description

The New Hampshire Department of Transportation (NHDOT) and the Federal Highway Administration (FHWA) have prepared this Final Supplemental Environmental Impact Statement (FSEIS) for proposed improvements to the Interstate Route 93 (I-93) corridor between Salem and Manchester, New Hampshire. The basic purpose of the I-93 Salem-Manchester project is to improve transportation efficiency and reduce safety problems associated with this approximately 19.8-mile segment of highway from the Massachusetts/New Hampshire State line to Manchester.

I-93 is a north-south principal arterial Interstate highway within the State of New Hampshire and is part of the National System of Interstate and Defense Highways. I-93 in New Hampshire extends a distance of approximately 132 miles from the Massachusetts border at Salem, New Hampshire to the Vermont border at Littleton, New Hampshire. The segment of I-93 under study intersects a number of the important highway routes in southern New Hampshire. Due to population growth, development, and recreational opportunities in New Hampshire, the travel demands for I-93 between Salem and Manchester have exceeded the capacity of this existing four-lane facility for a number of years. Population and traffic projections for the next twenty years support the conclusion that the existing facility will be increasingly less able to function at the levels of service and safety for which it was originally designed. Decreases in the level of service are evident in reduced traveling speeds, increased density of traffic flow, as well as in the traffic backups at some interchanges during commuting hours.

During weekday peak hours, motorists traveling along the I-93 corridor currently experience substantial traffic congestion and delay. The congestion not only results in increased travel times, but also contributes to safety problems, as the limited spacing between vehicles does not afford the motorists desired mobility – often leading to frequent and abrupt lane change maneuvers and sudden stops. Without substantial improvements, traffic operations and safety along this section of I-93 are expected to continue to deteriorate under future conditions as traffic volumes increase.

The proposed project involves a combination of transportation infrastructure improvements and strategies for the 19.8-mile study corridor. The main element of the proposed project involves widening I-93 from the existing two-lane highway in each direction to a four-lane highway in each direction. The proposed improvements begin in the Town of Salem, NH at the Massachusetts/New Hampshire State line and extend northerly through Salem, Windham, Derry and Londonderry, and into Manchester, ending at the I-93/I-293 interchange. In addition, the proposed project includes the following design modifications and infrastructure improvements for the five interchanges and local roads within the project corridor:

- Replace the red-listed Cross Street Bridge in the Exit 1 Interchange area.
- Reconstruct the Exit 1 interchange to improve substandard ramp geometry and replace seven red-listed bridges.

- Reconstruct the Exit 2 interchange to a diamond-type interchange configuration and replace four red-listed bridges.
- Widen and reconstruct Pelham Road from Policy Road to Stiles Road.
- Replace the Brookdale Road bridge.
- Replace four bridges, including two red-listed bridges, and relocate both the northbound and southbound barrels of I-93 into the median area in the vicinity of Exit 3.
- Reconfigure the Exit 3 interchange ramps with a diamond interchange design.
- Reconstruct and widen NH 111 beginning just west of the NH 111/NH 111A intersection.
- Relocate NH 111 north of its existing location before tying into existing NH 111 near the NH 111/Wall Street intersection.
- Relocate NH 111A on a new alignment near the NH 111/Wall Street intersection.
- In the Exit 4 Interchange area, widen I-93 to the east, retaining the existing layout for the southbound ramps.
- Reconstruct the existing Exit 4 northbound ramps diamond configuration with longer ramps.
- Reconstruct and widen NH 102 from Londonderry Road to the southbound ramps.
- Replace the NH 102 bridge over I-93 with a new bridge built directly south of the existing bridge.
- Reconstruct the Ash Street/ Pillsbury Road Bridge off-line.
- Reconstruct and widen NH 28 on-line from Symmes Drive to Liberty Drive including the reconstruction of the Perkins Road, Vista Ridge and Symmes Drive approaches, as well as the reconstruction of a portion of both Liberty and Independence Drives.
- Reconstruct the existing substandard diamond interchange at Exit 5 and replace four red-listed bridges.

In addition to the overall corridor highway improvements, the proposed project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. An expanded commuter bus service to Boston began operation from the Exits 2, 4, and 5 park-and-ride lots in November, 2008.

Intelligent Transportation System (ITS) technologies and Incident Management strategies are an integral part of the overall transportation improvement strategy for the I-93 corridor. NHDOT proposes to implement some of these measures such as variable message boards, highway advisory radio broadcasts, web site information, emergency reference markers, and coordination strategies among safety agencies before the highway widening. Additional measures will be added when the highway widening is completed.

The proposed project will also accommodate space for potential future mass transit opportunities between the MA/NH State line northerly to the Exit 5 Interchange (See Chapter 3: Alternatives for more information).

Incremental Implementation

Four waterbodies impaired for chloride are crossed by I-93 (Beaver Brook, Dinsmore Brook, the north tributary to Canobie Lake, and Policy Brook). Water quality impairment occurs when a waterbody fails to meet the applicable water quality standards (33 U.S.C. § 1313). Section 303 (d) of the Clean Water Act requires development of a pollutant loading and reduction plan, called a Total Maximum Daily Load (TMDL) for each impaired waterway (33 U.S.C. § 1313). The purpose of the TMDL is to identify existing loads in order to identify and eliminate the impaired status. On January 22, 2009, the U.S. Environmental Protection Agency (EPA) issued a letter to the New Hampshire Department of Environmental Services (NHDES) approving the TMDL studies conducted for the chloride-impaired waterbodies in the I-93 corridor. While EPA approves the TMDL reports establishing the total reduction in chloride loadings needed to achieve water quality standards, NHDES is responsible for the implementation of the TMDLs. For the chloride impaired waterbodies in the I-93 corridor, NHDES will prepare an Implementation Plan containing chloride load allocations. The load allocations will be distributed among the various entities responsible for chloride loadings (e.g. NHDOT for roads maintained by the State, individual municipalities for municipal roads, etc.).

In the 2005 Record of Decision (ROD), FHWA and NHDOT committed to no additional chloride loading from the project to the impaired waterbodies within the corridor. The 2005 ROD concluded that three-lanes could be operated in each direction without increasing chloride loadings based on current salt application best management practices. To meet the commitment to no additional chloride loading, the 2005 ROD required incremental implementation of the project in the event that agreement is not reached with NHDES prior to commencement of construction that new technology, best management practices, and/or other considerations are sufficient for the project to be completed in compliance with conditions placed on the Section 401 Water Quality Certification. The 2005 ROD defined incremental implementation as building the full four-lane footprint for the 2005 Selected Alternative, but only paving and operating the highway as a six lane facility (three lanes in each direction). Bridges and their approaches would be built initially in the final four-lane configuration. The fourth lane would be completed and opened to traffic when agreement with NHDES is reached on chloride issues.

The Section 401 Water Quality Certificate (approved May 2, 2006) references the 2005 ROD and contains a provision requiring incremental implementation of the project if TMDL salt

reduction loads cannot be met to ensure compliance with the Clean Water Act. Water Quality Certificate condition E-11 states:

> "if TMDLs are not approved by EPA and implementation plans are not completed and established with implementation of chloride load reductions in accordance with the plan, for the Activity and other roads operated by the Applicant in the TMDL watersheds, the Applicant shall incrementally implement the Activity, as proposed in the last paragraph of Section 1.3 of the ROD, by paving and operating only three lanes in each direction until implementation of the TMDLs is established for roads operated by the Applicant in the TMDL watersheds."

NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner. To assist with the implementation of TMDL load reductions, NHDOT is also assisting the towns in applying for salt reduction grants. A total of $2.5 million is available from FHWA for the municipal salt reduction program. The first phase of the municipal salt reduction program involves each municipality creating a salt management plan. The salt management plans are expected to be completed by July, 2010. Following approval of the salt management plans by a Salt Reduction Workgroup Steering Committee consisting of representatives of NHDOT, EPA, NHDES and FHWA, the towns will be eligible to receive funds for the implementation of their salt management plans.

Incremental implementation of the project (three-lanes in each direction) is possible in the interim, depending on the timing of the implementation of the TMDLs. However, the long-term plan remains to implement the four-lane 2005 Selected Alternative, not the three-lane alternative.

B. Project History

The interstate system in New Hampshire was built in the 1960's and early 1970's. The 19.8 mile section of I-93 between the Massachusetts/New Hampshire State line in Salem and I-93/I-293 junction in Manchester has not been substantially reconstructed or widened since it was first constructed in the early 1960's. The New Hampshire Legislature formally recognized the need to widen this section of I-93 and included the project in the first State Ten-Year Highway Plan, when that plan was enacted into legislation in 1986.

In 1988, NHDOT initiated the development of conceptual widening alternatives for the southern section of the I-93 corridor in the Town of Salem. At that time, the idea was to systematically reconstruct and widen the 19.8 mile segment of I-93 by proceeding from south to north over a period of years with completion by the year 2001-2002. However, as NHDOT proceeded, the environmental resource agencies registered their concern that an in-depth corridor-wide Environmental Impact Statement (EIS) that considered all alternatives would be necessary to gain environmental approvals.

In 1991, FHWA and NHDOT initiated preliminary design and environmental evaluation work for Salem to Manchester I-93 improvements within the framework of an EIS. A Notice of Intent

to prepare an EIS for the project was published in the Federal Register on February 21, 1992. As the EIS moved forward, questions were raised as to NHDOT's methodology for projecting future traffic volumes on I-93 and how any proposed highway improvements to I-93 would interface with the rest of the intermodal transportation network in New Hampshire. In response, NHDOT agreed in 1993 to develop a Statewide Transportation Model, which would provide a more effective methodology for projecting future traffic volumes and for considering the interplay between highway improvements and traffic patterns.

In 1999, with the development of the Statewide Transportation Model nearing completion, NHDOT restarted the EIS process by initiating preliminary engineering and environmental studies. In 2000, the NH State Legislature via House Bill (HB) 1106 identified I-93 as a high priority project because of the importance of this highway corridor to the region and the state. A new Notice of Intent to prepare an EIS was published in the Federal Register on October 27, 2000.

The development of the 2002 Draft EIS (2002 DEIS) involved a comprehensive public participation program, which included the creation of a local Advisory Task Force (ATF) to assist NHDOT in identifying issues and possible solutions regarding the project's purpose and need. The development of the 2002 DEIS also included numerous resource agency coordination meetings and public information meetings. Following the spirit and intent of environmental streamlining, the five Federal and three State agencies participating in the review of this project signed off on the basic project purpose and need in January 2001 and the reasonable range of alternatives to be studied in September 2001. The basic project purpose was to improve transportation efficiency, and reduce safety problems associated with the approximately 18-mile segment of I-93 from Salem to Manchester. The reasonable range of alternatives agreed on by the agencies included the No Build alternative, Transportation Systems Management (TSM) and Transportation Demand Management (TDM) measures, widening I-93 to four-lanes in each direction, widening I-93 to three lanes in each direction, a combination of four lane and three lane widening, and expanded bus service. In September 2002, the I-93 Improvements DEIS was issued.

After circulation of the 2002 DEIS, joint public hearings with the U.S. Army Corps of Engineers (ACOE) and the New Hampshire Department of Environmental Services (NHDES) were held on November 12, 2002 at Salem High School, and on November 14, 2002 at McLaughlin Middle School in Manchester. In August of 2003, after review of the revised and expanded project mitigation package, the U.S. Environmental Protection Agency (EPA) indicated that, based on the proposed mitigation, they did not intend to veto the project. In a letter dated December 30, 2003, the ACOE confirmed the Selected Four-Lane Alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) and that the minimization measures and proposed mitigation were appropriate to the scope and degree of proposed impacts, and meet the requirements of the 404(b)(1) Guidelines necessary for permitting the project. The FEIS was developed to respond to comments on the 2002 DEIS. Additional interagency coordination to address outstanding issues/comments on the 2002 DEIS and studies were conducted, as appropriate. In April 2004, the I-93 Improvements FEIS was issued.

The 2004 FEIS identified the Selected Alternative as widening I-93 from the existing two-lanes in each direction to four-lanes in each direction from Salem to Manchester. The Selected Alternative also includes improvements to existing interchanges, the replacement of 18 red-listed bridges[1] and the construction of new park-and-ride lots. The 2004 FEIS included a comprehensive mitigation and enhancement package for the Selected Alternative developed with extensive interagency review of the proposed mitigation options (See Chapter 11 of the 2004 FEIS). The 2004 FEIS made 87 mitigation and enhancement commitments, including:

- Protection of approximately 1,000 acres of land as part of compensatory wetland and floodplains mitigation.
- Funding of $3 million for the NHDES Drinking Water Supply Land Grant Program to be used to purchase property rights to aid in the protection of water quality around Massabesic Lake, which is used to supply drinking water to Manchester, and parts of Derry and Londonderry.
- Funding of $3.5 million for a Community Technical Assistance Program to help I-93 corridor municipalities manage growth related issues.
- Extensive stormwater treatment measures.
- Participation in ongoing regional chloride studies. NHDOT has dedicated $4.5 million for salt reduction, including $2.5 million available to I-93 corridor municipalities to fund salt reduction.

On June 28, 2005, FHWA issued a Record of Decision (ROD) approving the Selected Alternative (referred to as the "2005 Selected Alternative" in this FSEIS) for implementation.

In February 2006, the Conservation Law Foundation (CLF) brought suit in U.S. District Court for the District of New Hampshire against FHWA and NHDOT challenging the ROD and alleging violations of National Environmental Policy Act, 42 U.S.C. § 4321 *et seq.* and the Federal-Aid Highway Act, 23 U.S.C. § 101 *et seq.* The case was decided on cross motions for summary judgment. The District Court entered its decision on August 30, 2007 in *Conservation Law Foundation v. Federal Highway Administration and New Hampshire Department of Transportation* (Civ. No. 06-cv-45-PB (D.N.H)).

The District Court rejected the majority of the claims raised by CLF, including those related to the elimination of rail as an alternative for further study during scoping, the assessment of direct impacts on air quality, the assessment of cumulative impacts, water quality, and wildlife, claims related to the Federal Aid Highway Act, segmentation, the adequacy of the proposed mitigation measures and the public involvement process. The Court found that these issues were considered adequately by FHWA and NHDOT during the NEPA process and that their decisions on these issues were not arbitrary and capricious.

The Court held that the traffic projections in the 2004 FEIS relied on an outdated population growth forecast from New Hampshire's Office of Energy and Planning (OEP). As a result, the court determined that FHWA and NHDOT failed to consider in the 2004 FEIS how the

[1] New Hampshire's red-list identifies bridges requiring interim inspections due to known deficiencies, poor conditions, weight restrictions, or type of construction. These structures are inspected twice yearly.

"substantial additional traffic that results from the use of the more recent forecasts affects both their assessment of the Four Lane Alternative as a traffic congestion reduction measure and the impact that the additional traffic will have on secondary roads and air quality issues." The Court order directed NHDOT and FHWA to prepare a focused SEIS:

> "...that specifically considers how the Delphi Panel's population forecasts affect Defendants' analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the additional population predicted by those forecasts on secondary road traffic and air quality issues."

C. Purpose of this Supplemental Environmental Impact Statement and Reevaluation

This FSEIS was prepared to meet the requirements of the August 30, 2007 decision of the U.S. District Court for the District of New Hampshire in the case *Conservation Law Foundation v. Federal Highway Administration and New Hampshire Department of Transportation* (Civ. No. 06-cv-45-PB (D.N.H)). The District Court directed the New Hampshire Department of Transportation (NHDOT) and the Federal Highway Administration (FHWA) to prepare a SEIS specifically addressing the effects of the potential induced population and employment growth estimates prepared by a Delphi Panel on: 1) the performance of the 2005 Selected Alternative from the 2004 FEIS in reducing traffic congestion; 2) traffic on secondary roads; and 3) air quality.

In addition to meeting the specific requirements of the court order, FHWA has conducted a reevaluation of the 2004 FEIS as part of this FSEIS in order to provide an up-to-date consideration of the 2005 Selected Alternative and its effects on the environment. The primary purpose of the reevaluation process is to determine whether any changes in the project; changes in the existing physical or regulatory environment, including project design, concept and scope; or changes in the affected environment, impact analysis and proposed mitigation measures would result in the need to update technical information from the 2004 FEIS.

D. Analysis Framework

Population and Employment Scenarios

To address the Court Order requirement to evaluate the effects of the population and employment growth estimated by the Delphi Panel on traffic and air quality, NHDOT and FHWA decided that the New Hampshire Statewide Model was the best available traffic modeling tool for this purpose. Two population and employment scenarios were evaluated. For one set of analyses (Scenario 1), the Delphi Panel's blended average population and employment estimates (the "PBAA") were used as inputs in the Statewide Model. The FSEIS also includes traffic modeling based on the latest official state population and employment projections (Scenario 2). Scenario 2 includes a 2020 analysis year for comparison to the analysis year used by the Delphi PBAA and also a 2030 analysis year in order to match the analysis year of the

updated model (i.e., a 20-year horizon typically used in transportation planning). For detailed information on the development of Scenario 1 and Scenario 2, refer to Chapter 1: Introduction.

Tolling Sensitivity Analysis

On December 12, 2008, NHDOT submitted an Expression of Interest to the FHWA Tolling and Pricing Team to pursue tolling on I-93 as part of FHWA's Interstate System Reconstruction and Rehabilitation Pilot Program. The pilot program allows up to three existing Interstate facilities nationwide to be tolled to fund needed reconstruction or rehabilitation (two of the three slots have already been filled by projects in other states). The proposed toll would have been on I-93 southbound between Exit 1 and the State line and was conceptually envisioned to be $2 for passenger cars. The revenue generated by the proposed toll would have been used to fund the construction of the I-93 improvements. At the time of the preparation of the DSEIS, the tolling proposal had not been approved by FHWA or the New Hampshire Legislature. Nonetheless, NHDOT and FHWA decided to include an analysis of the potential traffic, air quality and noise effects of tolling on I-93 in the DSEIS. While it was not certain whether or not tolling would eventually occur at the time of the analysis, the tolling analyses was conducted and provided in the DSEIS to disclose the potential impacts of tolling on traffic, air quality and noise.

Subsequent to the publication of the DSEIS, NHDOT has decided not pursue the tolling on I-93 at this time. In a letter to New Hampshire Governor John Lynch dated March 19, 2010, NHDOT Commissioner George Campbell recommends against applying for the tolling pilot program for the following reasons:

1) The restricted geographical location would require All Electronic Tolling (AET), thus limiting the flexibility to introduce Open Road Tolling (ORT) as a possible option.
2) Users of the highway at that location would be paying for a section of the project that is already funded through authorized bond proceeds.
3) New assurances from Massachusetts Secretary of Transportation Jeffery Mullan that there is no current interest in the Bay State of establishing border tolls.

While tolling on I-93 southbound in Salem is not considered a practicable option at this time, the tolling sensitivity analysis prepared for the DSEIS is presented in this FSEIS for information disclosure purposes. The tolling sensitivity analysis compares the Build condition with the toll ("Build with Toll") to the Build condition without the toll ("Build without Toll"). The difference is the incremental effect of tolling on traffic, air quality and noise. Tolling was not analyzed for the No Build condition because the toll was being considered as a mechanism for funding the construction of the project. In addition, tolling was not analyzed for Scenario 1 (Delphi PBAA) demographics. The net effect of tolling under Scenario 1 would be very similar to the net effect under Scenario 2. The sensitivity analysis of Scenario 2 conditions provides a reasonable basis for establishing the general pattern and magnitude of the effects of tolling on I-93 as proposed at the time of the preparation of the DSEIS.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a

2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

E. Traffic

The Scenario 1 and Scenario 2 mainline traffic volume and LOS analyses reaffirm the need for and transportation benefits of the 2005 Selected Alternative. For Scenario 1, the 2005 Selected Alternative would eliminate LOS F conditions along the I-93 corridor north of Exit 1 (the segment between the State line and Exit 1 would be at LOS F in the No Build and Build conditions). For Scenario 2, the 2005 Selected Alternative eliminates LOS F conditions on all segments in 2020 and 2030. Under Scenario 2, the 2005 Selected Alternative also eliminates LOS E conditions on all segments, except for the segment south of Exit 1, which would be improved from LOS F to LOS E.

LOS F (Scenario 1) or LOS E (Scenario 2) for the segment of I-93 south of Exit 1 is considered acceptable given NHDOT's policy to not construct roadways with more than four-lanes in each direction. In addition to reducing peak hour congestion, the 2005 Selected Alternative would also reduce the congestion experienced by travelers in the shoulder hours on either side of the peak hour.

The Scenario 1 and Scenario 2 ramp junction LOS analyses show that the 2005 Selected Alternative would eliminate all LOS E and LOS F conditions as a result of the reconstruction of the interchanges along the project corridor.

The Scenario 1 and Scenario 2 intersection LOS analyses show both positive and negative effects of the 2005 Selected Alternative on congestion near interchanges and on secondary roads. Particularly for Scenario 2, the 2005 Selected Alternative reduces delay at more intersections than it increases. For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five intersections during the AM peak hour and at four intersections during the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole.

F. Air Quality

The FSEIS air quality analyses show that the 2005 Selected Alternative would not contribute to any exceedences of the National Ambient Air Quality Standards for carbon monoxide under either Scenario 1 or Scenario 2, including at three new analysis locations identified along the secondary road network. The 2005 Selected Alternative is in compliance with 40 CFR Part 93, the Clean Air Act Amendments and the New Hampshire State Implementation Plan. The 2005 Selected Alternative is included in the currently conforming Metropolitan Planning Organization plans and Transportation Improvement Programs per 40 CFR 93.115. The regional emissions

sensitivity analysis conducted as part of this FSEIS shows that Scenario 1 and Scenario 2 would not alter the conclusions of the FY2007-2010 regional emissions conformity analyses—emissions would continue to be well below the applicable carbon monoxide, volatile organic compounds and nitrous oxides budgets. Finally, the Mobile Source Air Toxics (MSAT) analysis shows that future MSAT emissions will decrease under the No Build condition and decrease even further with the implementation of the 2005 Selected Alternative.

G. Noise

As part of the final design process, NHDOT has continued to refine the design of the noise barriers proposed in the 2004 FEIS. The process has included the reevaluation of noise barriers in locations where additional residential receptors have been constructed since the noise evaluation for the 2004 FEIS (e.g. Squire Armour Road in Windham). The final design noise barrier evaluations identified one barrier location (Location 28 in Manchester) where the barrier could be extended to cover new residential receptors and still meet the NHDOT noise abatement policy cost effectiveness index criterion. While barriers were evaluated at other locations with new residential receptors, barriers in these locations would not be reasonable under the NHDOT noise abatement policy (e.g. the cost per benefited receptor would be greater than $30,000). With some minor design refinements, noise barriers are still proposed at all the locations where noise barriers were recommended in the 2004 FEIS.

A screening analysis for potential secondary roadway noise impacts was conducted to provide more information on the potential effects of the 2005 Selected Alternative. The secondary roadway noise screening analysis was conducted using FHWA's Traffic Noise Model version 2.5 Look-up Tables. The secondary road screening assessment did not identify any receptors where the Noise Abatement Criteria could be exceeded based on Scenario 1 and Scenario 2 traffic volumes; therefore no mitigation of secondary road noise impacts is proposed.

H. Socioeconomics

Updated population, employment, housing and wage information was gathered for the FSEIS existing conditions analysis year of 2005. As a result of design refinements since the 2004 FEIS, the number of full property acquisitions has changed. The number of residential acquisitions has decreased from the 21 estimated in the 2004 FEIS to 19 based on current right-of-way plans. The number of business relocations has increased from the 14 estimated in the 2004 FEIS to 23 based on current right-of-way plans. These minor changes do not change the conclusion of the 2004 FEIS that the 2005 Selected Alternative would not directly impact local demographics, housing or employment. Potential indirect effects on population and employment patterns are discussed in Section M.

I. Land Use

Updated information on land use and zoning conditions was obtained by reviewing recent land use plans and zoning regulations, through interviews with local and regional officials, and through windshield surveys. There has been additional development in the I-93 corridor

municipalities since the 2004 FEIS and minor changes in planning and zoning. Due to design refinements, there have been minor changes in the residential and business acquisitions required for the 2005 Selected Alternative. However, the direct land use and farmlands impacts of the 2005 Selected Alternative have not changed substantially since the 2004 FEIS. Potential indirect effects on land use are discussed in Section M.

J. Contaminated Properties and Hazardous Materials

NHDOT's Risk Assessment Survey for Contamination and Appraisal of Land (RASCAL) database was reviewed to identify updated information on known hazardous material concerns along the corridor. Since the 2004 FEIS, there have been design refinements to the 2005 Selected Alternative, changes in the proposed property acquisitions and additional hazardous material studies. Additional site testing, worker safety provisions, and material disposal procedures have been and will continue to be implemented in accordance with state and federal regulations at potentially contaminated sites.

K. Natural Resources

Water Resources

On May 24, 2007, the New Hampshire Department of Environmental Services (NHDES) issued a document entitled Interim Guidance for the Structural Design of Stormwater Best Management Practices Needed to Achieve Results of Pollutant Loading Analyses. NHDOT has agreed to strive to design and analyze the permanent stormwater treatment Best Management Practices (BMPs) for the I-93 project in accordance with the new guidance where feasible and consistent with other environmental and design considerations. The interim guidance substantially changed the design of the project stormwater treatment BMPs from those presented in the 2004 FEIS. The number of basins proposed has increased from 50 to approximately 100, and the predominant type of basins has been changed from dry extended detention basins to wet extended detention basins and gravel wetlands. Any changes in pollutant loadings as a result of the changes in the design of the proposed stormwater treatment practices are being done in cooperation with and with concurrence from NHDES. NHDOT will continue to coordinate with NHDES with respect to stormwater management and to ensure that the conditions of the Section 401 Water Quality Certification are met. The number of roadway lanes proposed as part of the 2005 Selected Alternative (four in each direction) has not changed; therefore the 2004 FEIS analysis and conclusions regarding deicing salt loadings have not changed. With the exception of the design changes in the stormwater treatment practices (doubling the number of detention basins), water resources commitments in the Record of Decision, Water Quality Certification, and NHDOT/NHDES Memorandum of Agreement remain valid.

Floodplains

Since the 2004 FEIS, 100-year floodplain impacts have been substantially reduced as a result of design modifications and updated floodplain mapping from 49.7 acre-feet to 19.8 acre-feet, which includes floodway impacts having been reduced from 6 acre-feet to 2 acre-feet. The reductions in estimated floodplain and floodway impacts indicate that reductions in the

floodplain mitigation commitments would be appropriate. The valley storage areas proposed in the 2004 FEIS have been removed from the floodplains mitigation package with concurrence from the Natural Resource Agencies. In addition, the Salem Waste Water Treatment Plant site proposed in the 2004 FEIS has been removed from the mitigation package due to the need for extensive hazardous materials remediation. To replace the mitigation planned for the Salem Waste Water Treatment Plant site, NHDOT is planning compensatory mitigation at Haigh Avenue in Salem. A second potential compensatory flood storage area has been identified at Cluff Crossing in Salem. Proposed changes to the mitigation commitments have been and will continue to be coordinated with the resource agencies.

Wetland Resources

The total wetland impacts for the first eleven construction contracts of the 2005 Selected Alternative have increased by about nine acres relative to that estimated in the 2004 FEIS and Section 404 permit application. The majority of the increase is due to a revised delineation of wetlands along the corridor (5.53 acres), with the remainder due to design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping. However, the type of impacts (generally edge impacts) and 2004 FEIS conclusions regarding the wetland impacts has not changed—the impacts are a small proportion of the total area of the affected wetland systems and the functions and values of the remaining wetland area will not be eliminated. Changes in wetland impacts for the remaining portion of the project contracts are in the process of being calculated, pending analysis once final design has been completed. NHDOT has been and will continue to coordinate with resource agencies regarding the increase in the total acreage of wetland impacts.

Wildlife Resources

Although the total acreage of wildlife habitat impacted by the 2005 Selected Alternative may increase slightly as result of final design, the 2004 FEIS conclusions regarding wildlife habitat impacts have not changed. The 2005 Selected Alternative primarily affects the edges of habitat areas adjacent to the existing I-93, and as such, habitat fragmentation is not an issue. The updated evaluation did not identify any new known occurrences of threatened or endangered species. The mitigation measures identified in the Record of Decision remain valid. Continued coordination on wildlife crossing issues has been ongoing with the natural resource agencies.

L. Cultural Resources

The cultural resources reevaluation indicates that there have been substantial changes in the impacts of the 2005 Selected Alternative since the 2004 FEIS, including the avoidance of impacts to certain resources and the discovery of additional National Register-eligible resources in the corridor. Changes in the project impacts and mitigation commitments have been and will continue to be coordinated with the New Hampshire Division of Historical Resources and FHWA.

M. Indirect Effects

The 2004 FEIS evaluated indirect effects based on the Delphi Panel estimates of future population and employment with and without the proposed project. For Scenario 1, indirect effects related to traffic, air quality and noise were evaluated by incorporating the No Build and Build Delphi Panel population and employment estimates into the updated New Hampshire Statewide model for the year 2020. The land conversion analysis based on the Delphi PBAA was updated for Scenario 1 based on changes in the minimum lot size for residences in certain towns, the area of developable land available based on recent build-out analyses, and changes in the proportion of the different types of housing (e.g. single-family, multi-family etc.) in each town.

For Scenario 2, a gravity model analysis was conducted using travel time information from the New Hampshire Statewide model and updated population and employment forecasts. Gravity models are used often in transportation and travel modeling. They are based on the observation that the overall attractiveness of an area to potential residents is a function of the capacity of an area for development (vacant developable land in valued and affordable locations) and accessibility to employment and activity centers, among other things. The model produces quantified results that can serve as the basis for assessing land use change. Under Scenario 2, the 2005 Selected Alternative will enhance accessibility near I-93, incrementally shifting population and employment from other areas of the model region to the study area communities. However, the Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of the projected future growth will be determined to a large extent by local land use regulations.

N. Cumulative Impacts

The updated cumulative impact analysis indicates that growth and development are expected to result in some cumulative impacts to water resources, wetlands, wildlife habitat, farmlands and cultural resources under Scenario 1 or Scenario 2. Substantial differences in the extent of potential impacts exist based on the degree of regulatory protection afforded different types of resources (e.g. wetlands vs. farmlands). For all of the resources, the direct and indirect effects of the 2005 Selected Alternative are negligible in comparison to magnitude of change expected under the No Build condition as a result of actions by others. Development impacts on environmentally sensitive features will be minimized in many cases by the presence of conserved lands, floodplain and open space zoning. Potential impacts can be further reduced through local adherence to existing zoning, and changes in planning regulations to further discourage most development in rural areas and to encourage the development that does occur in these areas to be clustered to reduce the total amount of land consumed. Focusing growth into existing cities and village centers will further reduce conflicts with the remaining natural areas in southern New Hampshire and northern Massachusetts. The Community Technical Assistance Program (CTAP) program will help the study area communities to adapt to future growth pressures consistent with local goals.

O. Visual Impacts

The 2004 FEIS stated that the 2005 Selected Alternative would increase the visual scale of the roadway due to the widening and result in the removal of some roadside vegetation. Where this vegetation is part of a forested buffer between the highway and adjacent development, this would have an adverse effect upon the quality of views from residential areas. While additional residences have been constructed in the corridor, the 2004 FEIS conclusions regarding visual impacts have not changed and the Record of Decision mitigation commitments remain valid. No additional analysis is warranted.

P. Energy Impacts

With respect to operational energy consumption, the 2004 FEIS concluded that since the project would improve the efficiency of the flow of traffic through the corridor, future vehicular energy requirements under the 2005 Selected Alternative would be lower than under the No Build Alternative. The 2004 FEIS conclusions regarding energy impacts have not changed and no mitigation is proposed. No additional analysis is warranted.

Q. Construction Impacts

The 2004 FEIS qualitatively evaluated construction impacts related to air quality, soil erosion, wildlife, noise, traffic, and visual resources. The 2004 FEIS conclusions regarding construction impacts have not changed and the Record of Decision mitigation commitments remain valid. No additional analysis is warranted.

R. Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

The 2004 FEIS discussed generally both short-term and long-term impacts from the proposed project. The 2004 FEIS conclusions regarding short-term uses and long-term productivity have not changed. No additional analysis is warranted.

S. Irreversible and Irretrievable Resource Commitments

The 2004 FEIS disclosed the resources that would be irreversibly and irretrievably committed to the proposed project (e.g. funds, fossil fuels, labor, and highway construction materials). The 2004 FEIS conclusions regarding irreversible and irretrievable resource commitments have not changed. No additional analysis is warranted.

T. Unresolved Issues and Areas of Controversy

There are no known major unresolved issues or areas of controversy related to this FSEIS.

U. Federal and State Actions Required

A Supplemental Record of Decision will be issued by FHWA no sooner than 30 days after the release of this FSEIS.

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY ES-1

A. Project Description ES-1

B. Project History ES-4

C. Purpose of this Supplemental Environmental Impact Statement and Reevaluation ES-7

D. Analysis Framework ES-7

E. Traffic ES-9

F. Air Quality ES-9

G. Noise ES-10

H. Socioeconomics ES-10

I. Land Use ES-10

J. Contaminated Properties and Hazardous Materials ES-11

K. Natural Resources ES-11

L. Cultural Resources ES-12

M. Indirect Effects ES-13

N. Cumulative Impacts ES-13

O. Visual Impacts ES-14

P. Energy Impacts ES-14

Q. Construction Impacts ES-14

R. Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity ES-14

S. Irreversible and Irretrievable Resource Commitments ES-14

T. Unresolved Issues and Areas of Controversy ES-14

U. Federal and State Actions Required ES-15

CHAPTER 1.0 – INTRODUCTION 1-1

1.1 Background 1-1

1.1.1 Project History 1-1

1.1.2 Delphi Panel 1-3

1.1.3 Court Order 1-5

1.1.4 Draft SEIS Distribution and Public Review 1-5

1.2 Requirements Met by this SEIS 1-6

1.2.1 Additional Analysis Required by the Court Order 1-6
1.2.2 NEPA Requirements 1-7
1.2.3 Reevaluation of the 2004 FEIS 1-7
1.3 Approach to Preparing the SEIS 1-8
1.3.1 Analysis Framework 1-8
1.3.2 Reevaluation of the 2004 FEIS 1-13

CHAPTER 2.0 – PURPOSE AND NEED FOR THE PROJECT.....2-1
2.1 Purpose 2-1
2.2 Need 2-1
2.2.1 Traffic Flow and Congestion 2-1
2.2.2 Safety Issues/Crash Data 2-3
2.2.3 Deteriorating Infrastructure 2-4

CHAPTER 3.0 – ALTERNATIVES.....3-1
3.1 Introduction 3-1
3.2 Description of the Alternatives Evaluated in this FSEIS 3-1
3.2.1 No Build Alternative 3-1
3.2.2 2005 Selected Alternative 3-2
3.3 Summary of Alternatives Considered and Rejected 3-8
3.3.1 Alternatives Screening 3-8
3.3.2 Identification of a Reasonable Range of Alternatives 3-11
3.3.3 Rationale for the 2005 Selected Alternative 3-12
3.3.4 Reevaluation of Alternatives 3-12

CHAPTER 4.0 – TRAFFIC.....4-1
4.1 Introduction 4-1
4.1.1 Traffic Analysis Terminology and Criteria 4-1
4.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 4-3
4.2.1 Traffic Data Collection and Traffic Model 4-3
4.2.2 Traffic Analysis Results 4-4
4.2.3 Record of Decision Commitments/Mitigation 4-4
4.3 Summary of 2005 Traffic Sensitivity Analysis 4-6
4.4 Methodology 4-7
4.4.1 Traffic Data Collection 4-7

4.4.2 Analysis Scenarios 4-9
4.4.3 Updated Design Information 4-11
4.4.4 New Hampshire Statewide Model 4-12
4.4.5 Future No Build Transportation Projects 4-13
4.4.6 Traffic Volume Assignments and Capacity Analysis 4-15
4.4.7 Vehicle Miles Traveled and Vehicle Hours Traveled 4-16
4.5 Existing Conditions 4-16
4.5.1 Traffic Volumes 4-16
4.5.2 Capacity Analysis 4-17
4.6 Impacts 4-19
4.6.1 Scenario 1 4-19
4.6.2 Scenario 2 4-23
4.6.3 Comparison between Scenario 1 and Scenario 2 4-29
4.6.4 Tolling Sensitivity Analysis 4-30
4.7 Conclusions 4-33
CHAPTER 5.0 – AIR QUALITY 5-1
5.1 Introduction 5-1
5.1.1 National Ambient Air Quality Standards 5-1
5.1.2 Mobile Source Air Toxics 5-3
5.1.3 Greenhouse Gas Emissions and Climate Change 5-4
5.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 5-6
5.2.1 Microscale Carbon Monoxide Analysis 5-6
5.2.2 Transportation Conformity 5-6
5.2.3 Record of Decision Commitments/Mitigation 5-6
5.3 Methodology 5-7
5.3.1 Updated Traffic Data 5-7
5.3.2 Updated Emissions Model 5-7
5.3.3 Microscale Carbon Monoxide Analysis 5-7
5.3.4 Regional Emissions Sensitivity Analysis 5-8
5.3.5 Mobile Source Air Toxics Analysis 5-9
5.3.6 Tolling Sensitivity Analysis 5-10

5.3.7 Greenhouse Gas Analysis 5-11
5.4 Existing Conditions 5-12
5.5 Impacts 5-12
5.5.1 Scenario 1 (Delphi Panel Blended Average Allocation) 5-12
5.5.2 Scenario 2 (Current State Projections) 5-15
5.5.3 Tolling Sensitivity Analysis 5-19
5.5.4 Consistency with the 2009 New Hampshire Climate Action Plan 5-20
5.5.5 Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis 5-23
5.6 Mitigation 5-25
5.7 Conclusions 5-25
CHAPTER 6.0 – NOISE 6-1
6.1 Introduction 6-1
6.1.1 Characteristics of Noise 6-1
6.1.2 Federal and State Highway Noise Policy 6-2
6.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 6-4
6.3 Methodology 6-5
6.3.1 I-93 Mainline 6-5
6.3.2 Secondary Roads 6-7
6.3.3 Tolling Sensitivity Analysis 6-7
6.4 Impacts and Mitigation 6-8
6.4.1 I-93 Mainline 6-8
6.4.2 Secondary Roads 6-11
6.4.3 Tolling Sensitivity Analysis 6-12
6.5 Conclusions 6-13
CHAPTER 7.0 – SOCIOECONOMICS 7-1
7.1 Introduction 7-1
7.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 7-1
7.2.1 Record of Decision Commitments/Mitigation 7-1
7.3 Methodology 7-2
7.4 Existing Conditions 7-3

7.4.1 Population 7-3
7.4.2 Housing 7-3
7.4.3 Employment 7-4
7.4.4 Wages 7-4
7.5 Impacts 7-4
7.6 Mitigation 7-5
7.7 Conclusions 7-5

CHAPTER 8.0 – LAND USE 8-1
8.1 Introduction 8-1
8.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 8-1
8.2.1 Land Use and Zoning 8-1
8.2.2 Farmlands 8-2
8.3 Methodology 8-2
8.4 Existing Conditions 8-2
8.4.1 Land Use Plans and Policies 8-2
8.4.2 Land Use 8-4
8.4.3 Zoning 8-9
8.4.4 Farmlands 8-11
8.5 Impacts 8-11
8.6 Mitigation 8-11
8.7 Conclusions 8-11

CHAPTER 9.0 – CONTAMINATED PROPERTIES AND HAZARDOUS MATERIALS 9-1
9.1 Introduction 9-1
9.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 9-1
9.2.1 Record of Decision Commitments/Mitigation 9-3
9.3 Methodology 9-3
9.4 Impacts 9-4
9.5 Mitigation 9-7
9.6 Conclusions 9-7

CHAPTER 10.0 – NATURAL RESOURCES 10-1
10.1 Introduction 10-1

10.1.1 Water Resources 10-1
10.1.2 Floodplains 10-2
10.1.3 Wetland Resources 10-2
10.1.4 Wildlife Resources 10-3
10.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 10-4
10.2.1 Water Resources 10-4
10.2.2 Floodplains 10-6
10.2.3 Wetland Resources 10-6
10.2.4 Wildlife Resources 10-7
10.2.5 Permit Conditions/Mitigation 10-8
10.3 Methodology 10-12
10.3.1 Water Resources 10-12
10.3.2 Floodplains 10-13
10.3.3 Wetland Resources 10-13
10.3.4 Wildlife Resources 10-13
10.4 Existing Conditions 10-14
10.4.1 Water Resources 10-14
10.4.2 Floodplains 10-21
10.4.3 Wetland Resources 10-21
10.4.4 Wildlife Resources 10-21
10.5 Impacts 10-21
10.5.1 Water Resources 10-21
10.5.2 Floodplains 10-22
10.5.3 Wetland Resources 10-23
10.5.4 Wildlife Resources 10-23
10.6 Mitigation 10-23
10.6.1 Water Resources 10-23
10.6.2 Floodplains 10-24
10.6.3 Wetland Resources 10-26
10.6.4 Wildlife Resources 10-26
10.7 Conclusions 10-27

10.7.1 Water Resources 10-27
10.7.2 Floodplains 10-27
10.7.3 Wetland Resources 10-27
10.7.4 Wildlife Resources 10-28

CHAPTER 11.0 – CULTURAL RESOURCES 11-1

11.1 Introduction 11-1
11.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 11-2
11.2.1 Archaeological Resources 11-2
11.2.2 Historic Architectural Resources 11-2
11.3 Methodology 11-2
11.4 Existing Conditions 11-3
11.5 Impacts and Mitigation 11-3
11.5.1 Archaeological Resources 11-3
11.5.2 Historic Architectural Resources 11-3
11.6 Conclusions 11-5

CHAPTER 12.0 – INDIRECT EFFECTS 12-1

12.1 Introduction 12-1
12.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 12-1
12.2.1 Indirect Land Use Impacts 12-1
12.2.2 Indirect Water Resources Impacts 12-2
12.2.3 Indirect Wetland Resources Impacts 12-3
12.2.4 Indirect Wildlife Resources Impacts 12-4
12.2.5 Indirect Air Quality Impacts 12-4
12.2.6 Indirect Noise Impacts 12-4
12.2.7 Record of Decision Commitments/Mitigation 12-4
12.3 Methodology 12-5
12.3.1 Scenario 1 12-5
12.3.2 Scenario 2 12-6
12.4 Impacts 12-13
12.4.1 Indirect Land Use Impacts 12-13
12.4.2 Indirect Water Resource Impacts 12-33

12.4.3 Indirect Wetland Resource Impacts 12-33
12.4.4 Indirect Wildlife Resource Impacts 12-33
12.4.5 Indirect Cultural Resource Impacts 12-33
12.4.6 Indirect Traffic Impacts 12-34
12.4.7 Indirect Air Quality Impacts 12-34
12.4.8 Indirect Noise Impacts 12-34
12.5 Mitigation 12-34
12.6 Conclusions 12-35

CHAPTER 13.0 – CUMULATIVE IMPACTS.....13-1
13.1 Introduction 13-1
13.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments 13-1
13.2.1 Record of Decision Commitments/Mitigation 13-2
13.3 Methodology 13-3
13.3.1 Study Area Boundaries 13-3
13.3.2 Analysis Year 13-3
13.3.3 Resources for Analysis 13-3
13.3.4 Resource Condition and Trends 13-4
13.3.5 Impacts of Other Reasonably Foreseeable Future Actions 13-4
13.3.6 Cumulative Impacts 13-5
13.4 Impacts 13-5
13.4.1 Water Resources 13-5
13.4.2 Wetlands 13-8
13.4.3 Wildlife Habitat 13-10
13.4.4 Farmlands 13-12
13.4.5 Cultural Resources 13-14
13.5 Mitigation 13-16
13.6 Conclusions 13-16

CHAPTER 14.0 – REEVALUTIONS OF OTHER TOPICS.....14-1
14.1 Introduction 14-1
14.2 Visual Impacts 14-1
14.2.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments 14-1

14.2.2 Changes in Regulations/Guidelines 14-2
14.2.3 Changes in Existing Conditions 14-2
14.2.4 Changes in Future No Build and Build Conditions 14-2
14.2.5 Mitigation 14-2
14.2.6 Conclusion 14-2
14.3 Energy Impacts 14-2
14.3.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments 14-2
14.3.2 Changes in Regulations/Guidelines 14-3
14.3.3 Changes in Existing Conditions 14-3
14.3.4 Changes in Future No Build and Build Conditions 14-3
14.3.5 Mitigation 14-3
14.3.6 Conclusion 14-3
14.4 Construction Impacts 14-4
14.4.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments 14-4
14.4.2 Changes in Regulations/Guidelines 14-6
14.4.3 Changes in Future No Build and Build Conditions 14-6
14.4.4 Mitigation 14-6
14.4.5 Conclusion 14-7
14.5 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity 14-7
14.5.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments 14-7
14.5.2 Changes in Regulations/Guidelines 14-8
14.5.3 Changes in Future No Build and Build Conditions 14-8
14.5.4 Conclusion 14-8
14.6 Irreversible and Irretrievable Resource Commitments 14-8
14.6.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments 14-8
14.6.2 Changes in Regulations/Guidelines 14-9
14.6.3 Changes in Future No Build and Build Conditions 14-9
14.6.4 Conclusion 14-9
CHAPTER 15.0 – FINAL SECTION 4(f) EVALUATION 15-1
15.1 Introduction 15-1

15.2 Proposed Action 15-3
15.3 Description of Historic Section 4(f) Resources 15-4
15.4 Impacts to Section 4(f) Properties 15-4
15.5 Alternatives Which Avoid Section 4(f) Property Impacts 15-4
15.5.1 No Build Alternative 15-5
15.5.2 Retention of Existing Culvert 15-5
15.5.3 New Pipe East of Existing Culvert 15-5
15.5.4 Realignment of Verani Way 15-6
15.5.5 Stone Culvert Relocation 15-6
15.6 Measures to Minimize Harm/Mitigation 15-6
15.7 Coordination 15-7
15.8 Summary Statement 15-7

CHAPTER 16.0 – PUBLIC INVOLVEMENT AND AGENCY COORDINATION 16-1
16.1 Public Involvement 16-1
16.2 Agency Coordination 16-2

CHAPTER 17.0 – FINAL SEIS DISTRIBUTION LIST 17-1
17.1 Federal Agencies 17-1
17.2 State Agencies 17-2
17.3 Federal and State Elected Officials 17-4
17.4 Regional Agencies and Municipalities 17-5
17.5 Private Organizations, Businesses and Individuals 17-9

CHAPTER 18.0 – LIST OF PREPARERS 18-1
18.1 New Hampshire Department of Transportation 18-1
18.2 Federal Highway Administration 18-1
18.3 The Louis Berger Group, Inc. 18-2

CHAPTER 19.0 – ACRONYMS 19-1
CHAPTER 20.0 – REFERENCES 20-1
CHAPTER 21.0 – INDEX 21-1

LIST OF TABLES

Table 2-1 I-93 Average Daily Traffic 2-3
Table 2-2 I-93 Level of Service 2-3

Table 3-1 Current Cost Estimates 3-8
Table 3-2 Comparison of Population Projections Used in Transportation Modeling, 2004 FEIS vs. Scenario 2 2020 and 2030 No Build 3-15

Table 4-1 Summary of 2004 FEIS Mainline Traffic Analysis Results, No Build Compared to Build, 2020 4-4
Table 4-2 Summary of 2005 Traffic Sensitivity Analysis Results, Delphi PBAA Build Condition, 2020 4-7
Table 4-3 Base Year Average Daily Traffic (ADT) 4-17
Table 4-4 I-93 Mainline DDHV LOS Summary, 2005 Base Year 4-17
Table 4-5 Intersection LOS, 2005 Base Year 4-18
Table 4-6 Scenario 1 Average Daily Traffic (ADT), 2020 4-19
Table 4-7 Scenario 1 Directional Design Hourly Volumes (DDHV), 2020 4-19
Table 4-8 Scenario 1 I-93 Mainline DDHV LOS Summary, 2020 4-20
Table 4-9 Scenario 1 Ramp Junction LOS Summary, 2020 4-21
Table 4-10 Scenario 1 Intersection LOS Summary, AM and PM Peak, 2020 4-22
Table 4-11 Scenario 1 VMT, VHT and Average Speed, 2020 4-23
Table 4-12 Scenario 2 Average Daily Traffic (ADT), 2020 and 2030 4-24
Table 4-13 Scenario 2 Directional Design Hourly Volumes (DDHV), 2020 and 2030 4-24
Table 4-14 Scenario 2 I-93 Mainline DDHV LOS Summary, 2020 and 2030 4-25
Table 4-15 Scenario 2 Ramp Junction LOS Summary, 2020 and 2030 4-26
Table 4-16 Scenario 2 Intersection LOS Summary, AM and PM Peak, 2020 4-27
Table 4-17 Scenario 2 Intersection LOS Summary, AM and PM Peak 2030 4-28
Table 4-18 Scenario 2 VMT, VHT and Average Speed, 2020 and 2030 4-29
Table 4-19 I-93 Mainline Average Daily Traffic and Level of Service, Comparison Between Scenario 1 and Scenario 2, 2020 4-30
Table 4-20 Scenario 2 Average Daily Traffic (ADT), Build with Toll Compared to Build without Toll, 2020 4-31
Table 4-21 Scenario 2 Average Daily Traffic (ADT), Build with Toll Compared to Build without Toll, 2030 4-31
Table 4-22 Scenario 2 Directional Design Hourly Volumes (DDHV), Build with Toll Compared to Build without Toll, 2020 4-31
Table 4-23 Scenario 2 Directional Design Hourly Volumes (DDHV), Build with Toll Compared to Build without Toll, 2030 4-32
Table 4-24 Scenario 2 I-93 Mainline DDHV LOS Summary, Build with Toll Compared to Build without Toll, 2020 and 2030 4-33

Table 5-1 2005 Existing Conditions Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-12
Table 5-2 Scenario 1 (2020 Delphi Panel Blended Average Allocation) Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-13
Table 5-3 Scenario 1 Mobile Source Air Toxic Emissions 5-15
Table 5-4 Scenario 2, 2020 Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-16

Table 5-5 Scenario 2, 2030 Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-16
Table 5-6 Scenario 2 (2020 and 2030 Current State Projections) Mobile Source Air Toxic Emissions 5-18
Table 5-7 Tolling Sensitivity Analysis, 2020 Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-19
Table 5-8 Tolling Sensitivity Analysis, 2030 Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million) 5-19
Table 5-9 Tolling Sensitivity Analysis, Mobile Source Air Toxic Emissions, 2020 and 2030 5-20
Table 5-10 Summary of New Hampshire Climate Action Plan Strategies and Consistency Analysis 5-21

Table 6-1 Examples of Common Sounds (A-weighted (dBA) Sound Level in Decibels) 6-2
Table 6-2 Noise Abatement Criteria (NAC) 6-3
Table 6-3 Comparison of I-93 Mainline Traffic Volumes Between the 2004 FEIS and SEIS Scenario 1 and Scenario 2, AM Peak Hour 6-6
Table 6-4 Comparison of I-93 Mainline Traffic Volumes Between the 2004 FEIS and SEIS Scenario 1 and Scenario 2, PM Peak Hour 6-6
Table 6-5 Summary of Final Design Noise Barrier Evaluations 6-9
Table 6-6 Secondary Road Noise Screening Analysis Scenario 1, 2020 6-11
Table 6-7 Secondary Road Noise Screening Analysis Scenario 2, 2020 and 2030 6-12
Table 6-8 Secondary Road Noise Tolling Sensitivity Analysis Scenario 2, 2020 and 2030 6-13

Table 8-1 Town of Salem Land Use Changes Since 2004 8-5
Table 8-2 Town of Windham Land Use Changes Since 2004 8-6
Table 8-3 Town of Derry Land Use Changes Since 2004 8-7
Table 8-4 Town of Londonderry Land Use Changes Since 2004 8-8
Table 8-5 Updated Zoning Districts in Salem 8-9
Table 8-6 Updated Zoning Districts in Windham 8-10

Table 9-1 Summary of Petroleum and Hazardous Material Site Status/Recommendations ... 9-5

Table 10-1 Updated 100-Year Floodplain Impacts 10-22

Table 12-1 Developable Land Estimates 12-11
Table 12-2 Study Area Population, Build Compared to No Build, 2020 Scenario 1 12-14
Table 12-3 Study Area Employment, Build Compared to No Build, 2020 Scenario 1 12-15
Table 12-4 Study Area Land Conversion, Build Compared to No Build, 2005 to 2020 Scenario 1 12-17
Table 12-5 Statewide Model Estimated Change in Population Based on Accessibility Change, Build Compared to No Build, 2030 Scenario 2 12-19
Table 12-6 Statewide Model Estimated Change in Employment Based on Accessibility Change, Build Compared to No Build, 2030 Scenario 2 12-20
Table 12-7 Study Area Population, Build Compared to No Build, 2020 Scenario 2 12-22

Table 12-8 Study Area Population, Build Compared to No Build, 2030 Scenario 2 12-23
Table 12-9 Study Area Employment, Build Compared to No Build, 2020 Scenario 2 12-24
Table 12-10 Study Area Employment, Build Compared to No Build, 2030 Scenario 2 12-25
Table 12-11 Study Area Land Conversion, Build Compared to No Build, 2005 to 2020 Scenario 2 12-27
Table 12-12 Study Area Land Conversion, Build Compared to No Build, 2005 to 2030 Scenario 2 12-28
Table 12-13 Study Area Population, 2020 Scenario 1 Compared to Scenario 2 12-30
Table 12-14 Study Area Employment, 2020 Scenario 1 Compared to Scenario 2 12-31
Table 12-15 Residential Land Conversion, 2005 to 2020 Scenario 1 Compared to Scenario 2 12-32

Table 13-1 Important Wildlife Habitat in New Hampshire Portion of Study Area 13-11
Table 13-2 Land in Farms, 1987- 2002 13-13

LIST OF FIGURES

Figure 4-1a Exit 1 and Exit 2 Analyzed Intersections
Figure 4-1b Exit 3 Analyzed Intersections
Figure 4-1c Exit 4 Analyzed Intersections
Figure 4-1d Exit 5 Analyzed Intersections
Figure 4-1e Secondary Road Analyzed Intersections
Figure 4-2 Scenario 1 Temporal Distribution of No Build and Build Average Daily Traffic in August, I-93 Northbound Between State Line and Exit 1, 2020
Figure 4-3 Scenario 2 Temporal Distribution of No Build and Build Average Daily Traffic in August, I-93 Northbound Between State Line and Exit 1, 2020
Figure 4-4 Scenario 2 Temporal Distribution of No Build and Build Average Daily Traffic in August, I-93 Northbound Between State Line and Exit 1, 2030

Figure 5-1 Microscale Air Quality Analysis Sites
Figure 5-2 Ozone Nonattainment Areas
Figure 5-3 Manchester CO Sensitivity Analysis, 2017 and 2026
Figure 5-4 Nashua CO Sensitivity Analysis, 2017 and 2026
Figure 5-5 Southern Serious (Boston-Lawrence-Worcester NH) Nonattainment Area VOC Sensitivity Analysis, 1017 and 2026
Figure 5-6 Southern Serious (Boston-Lawrence-Worcester NH) Nonattainment Area NOx Sensitivity Analysis, 1017 and 2026

Figure 8-1 Salem Land Use and Zoning Changes
Figure 8-2 Windham Land Use and Zoning Changes
Figure 8-3 Derry and Londonderry Land Use and Zoning Changes

Figure 10-1 Potential Floodplain Mitigation Sites in Salem

Figure 12-1 Percent Change in 2030 Population Based on Accessibility Change, No Build to Build

Figure 12-2 Percent Change in 2030 Employment Based on Accessibility Change, No Build to Build

Figure 13-1 Major Watersheds and Waterbodies
Figure 13-2 Impervious Surface Cover, USGS 2001
Figure 13-3 Wetlands
Figure 13-4 Important Wildlife Habitat
Figure 13-5 Agricultural Land Cover, USGS 2001

Figure 15-1 M&L Right-of-Way Map
Figure 15-2 Stone Box Culvert Location Map
Figure 15-3 Existing Conditions
Figure 15-4 Proposed Work

APPENDICES

Appendix A: Comment Response Document
Appendix B: Three-Lane Alternative Memorandum
Appendix C: Scenario 2 Indirect Effects Analysis Coordination

1.0 INTRODUCTION

This chapter introduces the Supplemental Environmental Impact Statement (SEIS) process, provides background information on the proposed action evaluated in this Final SEIS (FSEIS), summarizes the requirements met by the FSEIS, and explains the approach used to develop the FSEIS.

This FSEIS was prepared to meet the requirements of the August 30, 2007 decision of the U.S. District Court for the District of New Hampshire in the case *Conservation Law Foundation v. Federal Highway Administration and New Hampshire Department of Transportation* (Civ. No. 06-cv-45-PB (D.N.H). The District Court directed the New Hampshire Department of Transportation (NHDOT) and the Federal Highway Administration (FHWA) to prepare a SEIS specifically addressing the effects of the potential induced population and employment growth estimates prepared by a Delphi Panel on: 1) the performance of the 2005 Selected Alternative from the 2004 FEIS in reducing traffic congestion; 2) traffic on secondary roads; and 3) air quality.

This FSEIS/reevaluation serves as a supplement to the April 2004 *Interstate 93 Improvements Salem to Manchester Final Environmental Impact Statement* (2004 FEIS) (FHWA-NH-EIS-02-01-F). The FSEIS has been prepared in accordance with Council on Environmental Quality (CEQ) and FHWA regulations for implementing the National Environmental Policy Act (NEPA). The FSEIS incorporates a comprehensive reevaluation of the 2004 FEIS. In accordance with FHWA regulations, the comprehensive reevaluation was used to determine whether any project information should be updated and revised as part of the SEIS process.

This FSEIS represents a revision of the Draft SEIS (DSEIS). The draft document has been revised based on comments received during the public review process and to incorporate new information not available at the time of the preparation of the DSEIS. The DSEIS was circulated for a 53-day public review period, August 17, 2009 to October 9, 2009. A public hearing on the DSEIS was held on September 22, 2009 at the Derry Municipal Center.

1.1 Background

1.1.1 Project History

The interstate system in New Hampshire was built in the 1960's and early 1970's. The 19.8 mile section of I-93 between the Massachusetts/New Hampshire State line in Salem and I-93/I-293 junction in Manchester has not been substantially reconstructed or widened since it was first constructed in the early 1960's. The New Hampshire Legislature formally recognized the need to widen this section of I-93 and included the project in the first State Ten-Year Highway Plan, when that plan was enacted into legislation in 1986.

In 1988, NHDOT initiated the development of conceptual widening alternatives for the southern section of the I-93 corridor in the Town of Salem. At that time, the idea was to systematically reconstruct and widen the 19.8 mile segment of I-93 by proceeding from south to north over a period of years with completion by the year 2001-2002. However, as NHDOT proceeded, the

environmental resource agencies registered their concern that an in-depth corridor-wide environmental study that considered all alternatives would be necessary to gain environmental approvals.

In 1991, FHWA and NHDOT initiated preliminary design and environmental evaluation work for Salem to Manchester I-93 improvements within the framework of an EIS. A Notice of Intent to prepare an EIS for the project was published in the Federal Register on February 21, 1992. As the EIS moved forward, questions were raised as to NHDOT's methodology for projecting future traffic volumes on I-93 and how any proposed highway improvements to I-93 would interface with the rest of the intermodal transportation network in New Hampshire. In response, NHDOT agreed in 1993 to develop a Statewide Transportation Model, which would provide a more effective methodology for projecting future traffic volumes and for considering the interplay between highway improvements and traffic patterns.

In 1999, with the development of the Statewide Transportation Model nearing completion, NHDOT restarted the EIS process by initiating preliminary engineering and environmental studies. In 2000, the NH State Legislature via House Bill (HB) 1106 identified I-93 as a high priority project because of the importance of this highway corridor to the region and the state. A new Notice of Intent to prepare an EIS was published in the Federal Register on October 27, 2000.

The development of the 2002 Draft EIS (2002 DEIS) involved a comprehensive public participation program, which included the creation of a local Advisory Task Force (ATF) to assist NHDOT in identifying issues and possible solutions regarding the project's purpose and need. The development of the 2002 DEIS also included numerous resource agency coordination meetings and public information meetings. Following the spirit and intent of environmental streamlining, the five Federal and three State agencies participating in the review of this project signed off on the basic project purpose and need in January 2001 and the reasonable range of alternatives to be studied in September 2001. The basic project purpose was to improve transportation efficiency, and reduce safety problems associated with the approximately 18-mile segment of I-93 from Salem to Manchester. The reasonable range of alternatives agreed on by the agencies included the No Build alternative, Transportation Systems Management (TSM) and Transportation Demand Management (TDM) measures, widening I-93 to four-lanes in each direction, widening I-93 to three lanes in each direction, a combination of four lane and three lane widening, and expanded bus service. In September 2002, the I-93 Improvements DEIS was issued.

After circulation of the 2002 DEIS, joint public hearings with the U.S. Army Corps of Engineers (ACOE) and the New Hampshire Department of Environmental Services (NHDES) were held on November 12, 2002 at Salem High School, and on November 14, 2002 at McLaughlin Middle School in Manchester. In August of 2003, after review of the revised and expanded project mitigation package, the U.S. Environmental Protection Agency (EPA) indicated that, based on the proposed mitigation, they did not intend to veto the project. In a letter dated December 30, 2003, the ACOE confirmed the Selected Four-Lane Alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) and that the minimization measures and proposed mitigation were appropriate to the scope and degree of proposed impacts, and meet the

requirements of the 404(b)(1) Guidelines necessary for permitting the project. The FEIS was developed to respond to comments on the 2002 DEIS, and included additional interagency coordination to resolve issues and conduct additional studies or analysis, as appropriate. In April 2004, the I-93 Improvements FEIS was issued.

The 2004 FEIS identified the Selected Alternative as widening I-93 from the existing two-lanes in each direction to four-lanes in each direction from Salem to Manchester. The Selected Alternative also includes improvements to existing interchanges, the replacement of 18 red-listed bridges[1] and the construction of new park-and-ride lots. The 2004 FEIS included a comprehensive mitigation and enhancement package for the Selected Alternative developed with extensive interagency review of the proposed mitigation options (See Chapter 11 of the 2004 FEIS). The 2004 FEIS made 87 mitigation and enhancement commitments, including:

- Protection of approximately 1,000 acres of land as part of compensatory wetland and floodplains mitigation.
- Funding of $3 million for the NHDES Drinking Water Supply Land Grant Program to be used to purchase property rights to aid in the protection of water quality around Massabesic Lake, which is used to supply drinking water to Manchester, and parts of Derry and Londonderry.
- Funding of $3.5 million for a Community Technical Assistance Program to help I-93 corridor municipalities manage growth related issues.
- Extensive stormwater treatment measures.
- Participation in ongoing regional chloride studies. NHDOT has dedicated $4.5 million for salt reduction, including $2.5 million available to I-93 corridor municipalities to fund salt reduction.

On June 28, 2005, FHWA issued a Record of Decision (ROD) approving the Selected Alternative (referred to as the "2005 Selected Alternative" in this FSEIS) for implementation.

1.1.2 Delphi Panel

To facilitate the assessment of induced growth and land use change attributable to the I-93 project for the 2004 FEIS, NHDOT and FHWA utilized an expert panel methodology called the Delphi Technique. This section explains the concept of induced growth and summarizes the Delphi Panel process.

Definition of Indirect Land Use Effects/Induced Growth

Indirect effects are defined by CEQ as "effects which are caused by the action 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 pattern of

[1] New Hampshire's red-list identifies bridges requiring interim inspections due to known deficiencies, poor conditions, weight restrictions, or type of construction. These structures are inspected twice yearly.

land use, population density or growth rate, and related effects on air and water or other natural systems, including ecosystems" (40 CFR 1508.8(b)). For transportation projects, induced growth is attributed to changes in accessibility caused by the project that influences the location and/or magnitude of future development (Transportation Research Board, 2002). Typically, induced growth is quantified as the incremental change in future development with the project in comparison to the future without the project (e.g. the No Build alternative). In general, the widening of an existing roadway is less likely to cause induced growth than the construction of a new roadway or interchange (Transportation Research Board, 2002). This is because with an existing road, access to an area already has been established and the widening represents merely a marginal incremental change in access.

Delphi Panel Process

A Delphi is a structured process in which participants (the Panel) provide their assessment of likely future events (in this case the impacts of potential transportation investments) by responding to several rounds of questionnaires or surveys. A moderator tallies and summarizes the results of each round and provides these results back to the panelists. The Panel members are then given an opportunity to revise their initial analyses based on a review of their fellow panelists' work. The Delphi is considered complete when the responses in repeated rounds of questioning do not markedly change. The panelists typically conduct their work independently in an effort to allow for fully reflective responses to the survey question and subsequent responses. The results of the Delphi technique may be summarized through measures of central tendency. Ideally, panelists will reach a consensus.

For the 2004 FEIS, a 16 member panel was assembled and included individuals familiar with the corridor and the Study Area who were knowledgeable in the area of real estate, planning, environmental policy, etc. The Delphi Panel was tasked with projecting the potential change in population and employment in the 29-community secondary study area based on their best professional judgment. The panelists were directed to explain the rationale for their estimates in memos that were anonymously presented to the other panelists. After reviewing the work of their peers, the panelists had the opportunity to revise their population and employment estimates. Detailed information about the Panel's work is included in the "I-93 Manchester to Salem Expert Panel Analysis Final Report, December 28, 2001 (revised January 22, 2002)" and is summarized in Section 4.12 of the 2004 FEIS.

After two rounds of estimates for both the No Build and Build scenarios, the panelists could not reach consensus. Therefore, the results of the Delphi Technique process were summarized through the calculation of the Panelist's Blended Average Allocation (PBAA)—the average of the median and the mean. The blended average method gives some weight to very high and low outlying values, but gives less weight to these values than using a mean. The PBAA is a convenient measure to consider the opinions of the Panel, but it is important to note that it does not represent a group consensus. The individual panelists' findings represent "informed opinions" which cross a broad spectrum ranging from large additional increases in growth if the highway is widened to no additional increase in growth associated with the widening.

Traffic Sensitivity Analysis

In response to comments on the 2004 FEIS, a traffic sensitivity analysis was performed using the Delphi PBAA population and employment projections as input to a traffic analysis. A summary of the results of this analysis was published in the ROD. A summary of the results of the traffic sensitivity analysis is provided in Chapter 4: Traffic and the full text is located in Traffic Written Reevaluation/Technical Report, DSEIS Appendix A-1.

1.1.3 Court Order

In February 2006, the Conservation Law Foundation (CLF) brought suit in U.S. District Court for the District of New Hampshire against FHWA and NHDOT challenging the ROD and alleging violations of National Environmental Policy Act, 42 U.S.C. § 4321 *et seq.* and the Federal-Aid Highway Act, 23 U.S.C. § 101 *et seq.* The case was decided on cross motions for summary judgment. The District Court entered its decision on August 30, 2007 in *Conservation Law Foundation v. Federal Highway Administration and New Hampshire Department of Transportation* (Civ. No. 06-cv-45-PB (D.N.H)).

The District Court rejected the majority of the claims raised by CLF, including those related to the elimination of rail as an alternative for further study during scoping, the assessment of direct impacts on air quality, the assessment of cumulative impacts, water quality, and wildlife, claims related to the Federal Aid Highway Act, segmentation, the adequacy of the proposed mitigation measures and the public involvement process. The Court found that these issues were considered adequately by FHWA and NHDOT during the NEPA process and that their decisions on these issues were not arbitrary and capricious.

The Court held that the traffic projections in the 2004 FEIS relied on an outdated population growth forecast from New Hampshire's Office of Energy and Planning (OEP). As a result, the court determined that FHWA and NHDOT failed to consider in the 2004 FEIS how the "substantial additional traffic that results from the use of the more recent forecasts affects both their assessment of the Four Lane Alternative as a traffic congestion reduction measure and the impact that the additional traffic will have on secondary roads and air quality issues." The Court order directed NHDOT and FHWA to prepare a focused SEIS:

> "...that specifically considers how the Delphi Panel's population forecasts affect Defendants' analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the additional population predicted by those forecasts on secondary road traffic and air quality issues."

1.1.4 Draft SEIS Distribution and Public Review

Upon completion of the DSEIS, FHWA provided copies of the document to the EPA Office of Federal Activities and issued a notice of availability (NOA) in the Federal Register, consistent with NEPA. The NOA provided notice of the public comment period that began on August 17,

2009 and ended on October 1, 2009.[2] In response to requests for comment period extension, the comment period was extended to October 9, 2009, for a total duration of 53-days. The DSEIS was distributed to federal agencies, state agencies, regional agencies, municipalities in the Delphi study area, and other individuals and organizations that have expressed an interest in the project during previous public involvement activities or by commenting on the 2004 FEIS (See Chapter 17: Draft SEIS Distribution List). The DSEIS was also made available for public review at local libraries and through the project website. There were a total of 111 written comments received during the comment period, either by mail, email or submitted through the project website.

A public hearing was held on September 22nd, 2009, from 7:00 PM to 9:00 PM at the Derry Municipal Center. The public hearing was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS. The public hearing included a presentation on the results of the DSEIS and an opportunity for public comment. A total of twelve individuals provided verbal comments at the public hearing.

Copies of all the written comments received and the public hearing transcript are provided in FSEIS Appendix A: Comment Response Document. This appendix also documents NHDOT's and FHWA's responses to substantive comments.

1.2 Requirements Met by this SEIS

The I-93 Improvements FSEIS is being prepared to meet the following requirements:

- Provide additional studies as directed by the Court Order.
- Comply with NEPA requirements regarding the preparation of a SEIS.
- Comply with FHWA's regulations regarding conducting a focused reevaluation of a FEIS.

To ensure that the FSEIS satisfies all relevant legal requirements, this document addresses the specific issues of concern identified by the District Court, updates new project information identified during the reevaluation of the 2004 FEIS and satisfies NEPA requirements associated with preparing a SEIS.

1.2.1 Additional Analysis Required by the Court Order

As described in Section 1.1.3, the District Court directed NHDOT and FHWA to prepare a focused SEIS specifically addressing the effects of the induced population and employment growth estimates prepared by the Delphi Panel on: 1) the performance of the 2005 Selected Alternative from the 2004 FEIS in reducing traffic congestion, 2) traffic on secondary roads, and

[2] The DSEIS was filed with the EPA Office of Federal Activities in time to appear in the August 14, 2009 edition of the Federal Register. However, the NOA was published August 17, 2009 and listed the comment period end date as September 28, 2009. An amended NOA listing the comment period end date as October 1, 2009 was published in the Federal Register on August 21, 2009.

3) air quality issues. Additional traffic and air quality analysis studies were conducted to meet the requirements of the Court Order. The results of these studies are documented in the administrative record and incorporated into this FSEIS.

1.2.2 NEPA Requirements

CEQ NEPA regulations (40 CFR 1502.9 (c)(1)) require a federal agency to prepare a SEIS if:

- The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or
- Significant new circumstances or information relevant to environmental concerns have a bearing on the proposed action or its impacts.

The FHWA regulations for the preparation of a SEIS (23 CFR 771.130) are similar to the CEQ regulations. The FHWA regulations state that the SEIS needs to address changes to the proposed action or new information or circumstances relevant to environmental concerns that would result in significant environmental impacts not evaluated in the 2004 FEIS. The new circumstances or information that should be addressed in a SEIS include any physical or environmental changes to the proposed action or mitigation, and compliance with new or revised environmental regulations. A SEIS is not required to restate information presented in a FEIS, but rather incorporates by reference information from the FEIS that has not changed.

1.2.3 Reevaluation of the 2004 FEIS

Under FHWA's regulations (23 CFR 771.129), FHWA is required to prepare a written reevaluation of a FEIS whenever major events to advance a proposed action have not occurred within three years of the approval of the FEIS, or the last major FHWA approval or grant. Since the issuance of the 2004 FEIS in April 2004 and the ROD on June 28, 2005, several major events to advance the I-93 project have occurred, including final design and right-of-way acquisition work. Nonetheless, FHWA has conducted a reevaluation of the 2004 FEIS as part of this FSEIS in order to provide an up-to-date consideration of the 2005 Selected Alternative and its effects on the environment. The primary purpose of the reevaluation process is to determine whether any changes in the project; changes in the existing physical or regulatory environment, including project design, concept and scope; or changes in the affected environment, impact analysis and proposed mitigation measures would result in the need to update technical information from the 2004 FEIS.

Typically, FHWA uses a reevaluation process to determine whether an existing EIS is valid or a SEIS is required. In this case, however, the District Court order specifically required the preparation of a SEIS. Therefore, the reevaluation process was not used to decide whether a SEIS should be prepared. Rather, the reevaluation process was used to assess whether issues in addition to those addressed by the court ruling warranted attention in the SEIS given the time that had elapsed since the 2004 FEIS. Therefore, the results of both the reevaluation and the analyses required by the court ruling comprise this SEIS, and this document serves as both the SEIS and reevaluation report. Pursuant to CEQ and FHWA regulations, this document is subject

to the same distribution and public review requirements as the previously published DEIS and FEIS, except that scoping is not required (23 CFR 771.130(d)).

1.3 Approach to Preparing the SEIS

This section describes the analysis framework used meet the requirements of the Court Order with respect to population and employment inputs in traffic modeling for the FSEIS, and the methodology used to conduct the reevaluation of the 2004 FEIS.

1.3.1 Analysis Framework

To address the Court Order requirement to evaluate the effects of the population and employment growth estimated by the Delphi Panel on traffic and air quality, NHDOT and FHWA decided that the New Hampshire Statewide Model was the best available traffic modeling tool for this purpose. Two population and employment scenarios were evaluated. For one set of analyses (Scenario 1), the Delphi Panel's blended average population and employment estimates were used as inputs in the Statewide Model. The FSEIS also includes traffic modeling based on the latest official state population and employment projections (Scenario 2). The remainder of this section provides more information on the rationale for the two analysis scenarios used in this FSEIS, the updated New Hampshire Statewide Model and the framework for assessing the impacts of the possible tolling of I-93 southbound between Exit 1 and the State line.

Rationale for Two Population and Employment Scenarios

The Delphi Panel was an innovative attempt to estimate population and employment change for the 2004 FEIS. However, with the benefit of time and hindsight a number of problems with the Delphi process and results make the process and its results unreliable for predicting future traffic operations. These problems include:

- There was a lack of consensus among the Delphi Panel members regarding the potential indirect land use effects of the project. The Delphi process is most effective when the panel members reach or approach consensus. The I-93 Improvements Delphi Panel members not only did not reach a consensus, but diverged widely in their view of the effect of the project. For example, the estimates of the change in the study area population from the No Build to the Build condition ranged from zero to 64,600. The estimates of induced employment ranged from zero to 57,650. The Delphi PBAA is a convenient way of reconciling the divergent growth estimates of the individual panelists. The PBAA provides a single number for analysis purposes, but it is misleading in that it suggests consensus by the Panel, when in fact no such consensus was reached.
- It is now known that the level of growth predicted by the Delphi PBAA is probably unrealistically high. For example, the PBAA 2020 build condition population for the New Hampshire portion of the study area is 64,986 persons or 15 percent higher than the current OEP population forecast prepared in 2007.

- There was no upper limit (cap) on the total amount of population or employment growth the panelists could allocate to a given town. By estimating growth for individual towns and summing the results, the Delphi process inherently overestimated growth. In comparison, a standard demographic method (such as used by OEP) utilizes a control total (cap) where the total population of a state or region is established first and then allocated down to the town level.
- No planning agency has adopted or relied upon the Delphi PBAA growth estimates.
- The Delphi Panel results are now outdated because they were based on input from panelists in 2000-2001. OEP and the New Hampshire Economic and Labor Market Information Bureau (ELMI) have prepared revised population and employment projections based on updated information since the completion of the Delphi Panel process. Since 2000, more recent demographic information strongly indicates that the expected growth pressures on southern New Hampshire have either not materialized or have waned. The long term rate of growth for southern New Hampshire has been lowered. The Delphi Panel PBAA growth estimates do not reflect these trends.
- At the time the Delphi Panel was convened in 2000-2001, induced population growth was a nascent concept in environmental documentation, and continues to evolve. Subsequent studies and information have demonstrated that the potential effect of infrastructure improvements (widened roadway vs. new roadway) is likely less than was expected at that time.[3] Transportation is one component in land use decision making, but is not usually the most important component. Other factors include market demand, site suitability, capital availability, economic feasibility, and the regulatory environment.[4] Widening of an existing roadway will not automatically lead to population growth. For example, the Maine Turnpike (I-95) in York and Cumberland counties was widened by one lane in each direction between 2000 and 2004. U.S. Census data shows that York and Cumberland counties grew substantially less in the year following the completion of the widening (2005-2006) than they did in the year before the widening (2000-2001), and share of statewide population growth represented by these two counties decreased from 65 percent before the widening to only 17 percent after.

To meet the specific requirements of the Court Order while also providing an analysis that corrects the deficiencies of the Delphi PBAA in the FSEIS, NHDOT and FHWA decided to provide two population and employment scenarios:

- Scenario 1 Delphi PBAA
- Scenario 2 Official State Projections

To directly address the requirements of the court order in the FSEIS, the Scenario 1 analysis involved using the No Build and Build Delphi Panel Blended Average Allocation (PBAA)

[3] See for example: David Hartgen. Highways and Sprawl in North Carolina. 2003. http://www.johnlocke.org/acrobat/policyReports/highways-report.pdf

[4] Urban Land Institute. Influence of Transportation Infrastructure on Land Use. 2004. http://www.fhwa.dot.gov/planning/tranlanduse.pdf

population and employment levels in the New Hampshire Statewide Model. The resulting traffic projections reflect the baseline growth and induced growth anticipated by the Delphi PBAA and were used as inputs into the air quality and noise analyses for Scenario 1. The future analysis year for Scenario 1 is 2020 to match the Delphi Panel analysis year. The base year for the FSEIS is 2005, to match the base year of the updated New Hampshire Statewide Model.

Scenario 2 was developed to use official state population and employment projections as inputs in the New Hampshire Statewide Model, consistent with the objective of the FSEIS to provide updated project information based on the latest available information. Unlike the Delphi PBAA, Scenario 2 uses control totals and a gravity model accessibility analysis to measure the potential indirect effects of the 2005 Selected Alternative on population and employment growth. Gravity models are an accepted practice for evaluating the potential indirect effects of transportation projects.[5] They are based on the observation that the overall attractiveness of an area to potential residents is partially a function of the capacity of an area for development (vacant developable land in valued and affordable locations) and accessibility to employment and activity centers. The model produces quantified results that can serve as the basis for assessing possible land use change.

Accessibility refers to "the number of opportunities available within a certain distance or travel time."[6] As movement becomes less costly, either in terms of time or money, between any two places, accessibility increases. The propensity for interaction between any two places increases as the cost of movement between them decreases. Accessibility can also be understood as the attractiveness of a place of origin (how easy it is to get from there to all other destinations) and as a destination (how easy it is to get to there from all other origins and destinations). Consequently, the structure and capacity of the transportation network affect the level of accessibility in a given area. The accessibility of places can have an impact on land value, and hence the use to which land is put. Holding all other factors constant, the gravity model formulation assumes that areas where accessibility increases as a result of a transportation project will be relatively more attractive for development than if the project had not been built.

It is important to understand that within a gravity model analysis, regional population and employment totals do not change as a result of the transportation project—only the location of growth changes. For the Scenario 2 analysis, this means that the population and employment control totals for the New Hampshire Statewide Model region (which includes all of New Hampshire and portions of Massachusetts, Maine and Vermont) are the same between the No Build and Build conditions, but the location of growth is redistributed based on the accessibility analysis. This assumption is supported by several recent studies that have contained comprehensive reviews of the literature on transportation improvements and regional development.[7] Each of these literature reviews has concluded that in an age where most

[5] See for example: NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects (page 77) and NCHRP Report 456: Guidebook for Assessing the Social and Economic Effects of Transportation Projects (page 100)

[6] Susan Hanson, The Geography of Urban Transportation, The Guilford Press, New York, 1995, p. 4.

[7] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development*, The Brookings Institution Center on Urban and Metropolitan Policy, 2000; NCHRP Report 423A, *Land Use Impacts of Transportation: A Guidebook*, Transportation Research Board, 1999; NCHRP Report 456, *Guidebook for Assessing the Social and Economic Effects of Transportation*

metropolitan locations are connected by the interstate highway network and other major roadways, roadway improvements, such as a widening, generally do not bring new growth to a region, but instead, influence where growth and development occurs on a local level within the region.

Recent reviews of the literature conclude that:

> Beltways and urban highways more generally do not increase the overall rate of growth [in a region] but may influence where growth occurs and at what densities.[8]

> ...highway projects affect the geographic location of economic activity by advantaging some places while causing firms and persons to shift their location choices away from other places.[9]

Studies have found that the effect of highways on land prices has been diminishing over time since early studies of the first segments of the interstate system in the 1950s. Boarnet and Haughwout (2000) note that studies have shown that incremental improvements in areas that already possess highway access have reduced the magnitude of the influence of highways on land development activity:

> As more highways are built, and the metropolitan highway network matures, the incremental effect on accessibility from new or improved highways decreases, thus accounting for a smaller change in land prices due to any access premium.
>
> New evidence suggests that metropolitan highway projects still influence land use in the way that theory predicts. The important difference between the new evidence and earlier studies is that the geographic scale of the land use effect appears to be somewhat smaller. A new highway or improvement might importantly reduce travel times in the immediate vicinity of a project, even if the resulting changes in metropolitan-wide transportation accessibility are small. Hence the land use effects of modern highway projects likely operate over a very fine geographic scale, rather close to the project. [10]

For roadway widening projects in particular, the relevant literature suggests that regional total population and employment levels will not change as a result of the project. Indirect land use effects are likely to be focused on shifts in the distribution of future growth, concentrated in

---

Projects, Transportation Research Board, 2001; NCHRP Report 403, *Guidance for Estimating the Indirect Effects of Proposed Transportation Projects*, Transportation Research Board, 1998.

[8] Susan Handy, *Smart Growth and the Transportation Land Use Connection: What Does the Research Tell Us?* International Regional Science Review, Vol 28 pp 146-167, 2005

[9] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development,* The Brookings Institution Center on Urban and Metropolitan Policy, 2000.

[10] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development,* The Brookings Institution Center on Urban and Metropolitan Policy, 2000

areas near the project. These conclusions support the overall framework for the Scenario 2 indirect effects analysis through the use of control totals and a gravity model analysis. Additional information on the basis of the No Build and Build population and employment levels for Scenario 2 is provided in Chapter 11, Indirect Effects and the New Hampshire Statewide Model Documentation, located in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

Scenario 2 includes a 2020 analysis year for comparison to the analysis year used by the Delphi PBAA and also a 2030 analysis year in order to match the analysis year of the updated model (i.e., a 20-year horizon typically used in transportation planning).

New Hampshire Statewide Model

NHDOT maintains a statewide transportation model in order to systematically plan for future transportation needs. The purpose of the New Hampshire Statewide Model is to estimate future travel patterns and their effects on transportation infrastructure associated with changes in population and employment in the State. The New Hampshire Statewide Model was developed in 1997, and underwent substantial updates between 2005 and 2007. There are a total of 499 internal Traffic Analysis Zones (TAZs) and 29 external TAZs. The external TAZs are used to represent trips with origins or destinations outside the model area. The model area covers all of New Hampshire, and portions of Massachusetts, Maine, and Vermont.

The 2005-2007 model update process included the use of recent baseline and future year population and employment forecasts. The data sources utilized in these updates included 2000 U.S. Census data, 2005 New Hampshire OEP population projections for New Hampshire, the Massachusetts Statewide Travel Demand Forecasting Model, Maine Office of State Planning population projections for York County, New Hampshire ELMI employment forecasts, and employment growth rates from the U.S. Department of Commerce, Bureau of Economic Analysis. During the 2005 updates, extensive coordination was conducted with the regional planning commissions in the New Hampshire portion of the model area to adjust the employment forecasts based on local knowledge of upcoming developments and conditions. The update process also included changes to the highway and transit networks, and tourist trip purpose modeling (See the New Hampshire Statewide Model Documentation for detailed information, located in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report).

The existing conditions analysis year for the FSEIS is 2005, to coincide with the updated base year of the New Hampshire Statewide Model.

Analysis Framework for Tolling Sensitivity Analysis

On December 12, 2008, NHDOT submitted an Expression of Interest to the FHWA Tolling and Pricing Team to pursue tolling on I-93 as part of FHWA's Interstate System Reconstruction and Rehabilitation Pilot Program. The pilot program allows up to three existing Interstate facilities nationwide to be tolled to fund needed reconstruction or rehabilitation (two of the three slots have already been filled by projects in other states). The proposed toll would have been on I-93 southbound between Exit 1 and the State line and was conceptually envisioned to be $2 for

passenger cars. The revenue generated by the proposed toll would have been used to fund the construction of the I-93 improvements. At the time of the preparation of the DSEIS, the tolling proposal had not been approved by FHWA or the New Hampshire Legislature. Nonetheless, NHDOT and FHWA decided to include an analysis of the potential traffic, air quality and noise effects of tolling on I-93 in the DSEIS. While it was not certain whether or not tolling would eventually occur at the time of the analysis, the tolling analyses was conducted and provided in the DSEIS to disclose the potential impacts of tolling on traffic, air quality and noise.

Subsequent to the publication of the DSEIS, NHDOT has decided not pursue the tolling on I-93 at this time. In a letter to New Hampshire Governor John Lynch dated March 19, 2010, NHDOT Commissioner George Campbell recommends against applying for the tolling pilot program for the following reasons:

1) The restricted geographical location would require All Electronic Tolling (AET), thus limiting the flexibility to introduce Open Road Tolling (ORT) as a possible option.
2) Users of the highway at that location would be paying for a section of the project that is already funded through authorized bond proceeds.
3) New assurances from Massachusetts Secretary of Transportation Jeffery Mullan that there is no current interest in the Bay State of establishing border tolls.

While tolling on I-93 southbound in Salem is not considered a practicable option at this time, the tolling sensitivity analysis prepared for the DSEIS is presented in this FSEIS for information disclosure purposes. The tolling sensitivity analysis compares the Build condition with the toll ("Build with Toll") to the Build condition without the toll ("Build without Toll"). The difference is the incremental effect of tolling on traffic, air quality and noise. Tolling was not analyzed for the No Build condition because the toll was being considered as a mechanism for funding the construction of the project. In addition, tolling was not analyzed for Scenario 1 (Delphi PBAA) demographics. The net effect of tolling under Scenario 1 would be very similar to the net effect under Scenario 2. The sensitivity analysis of Scenario 2 conditions provides a reasonable basis for establishing the general pattern and magnitude of the effects of tolling on I-93 as proposed at the time of the preparation of the DSEIS.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

1.3.2 Reevaluation of the 2004 FEIS

The reevaluation of the 2004 FEIS focused on identifying:

- Changes resulting from additional design refinements from the 2004 FEIS to the FSEIS;
- Changes in information or circumstances relevant to environmental concerns and bearing on the proposed project or its impacts that would result in significant environmental impacts not evaluated in the 2004 FEIS;
- Changes in the relevant regulations or laws since publication of the 2004 FEIS, resulting in new requirements that were not previously addressed;
- Changes in mitigation measures or other environmental commitments; or
- Changes in analysis methods and potential impacts based on the Court Order.

The results of the reevaluation process were used to determine what information from the 2004 FEIS to update as part of the FSEIS. The results of the reevaluation are incorporated in Chapters 3 through 15 of the FSEIS, and in the supporting technical reports.

2.0 PURPOSE AND NEED FOR THE PROJECT

2.1 Purpose

The purpose of the I-93 Improvements project is to improve transportation efficiency and reduce safety problems associated with this approximately 19.8-mile segment of I-93 between Salem and Manchester. The purpose of the project has not changed since the 2004 FEIS.

2.2 Need

Interstate 93 is a north-south principal arterial Interstate highway within the State of New Hampshire and is part of the National System of Interstate and Defense Highways. I-93 in New Hampshire extends a distance of approximately 132 miles from the Massachusetts border at Salem, New Hampshire to the Vermont border at Littleton, New Hampshire. The segment of I-93 under study intersects a number of the important highway routes in southern New Hampshire. Due to population growth, development, and recreation opportunities in New Hampshire, the travel demands for I-93 between Salem and Manchester have exceeded the capacity of this existing four-lane facility for a number of years. Population and traffic projections for the next twenty years support the conclusion that the existing facility will be increasingly less able to function at the levels of service and safety for which it was originally designed. Decreases in the level of service are evident in the reduced traveling speeds, increased density of traffic flow, as well as in the traffic backups at some interchanges and mainline segments during commuting hours.

Traffic backups and congestion are routinely exacerbated due to traffic incidents such as crashes and vehicle breakdowns. As one of the main arterials in the New Hampshire highway system, it is important that this roadway function properly to serve all users. The New Hampshire Legislature recognized the need for improving this highway and included the project in the State Ten-Year Highway Plan when that plan was enacted in 1986 and is included in the current Ten Year Transportation Improvement Plan.

The purpose and need for this project was formally agreed to in a letter dated January 23, 2001, and signed by the state and federal agencies participating in the Environmental Streamlining partnership established for facilitating the study process.

The traffic congestion and crash data supporting the need for the project have been updated since the 2004 FEIS; see Sections 2.2.1 and 2.2.2, below.

2.2.1 Traffic Flow and Congestion

During weekday peak hours, motorists traveling along the I-93 corridor currently experience traffic congestion and substantial delay. The congestion not only results in increased travel times, but also contributes to safety problems, as the limited spacing between vehicles does not afford the motorists desired mobility – often leading to frequent and abrupt lane change

maneuvers and sudden stops. Another consequence of the traffic congestion is increased motor vehicle fuel consumption.

Average daily traffic (ADT) is the average number of vehicles that pass a specified point during a 24-hour period. ADT for 2005 ranged from approximately 72,000 vehicles per day (vpd) between Exits 4 and 5, to as high as 109,000 vpd south of Exit 1. Traffic volumes have grown on all segments of I-93 between 1997 and 2005, with the fastest growth in traffic occurring between Exits 3 and 4 (2.10 percent average annual growth rate).

Level of service (LOS) is a measure describing operational conditions within a traffic stream and motorists' perceptions of those conditions. Six levels of service are defined ranging in letter designation from LOS A to LOS F, with LOS A representing the best operating condition and LOS F representing the worst. LOS C describes a stable flow condition and is considered desirable for peak or design hour traffic flow. LOS D is generally considered acceptable where the cost and impacts of making improvements to provide LOS C are deemed unjustifiable. Level of service E is capacity. Operating conditions during the peak hours of the day are currently poor with all segments of the corridor operating at LOS E or F. Interchange operations also regularly break down during weekday peak hours. On and off ramps to I-93 southbound at Exits 1, 2 and 3 currently operate at LOS E or F during the AM peak hour.

Without substantial improvements, or dramatically reduced demand, traffic operations are expected to continue to deteriorate under future conditions, as traffic volumes increase. Traffic forecasts for the year 2020 show ADT's ranging from approximately 69,300 vpd between Exits 4 and 4A to as high as 123,100 vpd south of Exit 1 for the No Build condition. This level of traffic would further increase congestion along I-93, at the corridor interchanges, and along nearby local roadways. This additional traffic would be expected to expand the period of congestion to more hours of the day and to a greater number of days during the year. Crash frequency would be expected to increase as a result of the increased level of congestion.

I-93 ADT and LOS for 1997, 2005, 2020 and 2030 year conditions are summarized in Tables 2-1 and 2-2, respectively. The 2020 and 2030 No Build traffic projections are based on SEIS Scenario 2 population and employment projections (See Chapter 1: Introduction, Section 1.3.1).

Table 2-1
I-93 Average Daily Traffic

Segment	1997 (2004 FEIS Base Year)	2005 (SEIS Base Year)	2020 No Build[1]	2030 No Build[1]
MA. Line to Exit 1	104,400	109,000	123,100	129,800
Exit 1 to Exit 2	81,100	87,000	96,700	101,900
Exit 2 to Exit 3	74,900	84,000	93,700	98,100
Exit 3 to Exit 4	61,800	73,000	76,500	79,700
Exit 4 to Exit 4A*	64,900	72,000	69,300	72,200
Exit 4A to Exit 5	-	-	81,000	84,500
North of Exit 5	69,300	77,000	78,400	81,700

1. Based on Scenario 2 population and employment (official state projections).
*Exit 4A is a separate future project included in the No Build condition. It does not currently exist in the 2005 baseline condition.

Table 2-2
I-93 Level of Service[2]

Segment	1997 (2004 FEIS Base Year)	2005 (SEIS Base Year)	2020 No Build[1]	2030 No Build[1]
MA. Line to Exit 1	E	E	F	F
Exit 1 to Exit 2	E	F	F	F
Exit 2 to Exit 3	E	F	F	F
Exit 3 to Exit 4	D	E	E	F
Exit 4 to Exit 4A*	D	E	D	E
Exit 4A to Exit 5	-	-	F	F
North of Exit 5	D	E	E	F

1. Based on Scenario 2 population and employment (official state projections).
2. Based on directional design hour volumes (DDHV).
*Exit 4A is a separate future project included in the No Build condition. It does not currently exist in the 2005 baseline condition.

2.2.2 Safety Issues/Crash Data

Crash Data

Crash data from 1995 to 2002 were summarized in the 2004 FEIS purpose and need statement. For this FSEIS, updated crash data from 2000 to 2005, 2006, and 2007 was reviewed.[1] It is important to note that the more recent crash statistics are not directly comparable to the 2004 FEIS crash statistics because the methodology used to collect and analyze the data was changed in 2000.

[1] NHDOT. *Summary of Crash Data, I-93 Salem to Manchester, 2000 to 2007.*

A review of crash data for the 19.8-mile corridor and the interchanges for the five-year period of January 2000 through December 2005 revealed a total of 1,612 crashes. Of these, 543 crashes (34 percent) resulted in personal injury with an additional 8 crashes (less than one percent) resulting in a fatality. The remaining 1,061 crashes (66 percent) resulted in property damage only.

During the period between 2000 and 2005, total crashes ranged from a high of 476 crashes in 2001 to 119 crashes in 2003, with an average of 269 crashes per year over the five year period. Crash data for 2006 and 2007 indicates a substantially higher total number of crashes than the 2000-2005 average, with 330 crashes in 2006 and 395 crashes in 2007. The crash rate for the corridor as a whole has increased in recent years from an average of 0.53 annual crashes per million vehicle miles traveled (MVMT) between 2000 and 2005, to 0.69 annual crashes per MVMT in 2006 and 0.82 annual crashes per MVMT in 2007. The crash rate has increased due to a combination of an increase in the number of crashes and a decrease in Vehicle Miles Traveled (VMT) in 2006-2007 compared to 2000-2005.

The segment of I-93 between Exits 3 and 4 recorded the highest number of crashes from 2000 to 2005 with 465 crashes (29 percent of the total number for the corridor for the time period). Between Exit 5 and I-293, 263 (16 percent of the total) were recorded. The segments between Exits 4 and 5, and between the MA state line and Exit 1 recorded 266 (17 percent of the total) and 294 crashes (18 percent of the total), respectively. The segments between Exit 1 and Exit 2, and between Exit 2 and Exit 3 recorded the fewest crashes with 177 (11 percent of the total) and 147 (9 percent of the total), respectively.

The number of crashes that occurred at each of the interchanges between 2000 and 2005 ranged from a low of zero at I-293 to a high of 90 at Exit 4.

2.2.3 Deteriorating Infrastructure

Infrastructure condition continues to deteriorate along the I-93 corridor between Salem and Manchester. This facility was constructed in the 1960's and many parts are reaching the end of their service life. In 2006, there were 18-red listed bridges in the I-93 project corridor.[2] Twelve of the red listed bridges in the corridor were ranked in the top twenty list of state priorities for replacement. Between the State Line and Exit 3, major deficiencies include fourteen red-listed bridges, poor interchange geometry, and inadequate interchange capacity, and lane drop congestion. At Exit 5, major deficiencies include four red-listed bridges, inadequate ramp lengths, and inadequate interchange capacity. Each of the interchange areas have ramps with less than desirable grades and some acceleration and deceleration lanes with less than desirable lengths. In addition, the mainline grades are also greater than the desirable maximum grades at several locations along the corridor. Pavement along many sections of the corridor is showing signs of distress. As traffic continues to grow and the infrastructure continues to age, the existing deficiencies will become more of a problem.

[2] New Hampshire's red-list identifies bridges requiring interim inspections due to known deficiencies, poor conditions, weight restrictions, or type of construction. These structures are inspected twice yearly.

3.0 ALTERNATIVES

3.1 Introduction

This chapter provides a description of the No Build Alternative and the 2005 Selected Alternative evaluated in this FSEIS, as well as a summary of other Build Alternatives considered and dismissed previously in the development of the project because they would not meet the purpose and need and/or were impracticable. In response to comments on the DSEIS, this chapter provides a reevaluation of alternatives that were previously dismissed and new alternatives that were not considered as part of the 2004 FEIS process. The reevaluation concludes that there are no changes or new information that would warrant a detailed analysis of previously dismissed or new alternatives in this FSEIS.

3.2 Description of the Alternatives Evaluated in this FSEIS

3.2.1 No Build Alternative

The future condition without the proposed project is called the No Build Alternative. The No Build Alternative does not meet the purpose and need for the project. Analysis of the No Build Alternative is required by the National Environmental Policy Act (NEPA) and is used as a baseline for the evaluation of the environmental effects of the 2005 Selected Alternative.

Reasonably foreseeable transportation projects that would be completed by 2020 or 2030 were identified for inclusion in the No Build Alternative roadway network based on discussions and communications between the New Hampshire Department of Transportation (NHDOT), the Central New Hampshire Regional Planning Commission, the Southern New Hampshire Planning Commission, the Nashua Regional Planning Commission, the Rockingham Planning Commission and the Commonwealth of Massachusetts. The following major roadway projects were included as part of the 2020 No-Build for Scenario 1 and Scenario 2:

- Bedford-Manchester, F.E. Everett Turnpike Airport Access Road
- Manchester, I-293 Exit 5 (Granite Street) interchange
- Windham- Salem, NH 111 Bypass
- Nashua, Broad Street Parkway
- Derry-Londonderry, I-93 Exit 4A

The following major roadway project was included as part of the 2030 No-Build for Scenario 2:

- Bow-Concord, Widen I-93 to six lanes between I-89 and Exit 15

For the 2020 roadway network it was assumed that the portion of I-93 in northern Massachusetts would have its current configuration of 3 lanes in each direction plus use of the breakdown lane as a travel lane in the peak periods. For the 2030 roadway network, it was assumed that the

fourth travel lane would be fully operational and that the shoulder would be restored. These assumptions were based on input from the Massachusetts Executive Office of Transportation (MA EOT).[1]

The No Build Alternative does not include the bus-on-shoulder service recommended by the I-93 Bi-State Transit Investment Study Preliminary Definition and Evaluation of Alternatives report. At this time the bus-on-shoulder service is not foreseeable because it is based on preliminary strategic planning and requires major infrastructure improvements in Massachusetts. Key steps to the implementation of the bus-on-shoulder concept have not yet been taken, such as the creation of an implementation agreement between NHDOT, MassDOT, transit agencies and operators, Federal Transit Administration (FTA), FHWA, and area regional planning commissions (RPCs). The bus-on-shoulder concept and infrastructure improvements are not currently included in statewide or metropolitan planning organization (MPO) fiscally constrained long-range transportation plans. For more information on the I-93 Bi-State Transit Investment Study and the decision to not include the conceptual bus-on-shoulder service in the No Build Alternative, see DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

3.2.2 2005 Selected Alternative

Description of the 2005 Selected Alternative

The main element of the 2005 Selected Alternative involves widening I-93 from the existing two-lane highway in each direction to a four-lane highway in each direction. The 2005 Selected Alternative begins in the Town of Salem, NH at the Massachusetts/New Hampshire State line and extends northerly through Salem, Windham, Derry and Londonderry, and into Manchester, ending at the I-93/I-293 interchange. In addition, the proposed project includes the following design modifications and infrastructure improvements for the five interchanges and local roads within the project corridor:

- Replace the red-listed Cross Street Bridge in the Exit 1 Interchange area.
- Reconstruct the Exit 1 interchange to improve substandard ramp geometry and replace seven red-list bridges.
- Reconstruct the Exit 2 interchange to a diamond-type interchange configuration and replace four red-listed bridges.
- Widen and reconstruct Pelham Road from Policy Road to Stiles Road.
- Replace the Brookdale Road Bridge.
- Replace four bridges, including two red-listed bridges, and relocate both the northbound and southbound barrels of I-93 into the median area in the vicinity of Exit 3.
- Reconfigure the Exit 3 interchange ramps with a diamond interchange design.
- Reconstruct and widen NH 111 beginning just west of the NH 111/NH 111A intersection.

[1] MA EOT was combined with other Massachusetts transportation agencies in 2009 to form the Massachusetts Department of Transportation (MassDOT).

- Relocate NH 111 north of its existing location before tying into existing NH 111 near the NH 111/Wall Street intersection.
- Relocate NH 111A on a new alignment near the NH 111/Wall Street intersection.
- In the Exit 4 Interchange area, widen I-93 to the east, retaining the existing layout for the southbound ramps.
- Reconstruct the existing Exit 4 northbound ramps diamond configuration with longer ramps.
- Reconstruct and widen NH 102 from Londonderry Road to the southbound ramps.
- Replace the NH 102 bridge over I-93 with a new bridge built directly south of the existing bridge.
- Reconstruct the Ash Street/ Pillsbury Road Bridge off-line.
- Reconstruct and widen NH 28 on-line from Symmes Drive to Liberty Drive including the reconstruction of the Perkins Road, Vista Ridge and Symmes Drive approaches, as well as the reconstruction of a portion of both Liberty and Independence Drives.
- Reconstruct the existing substandard diamond interchange at Exit 5 and replace four red-listed bridges.

In addition to the overall corridor highway improvements, the proposed project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5.

- Construct a 470-space park-and-ride facility and bus terminal at Exit 2 adjacent to the interchange in the SE quadrant with access via Pelham Road (eastbound traffic only) and from South Policy Street via Raymond Avenue (all directions).
- Construct a park-and-ride lot at Exit 3 adjacent to the relocated northbound barrel in the SE quadrant of the reconstructed interchange. Access would be from NH 111 east of the Exit 3 Interchange and from relocated NH 111A. Other locations are being considered within the immediate area of the interchange.
- Retain the existing parking lots at Exit 4 and construct a new bus terminal building.
- Construct a park-and-ride lot and bus maintenance facility at Exit 5 in the NW quadrant of the interchange just west of the southbound off-ramp. The park-and-ride lot access is from NH 28 (westbound traffic only) and from Symmes Drive (all directions) connecting to NH 28. This maintenance facility supports the implementation of the Expanded Bus Services provided by Boston Express.

Design Refinements Since the 2004 FEIS

Since the 2004 FEIS, the design of the 2005 Selected Alternative has been advanced. The reevaluation of the environmental impacts in this FSEIS takes into account these design refinements on a resource by resource basis.

Expanded Bus Service

NHDOT has developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends. The bus service is a public/private partnership funded through the Congestion Mitigation and Air Quality Program (CMAQ). Total ridership for the expanded service in 2009 was 287,000 (Exit 2, Exit 4, Exit 5 and Manchester).

Intelligent Transportation Systems

Intelligent Transportation System (ITS) technologies and Incident Management strategies are an integral part of the overall transportation improvement strategy for the I-93 corridor. NHDOT proposes to implement some of these measures such as variable message boards, highway advisory radio broadcasts, web site information, emergency reference markers, and coordination strategies among safety agencies before the highway widening. Additional measures will be added when the highway widening is completed.

NHDOT, FHWA, the New Hampshire Department of Safety (NHDOS) and local emergency responders have initiated a program to address the mobility and safety implications of traffic incidents on the I-93 corridor before, during and after the construction of the 2005 Selected Alternative. Traffic incident management training workshops and meetings were held with state and local stakeholders to solicit their input on the needs and opportunities seen in the corridor. A multi-disciplined Incident Management Work Group of NHDOT employees was tasked with developing an action plan from the feedback gathered from these sessions. A Technical Steering Committee, established in 2007, and formalized with local chairmanship in 2008, adopted the I-93 Traffic Incident Management Plan (TIMP) on March 26, 2008. The plan established the following goals:

- Goal #1: Minimize the impacts of incidents on travel
- Goal #2: Improve safety at the incident scene
- Goal #3: Reduce the probability of secondary incidents
- Goal #4: Foster inter-agency cooperation
- Goal #5: Establish a sustainable traffic incident management program

The plan outlined the following strategies to achieve these goals:

- Strategy 1.1: Service Patrols. Service patrols involve assisting motorists stranded with minor vehicle problems to reduce congestion and safety issues caused by drivers shying away from vehicles stopped on the shoulder.

- Strategy 1.2: Intelligent Transportation System (ITS) Devices. ITS devices include cameras, traffic sensors, dynamic message signs, Highway Advisory Radio and phone-based "511" traveler information systems.
- Strategy 1.3: Communications Protocols. Communications protocols deal with the way in which ITS strategies are implemented to provide coordinated response to incidents and communicate information to travelers.
- Strategy 1.4: Emergency Detour Routes. Emergency detour routes help alleviate the traffic congestion on local roads as well as on the interstate during traffic incidents by allowing traffic to bypass the section of the interstate that is affected by an incident.
- Strategy 1.5: Individual Work Zone Traffic Incident Management Plans. This strategy involves the development of detailed traffic incident management measures specific to individual construction projects along the corridor.
- Strategy 1.6: Emergency Responder Support Infrastructure. Emergency responder support infrastructure includes issues such as access to the highway, turnaround points, and access to water sources.
- Strategy 1.7: Memorandums of Agreement (MOA). Examples of the types of MOAs between state agencies, local communities, and private entities envisioned by this strategy include standardization/interoperability of radio communications, traffic signal operations and maintenance, video and data sharing, utility (fire access and standpipe) maintenance and towing services.
- Strategy 1.8: Public Education and Awareness. A public outreach campaign will disseminate information about upcoming construction activities, TIMP strategies and traffic conditions.
- Strategy 1.9: Technical Steering Committee (TSC). The TSC is intended to improve interagency coordination and implementation of the TIMP strategies.
- Strategy 1.10: Post Incident Review Process. A formal post incident review process will improve coordination between responders and identify areas for improvement.
- Strategy 1.11: Enhanced Reference Location Signs. Improved mile marker signs will be installed to increase the accuracy of incident location identification and response times.

Potential Future Mass Transit Accommodations

The 2005 Selected Alternative does not include rail service within the I-93 corridor, or along the former Manchester and Lawrence Rail Line Corridor. However, the 2005 Selected Alternative will accommodate space for potential future mass transit opportunities between the MA/NH state line northerly to the Exit 5 Interchange. The potential rail line within the highway corridor could be a link in a future service between Lawrence, MA or Woburn, MA (and ultimately Boston, MA) to the south and the Manchester Airport and/or the City of Manchester, NH to the north. In addition, the proposed layout provides provisions, such as bridge replacements and continued grade separated crossings, to facilitate, and not preclude, the reestablishment of future rail service on the Manchester- Lawrence line.

NHDOT and the Commonwealth of Massachusetts are evaluating potential public transportation alternatives for the I-93 corridor as part of the separate I-93 Bi-State Transit Investment Study. While the transit service alternatives being evaluated by the Bi-State study would enhance mobility in the corridor, they would not divert sufficient vehicle trips from I-93 to eliminate the need to widen I-93 to four-lanes in each direction. For detailed information on the projected transit ridership levels supporting this conclusion, refer to the I-93 Transit Investment Study Ridership Memo provided in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

Incremental Implementation

As discussed in Chapter 10, four waterbodies impaired for chloride are crossed by I-93 (Beaver Brook, Dinsmore Brook, the north tributary to Canobie Lake, and Policy Brook). Water quality impairment occurs when a waterbody fails to meet the applicable water quality standards (33 U.S.C. § 1313). Section 303 (d) of the Clean Water Act requires development of a pollutant loading and reduction plan, called a Total Maximum Daily Load (TMDL) for each impaired waterway (33 U.S.C. § 1313). The purpose of the TMDL is to identify existing loads in order to identify and eliminate the impaired status. On January 22, 2009, EPA issued a letter to NHDES approving the TMDL studies conducted for the chloride-impaired waterbodies in the I-93 corridor. While EPA approves the TMDL reports establishing the total reduction in chloride loadings needed to achieve water quality standards, NHDES is responsible for the implementation of the TMDLs. For the chloride impaired waterbodies in the I-93 corridor, NHDES will prepare an Implementation Plan containing chloride load allocations. The load allocations will be distributed among the various entities responsible for chloride loadings (e.g. NHDOT for roads maintained by the State, individual municipalities for municipal roads, etc.).

In the 2005 Record of Decision (ROD), FHWA and NHDOT committed to no additional chloride loading from the project to the impaired waterbodies within the corridor. The 2005 ROD concluded that three-lanes could be operated in each direction without increasing chloride loadings based on current salt application best management practices. To meet the commitment to no additional chloride loading, the 2005 ROD required incremental implementation of the project in the event that agreement is not reached with NHDES prior to commencement of construction that new technology, best management practices, and/or other considerations are sufficient for the project to be completed in compliance with conditions placed on the Section 401 Water Quality Certification. The 2005 ROD defined incremental implementation as building the full four-lane footprint for the 2005 Selected Alternative, but only paving and operating the highway as a six lane facility (three lanes in each direction). Bridges and their approaches would be built initially in the final four-lane configuration. The fourth lane would be completed and opened to traffic when agreement with NHDES is reached on chloride issues.

The Section 401 Water Quality Certificate (approved May 2, 2006) references the 2005 ROD and contains a provision requiring incremental implementation of the project if TMDL salt reduction loads cannot be met to ensure compliance with the Clean Water Act. Water Quality Certificate condition E-11 states:

> "if TMDLs are not approved by EPA and implementation plans are not completed and established with implementation of chloride load reductions in accordance with the plan, for the Activity and other roads operated by the Applicant in the TMDL watersheds, the Applicant shall incrementally implement the Activity, as proposed in the last paragraph of Section 1.3 of the ROD, by paving and operating only three lanes in each direction until implementation of the TMDLs is established for roads operated by the Applicant in the TMDL watersheds."

NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner. To assist with the implementation of TMDL load reductions, NHDOT is also assisting the towns in applying for salt reduction grants. A total of $2.5 million is available from FHWA for the municipal salt reduction program. The first phase of the municipal salt reduction program involves each municipality creating a salt management plan. The salt management plans are expected to be completed by July, 2010. Following approval of the salt management plans by a Salt Reduction Workgroup Steering Committee consisting of representatives of NHDOT, EPA, NHDES and FHWA, the towns will be eligible to receive funds for the implementation of their salt management plans.

Incremental implementation of the project (three-lanes in each direction) is possible in the interim, depending on the timing of the implementation of the TMDLs. However, the long-term plan remains to implement the four-lane 2005 Selected Alternative, not the three-lane alternative. As discussed in Section 3.3.4, the changes and new information since the 2004 FEIS do not change the previous conclusions regarding the three-lane alternative.

Project Costs

An initial total project cost of $425 million was estimated in 2002 for the DEIS and Public Hearing. A total revised project cost of $480 million was estimated prior to the June 2005 ROD to coincide with the start of final design. This estimate updated the conceptual DEIS estimate by a simple across the board increase of 10 percent. As part of the 2008 Financial Plan update for the project, NHDOT has prepared a detailed total cost estimate of $795 million (inflated to the future year of construction dollars), see Table 3-1. The major causes of the increase in the project cost estimate include:

- Construction costs escalation (2003- 2006).
- Escalation in right-of-way acquisition costs due to higher than anticipated costs for acquired parcels, post-acquisition settlements, and planned acquisition of larger parcels.
- Ancillary projects such as the start-up costs of the expanded bus service and more detailed cost estimates for Intelligent Transportation Systems (ITS) and Incident Management (IM) elements. These costs were not anticipated in the previous cost estimates.
- Increases in engineering costs as a result of existing consultant contracts, the need to complete the SEIS and general state engineering increases.

Table 3-1
Current Cost Estimates

		Estimated Cost (millions)
Construction	Early Action	$73.8
	Mainline Priorities	$302.1
	Mainline Capacity Improvements	$235.5
	Subtotal	*$611.3*
Right-Of-Way	Acquisitions	$65.4
	Mitigation	$46.6
	Subtotal	*$111.9*
Engineering		$71.2
Total		$794.4

Source: I-93 Improvements 2008 Financial Plan

NHDOT is using a prioritized implementation strategy, utilizing the existing financial resources and available and expected bonding capacity to advance the construction of the project with an emphasis on the areas of greatest concern for safety, capacity and infrastructure condition. It is important to note that all work completed on the corridor will be functional and will be used to manage traffic volumes as construction along the corridor advances. Every segment will be usable once it is complete.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

3.3 Summary of Alternatives Considered and Rejected

Section 3.3.1 summarizes the alternatives considered and rejected through the scoping process for the 2002 DEIS. Section 3.3.2 identifies the reasonable range of alternatives analyzed in the 2002 DEIS and 2004 FEIS. Section 3.3.3 explains the rationale for the 2005 Selected Alternative. During the reevaluation of the 2005 Selected Alternative, no information was found that would require the reexamination of other alternatives previously rejected.

3.3.1 Alternatives Screening

Conceptual alternatives were identified and discussed in the Scoping Report (VHB, May 2000) and the subsequent Rationale Report (VHB, January 2001). Both of these documents were provided to the appropriate federal and state resource agencies and comments solicited. In addition, a series of agency coordination and public information meetings were conducted as part

of the alternatives screening process, see Sections 2.4.1 and 2.4.2 of the 2004 FEIS. The conceptual alternatives identified provided a range of potential solutions or actions to address the purpose and need of the I-93 Salem-Manchester project. The six basic types of alternatives were:

- No-Build,
- Implementation of Transportation System Management (TSM) actions,
- Providing additional lanes to the existing highway (highway widening),
- Implementation of Transportation Demand Management (TDM) strategies
- Providing alternative modes of transportation (a form of TDM),
- A combination of these.

Alternative highway corridors involving the relocation of I-93 (or sections thereof) to bypass existing I-93 were not considered viable options because of the magnitude of investment required, presumed environmental impacts, and current traffic patterns associated with the existing facility.

Transportation System Management

A variety of transportation system management (TSM) measures were considered, including interchange geometry improvements, ramp metering, shoulder lane use, and Intelligent Transportation Systems (e.g. incident management, cameras, dynamic message signs). It was concluded that TSM measures alone would not address all the long-term safety and capacity needs of the I-93 corridor, but some TSM actions can provide short-term relief in advance of a more comprehensive solution. Specifically many of the interchange TSM actions would, in the short-term, enhance the safe and efficient flow of traffic in the vicinity of the interchanges. In addition, Intelligent Transportation Systems (ITS) technology will be incorporated into the overall improvements to I-93. Such systems will supplement and complement regional and statewide efforts currently underway in New Hampshire, and will serve in the long-term to enhance the safety and capacity of the I-93 corridor. Ramp metering was not proposed to be carried forward for further study as its effectiveness relative to improving I-93 would be limited to the southbound barrel in the morning peak period, and the resulting backups on secondary roads within the interchange area would be excessive. The evaluation of shoulder lane use did not support its continued consideration because of safety, cost and construction scheduling issues.

Highway Widening and Interchange Improvements

Highway widening alternatives considered included a three-lane alternative, four-lane alternative and a combination alternative. In addition, numerous interchange reconstruction alternatives were evaluated. Environmental, socioeconomic and engineering constraints were taken into account during the development of these alternatives with impacts to resources minimized as practicable. It was concluded that all three of the highway widening alternatives should be

advanced for detailed analysis in the EIS. In addition, several of the interchange options were advanced.

Transportation Demand Management

Transportation demand management (TDM) encompasses strategies that are designed to change personal travel behavior to reduce the demand for automobile use and the need for highway capacity expansion. TDM measures considered included employer-based incentives, congestion pricing, High Occupancy Vehicle (HOV) lanes, park-and-ride lots, bus service improvements, and rail service improvements.

Congestion pricing was not proposed for further study as it would do little to address current congestion levels, there is a lack of alternative routes or modes and heavy public opposition was anticipated.

Based on the study of potential ridership and its affect on highway level of service, bus service, rail service and the use of HOV lanes, either alone or in combination with each other, do not eliminate the need to widen the highway, if acceptable levels of service are to be achieved over the next 20 years. The mode options will help alleviate the number of hours over which congestion occurs, but the peak hour of congestion will remain, and under many of the mode combinations tested, the 3+ hour period of congestion will remain. These measures do not result in enough diversion to influence the need to widen the highway and would result in major additional expenditures for construction and long term operation. They also require substantial investment by the State of Massachusetts. With this in mind, it was concluded that further consideration of HOV lanes and rail service would be discontinued as part of this project.

Expanded bus service, new park-and-ride lots and enhanced ridesharing opportunities were proposed for further evaluation. In addition, given the possibility that rail service will be required to meet the long-range needs of transportation in the area served by I-93, it was proposed that space be reserved within the I-93 highway corridor for a possible future passenger rail line. By reserving such space, future opportunities for rail service, and possibly as an interim measure for bus service, will remain available.

In the 2004 FEIS NHDOT committed to conducting a study with the Commonwealth of Massachusetts to evaluate long-term transit alternatives between Boston, MA and Manchester, NH. The objective of the I-93 Bi-State Transit Investment Study is to determine future transit investments necessary to meet mobility needs within a study area which encompasses the study area for the I-93 project as well as part of Massachusetts, and to develop a strategic plan for funding and phased implementation of the recommended options. As part of the study, a Preliminary Draft Definition and Evaluation of Alternatives report was issued evaluating conceptual alternatives and recommending implementation of bus-on-shoulder service on I-93 and preservation of the Manchester & Lawrence right-of-way for potential future use (NHDOT and MAEOT, 2008). The bus-on-shoulder service was found to have roughly the same ridership at half the cost of rail. Therefore, a new rail transit service was found to not meet cost effectiveness criteria in comparison to the bus-on-shoulder alternative, but may be feasible in the future, possibly beyond the study's 2030 horizon year.

3.3.2 Identification of a Reasonable Range of Alternatives

Based on the collective consideration and analysis summarized in Section 3.3.2, the following seven alternatives or combination thereof were selected as a "reasonable range of alternatives" for more detailed evaluation in the 2002 DEIS and 2004 FEIS:

1. The No-Build Alternative, which essentially serves as the baseline condition for comparison with the Build Alternatives.

2. Transportation Systems Management (TSM) measures; specifically minor improvements such as ramp lengthening and lane widenings that can be accomplished within the existing ROW at minimal expense. Such measures generally do not address the long-term project purpose and need, but can help to alleviate problems in the near term. Two other TSM measures, ramp metering and shoulder lane use, were determined to be impractical and were not proposed for further consideration.

3. Widening I-93 to 4-lanes in each direction the entire length of the corridor including interchange improvements, in addition to constructing or expanding park-and-ride lots at Exits 2, 3, 4, and 5, and providing room and, as practical, constructing sub-grade for future rail transit service within the highway corridor.

4. Widening I-93 to 3-lanes in each direction for the entire length of the corridor including interchange improvements, in addition to the same park-and-ride lot construction and provision for future rail transit service as noted with the 4-lane widening alternative.

5. Widening I-93 to 4-lanes in each direction south of Exit 3 and 3-lanes in each direction north of Exit 3 including interchange improvements, along with the provisions proposed with either the 3 or 4-lane widening schemes. This is the so called "Combination Alternative".

6. Transportation Demand Management (TDM) measures; specifically Intelligent Transportation Systems (ITS) techniques as well as employer based measures utilizing incentives and disincentives to encourage people to not drive alone. It was concluded that congestion pricing, another TDM measure, would be impracticable.

7. Improvements in bus service to include expanding existing service and providing enhanced ride-sharing opportunities to employment centers in northern Massachusetts. After ridership studies, it was concluded that neither rail service nor HOV lanes would be effective alone or in combination with other mode options in satisfying the need for the project.

In a Memorandum of Agreement signed in the Fall of 2002, the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (EPA), U.S. Fish & Wildlife Service (USFWS),

Federal Transit Administration (FTA), NHDES, New Hampshire Fish and Game Department (NHF&GD), and the New Hampshire Division of Historical Resources (State Historic Preservation Office - SHPO) agreed that these alternatives represented a reasonable range of alternatives.

3.3.3 Rationale for the 2005 Selected Alternative

The No Build Alternative would not meet the purpose and need for the project. The four-lane alternative rather than the three-lane alternative or combination alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). On December 30, 2003 ACOE issued a letter to NHDOT identifying the four-lane alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) under the Section 404(b)(1) Guidelines.

3.3.4 Reevaluation of Alternatives

As a result of the Court Order, the scope of the SEIS is limited and does not include analysis of alternatives other than the 2005 Selected Alternative. The Court Order directed NHDOT and FHWA to prepare a focused SEIS specifically considering: "how the Delphi Panel's population forecasts affect Defendant's analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the population predicted by those forecasts on secondary road traffic and air quality issues." The Court Order did not require additional analysis of other alternatives. The limited scope of this SEIS was disclosed in the Notice of Intent published in the Federal Register on March 12, 2008. The use of a limited scope SEIS is explicitly allowed under FHWA's NEPA regulations (23 CFR 771.130 (f)).

Nevertheless, in response to comments on DSEIS, this section provides a reevaluation of alternatives that were previously dismissed and new alternatives that were not considered as part of the 2004 FEIS process. The reevaluation concludes that there are no changes or new information that would warrant a detailed analysis of previously dismissed or new alternatives in this FSEIS.

Three-Lane Alternative

Comments on the DSEIS included the desire for the three-lane alternative to be analyzed in the FSEIS based on the following new information: 1) the updated New Hampshire Statewide Model, 2) the use of the gravity model approach instead of the Delphi Panel for Scenario 2, and 3) population projections that have been revised downward since the 2004 FEIS. The changes and new information since the 2004 FEIS do not change the previous conclusions regarding the three-lane alternative. The basis for the decision not to analyze the three-lane alternative in the FSEIS is discussed in detail below.

Updated New Hampshire Statewide Model
The primary change to the New Hampshire Statewide Model since the 2004 FEIS has been the updates to population and employment information. This issue is addressed below in the Updated

Population and Employment Projections section. In addition to the population and employment updates, the updates to the New Hampshire Statewide Model between 2005 and 2007 included:

- Conversion of the model software platform from EMME/2 to TransCAD. The current TransCAD model retains the same basic structure and inputs as the original EMME/2 model developed in 1997. Therefore, this change would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative.
- Tourist trip purpose modeling. This additional feature would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative because tourist trips remain a limited proportion of overall travel activity.
- Transit model update. The transit network was updated to account for service changes since 1995-1998. These minor updates to the modeling of intercity rail and bus service would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative because transit ridership remains very small in comparison to the number of trips on I-93 made by automobiles and trucks.

The New Hampshire Statewide Model is an updated and improved tool, not new information unto itself. For more information on the updates to the New Hampshire Statewide Model, refer to DSEIS Appendix A-2.

Use of Gravity Model Approach for Scenario 2

The gravity model approach was used to model potential indirect land use effects under Scenario 2, instead of the Delphi approach used in the analysis of Scenario 1. The gravity model changes the distribution of population and employment in the region based solely on changes in accessibility.[2] In this case, the New Hampshire Office of Energy and Planning's (OEP's) population forecast is used as the basis for the Build Condition and the gravity model is used to define the No Build condition (distribution of population and employment without the project). However, the gravity model analysis for Scenario 2 shows a relatively small change in the distribution of population and employment as a result of the project (See for example, Table 12-7). Therefore, the gravity model approach itself does not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative. The issue of changes in population and employment projections is addressed below.

Updated Population and Employment Projections

The Scenario 2 2020 population and employment projections used in the traffic modeling for the SEIS are only slightly higher than the population and employment projections used in the traffic modeling for the 2004 FEIS. As a result, the three-lane alternative would perform similar to or worse than it did in the 2004 FEIS analysis under Scenario 2 in 2020. Therefore, additional detailed analysis of the three-lane alternative in the SEIS is not warranted or necessary.

[2] Accessibility can be understood as the attractiveness of a place of origin (how easy it is to get from there to all other destinations) and as a destination (how easy it is to get to there from all other origins and destinations). Consequently, the structure and capacity of the transportation network affect the level of accessibility in a given area. The accessibility of places can have an impact on land value, and hence the use to which land is put. Holding all other factors constant, the gravity model formulation assumes that areas where accessibility increases as a result of a transportation project will be relatively more attractive for development than if the project had not been built.

The 2020 population and employment levels used in the 2004 FEIS traffic modeling were based on OEP projections from the mid-1990's. These projections were developed using the results of the 1990 Census. Subsequent to the release of the 2000 Census results, growth projections were revised upward. The 2005 Traffic Sensitivity Analysis (TSA) reported that the population projections used in the 2004 FEIS traffic model for the 23 communities in the New Hampshire portion of the Delphi study area was 11 percent lower than the latest available OEP projection at that time (See DSEIS Appendix A-1: 2005 Traffic Sensitivity Analysis). Since the release of the TSA, OEP has lowered their growth projections, but they still remain slightly higher than the projections used in the traffic modeling for the 2004 FEIS. For example, the 2020 population for the 23 communities under the Scenario 2 No Build condition is 3.9 percent higher than the population used in the 2004 FEIS modeling. The 2020 employment for the 23 communities under the Scenario 2 No Build condition is 7 percent higher than the population used in the 2004 FEIS modeling. A detailed comparison of the population levels used in the 2004 FEIS traffic modeling with the Scenario 2 2020 and 2030 No Build is provided in Table 3-2. The relative difference between the 2004 FEIS population levels and the Scenario 2 population levels would be slightly larger if the comparison was made to the Scenario 2 Build condition instead of the No Build condition.

Conclusion

The changes since the 2004 FEIS, including changes in population and employment growth projections, show that the three-lane alternative would perform similar or worse than it did in the 2004 FEIS. The three-lane alternative underperformed as a congestion mitigation measure for 2020 and would continue to provide inadequate LOS for 2030 (refer to FSEIS Appendix B: Three-Lane Alternative Memorandum for detailed information on the expected LOS for the three-lane alternative for Scenario 2 2020 and 2030). No new information has been identified that would change the conclusions of the 2004 FEIS regarding the three-lane alternative. Therefore, the information used in the decision to select the four-lane alternative remains valid.

Table 3-2
Comparison of Population Projections Used in Transportation Modeling
2004 FEIS vs. Scenario 2 2020 and 2030 No Build

	2004 FEIS 2020 Population	Scenario 2 2020 No Build Population	Difference	Percent Difference	2030 No Build Population	Difference	Percent Difference
Allenstown	5,731	5,634	-97	-1.7%	5,976	245	4.1%
Atkinson	6,639	7,307	668	9.1%	7,707	1,068	13.9%
Auburn	6,308	5,680	-628	-11.1%	5,999	-309	-5.2%
Bedford	28,250	23,730	-4,520	-19.0%	24,978	-3,272	-13.1%
Bow	7,974	9,731	1,757	18.1%	10,838	2,864	26.4%
Candia	4,594	4,516	-78	-1.7%	4,755	161	3.4%
Chester	3,753	5,116	1,363	26.6%	5,449	1,696	31.1%
Concord	41,813	47,626	5,813	12.2%	50,527	8,714	17.2%
Danville	5,484	5,057	-427	-8.4%	5,383	-101	-1.9%
Deerfield	5,537	4,744	-793	-16.7%	5,035	-502	-10.0%
Derry	49,547	37,960	-11,587	-30.5%	39,086	-10,461	-26.8%
Dunbarton	2,980	2,881	-99	-3.4%	3,102	122	3.9%
Goffstown	18,480	20,104	1,624	8.1%	21,474	2,994	13.9%
Hampstead	13,565	9,770	-3,795	-38.8%	10,440	-3,125	-29.9%
Hooksett	10,694	16,159	5,465	33.8%	17,725	7,031	39.7%
Londonderry	31,699	27,683	-4,016	-14.5%	29,456	-2,243	-7.6%
Manchester	94,633	116,515	21,882	18.8%	119,764	25,131	21.0%
Pelham	13,053	16,822	3,769	22.4%	19,612	6,559	33.4%
Pembroke	7,924	8,332	408	4.9%	8,926	1,002	11.2%
Raymond	15,236	11,843	-3,393	-28.6%	12,509	-2,727	-21.8%
Salem	27,879	32,484	4,605	14.2%	33,926	6,047	17.8%
Sandown	8,931	6,573	-2,358	-35.9%	7,007	-1,924	-27.5%
Windham	12,214	13,892	1,678	12.1%	14,728	2,514	17.1%
Total	**422,918**	**440,159**	**17,241**	**3.9%**	**464,402**	**41,484**	**8.9%**

Transportation Demand Management and Public Transportation

Comments on the DSEIS also included the desire for TDM measures to be evaluated in the FSEIS, such as congestion pricing, 55 mph speed limit and HOV lanes. Comments on the DSEIS also suggested improved public transportation as an alternative to roadway widening. Each of these alternatives, and the rationale for why they were not analyzed in detail in the FSEIS, are addressed below

Congestion Pricing
Congestion pricing was considered during the alternatives screening process for the 2004 FEIS (See Section 2.3.4.2 of the 2004 FEIS). It was concluded that congestion pricing would be impracticable. A congestion pricing alternative would still be impracticable for the following reasons:

- Impacts on other roadways- shifting traffic to other facilities from I-93 would not be consistent with the purpose and need for the project (improving transportation system efficiency);
- Public acceptance issues with the relatively high charges that would be needed to manage traffic demand in the peak periods without widening the roadway; and
- Social justice issues raised by disparate impacts by congestion pricing.

As discussed in Section 1.3.1, the $2 non-variable toll on I-93 southbound between the Stateline and Exit 1 under consideration at the time of the preparation of the DSEIS has since been found to be impracticable.

No new information has been identified that would change the conclusions of the 2004 FEIS regarding congestion pricing. Therefore, the information used in the decision to reject this alternative remains valid.

55 MPH Speed Limit

A 55 mph speed limit was suggested in comments on DSEIS as both a means to reduce travel demand and to improve safety. The speed limit on I-93 south of Exit 2 is 55 mph. Reducing the speed limit on I-93 north of Exit 2 to 55 mph would be inconsistent with the purpose of the project related to improving transportation system efficiency. A lower speed limit would increase travel times and costs for individuals and businesses.

As for the safety goals of the project, the effect of speed limit policies on safety on interstate highways is unclear. While some studies have shown a reduction in accident rates with a lower speed limit, others have shown no change.[3] In addition, experience with the National maximum speed limit law (repealed in 1995) has shown that the majority of drivers ignore a 55 mph speed limit on interstate highways. Therefore, reducing the speed limit on I-93 to 55 mph would not be an effective strategy for improving safety.

Although a 55 mph speed limit was not an alternative considered during the alternatives screening process for the 2004 FEIS, the discussion above supports the conclusion that it is not a reasonable alternative that would warrant detailed analysis in the FSEIS.

HOV Lanes, Rail Service, Bus Service

Alternatives incorporating HOV lanes, rail service and bus service were considered and found not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). These alternatives would result in little or no reduction in travel on I-93 during the design hour and would not reduce the number of additional travel lanes required to provide acceptable levels of service on I-93. Since they would not increase the efficiency of the transportation system, these alternatives were eliminated from further consideration and do not require detailed study in the FSEIS.

[3] See for example: Malyshkina and Mannering, 2008. "Effect of Increases in Speed Limits on Severities of Injuries in Accidents" Transportation Research Record, Volume 2083. (An increase in the speed limit from 65 mph to 70 mph did not have a statistically significant effect on the severity of accidents on Interstate highways in Indiana).

No new information has been identified that would change the conclusions of the 2004 FEIS regarding HOV lanes, rail service and bus service. Therefore, the information used in the decision to reject these alternatives remains valid.

4.0 TRAFFIC

4.1 Introduction

This chapter provides a summary of the detailed information in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report. No substantive changes have been made to the traffic analyses since the DSEIS.

4.1.1 Traffic Analysis Terminology and Criteria

Traffic Volumes

The general unit of measure used to quantify roadway usage is the average daily traffic (ADT), which is defined as the total volume of traffic during a given period of time divided by the number of days in that time period. A more specific unit of measure is known as the average annual daily traffic volume (AADT), which is determined by dividing the total yearly volume by the number of days in the year. Although an actual AADT can only be established at a continuous count station, AADTs can be estimated along segments of roadways by applying adjustment factors developed from data collected at continuous count stations to specific daily or hourly counts.

While the AADTs are an important measure, it is the hourly volume condition that is primarily used to evaluate and design roadway facilities. However, because hourly traffic volumes can vary substantially over the course of a day and throughout the year, it is necessary to select an appropriate design hourly volume condition. A design based on the (maximum) peak hour traffic of the year is not an appropriate design hour volume condition. Designs based on such extreme conditions would be a poor investment of public funds given the size of the facility that would be required. Similarly, the average hourly traffic volume condition would result in an inadequate design as it would be exceeded half of the time. In accordance with industry practice, the hourly traffic volume used for the purpose of design should not be exceeded very often or by very much, while on the other hand, it should not be so high that the volume of traffic would rarely be high enough to make full use of the facility.

As recommended in *A Policy on Geometric Design of Highways and Streets*[1], the hourly traffic volume that should generally be used for the design of a highway facility is the 30th highest hourly volume of the year. Given the economic considerations involved in the planning and design of roadway facilities, this design criterion is selected since the 30th highest hourly volume generally reflects a "point of diminishing return" in that a substantial increase in design requirements would accommodate only very few periods of higher traffic volumes. The 2004 FEIS found that based on the data from the NHDOT permanent count station between Exits 3 and 4, the 30th highest hour volume for I-93 is approximately 9.4 percent of the ADT. The

[1] American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, Washington, D.C., 2004.

Directional Design Hour Volume (DDHV) split shows approximately 60 percent of the total hourly traffic traveling in the peak direction.

Level of Service

Level of service (LOS) is a measure describing operational conditions on a transportation facility and motorists' perceptions of those conditions. Level of service generally describes these conditions in terms of such factors as speed and travel time, density or freedom to maneuver, traffic interruptions, comfort and convenience, and safety and, in so doing, provides an index to quality of traffic flow. LOS ratings range from A (no congestion on the road) to F (roadways that are overcapacity). It is important to note that there is considerable variance within the LOS F range for the various facility types that have been analyzed. When necessary, the results within the LOS F range will be differentiated to show relative congestion levels (e.g. average delay per vehicle for intersections). The criteria used to define LOS for freeways, ramp junctions, signalized intersections and unsignalized intersections are based on the methodologies presented in the 2000 Highway Capacity Manual (HCM).[2]

Freeways

For freeways (limited access roadways, including the I-93 mainline), LOS is estimated based on the density of the vehicles (a measure that quantifies the proximity of vehicles to each other within the traffic stream) and indicates the degree of maneuverability within the traffic stream. LOS A describes completely free flow conditions. LOS C describes a stable flow condition and is considered desirable for peak or design hour traffic flow. LOS E is capacity, while LOS F represents forced break down flow. The theoretical capacity of a highway with a free flow speed of 65 mph is approximately 2,350 vehicles per lane per hour. However, because of factors such as the number of heavy vehicles, slope, driver characteristics (percentage of commuters), etc., this capacity is reduced based upon prevailing conditions. In addition, as congestion increases, the capacity of a highway lane decreases because the efficiency of traffic flow is reduced (e.g. lower speeds). For example, the approximate capacity of the segment of I-93 northbound between the State line and Exit 1 is estimated to be 1,800 vehicles per lane per hour under congested flow conditions (see the capacity analysis subsection of Section 4.4.6 for more information).

In the design of new roadway facilities, NHDOT policy has established LOS C as desirable and LOS D as minimally acceptable. However, despite establishing LOS D as the minimally acceptable LOS, NHDOT has also expressed a general policy of not constructing highways with more than eight basic lanes (four lanes in each direction). An eight-lane facility, excluding auxiliary lanes required at interchanges, is the widest configuration that NHDOT considers appropriate for New Hampshire. Continued widening beyond eight lanes is not considered a feasible and prudent option to address future long-range transportation needs in the I-93 corridor. Therefore, LOS lower than LOS D (e.g. LOS E or LOS F) is considered acceptable where more than four-lanes in each direction would be required to achieve LOS D.

[2] 2000 Highway Capacity Manual, Transportation Research Board, Washington, D.C.

Ramp Junctions
The LOS for ramp junctions (merge and diverge areas) is determined based on the density (passenger cars per mile per lane) in the influence area of the ramp. LOS A through E represent stable operation at the merge or diverge influence areas without adversely disrupting through vehicles. LOS F represents breakdown conditions where the demand exceeds the capacity of upstream or downstream freeway sections or the capacity of an off-ramp.

Signalized Intersections
The LOS of a signalized intersection is defined in terms of control delay per vehicle (seconds per vehicle). Control delay is the portion of total delay experienced by a motorist that is attributable to the traffic signal. It is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. At signalized intersections the control delay (and associated LOS) can be calculated for individual movements, an entire approach leg, or the overall intersection. LOS A describes operations with minimal delays, up to 10 seconds per vehicle, while LOS F describes operations with delays in excess of 80 seconds per vehicle. Under LOS F, excessive delays and longer queues are common as a result of over-saturated conditions (i.e., demand rates exceeding the capacity).

Unsignalized Intersections
The LOS for a stop sign controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. The LOS control delay is the portion of total delay experienced by a motorist that is attributable to a stop sign. The control delay is defined for each critical traffic movement in the intersection and is not defined for the intersection as a whole.

4.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

4.2.1 Traffic Data Collection and Traffic Model

The 2004 FEIS utilized traffic volume data collected in 1997 as the base year for establishing existing traffic volumes. The existing traffic volumes for 1997 were provided for the I-93 mainline, entrance/exit ramps, and the intersections of the ramps with the feeder roadways. The future analysis year was 2020 and future traffic volumes were projected using the New Hampshire Statewide Travel Demand Modeling System (NHSTMS) and the I-93 sub-area model of the NHSTMS. The 2020 highway network included proposed improvements expected to be completed by 2020, such as the I-293 reconstruction, the Manchester Airport Access Road, the Nashua Circumferential Highway, and the F.E. Everett Turnpike expansion.[3] The 2020 population levels in the model were based on projections by the New Hampshire Office of State Planning (now the Office of Energy and Planning) from the mid-1990s.

[3] The 2004 FEIS analysis did not include I-93 Exit 4A, a new interchange between the existing Exits 4 and 5 proposed by the Towns of Londonderry and Derry. The Exit 4A project was not considered reasonably foreseeable at the time of the 2004 FEIS. In 2007, a Draft Environmental Impact Statement (DEIS) for the Exit 4A project was published. As noted in Section 4.4.5, the Exit 4A project is included in the SEIS Scenario 1 and Scenario 2 future No Build conditions.

4.2.2 Traffic Analysis Results

The ADT, DDHV, and LOS results from the 2004 FEIS for the I-93 mainline are summarized in Table 4-1. The results showed that the 2005 Selected Alternative would substantially reduce mainline congestion in comparison to the No Build Alternative by eliminating LOS E and F conditions on all but one segment. The segment of I-93 south of Exit 1 would be improved from LOS F to LOS E as a result of the 2005 Selected Alternative. The 2005 Selected Alternative was expected to increase traffic volumes (ADT and DDHV) within the I-93 corridor in comparison to the No Build Alternative since the number of vehicles projected to be diverted from I-93 to other roadways would be substantially reduced.

Table 4-1
Summary of 2004 FEIS Mainline Traffic Analysis Results, 2020
No Build Compared to Build

	ADT		DDHV		LOS	
Segment	**No Build**	**Build**	**No Build**	**Build**	**No Build**	**Build**
MA. Line to Exit 1	137,000	143,600	7,700	8,100	F	E
Exit 1 to Exit 2	103,600	116,500	5,800	6,600	F	D
Exit 2 to Exit 3	98,000	108,900	5,500	6,100	F	C
Exit 3 to Exit 4	73,000	76,600	4,100	4,300	E	B
Exit 4 to Exit 5	81,200	85,200	4,600	4,800	E	C
North of Exit 5	84,300	88,900	4,800	5,000	F	C

The interchange ramp junction analysis presented in the 2004 FEIS showed that all ramp movements would operate at LOS D or better under the 2005 Selected Alternative. The signalized intersection analysis found all analyzed intersections near the corridor interchanges to operate at LOS D or better under the 2005 Selected Alternative, with the exception of NH 102/Fordway Street intersection which would operate at LOS F during the PM peak hour. This intersection was found to be at LOS F under existing conditions, as well as under the future No Build condition.

4.2.3 Record of Decision Commitments/Mitigation

The Record of Decision made the following commitments with respect to traffic:

- NHDOT will coordinate with the town of Windham to accommodate the town's planning goals for the Exit 3 Interchange area.

- Three new park-and-ride lots will be constructed at Exits 2, 3 and 5, in addition to the overall corridor highway improvements to support carpooling and enhance ride-sharing opportunities. The new park-and-ride facilities will include the construction of terminal facilities to support expanded and enhanced bus service in the corridor. A terminal facility will also be constructed within the existing park-and-ride lot at Exit 4 to promote consistent service within the corridor. The park-and-ride facilities at Exit 2 and Exit 5

will be constructed in advance of the mainline highway widening work to provide options for commuters seeking alternatives during construction.

- NHDOT will continue to work with regional and local officials to implement the recommendations of the "Salem to Concord Bikeway Feasibility Study" in lieu of in-corridor bicycle facilities. Paved shoulders along intersecting side roads are proposed for shared-use bicycle lanes. In addition, providing suitable accessibility for bicycle users through interchange areas will be considered in more detail during final design.

- The current bus service to Boston that operates in the corridor will be expanded to provide service from the new park-and-ride bus station facilities along with the existing Exit 4 lot. NHDOT is committed to supplementing transit service as an integral component of the Transportation System in the I-93 corridor as part of the funding strategy being developed.

- All appropriate avenues of funding for bus service will be pursued including Congestion Mitigation and Air Quality Improvement Program (CMAQ) and Federal Transit Administration (FTA) funds. Full funding of bus purchases is anticipated along with construction of other required capital improvements (i.e. terminal and bus maintenance facilities). Assistance with operating costs for a three-year start-up period is proposed with the expectation that the bus service will achieve financial viability and be self-sufficient beyond this start-up period. As part of the overall funding strategy, funds for a transit marketing program are included.

- NHDOT will continue to work towards providing enhanced ride-sharing opportunities. NHDOT will continue working cooperatively with public transit agencies, the MPOs, the Transportation Management Organizations and Transportation Management Associations (TMA), as well as the Commonwealth of Massachusetts, to develop a coordinated transit program for the I-93 corridor. NHDOT will work with "CARAVAN for Commuters" to develop concepts for a ride-sharing program from southern New Hampshire that serves the entire I-93 corridor. NHDOT further proposes to subsidize a commuter incentive program in its early stages.

- NHDOT will continue to develop and improve on incident management procedures in the corridor relative to response time, minimizing traffic delays and addressing traffic diversion issues. A number of incident management practices will be considered and implemented in the near-term, during construction, and over the long-term, following construction.

- Intelligent Transportation System (ITS) technologies will be incorporated into the overall I-93 improvements to better manage traffic/travel demand, enhance safety and capacity, and supplement incident management initiatives.

- The proposed layout will not preclude future mass transit opportunities within the I-93 corridor or along the former Manchester-Lawrence line. The Selected Alternative will accommodate space within the median to allow future mass transit opportunities in the

corridor. In addition, the proposed layout will provide provisions, such as bridge replacements and continued grade-separated crossings at Exit 5 to facilitate possible future rail service on the Manchester-Lawrence line.

- A Bi-State Transit Investment Study has been jointly undertaken with the Commonwealth of Massachusetts in April 2005 to consider in more detail the long-term rail and transit needs and identify viable options for the overall I-93 corridor between Manchester and Boston. NHDOT and the Massachusetts Highway Department (MassHighway) signed a Memorandum of Understanding that allowed initiation of this study in March 2005.

The execution or implementation of many of the ROD commitments, such as the construction of the park and ride facilities, the bus terminal facilities, and the initiation of the transit investment study are already underway. Other commitments, such as design of the Incident Management and Intelligent Transportation System have been initiated and will be included in the design of the project.

4.3 Summary of 2005 Traffic Sensitivity Analysis

In response to comments on the 2004 FEIS concerning the potential effects of the Delphi Panel's population and employment projections, a Traffic Sensitivity Analysis reflecting the induced traffic that may possibly occur was conducted and referenced in the 2005 Record of Decision. The Traffic Sensitivity Analysis used the same I-93 sub-area model used in the 2004 FEIS (1997 base year) and all model parameters except for population and employment remained the same as in the model runs conducted for the 2004 FEIS. The Traffic Sensitivity Analysis included model runs for the following two conditions:

- Build (four-lanes in each direction) with current New Hampshire Office of Energy and Planning (OEP) population projections.

- Build (four-lanes in each direction) with Delphi Panelist's Blended Average Allocation (PBAA) population and employment estimates.

The Traffic Sensitivity Analysis results for the Delphi PBAA Build condition are summarized in Table 4-2. The results showed that when the added potential traffic associated with the Delphi PBAA population and employment estimates was considered, the 2005 Selected Alternative would provide LOS F from Exit 1 south, LOS E from Exit 3 south, and LOS C north of Exit 3. The 2005 Record of Decision made the following conclusions based on the results of the Traffic Sensitivity Analysis:

> Even when you consider the additional potential traffic from the Delphi process, the following conclusions are still valid:

- There is substantial new capacity being added.
- There will be an improved level of service compared to the existing condition.

- Operating conditions will be substantially better than the No Build condition of corridor-wide failure.
- The conclusion does not change, i.e. the southern tier was known to be congested, and the NHDOT will not pursue an improvement greater than four lanes in each direction.
- The observable benefit was not necessarily in the peak hour but in the reduction of congested hours each day.
- The higher volumes increase the need for capacity and safety improvements in the corridor and reinforce the decision to pursue the Selected Alternative (four lanes in each direction).

Traffic Sensitivity Analysis also provided ridership projections for the I-93 Enhanced Rail Corridor alternative based on Delphi PBAA build condition population and employment levels. The Traffic Sensitivity Analysis concluded that design hour volumes (the basis for LOS determinations) would not be substantially affected by the rail ridership and that a rail alternative does not reduce the travel demand such that I-93 would not have to be widened. The full text of the Traffic Sensitivity Analysis is provided in Traffic Written Reevaluation/Technical Report DSEIS Appendix A-1.

Note that even though they are both based on the Delphi PBAA population and employment estimates, the Traffic Sensitivity Analysis results are not directly comparable to SEIS Scenario 1 due to the use of a different transportation model (e.g. updated New Hampshire Statewide model with a 2005 base year) and different No Build projects (e.g. Scenario 1 includes I-93 Exit 4A).

Table 4-2
Summary of 2005 Traffic Sensitivity Analysis Results, 2020
Delphi PBAA Build Condition

Segment	ADT	DDHV	LOS
MA. Line to Exit 1	187,160	10,556	F
Exit 1 to Exit 2	151,112	8,253	E
Exit 2 to Exit 3	140,304	7,913	E
Exit 3 to Exit 4	96,632	5,450	C
Exit 4 to Exit 5	97,642	5,507	C
North of Exit 5	100,131	5,674	C

4.4 Methodology

4.4.1 Traffic Data Collection

Updated traffic volume information was collected to represent the 2005 base year (existing) condition for the SEIS. The base year for the SEIS traffic analysis is 2005 in order to match the base year of the updated New Hampshire Statewide Model. NHDOT maintains a traffic counting program that includes Automatic Traffic Recorder (ATR) counts on major highways. ATR counts have been recorded for each segment of the I-93 corridor within the last few years. These counts provide hourly traffic volumes over a minimum 24-hour period, thereby providing both ADT and peak hour traffic volumes. The 24-hour counts were adjusted using NHDOT monthly variation factors to obtain 2005 ADTs for each segment.

Directional design hour volumes (DDHV) were derived by applying a directional factor of 60 percent and a design peak hour factor of 9.4 percent, consistent with the values utilized in the 2004 FEIS and supported by expected future trends. The 2004 FEIS included an analysis of traffic data collected at the continuous counting station located on I-93 between Exits 3 and 4. This analysis showed that the 30th highest hourly volume (design hour volume) was approximately 9.4 percent of the ADT in 1997. Historical records at the same counting station have recorded a gradual decrease in the percentage of ADT represented by the design hour volume. This trend can be attributed to the fact that the facility is becoming more congested during the peak hour and drivers are seeking to alter their driving habits by shifting to shoulder hours on each side of the peak hour. The widening of I-93 would provide additional capacity that would reduce or eliminate peak hour congestion. As a result, some drivers would revert to their historical preference by traveling during the peak hour, and the percentage of ADT represented by the design hour volume would be expected to increase. Therefore, the 9.4 percent design peak hour factor used in the 2004 FEIS remains a reasonable value for the SEIS.

In addition to the ATR 24-hour counting program, extensive Turning Movement Counts (TMCs) were collected during the AM and PM peak hours at all intersections studied in the 2004 FEIS. These included all of the ramp terminal intersections, as well as other intersections in the vicinity of the ramps. A list of the 19 intersections counted and studied in the 2004 FEIS and re-analyzed in the SEIS is provided below. The locations of the studied intersections are shown in Figure 4-1.

Intersections near Interchanges - Studied in the 2004 FEIS and SEIS:

Exit 1
- Rockingham Park Boulevard/Mall Road (#1)

Exit 2
- Pelham Road (NH 97)/Stiles Road/Manor Parkway (#2)
- Pelham Road (NH 97)/Keewaydin Drive (#3)
- Pelham Road (NH 97)/SB Ramps (#4)
- Pelham Road (NH 97)/NB Ramps (#5)
- Pelham Road (NH 97)/South Policy Street/North Policy Street (#6)

Exit 3
- NH 111/Village Green/Post Office Drive (#7)
- NH 111/Wall Street (#8)
- NH 111/SB Ramps (#9)
- NH111/NB Ramps (#10)
- NH 111/NH 111A (#11)

Exit 4
- NH 102/Gilcreast Road (#12)
- NH 102/Market Basket Drive/Hampton Drive (#13)
- NH 102/SB Ramps (#14)
- NH 102/NB Ramps (#15)
- NH 102/Fordway Street (#16)

Exit 5

- NH 28/Symmes Drive/Vista Ridge Drive (#17)
- NH 28/NB Ramps (#18)
- NH 28/SB Ramps (#19)

To meet the requirement of the Court Order to study secondary road traffic conditions as an indirect impact, the update analysis included traffic counts at intersections on the secondary roadway network. The secondary roadway network consists of the parallel roadways and feeder roads in the vicinity of I-93. The primary parallel roadways are NH Route 28 and NH Route 128. The feeder roadways include NH Routes 97, 111, 111A, and 102. The update analysis also included intersections not in the immediate vicinity of the I-93 exits in order to measure the effects of the project at other locations that could be affected by the project. These locations included intersections of State routes with other State routes, and State routes with major cross streets. The primary consideration in the selection of secondary road intersections for analysis was the likelihood of the intersection being affected by changes in traffic patterns as a result of the widening of I-93. The level of congestion under existing conditions was also a factor in order to identify locations where traffic and/or air quality impacts could occur. A list of the additional 13 intersections included in the update analysis is provided below:

Secondary Roadway Intersections – Studied in the SEIS

- NH 102/NH 121, Chester (#20)
- NH 28/Cluff Crossing/Cluff Road, Salem (#21)
- NH 28/Rockingham Park Boulevard, Salem (#22)
- NH 28/NH 97, Salem (#23)
- NH 111A/Main Street/Nashua Road, Pelham (#24)
- NH 111/N. Lowell Road/Fellows Road, Windham (#25)
- NH 111/Lowell Road/Hardwood Road, Windham (#26)
- NH 111/NH 128, Windham (#27)
- NH 102/NH 128, Londonderry (#28)
- NH 102/NH 28, Derry (#29)
- NH 128/Pillsbury Road, Londonderry (#30)
- NH 28/Tsienneto Road/Folsom Road, Derry (#31)
- NH 111/NH 121, Hampstead (#32)

4.4.2 Analysis Scenarios

Two different demographic scenarios were used to provide population and employment inputs into the New Hampshire Statewide Model for the update analysis:

- Scenario 1: Delphi Panel's Blended Average Allocations (PBAA) of population and employment, 2020, No Build and Build. There is no Scenario 1 analysis for the year 2030 because the Delphi panel's work was focused on an analysis year of 2020.
- Scenario 2: New Hampshire Office of Energy and Planning (OEP) population forecasts, 2020 and 2030, No Build and Build.

The objective of Scenario 1 (Delphi PBAA) is to understand the effects of the Delphi PBAA population and employment on traffic volumes, travel patterns, congestion, and air quality on I-93 and secondary, parallel and feeder roads to I-93. The Scenario 1 traffic analysis reflects the future population and employment as determined through the Delphi PBAA at the time the Delphi process was conducted (2000-2001). Scenario 1 does not take into account the possible land use effects of a future Exit 4A or the potential tolling of I-93. This is because neither of these conditions was explicitly factored into the Delphi process reported in the 2004 FEIS, i.e., the panelists were not requested to consider Exit 4A and tolling had not been proposed at that time. For these reasons, it would be methodologically inappropriate to adjust the Delphi PBAA results for either the potential land use effects of Exit 4A or the potential tolling of I-93. The objective of the Scenario 1 analysis is met by the analysis reported in this chapter and Chapter 5: Air Quality.

Scenario 2 was developed to use official State population and employment projections as inputs in the New Hampshire Statewide Model, consistent with the objective of the SEIS to provide updated project information based on the latest available information. Scenario 2 included a 2020 analysis year in order to match the analysis year used by the Delphi PBAA and also a 2030 analysis year in order to match the analysis year of the updated model (i.e., a 20-year horizon typically used in transportation planning).

Tolling Sensitivity Analysis

On December 12, 2008, NHDOT submitted an Expression of Interest to the FHWA Tolling and Pricing Team to pursue tolling on I-93 as part of FHWA's Interstate System Reconstruction and Rehabilitation Pilot Program. The pilot program allows up to three existing Interstate facilities nationwide to be tolled to fund needed reconstruction or rehabilitation (two of the three slots have already been filled by projects in other states). The proposed toll would have been on I-93 southbound between Exit 1 and the State line and was conceptually envisioned to be $2 for passenger cars. The revenue generated by the proposed toll would have been used to fund the construction of the I-93 improvements. At the time of the preparation of the DSEIS, the tolling proposal had not been approved by FHWA or the New Hampshire Legislature. Nonetheless, NHDOT and FHWA decided to include an analysis of the potential traffic, air quality and noise effects of tolling on I-93 in the DSEIS. While it was not certain whether or not tolling would eventually occur at the time of the analysis, the tolling analyses was conducted and provided in the DSEIS to disclose the potential impacts of tolling on traffic, air quality and noise.

Subsequent to the publication of the DSEIS, NHDOT has decided not pursue the tolling on I-93 at this time. In a letter to New Hampshire Governor John Lynch dated March 19, 2010, NHDOT Commissioner George Campbell recommends against applying for the tolling pilot program for the following reasons:

1) The restricted geographical location would require All Electronic Tolling (AET), thus limiting the flexibility to introduce Open Road Tolling (ORT) as a possible option.
2) Users of the highway at that location would be paying for a section of the project that is already funded through authorized bond proceeds.

3) New assurances from Massachusetts Secretary of Transportation Jeffery Mullan that there is no current interest in the Bay State of establishing border tolls.

While tolling on I-93 southbound in Salem is not considered a practicable option at this time, the tolling sensitivity analysis prepared for the DSEIS is presented in this FSEIS for information disclosure purposes. The tolling sensitivity analysis compares the Build condition with the toll ("Build with Toll") to the Build condition without the toll ("Build without Toll"). The difference is the incremental effect of tolling on traffic, air quality and noise. Tolling was not analyzed for the No Build condition because the toll was being considered as a mechanism for funding the construction of the project. In addition, tolling was not analyzed for Scenario 1 (Delphi PBAA) demographics. The net effect of tolling under Scenario 1 would be very similar to the net effect under Scenario 2. The sensitivity analysis of Scenario 2 conditions provides a reasonable basis for establishing the general pattern and magnitude of the effects of tolling on I-93 as proposed at the time of the preparation of the DSEIS.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

Methodology
The tolling sensitivity analysis modeling procedure was based on the existing toll methodology in the New Hampshire Statewide Transportation Model. The model toll procedure applies a toll at specified locations on the link system. The tolls are converted into time equivalents based on the value of time and then added to the network travel time. The network travel times, including the time added based on the tolls, affect the mode and route choices made travelers.

Typically, the value of time is based on 1/3 to ½ the average hourly wage of the drivers. Heavy commercial truck value of time is based on operating hourly operating costs and typically ranges from $60 to $100 per hour. Toll levels by vehicle class were based on the current toll structure on the F.E. Everett Turnpike. A 30 second average delay per vehicle was used to simulate delays at the toll collection facility based on data on the proportion of drivers using EZpass vs. cash on the F.E. Everett Turnpike. Detailed information on the assumptions used in the tolling sensitivity analysis is provided in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

4.4.3 Updated Design Information

In order to update and analyze the future Build conditions, the most recent design plans for the I-93 project were assembled and reviewed. These plans provided the currently proposed roadway layout, lane use, traffic control measures, and signal phasing and timing for the project.

4.4.4 New Hampshire Statewide Model

NHDOT maintains a statewide transportation model in order to systematically plan for future transportation needs. The model is called the "New Hampshire Statewide Travel Model System" or NHSTMS. The purpose of the NHSTMS is to estimate future travel patterns and their effects on transportation infrastructure associated with changes in population and employment in the State. The NHSTMS was developed in 1997, and underwent a substantial updates between 2005 and 2007. There are a total of 499 internal Traffic Analysis Zones (TAZs) and 29 external TAZs in the model. The external TAZs are used to represent trips with origins or destinations outside the model area. The model area covers all of New Hampshire, and portions of Massachusetts, Maine, and Vermont. The base year of the updated model is 2005.

The model update process included the use of recent baseline and future year population and employment forecasts. The data sources utilized in these updates included 2000 U.S. Census data, 2005 OEP population projections for New Hampshire, the Massachusetts Statewide Travel Demand Forecasting Model, Maine Office of State Planning population projections for York County, New Hampshire Economic and Labor Market Information Bureau employment forecasts, and employment growth rates from the U.S. Department of Commerce Bureau of Economic Analysis. During the 2005 updates, extensive coordination was conducted with the regional planning commissions in the New Hampshire portion of the model area to adjust the employment forecasts based on local knowledge of upcoming developments and conditions. The update process also included changes to the highway and transit networks, and tourist trip purpose modeling, see the Traffic Written Reevaluation/Technical Report, DSEIS Appendix A-2: New Hampshire Statewide Model Documentation for detailed information.

The NHSTMS was used for the Scenario 1 and Scenario 2 traffic analyses. For Scenario 1, the Delphi PBAA population and employment estimates for the No Build and Build conditions were used in the model. For Scenario 2, population and employment inputs based on official State projections were used, along with a gravity model analysis to assess the possible indirect land use effects of the project based on changes in accessibility. The Scenario 2 2030 analysis includes employment adjustments to account for the potential indirect land use effects of I-93 Exit 4A (a future No Build project). More information on the development of the population and employment inputs for Scenario 2 No Build and Build conditions is provided in Chapter 12: Indirect Effects, Section 12.3.2 and the Traffic Written Reevaluation/Technical Report, DSEIS Appendix A-2: New Hampshire Statewide Model Documentation.

Indirect Land Use Effects of I-93 Exit 4A

The towns of Derry and Londonderry, NH have proposed the construction of I-93 Exit 4A, a new interchange between the existing Exit 4 and Exit 5. This project is separate from the NHDOT I-93 Improvements project. A Draft EIS for the I-93 Exit 4A Interchange Study Derry-Londonderry project was published in July 2007. The purpose of the project includes "providing improved Interstate access for commercial and industrially-zoned lands near NH Route 28 in both Derry and Londonderry, thus allowing for the planned and orderly development of such lands to further locally-defined economic development goals and tax base diversification."(Exit

4A DEIS, Page 1-3). The possible construction of I-93 Exit 4A and the associated connector roadway to Folsom Road in Derry, near its intersection with North High Street, would provide access to land for commercial/industrial development on the east side of I-93.

The Exit 4A project was not included in the 2005 New Hampshire Statewide Model update or accounted for in the updated baseline population and employment estimates prepared in coordination with the Regional Planning Commissions during the model update process. As a reasonably foreseeable transportation project, Exit 4A is included in both the No Build condition and Build condition traffic modeling for the SEIS. However, the New Hampshire Statewide Model does not explicitly account for the localized industrial and commercial development that could occur as a result of the construction of Exit 4A.

Through coordination with FHWA, the I-93 SEIS project team decided to update the 2030 analysis year model for the SEIS Scenario 2 (No Build and Build) to account for the potential indirect land use effects of Exit 4A. The year 2030 was used for the analysis based on the reasonable assumption that there would be a time lag between the construction of the Exit 4A project and potential changes in land use. While the Exit 4A project may be completed by 2020, any land use effects of the new interchange would be more likely to occur by 2030.[4] The methodology developed for assessing the indirect land use effects of I-93 Exit 4A is consistent with the overall SEIS Scenario 2 analysis framework because it maintains the county-level No Build and Build condition employment totals. The methodology allows for the additional employment growth estimated for the Exit 4A area to be shifted from other areas in Rockingham County.

For additional information on the methodology and results of the Exit 4A indirect land use effects assessment, refer to the memo entitled *Revised Employment Estimates to Account for the Potential Indirect Land Use Effects of I-93 Exit 4A* (Indirect Effects Written Reevaluation/Technical Report, DSEIS Appendix G-1).

4.4.5 Future No Build Transportation Projects

Reasonably foreseeable transportation projects that would be completed by 2020 or 2030 were identified for inclusion in the No Build roadway network in the NHSTMS based on discussions and communications that occurred among NHDOT, FHWA, the New Hampshire Regional Planning Commissions and the Commonwealth of Massachusetts. The following major roadway projects were included as part of the 2020 No Build for Scenario 1 and Scenario 2:[5]

- Bedford- Manchester- Airport Access Road (F.E. Everett Turnpike to airport only)
- Manchester- Complete Granite Street interchange
- Windham- Salem- Relocate NH 111

[4] See Appendix A-3: Memorandum dated March 4, 2009 from Jamie Sikora, Environmental Programs Manager, Re: *Consideration of Exit 4A in the NH I-93 SEIS*

[5] The 2020 No Build projects are the same for Scenario 1 and Scenario 2 in order for the differences in the traffic analysis results between the two scenarios to be only the result of different population and employment levels. The Delphi panel was not given instructions on specific No Build transportation projects to consider in making their estimates.

- Nashua- Broad Street Parkway
- I-93 Exit 4A

The following major roadway project was included as part of the 2030 No Build for Scenario 2:

- Bow-Concord- Widen I-93 to six lanes between I-89 and Exit 15

For the 2020 roadway network it was assumed that the portion of I-93 in northern Massachusetts would have its current configuration of three lanes in each direction plus use of the breakdown lane as a travel lane in the peak periods. For the 2030 roadway network, it was assumed that the fourth travel lane would be fully operational and that the shoulder would be restored. These assumptions were based on input from the Massachusetts Executive Office of Transportation Planning.

I-93 Bi-State Transit Investment Study

Future transit service developed based on the recommendations of the I-93 Bi-State Transit Investment Study is not reasonably foreseeable at this time because it is not currently included in statewide or MPO fiscally constrained long-range transportation plans. NHDOT and MA EOT have undertaken the I-93 Bi-State Transit Investment Study to identify potential and feasible transportation modal alternatives for travel between southern New Hampshire and the Greater Metropolitan Boston area, including outlying suburbs along I-93, I-495 and 1-95 (Route 128). The objective of the study is to determine future transit investments necessary to meet mobility needs within the study area and to develop a strategic plan for funding and phased implementation of the recommended options. As part of the study, a Draft Preliminary Definition and Evaluation of Alternatives report was prepared that evaluated conceptual alternatives and recommended implementation of bus-on-shoulder service on I-93 and preservation of the M&L right-of-way for potential future use. A new rail transit service was found to not meet cost effectiveness criteria in comparison to the bus-on-shoulder alternative, but may be feasible in the future, possibly beyond the study's 2030 horizon year. In addition to not being included in long-range transportation plans, the bus-on-shoulder service recommended by the study is not reasonably foreseeable for 2030 because it is based on preliminary strategic planning and requires major infrastructure improvements in Massachusetts. Key steps to the implementation of the bus-on-shoulder concept have not yet been taken, such as the creation of an implementation agreement between NHDOT, MA EOT, MassHighway, transit agencies and operators, FTA, FHWA, and area RPCs.

Although bus-on-shoulder service is not included in the No Build condition, even if it was included, it would not generate sufficient ridership to alter the need to widen I-93 to four lanes in each direction. Refer to the Transit Investment Study Ridership Memo in Traffic Written Reevaluation/Technical Report DSEIS Appendix A-4 for detailed information on the ridership projections.

4.4.6 Traffic Volume Assignments and Capacity Analysis

The mainline I-93 volumes were based on the most recent available NHDOT automatic traffic recorder (ATR) data. This data was adjusted to reflect average annual conditions, factored to a consistent base year (2005), and then balanced to provide volume assignment networks for the entire corridor.

Intersection turning movement volume assignments for the 2005 base year condition were based on the most recent available turning movement count (TMC) data, the application of monthly variation factors and by balancing volumes between adjacent intersections. Based on the future traffic volume data projections from the New Hampshire Statewide Model, balanced 2020 and 2030 traffic volume networks were developed for the AM and PM peak hours for both the future No Build and Build Conditions. The future volumes were determined by applying the net change in AM and PM peak hour traffic volumes projected by the model results for each scenario to the 2005 base year volumes.

For all of the mainline roadway segments, ramp junction points and study intersections, capacity analyses were conducted based on the methodologies presented in the Highway Capacity Manual 2000. The latest version of the Highway Capacity Manual (HCS) software, HCS+ was used for the update evaluation instead of the HCS 4.f version used in the 2004 FEIS.

The mainline capacity analysis produces LOS results for a single hour (the design hour) based on the Directional Design Hour Volumes (DDHV). In order to provide information on the effect of the 2005 Selected Alternative on congestion at other time periods, a separate temporal distribution analysis was conducted for the segment of I-93 northbound between the State line and Exit 1. The State line to Exit 1 segment was used for the analysis because it is the most congested segment of the corridor.

The temporal distribution analysis utilized hourly northbound traffic volumes from the NHDOT permanent 24-hour count station (#01399001) to calculate the percentage of total daily traffic occurring in each hour. The ATR data used in the analysis was from August, 2008. The hourly percentages were then used to estimate hourly volumes for Scenario 1 and Scenario 2 based on the SEIS ADT projections. The ADT projections were based on the model generated net change in traffic volumes between the 2005 baseline condition and the future No Build and Build conditions. It was assumed that approximately 50 percent of the daily traffic would travel northbound and 50 percent would travel southbound over a 24-hour period. The northbound traffic volume was seasonally adjusted for August (traffic in on I-93 in August is typically 10 percent higher than average). The result of these calculations was an hourly traffic volume demand for Scenario 1 and Scenario 2 unconstrained by capacity.

An approximate congested flow capacity of 1,800 vehicles per hour per lane for the existing three-lane segment of I-93 between the State line and Exit 1 was estimated based on the Highway Capacity Manual and ATR data for 2008. The ATR data shows that the maximum number of vehicles per hour during the PM peak period is approximately 5,400 (1,800 per hour per lane). This results in a No Build capacity of 5,400 vehicles per hour (three lanes) and a Build capacity of 7,200 vehicles per hour (four lanes). The No Build and Build unconstrained hourly

traffic demand values were compared to the estimated congested capacities. Where the congested capacity was exceeded, the volumes were adjusted to account for the effect of peak spreading to the shoulder hours (e.g. drivers choosing hours on either side of the peak hour to avoid peak hour congestion). The peak spreading adjustments were only performed for the No Build condition because the estimated capacity was not exceeded in the Build condition under Scenario 1 and Scenario 2. A chart illustrating the hourly volumes and the number of hours where the congested capacity of I-93 northbound is exceeded was developed to represent the output of the temporal distribution analysis.

4.4.7 Vehicle Miles Traveled and Vehicle Hours Traveled

Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) were calculated based on the assignment results of the New Hampshire Statewide Model. After the final assignments were developed for each scenario, VMT was calculated by multiplying the simulated traffic volumes for each link in the network by its corresponding link length. VHT was calculated by multiplying the simulated traffic volumes for each link in the network by its corresponding link travel time. The VMT and VHT values for each of the individual links were summed to calculate total VMT and VHT for the model region, which consists of all of New Hampshire and portions of Massachusetts, Maine and Vermont.

As part of the calculations for VHT, congested speeds were used to determine the link travel times. After the model runs were completed, the travel times for each link were calculated based on the volume to capacity ratios for each link. The Bureau of Public Roads (BPR)[6] Speed Volume Curve equation was used to determine the congested speed that was used in the calculations for VHT.

4.5 Existing Conditions

4.5.1 Traffic Volumes

Table 4-3 provides a comparison between the 1997 ADT presented in the 2004 FEIS and the 2005 base year ADT developed for the SEIS. The traffic volumes listed in the table show that the ADT on I-93 has increased by an average of 10.5 percent from 1997 to 2005, with the greatest increases occurring in the central portion of the corridor. For example, between Exit 3 and Exit 4, ADT increased by 11,200 or 18 percent between 1997 and 2005.

[6] The Bureau of Public Roads is the predecessor of the Federal Highway Administration.

Table 4-3
Base Year Average Daily Traffic (ADT)

Segment	2004 FEIS – 1997 Base Year	SEIS – 2005 Base Year
MA. Line to Exit 1	104,400	109,000
Exit 1 to Exit 2	81,100	87,000
Exit 2 to Exit 3	74,900	84,000
Exit 3 to Exit 4	61,800	73,000
Exit 4 to Exit 5	64,900	72,000
North of Exit 5	69,300	77,000

4.5.2 Capacity Analysis

Table 4-4 shows the results of the mainline capacity analysis for the 2005 base year in comparison to the 2004 FEIS 1997 base year. Consistent with the traffic volume increases since 1997, congestion on the corridor has continued to increase. The segments of I-93 between Exit 1 and Exit 3 have worsened from LOS E in 1997 to LOS F in 2005. Between Exit 3 and Exit 5, LOS has worsened from LOS D in 1997 to LOS E in 2005.

When considering the operating conditions of a highway, it is important to consider the magnitude of congestion in terms of the time frame over which a poor level of service occurs. The level of service ratings in Table 4-4 are based on a one-hour period. The peak period for I-93 actually extends well beyond a single hour. This phenomenon, which is known as "peak hour spreading," occurs when segments of a corridor are so congested that the poor level of service extends into the hour before and the hour following the peak hour. In doing so, the actual operating conditions of the highway are somewhat worse (and the number of motorists affected greater) than what is indicated by evaluating a single one-hour period.

Table 4-4
I-93 Mainline DDHV LOS Summary, 2005 Base Year

Segment	2004 FEIS – 1997 Base Year	SEIS – 2005 Base Year
MA. Line to Exit 1	E	E
Exit 1 to Exit 2	E	F
Exit 2 to Exit 3	E	F
Exit 3 to Exit 4	D	E
Exit 4 to Exit 5	D	E
North of Exit 5	D	E

The 2005 base year ramp junction analysis shows that LOS E and LOS F conditions occur at ramp junctions on I-93 southbound between Exits 1 and 3 during the AM peak hour. During the PM peak hour, LOS E conditions occur at the Exit 2 northbound on-ramp and the Exit 3 northbound off-ramp. The remaining ramp junctions operate at LOS D or better in the 2005 base year.

A total of 32 intersections (19 intersections near interchanges and 13 secondary road intersections) were analyzed for the AM and PM peak hours. Table 4-5 summarizes the intersection capacity analysis for the 2005 base year. For the 19 intersections near interchanges,

one intersection operates at LOS F during the AM peak hour and two intersections operate at LOS F during the PM peak hour. For the 13 secondary road intersections, seven intersections operate at LOS E or F during the AM peak hour and eight intersections operate at LOS E or F during the PM peak hour. A total of seven and eight of the secondary road intersections are operating poorly (at LOS E or LOS F) during the AM and PM peak hours, respectively.

Table 4-5
Intersection LOS, 2005 Base Year

Intersection Number	Intersection Location	AM	PM
	Exit 1:		
1	Rockingham Park Blvd / Mall Road	C	D
	Exit 2:		
2	Pelham Rd (NH 97) / Stiles Rd / Manor Pky	C	C
3	Pelham Rd (NH 97) / Keewaydin Dr	C	C
4	Pelham Rd (NH 97) / SB Ramps	B	C
5	Pelham Rd (NH 97) / NB Ramps	C	D
6	Pelham Rd (NH 97) / So Policy/No Policy St	C	D
	Exit 3:		
7	NH 111 / Village Green/ Post Office Dr	B	C
8	NH 111 / Wall Street	A	B
9	NH 111 / SB Ramps	F	F
10	NH 111 / NB Ramps	C	D
11	NH 111 / NH 111A	D	C
	Exit 4:		
12	NH 102 / Gilcreast Rd	C	D
13	NH 102 / Market Basket Drive	C	D
14	NH 102 / SB Ramps	B	C
15	NH 102 / NB Ramps	C	D
16	NH 102 / Fordway Street	D	C
	Exit 5:		
17	NH 28 / Symmes Drive	A	B
18	NH 28 / NB Ramps	C	C
19	NH 28 / SB Ramps	C	F
	Secondary Road Intersections		
20	NH 102 / NH 121	F	F
21	NH 28/Cluff Crossing/Cluff Rd	C	D
22	NH 28/ Rockingham Park Blvd	C	C
23	NH 28 / NH 97 (Main St)	C	C
24	NH 111A / Main St/ Nashua Rd	F	F
25	NH 111 / N Lowell Rd / Fellows Rd	F	E
26	NH 111 / Lowell Rd / Hardwood Rd	C	C
27	NH 111 / NH 128	F	F
28	NH 102 / NH 128	F	F
29	NH 102 / NH 28	E	F
30	NH 128/ Pillsbury Rd	C	C
31	NH 28 / Tsienneto Rd / Folsom Rd	D	F
32	NH 111 / NH 121	F	F

4.6 Impacts

4.6.1 Scenario 1

Traffic Volumes

Tables 4-6 and 4-7 provide the Scenario 1 I-93 mainline ADT and DDHV volumes, respectively. The results show that the Build condition increases traffic volumes by between 19 and 43 percent over the No Build condition volumes.

Table 4-6
Average Daily Traffic (ADT)
Scenario 1, 2020

Segment	2005 Base Year	Scenario 1, 2020		
		No Build	Build	No Build –Build Percent Change
MA. Line to Exit 1	109,000	134,500	160,400	19%
Exit 1 to Exit 2	87,000	106,000	143,600	35%
Exit 2 to Exit 3	84,000	104,400	145,100	39%
Exit 3 to Exit 4	73,000	93,000	126,900	36%
Exit 4 to Exit 4A*	72,000	77,800	111,500	43%
Exit 4A to Exit 5	72,000	96,800	131,000	35%
North of Exit 5	77,000	95,100	129,700	36%

*Exit 4A is a future No Build project that is not part of the 2005 base year condition.

Table 4-7
Directional Design Hourly Volumes (DDHV)
Scenario 1, 2020

	No Build	Build	No Build –Build Percent Change
MA. Line to Exit 1	7,600	9,000	18%
Exit 1 to Exit 2	6,000	8,100	35%
Exit 2 to Exit 3	5,900	8,200	39%
Exit 3 to Exit 4	5,200	7,200	38%
Exit 4 to Exit 4A	4,400	6,300	43%
Exit 4A to Exit 5	5,500	7,400	35%
North of Exit 5	5,400	7,300	35%

Capacity Analysis

I-93 Mainline

Table 4-8 summarizes the results of the I-93 mainline LOS analysis for Scenario 1. The 2005 Selected Alternative would eliminate LOS F conditions along the I-93 corridor north of Exit 1. The segment of I-93 between Exit 1 and the State line would remain at LOS F in the design hour under the Scenario 1 Build condition. However, as discussed below, shoulder hour congestion on this segment would be substantially reduced as a result of the 2005 Selected Alternative.

It is important to recognize that the future design hour volumes and LOS represent traffic congestion in a one-hour period. However, because the peak commuter period currently extends beyond a single hour, the design hour is expected to experience an inflow of volume from the hour before and hour after the design hour as the capacity of the highway is increased with the widening. As a result, one substantial benefit of the additional capacity will be the shrinking of the duration of the peak period congestion that is experienced today by motorists.

Figure 4-2 provides the results of the I-93 northbound temporal distribution analysis for Scenario 1. In the 2020 No Build condition, the congested capacity is exceeded for six hours between 1:00 PM and 7:00 PM. The 2020 Build condition eliminates this extended period of severe congestion, with congested capacity being closely approached for only a single hour (4:00 PM to 5:00 PM). The results demonstrate that the congestion reduction benefits of the 2005 Selected Alternative extend beyond the design hour considered in the DDHV LOS analysis. A similar benefit in shoulder hour congestion reduction would occur on the southbound direction of the Exit 1 to State line segment in the AM peak period as a result of the additional capacity added by the 2005 Selected Alternative.

Table 4-8
I-93 Mainline DDHV LOS Summary
Scenario 1, 2020

Segment	2005 Base Year	Scenario 1, 2020	
		No Build	Build
MA. Line to Exit 1	E	F	F
Exit 1 to Exit 2	F	F	D
Exit 2 to Exit 3	F	F	E
Exit 3 to Exit 4	E	F	D
Exit 4 to Exit 4A	E	E	C
Exit 4A to Exit 5	E	F	D
North of Exit 5	E	F	D

Ramp Junctions

Table 4-9 provides the results of the ramp junction LOS analysis for Scenario 1. Under the No Build condition, the majority of the ramps to and from I-93 northbound and southbound at Exits 1 through 3 would operate at LOS E or LOS F during the AM and PM peak hours. The 2005 Selected Alternative would greatly improve operating conditions since all ramps are projected to operate at LOS D or better during both the AM and PM peak hours under the Build condition.

Table 4-9
Scenario 1 Ramp Junction LOS Summary, 2020

From/To	AM Peak		PM Peak	
	No Build	Build	No Build	Build
I-93 Northbound				
Exit 1 Off Ramp	B	B	F	C
Exit 1 On Ramp	C	B	F	C
Exit 2 Off Ramp	C	C	F	D
Exit 2 On Ramp	C	B	F	D
Exit 3 Off Ramp	C	B	F	C
Exit 3 On Ramp	C	B	F	C
Exit 4 Off Ramp	C	A	F	C
Exit 4 On Ramp	C	B	D	B
Exit 4A Off Ramp	C	B	D	B
Exit 4A On Ramp	C	B	F	C
Exit 5 Off Ramp	D	C	F	C
Exit 5 On Ramp	D	B	F	C
I-93 Southbound				
Exit 1 Off Ramp	F	C	F	B
Exit 1 On Ramp	F	D	F	D
Exit 2 On Ramp	F	C	F	C
Exit 2 Off Ramp	F	D	F	B
Exit 3 Off Ramp	E	D	D	B
Exit 3 On Ramp	F	D	C	B
Exit 4 Off Ramp	D	C	C	B
Exit 4 On Ramp from East	C	B	C	B
Exit 4 On Ramp from West	D	C	C	B
Exit 4A Off Ramp	E	C	D	C
Exit 4A On Ramp	C	B	C	B
Exit 5 Off Ramp	D	C	E	C
Exit 5 On Ramp	E	C	D	B

Intersections
The results of the intersection LOS analysis for Scenario 1 are summarized in Table 4-10. Additional information, including volume to capacity ratios (v/c) and average delay per vehicle is provided in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

The 2005 Selected Alternative would eliminate LOS E or F conditions at three intersections during the AM peak and at six intersections during the PM peak hour. The 2005 Selected Alternative would create LOS E or F conditions at three intersections (Intersection 2 - NH 97 and Stiles Road/Manor Parkway; Intersection 12 - NH 102 and Gilcreast Road; and Intersection 31 - NH 28 and Tsienneto Road/Folsom Road) during the AM peak hour. The 2005 Selected Alternative would create LOS E or F conditions at three intersections along NH 102 (Intersection 12 - NH 102 and Gilcreast Road; Intersection 13 - NH102 and Market Basket Drive/Hampton Drive, and Intersection 16 - NH 102 and Fordway Street) during the PM peak hour.

The LOS projected at Intersection 3 - Pelham Road (NH 97)/Keewaydin Drive would improve dramatically in the AM peak hour as a result of the diamond interchange proposed in the build condition at Exit 2. The existing eastbound left turn movement used by vehicles to enter

southbound I-93 would be shifted to an eastbound right turn movement at Intersection 4 - Pelham Rd (NH 97)/SB Ramps.

The 2005 Selected Alternative would also result in both increases and decreases in delay that would not change the overall intersection LOS.

Table 4-10
Scenario 1 Intersection LOS Summary, AM and PM Peak 2020

Intersection Number	Intersection Location	AM		PM	
		No Build	Build	No Build	Build
	Exit 1:				
1	Rockingham Park Blvd / Mall Road	C	C	F	F
	Exit 2:				
2	Pelham Rd (NH 97) / Stiles Rd / Manor Pky	D	E	F	F
3	Pelham Rd (NH 97) / Keewaydin Dr	F	B	F	F
4	Pelham Rd (NH 97) / SB Ramps	B	B	F	F
5	Pelham Rd (NH 97) / NB Ramps	F	C	F	C
6	Pelham Rd (NH 97) / So Policy/No Policy St	C	D	F	F
	Exit 3:				
7	NH 111 / Village Green/ Post Office Dr	D	C	E	D
8	NH 111 / Wall Street	A	B	C	C
9	NH 111 / SB Ramps	F	C	F	B
10	NH 111 / NB Ramps	B	B	C	C
11	NH 111 / NH 111A	C	B	C	C
	Exit 4:				
12	NH 102 / Gilcreast Rd	C	E	D	F
13	NH 102 / Market Basket Drive	E	F	D	E
14	NH 102 / SB Ramps	B	B	B	C
15	NH 102 / NB Ramps	C	C	F	C
16	NH 102 / Fordway Street	D	D	C	E
	Exit 5:				
17	NH 28 / Symmes Drive	C	C	F	D
18	NH 28 / NB Ramps	D	C	C	B
19	NH 28 / SB Ramps	C	C	D	C
	Secondary Road Intersections				
20	NH 102 / NH 121	F	F	F	F
21	NH 28/Cluff Crossing/Cluff Rd	C	C	F	F
22	NH 28/ Rockingham Park Blvd	C	C	E	E
23	NH 28 / NH 97 (Main St)	E	F	F	F
24	NH 111A / Main St/ Nashua Rd	F	F	F	F
25	NH 111 / N Lowell Rd / Fellows Rd	F	F	F	F
26	NH 111 / Lowell Rd / Hardwood Rd	D	D	E	D
27	NH 111 / NH 128	F	F	F	F
28	NH 102 / NH 128	F	F	F	F
29	NH 102 / NH 28	F	F	F	F
30	NH 128/ Pillsbury Rd	E	E	C	C
31	NH 28 / Tsienneto Rd / Folsom Rd	D	E	F	F
32	NH 111 / NH 121	F	F	F	F

*Unsignalized Intersection- LOS and Delay for Side Street
** Volume exceeds capacity. Delay not measurable

Vehicle Miles Traveled and Vehicle Hours Traveled

Table 4-11 provides the Scenario 1 VMT, VHT and average speed for the New Hampshire Statewide Model region. VMT is projected to increase by approximately 1.7 percent between the No Build and the Build condition under Scenario 1. In addition to changes due to different land use conditions, VMT increases in the Build condition because travelers would be able to travel longer distances in the same amount of time due to reduced congestion and increased speeds on I-93. As a result, some of the trip origin/destinations throughout the region would change in the Build condition (e.g. some travelers would choose to make longer trips). VHT would increase as well in the Build condition due to the longer travel distances. However, the increase in VHT in the Build condition would be 0.2 percent greater than the No Build condition, a proportionally smaller increase than the increase in VMT (1.7 percent). VHT would increase less than VMT because the increased capacity and reduced congestion on I-93 in the Build condition. The 1.5 percent increase in network-wide average daily speed in the Build condition shows that the 2005 Selected Alternative would improve the efficiency of the transportation system in the region under Scenario 1. An increase in the average daily speed of one-half mile per hour over a whole day for the entire model region (not only in New Hampshire) is substantial.

Table 4-11
Scenario 1 VMT, VHT and Average Speed, 2020

	VMT	VHT	Average Speed
No Build	74,306,502	2,228,086	33.34
Build	75,543,678	2,231,969	33.84
Percent Change	1.7%	0.2%	1.5%

4.6.2 Scenario 2

Traffic Volumes

Tables 4-12 and 4-13 provide and Scenario 2 I-93 mainline ADT and DDHV volumes, respectively. The results show that by 2030, Build condition traffic volumes would be between 18 and 41 percent higher than the No Build condition traffic volumes.

Table 4-12
Average Daily Traffic (ADT)
Scenario 2, 2020 and 2030

Segment	2005 Base Year	2020			2030		
		No Build	Build	No Build – Build Percent Change	No Build	Build	No Build – Build Percent Change
MA. Line to Exit 1	109,000	123,100	137,000	11%	129,800	152,900	18%
Exit 1 to Exit 2	87,000	96,700	118,000	22%	101,900	134,900	32%
Exit 2 to Exit 3	84,000	93,700	116,900	25%	98,100	135,800	38%
Exit 3 to Exit 4	73,000	76,500	94,800	24%	79,700	109,000	37%
Exit 4 to Exit 4A*	72,000	69,300	88,200	27%	72,200	101,500	41%
Exit 4A to Exit 5	72,000	81,000	100,600	24%	84,500	116,100	37%
North of Exit 5	77,000	78,400	97,600	24%	81,700	113,100	38%

*Exit 4A is a future No Build project that is not part of the 2005 base year condition.

Table 4-13
Directional Design Hourly Volumes (DDHV)
Scenario 2, 2020 and 2030

Segment	2020			2030		
	No Build	Build	No Build –Build Percent Change	No Build	Build	No Build –Build Percent Change
MA. Line to Exit 1	6,900	7,700	12%	7,300	8,600	18%
Exit 1 to Exit 2	5,500	6,700	22%	5,700	7,600	33%
Exit 2 to Exit 3	5,300	6,600	25%	5,500	7,700	40%
Exit 3 to Exit 4	4,300	5,300	23%	4,500	6,100	36%
Exit 4 to Exit 4A	3,900	5,000	28%	4,100	5,700	39%
Exit 4A to Exit 5	4,600	5,700	24%	4,800	6,500	35%
North of Exit 5	4,400	5,500	25%	4,600	6,400	39%

Capacity Analysis

I-93 Mainline

Table 4-14 summarizes the results of the I-93 mainline LOS analysis for Scenario 2. Under Scenario 2 2020 and 2030 conditions, the 2005 Selected Alternative would improve LOS on all segments in comparison to the No Build condition. LOS E or F conditions would be eliminated on all segments except for the segment south of Exit 1 (which would be improved from LOS F to LOS E in both 2020 and 2030).

It is important to recognize that the future design hour volumes and LOS represent traffic congestion in a one-hour period. However, because the peak commuter period currently extends beyond a single hour, the design hour is expected to experience an inflow of volume from the hour before and hour after the design hour as the capacity of the highway is increased with the widening. As a result, one substantial benefit of the additional capacity will be the shrinking of the duration of the peak period congestion that is experienced today by motorists.

Figures 4-3 and 4-4 provide the results of the I-93 northbound temporal distribution analysis for Scenario 2 2020 and 2030, respectively. In the 2020 No Build condition, the congested capacity

is exceeded for one hour between 4:00 PM and 5:00 PM, and is near capacity on the hours on either side of this peak hour. By the 2030 No Build condition, the period during which capacity is exceeded increases to four hours (2:00 PM to 6:00 PM). The 2005 Selected Alternative eliminates this severe congestion in 2020 and 2030. The results demonstrate that the congestion reduction benefits of the 2005 Selected Alternative extend beyond the design hour considered in the DDHV LOS analysis. A similar benefit in shoulder hour congestion reduction would occur on the southbound direction of the Exit 1 to State line segment in the AM peak period as a result of the additional capacity added by the 2005 Selected Alternative.

Table 4-14
I-93 Mainline DDHV LOS Summary
Scenario 2, 2020 and 2030

Segment	2005 Base Year	2020		2030	
		No Build	Build	No Build	Build
MA. Line to Exit 1	E	F	E	F	E
Exit 1 to Exit 2	F	F	D	F	D
Exit 2 to Exit 3	F	F	D	F	D
Exit 3 to Exit 4	E	E	C	F	C
Exit 4 to Exit 4A	E	D	C	E	C
Exit 4A to Exit 5	E	F	C	F	C
North of Exit 5	E	E	C	F	C

Ramp Junctions

Table 4-15 summarizes the results of the ramp junction capacity analysis for Scenario 2. In the 2020 No Build condition, six ramps would operate at LOS E or F during the AM peak hour, while ten ramps would operate at LOS E or F during the PM peak hour. In the 2030 No Build condition, six ramps would operate at LOS E or F during the AM peak hour, while 15 ramps would operate at LOS E or F during the PM peak hour. All of the ramps that would operate LOS E or F in the No Build condition would improve to LOS D or better as a result of the 2005 Selected Alternative in both 2020 and 2030. This represents a substantial reduction in congestion as a result of the 2005 Selected Alternative.

Table 4-15
Scenario 2 Ramp Junction LOS Summary, 2020 and 2030

From/To	2020				2030			
	AM Peak		PM Peak		AM Peak		PM Peak	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
I-93 Northbound								
Exit 1 Off Ramp	B	A	F	C	B	A	F	C
Exit 1 On Ramp	C	B	F	B	D	B	F	C
Exit 2 Off Ramp	C	B	F	C	C	B	F	D
Exit 2 On Ramp	C	B	F	C	C	B	F	D
Exit 3 Off Ramp	C	A	F	C	C	B	F	D
Exit 3 On Ramp	C	B	E	C	C	B	F	C
Exit 4 Off Ramp	C	A	E	B	C	A	F	B
Exit 4 On Ramp	C	B	D	B	C	B	F	C
Exit 4A Off Ramp	C	B	D	B	C	B	F	C
Exit 4A On Ramp	C	B	D	B	D	B	F	C
Exit 5 Off Ramp	D	B	E	C	D	B	F	C
Exit 5 On Ramp	D	B	E	B	D	B	F	C
I-93 Southbound								
Exit 1 Off Ramp	F	C	D	B	F	C	D	B
Exit 1 On Ramp	F	D	D	C	F	D	D	C
Exit 2 On Ramp	F	B	D	B	F	C	D	B
Exit 2 Off Ramp	F	C	D	B	F	C	D	B
Exit 3 Off Ramp	E	B	C	B	E	C	C	B
Exit 3 On Ramp	F	C	C	B	F	D	C	B
Exit 4 Off Ramp	D	B	C	B	D	B	C	B
Exit 4 On Ramp from East	C	B	B	B	C	B	B	B
Exit 4 On Ramp from West	D	B	C	B	D	B	C	B
Exit 4A Off Ramp	D	B	D	B	D	B	E	C
Exit 4A On Ramp	C	B	C	B	C	B	C	B
Exit 5 Off Ramp	D	B	E	C	D	B	E	C
Exit 5 On Ramp	D	B	D	B	D	B	E	B

Intersections
The results of the intersection capacity analysis for Scenario 2 2020 are summarized in Table 4-16. The results of the intersection capacity analysis for Scenario 2 2030 are summarized in Table 4-17. Additional information, including volume to capacity ratios (v/c) and average delay per vehicle is provided in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

In 2020, the 2005 Selected Alternative would eliminate LOS E or F conditions at two intersections during the AM peak and at three intersections during the PM peak hour. The 2005 Selected Alternative would not create LOS E or F conditions at any intersections during the AM or PM peak hours in 2020.

In 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five intersections during the AM peak hour and at four intersections during the PM peak hour. The 2005 Selected Alternative would create LOS E conditions at one intersection during the PM peak hour by increasing the average delay by 5.5 seconds (Intersection 21- NH 28/Cluff Crossing/Cluff Road). The 2005 Selected Alternative would not create LOS F conditions at any intersections in the AM or PM peak hours.

The 2005 Selected Alternative would also result in increases and decreases in delay that would not change the overall intersection LOS in 2020 and 2030.

Table 4-16
Scenario 2 Intersection LOS Summary, AM and PM Peak 2020

Intersection Number	Intersection Location	AM		PM	
		No Build	Build	No Build	Build
	Exit 1:				
1	Rockingham Park Blvd / Mall Road	C	B	E	D
	Exit 2:				
2	Pelham Rd (NH 97) / Stiles Rd / Manor Pky	C	C	C	C
3	Pelham Rd (NH 97) / Keewaydin Dr	F	B	C	B
4	Pelham Rd (NH 97) / SB Ramps	B	B	D	C
5	Pelham Rd (NH 97) / NB Ramps	D	C	F	C
6	Pelham Rd (NH 97) / So Policy/No Policy St	C	C	E	E
	Exit 3:				
7	NH 111 / Village Green/ Post Office Dr	D	C	E	E
8	NH 111 / Wall Street	A	B	C	D
9	NH 111 / SB Ramps	F	B	F	B
10	NH 111 / NB Ramps	B	B	C	C
11	NH 111 / NH 111A	C	B	C	B
	Exit 4:				
12	NH 102 / Gilcreast Rd	C	C	D	D
13	NH 102 / Market Basket Drive	B	C	D	D
14	NH 102 / SB Ramps	C	B	C	B
15	NH 102 / NB Ramps	C	C	D	C
16	NH 102 / Fordway Street	C	C	B	C
	Exit 5:				
17	NH 28 / Symmes Drive	B	C	D	D
18	NH 28 / NB Ramps	C	C	C	B
19	NH 28 / SB Ramps	C	C	D	B
	Secondary Road Intersections				
20	NH 102 / NH 121	E	E	F	F
21	NH 28/Cluff Crossing/Cluff Rd	C	C	D	D
22	NH 28/ Rockingham Park Blvd	C	C	D	D
23	NH 28 / NH 97 (Main St)	C	C	C	C
24	NH 111A / Main St/ Nashua Rd	F	F	F	F
25	NH 111 / N Lowell Rd / Fellows Rd	F	F	F	F
26	NH 111 / Lowell Rd / Hardwood Rd	D	C	E	E
27	NH 111 / NH 128	F	F	F	F
28	NH 102 / NH 128	F	E	F	F
29	NH 102 / NH 28	D	C	F	F
30	NH 128/ Pillsbury Rd	D	C	C	C
31	NH 28 / Tsienneto Rd / Folsom Rd	D	D	F	F
32	NH 111 / NH 121	F	F	F	F

*Unsignalized Intersection- LOS and Delay for Side Street only
** Volume exceeds capacity. Delay not measurable

Table 4-17
Scenario 2 Intersection LOS Summary, AM and PM Peak 2030

Intersection Number	Intersection Location	AM		PM	
		No Build	Build	No Build	Build
	Exit 1:				
1	Rockingham Park Blvd / Mall Road	C	B	E	D
	Exit 2:				
2	Pelham Rd (NH 97) / Stiles Rd / Manor Pky	C	D	C	C
3	Pelham Rd (NH 97) / Keewaydin Dr	E	B	D	B
4	Pelham Rd (NH 97) / SB Ramps	B	B	D	C
5	Pelham Rd (NH 97) / NB Ramps	E	C	F	C
6	Pelham Rd (NH 97) / So Policy/No Policy St	C	D	F	F
	Exit 3:				
7	NH 111 / Village Green/ Post Office Dr	E	D	F	F
8	NH 111 / Wall Street	B	B	C	D
9	NH 111 / SB Ramps	F	B	F	B
10	NH 111 / NB Ramps	B	B	C	C
11	NH 111 / NH 111A	C	B	C	C
	Exit 4:				
12	NH 102 / Gilcreast Rd	C	C	D	D
13	NH 102 / Market Basket Drive	C	C	D	D
14	NH 102 / SB Ramps	C	B	C	B
15	NH 102 / NB Ramps	C	C	D	C
16	NH 102 / Fordway Street	B	B	C	C
	Exit 5:				
17	NH 28 / Symmes Drive	C	C	F	D
18	NH 28 / NB Ramps	C	C	C	C
19	NH 28 / SB Ramps	C	B	C	B
	Secondary Road Intersections				
20	NH 102 / NH 121	D	D	F	F
21	NH 28/Cluff Crossing/Cluff Rd	C	C	D	E
22	NH 28/ Rockingham Park Blvd	C	C	D	D
23	NH 28 / NH 97 (Main St)	C	D	C	C
24	NH 111A / Main St/ Nashua Rd	F	F	F	F
25	NH 111 / N Lowell Rd / Fellows Rd	F	F	F	F
26	NH 111 / Lowell Rd / Hardwood Rd	D	D	F	F
27	NH 111 / NH 128	F	F	F	F
28	NH 102 / NH 128	F	E	F	F
29	NH 102 / NH 28	C	C	F	F
30	NH 128/ Pillsbury Rd	E	D	C	C
31	NH 28 / Tsienneto Rd / Folsom Rd	D	D	F	F
32	NH 111 / NH 121	F	F	F	F

*Unsignalized Intersection- LOS and Delay for Side Street only
** Volume exceeds capacity. Delay not measurable

Vehicle Miles Traveled and Vehicle Hours Traveled

Table 4-18 provides the Scenario 2 VMT, VHT and average speed for the New Hampshire Statewide Model region. VMT is projected to increase by approximately 3.7 percent between the No Build and the Build condition under Scenario 2 in 2020 and 2030. In addition to changes due to different land use conditions, VMT increases in the Build condition because travelers

would be able to travel longer distances in the same amount of time due to reduced congestion and increased speeds on I-93. As a result, some of the trip origin/destinations throughout the region would change in the Build condition (e.g. some travelers would choose to make longer trips). VHT would increase as well in the Build condition due to the longer travel distances. However, the increase in VHT in the Build condition would be 2.0 percent greater than the No Build condition, a proportionally smaller increase than the increase in VMT (3.7 percent). VHT would increase less than VMT because of the increased capacity and reduced congestion on I-93 in the Build condition. The 1.6 percent increase in network-wide average daily speed in the Build condition in 2020 and 2030 shows that the 2005 Selected Alternative would improve the efficiency of the transportation system in the region under Scenario 2. An increase in the average daily speed of slightly more than one-half mile per hour over a whole day for the entire model region (not only in New Hampshire) is substantial.

Table 4-18
Scenario 2 VMT, VHT and Average Speed, 2020 and 2030

	VMT	VHT	Average Speed
2020 No Build	69,784,819	1,895,748	36.81
2020 Build	72,335,118	1,933,578	37.41
Percent Change	3.7%	2.0%	1.6%
2030 No Build	75,577,315	2,056,207	36.75
2030 Build	78,339,302	2,097,287	37.35
Percent Change	3.7%	2.0%	1.6%

4.6.3 Comparison between Scenario 1 and Scenario 2

Table 4-19 provides a comparison between the Scenario 1 and Scenario 2 2020 Build condition mainline ADT and LOS. The results show that that higher population and employment levels in the Delphi PBAA Build condition increase traffic volumes on I-93 by between 15 and 25 percent over the traffic volumes based on current OEP population projections. As a result, LOS is lower on several segments of I-93 under Scenario 1 in comparison to Scenario 2. The Delphi PBAA Build condition population levels were very similar to previous OEP population projections (e.g. the OEP population projections used in the 2005 Traffic Sensitivity Analysis). However, the 2007 OEP population projections used in Scenario 2 reflect reduced future growth compared to the previous projections due to slowing economic growth.

Table 4-19
I-93 Mainline Average Daily Traffic and Level of Service
Comparison Between Scenario 1 and Scenario 2, 2020

Segment	ADT				DDHV LOS	
	Scenario 1 Build	Scenario 2 Build	Difference	Percent Difference	Scenario 1 Build	Scenario 2 Build
MA. Line to Exit 1	160,400	137,000	23,400	15%	F	E
Exit 1 to Exit 2	143,600	118,000	25,600	18%	D	D
Exit 2 to Exit 3	145,100	116,900	28,200	19%	E	D
Exit 3 to Exit 4	126,900	94,800	32,100	25%	D	C
Exit 4 to Exit 4A	111,500	88,200	23,300	21%	C	C
Exit 4A to Exit 5	131,000	100,600	30,400	23%	D	C
North of Exit 5	129,700	97,600	32,100	25%	D	C

Comparing the Scenario 1 (Table 4-11) and Scenario 2 (Table 4-18) VMT and VHT results shows that the overall VMT and VHT for Scenario 1 in 2020 are higher than the corresponding VMT and VHT values for Scenario 2 in 2020, consistent with the higher levels of population and employment estimated in Scenario 1. Under Scenario 1, the population and employment levels estimated by the Delphi panel for the No Build and Build conditions were used to replace the existing model population and employment levels, resulting in a net increase in population and employment in the model region as a whole between the No Build and Build conditions. In contrast, under Scenario 2 the same control total population and employment levels were kept constant between the No Build and Build, as is consistent with standard demographic forecasting practice).

The percentage increase in VMT and VHT between the No Build and Build conditions is higher in Scenario 2 than in Scenario 1. This difference is explained by the combination of several differences in the modeling of Scenario 1 and Scenario 2, including a different zonal structure in Scenario 1 analysis (no changes to the TAZ boundaries and network detail around I-93 Exit 4A under Scenario 1), and increased congestion under Scenario 1 relative to Scenario 2 due to the higher population and employment levels. It is important to note that the relative increase in regional speeds under the Build condition (approximately 1.5 percent) is approximately the same between Scenario 1 and Scenario 2.

4.6.4 Tolling Sensitivity Analysis

Traffic Volumes

The ADT volumes for the Build with Toll condition are presented in Table 4-20 (2020) and Table 4-21 (2030). The Directional Design Hour Volumes are presented in Table 4-22 (2020) and Table 4-23 (2030). The traffic volume data shows that the Build with Toll condition would reduce traffic volumes in comparison to the Build without toll condition. As would be expected, the largest ADT reduction as a result of tolling occurs on the segment of I-93 south of Exit 1 (the segment where the toll would be located). Under Scenario 2 2020 conditions, ADT on the segment south of Exit 1 is reduced by 12,900 or 9.4 percent as a result of the toll. In 2030, ADT south of Exit 1 is reduced by 19,000 or 12.4 percent as a result of the toll. For the northern portions of the corridor, the drop in the mainline volumes as a result of tolling is smaller.

Table 4-20
Average Daily Traffic (ADT)
Build with Toll Compared to Build without Toll, Scenario 2 2020

Segment	2020 Build with Toll	2020 Build without Toll	Difference	Percent Change
MA. Line to Exit 1	124,100	137,000	-12,900	-9.4%
Exit 1 to Exit 2	113,000	118,000	-5,000	-4.2%
Exit 2 to Exit 3	113,700	116,900	-3,200	-2.7%
Exit 3 to Exit 4	93,000	94,800	-1,800	-1.9%
Exit 4 to Exit 4A	88,300	88,200	100	0.1%
Exit 4A to Exit 5	100,200	100,600	-400	-0.4%
North of Exit 5	97,000	97,600	-600	-0.6%

Table 4-21
Average Daily Traffic (ADT)
Build with Toll Compared to Build without Toll, Scenario 2 2030

Segment	2030 Build with Toll	2030 Build without Toll	Difference	Percent Change
MA. Line to Exit 1	133,900	152,900	-19,000	-12.4%
Exit 1 to Exit 2	122,700	134,900	-12,200	-9.0%
Exit 2 to Exit 3	127,400	135,800	-8,400	-6.2%
Exit 3 to Exit 4	103,200	109,000	-5,800	-5.3%
Exit 4 to Exit 4A	97,400	101,500	-4,100	-4.0%
Exit 4A to Exit 5	111,500	116,100	-4,600	-4.0%
North of Exit 5	108,600	113,100	-4,500	-4.0%

Table 4-22
Directional Design Hourly Volumes (DDHV)
Build with Toll Compared to Build without Toll, Scenario 2 2020

Segment	2020 Build With Toll	2020 Build Without Toll	Difference	Percent Change
MA. Line to Exit 1	7,000	7,700	-700	-9.1%
Exit 1 to Exit 2	6,400	6,700	-300	-4.5%
Exit 2 to Exit 3	6,400	6,600	-200	-3.0%
Exit 3 to Exit 4	5,200	5,300	-100	-1.9%
Exit 4 to Exit 4A	5,000	5,000	0	0.0%
Exit 4A to Exit 5	5,700	5,700	0	0.0%
North of Exit 5	5,500	5,500	0	0.0%

Table 4-23
Directional Design Hourly Volumes (DDHV)
Build with Toll Compared to Build without Toll, Scenario 2 2030

Segment	2030 Build With Toll	2030 Build Without Toll	Difference	Percent Change
MA. Line to Exit 1	7,600	8,600	-1,000	-11.6%
Exit 1 to Exit 2	6,900	7,600	-700	-9.2%
Exit 2 to Exit 3	7,200	7,700	-500	-6.5%
Exit 3 to Exit 4	5,800	6,100	-300	-4.9%
Exit 4 to Exit 4A	5,500	5,700	-200	-3.5%
Exit 4A to Exit 5	6,300	6,500	-200	-3.1%
North of Exit 5	6,100	6,400	-300	-4.7%

The traffic modeling results for the tolling sensitivity analysis show that the implementation of the toll not only affects the I-93 corridor, but has a region-wide effect. Generally, the change in traffic volumes is spread throughout the region and is not focused on the parallel roads closest to I-93 (e.g. NH 28). The reason this occurs is because the toll changes trip distribution patterns, both destinations and route choice. Based on the value of time, the toll is treated as a travel time impedance in the model—resulting in changes in destination choices. For example, fewer people would leave New Hampshire to travel to Massachusetts as a result of the toll. In addition to the changes in destinations as a result of the toll, some of the changes in route choice that does occur involve other regional roadways farther away from the I-93 corridor. DSEIS Appendix A: Traffic Written Reevaluation/Technical Report provides additional information and mapping illustrating the effect of the potential toll on traffic volumes.

Capacity Analysis

Table 4-24 compares the results of the LOS analysis for the Build with Toll and the Build without Toll conditions. The results indicate that with the exception of three segments in 2020, the change in traffic volumes as result of tolling would not change the LOS results. The freeway segment between MA Line to Exit 3 would improve from LOS E for the 2020 Build without Toll condition to LOS D for the 2020 Build with Toll condition. The two freeway segments between Exit 1 and Exit 3 would improve from LOS D for the 2020 Build without Toll condition to LOS C for the 2020 Build with Toll condition.

The results of the ramp junction analysis indicate that all ramps for the Build with Toll condition would operate at the same LOS as the Build condition except for two to five ramps to and from I-93 southbound. LOS would improve at these ramps due to a combination of traffic diversion and drivers readjusting their destinations due to the implementation of a toll south of Exit 1. Ramps further from the location of the toll show less of an effect on ramp volumes and thus no effect on LOS.

Intersection capacity analysis was conducted for intersections in the vicinity of Exit 1, Exit 2, and Exit 3 for the Build with Toll condition. Intersections in the vicinity of these exits were selected for analysis because the model results showed that within the I-93 corridor, the

influence of the toll decreases as the distance from the toll location increases. The intersections beyond Exit 3 did not exhibit substantial change in volumes as a result of the toll.

Table 4-24
I-93 Mainline DDHV LOS Summary
Build with Toll Compared to Build without Toll, Scenario 2 2020 and 2030

	2020		2030	
	Build with Toll	**Build without Toll**	**Build with Toll**	**Build without Toll**
MA. Line to Exit 1	D	E	E	E
Exit 1 to Exit 2	C	D	D	D
Exit 2 to Exit 3	C	D	D	D
Exit 3 to Exit 4	C	C	C	C
Exit 4 to Exit 4A	C	C	C	C
Exit 4A to Exit 5	C	C	C	C
North of Exit 5	C	C	C	C

For the analyzed intersections associated with the I-93 interchanges at Exit 1, Exit 2, and Exit 3, the capacity analyses indicate that the Build with Toll condition would generally improve traffic congestion at these intersections in comparison to the Build without Toll condition in both 2020 and 2030 in the AM and PM peak hours. The toll would not create LOS E or LOS F conditions in 2020 or 2030. This result occurs because the addition of the toll affects trip making patterns broadly at a regional level, including a decrease in the number of trips between New Hampshire and Massachusetts. For detailed capacity analysis results, refer to DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

4.7 Conclusions

Scenario 1 and Scenario 2

The Scenario 1 and Scenario 2 mainline traffic volume and LOS analyses reaffirm the need for and transportation benefits of the 2005 Selected Alternative. For Scenario 1, the 2005 Selected Alternative would eliminate LOS F conditions along the I-93 corridor north of Exit 1 (the segment between the State line and Exit 1 would be at LOS F in the No Build and Build conditions). For Scenario 2, the 2005 Selected Alternative eliminates LOS F conditions on all segments in 2020 and 2030. Under Scenario 2, the 2005 Selected Alternative also eliminates LOS E conditions on all segments, except for the segment south of Exit 1, which would be improved from LOS F to LOS E.

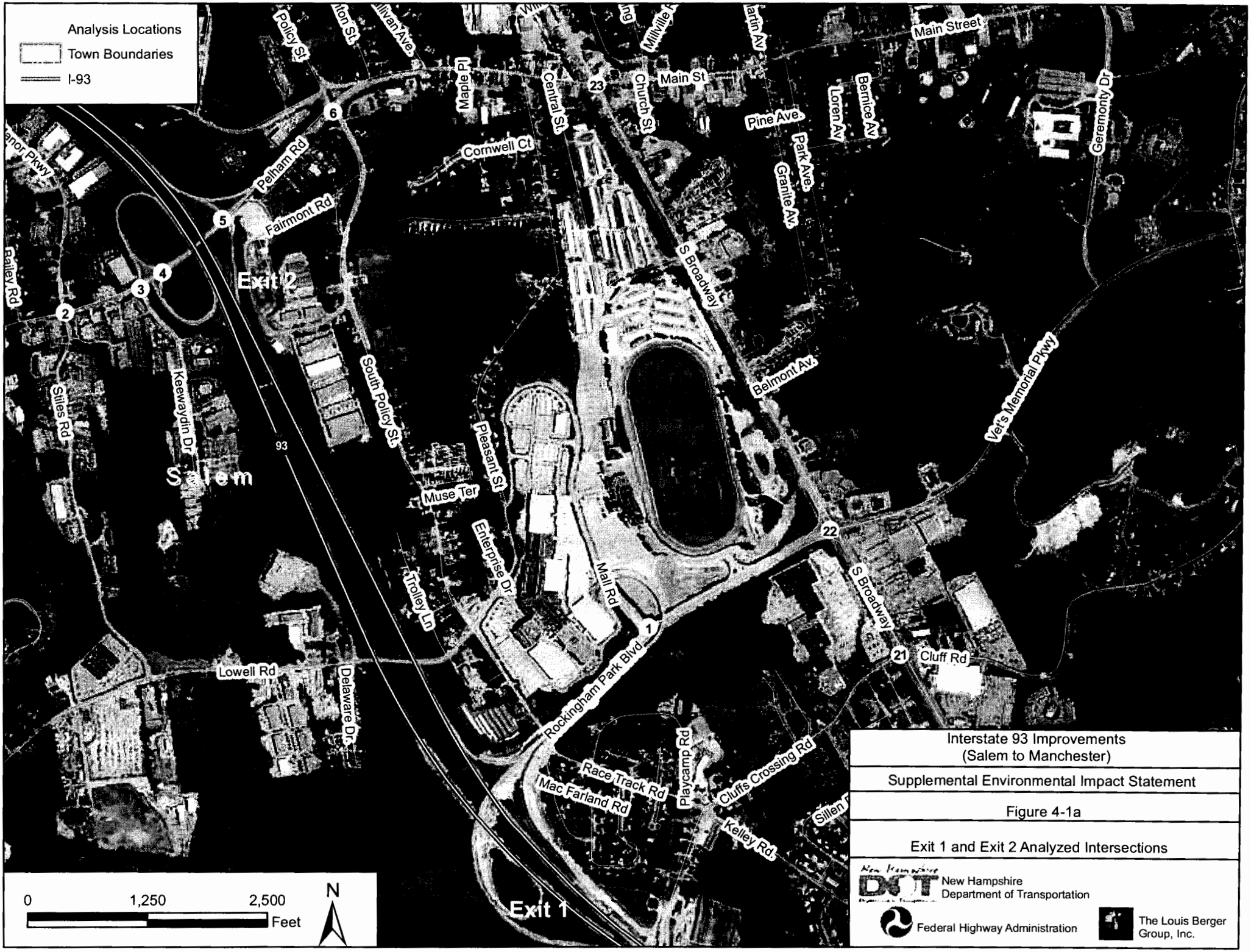
LOS F (Scenario 1) or LOS E (Scenario 2) for the segment of I-93 south of Exit 1 is considered acceptable given NHDOT's policy to not construct roadways with more than four-lanes in each direction. In addition to reducing peak hour congestion, the 2005 Selected Alternative would also reduce the congestion experienced by travelers in the shoulder hours on either side of the peak hour.

The Scenario 1 and Scenario 2 ramp junction LOS analyses show that the 2005 Selected Alternative would eliminate all LOS E and LOS F conditions as a result of the reconstruction of the interchanges along the project corridor.

The Scenario 1 and Scenario 2 intersection LOS analyses show both positive and negative effects of the 2005 Selected Alternative on congestion near interchanges and on secondary roads. Particularly for Scenario 2, the 2005 Selected Alternative reduces delay at more intersections than it increases. For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five intersections during the AM peak hour and four intersections in the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole.

Tolling Sensitivity Analysis

The Build with Toll condition would reduce traffic volumes and improve LOS on the I-93 mainline. The effect of tolling in the New Hampshire Statewide Model shows a diffuse effect on travel patterns at a regional scale, including both changes in trip destinations (e.g. less trips from New Hampshire to Massachusetts) and changes in trip route (e.g. shifts to north-south roadway corridors other than I-93). As a result of the regional effect of tolling in the model, the effects of tolling on intersections in the vicinity of I-93 are primarily positive. The tolling sensitivity analysis shows that the proposed toll would not create substantial or widespread congestion on the secondary road network in the vicinity of I-93.



Interstate 93 Improvements
(Salem to Manchester)

Supplemental Environmental Impact Statement

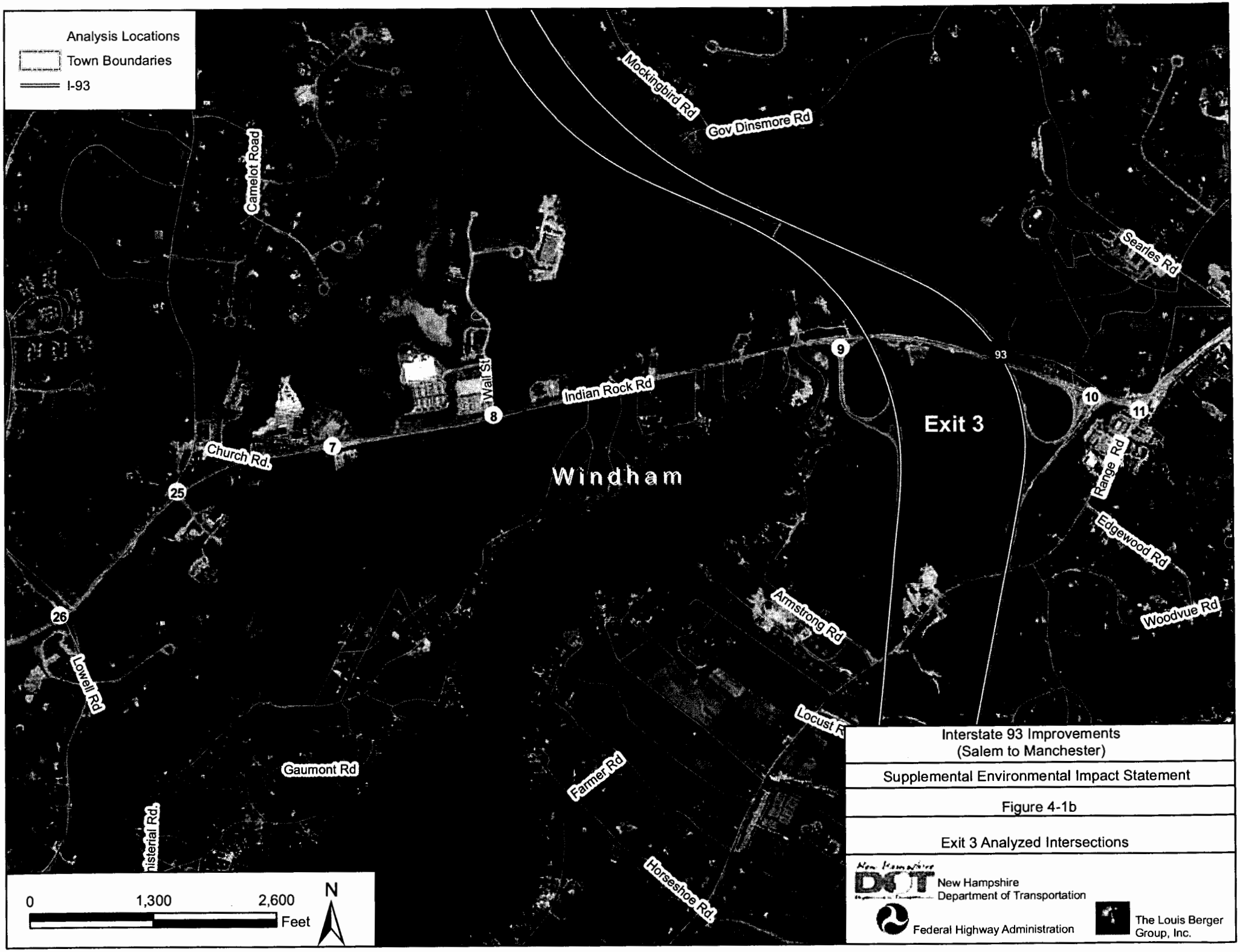
Figure 4-1a

Exit 1 and Exit 2 Analyzed Intersections

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.



Interstate 93 Improvements
(Salem to Manchester)

Supplemental Environmental Impact Statement

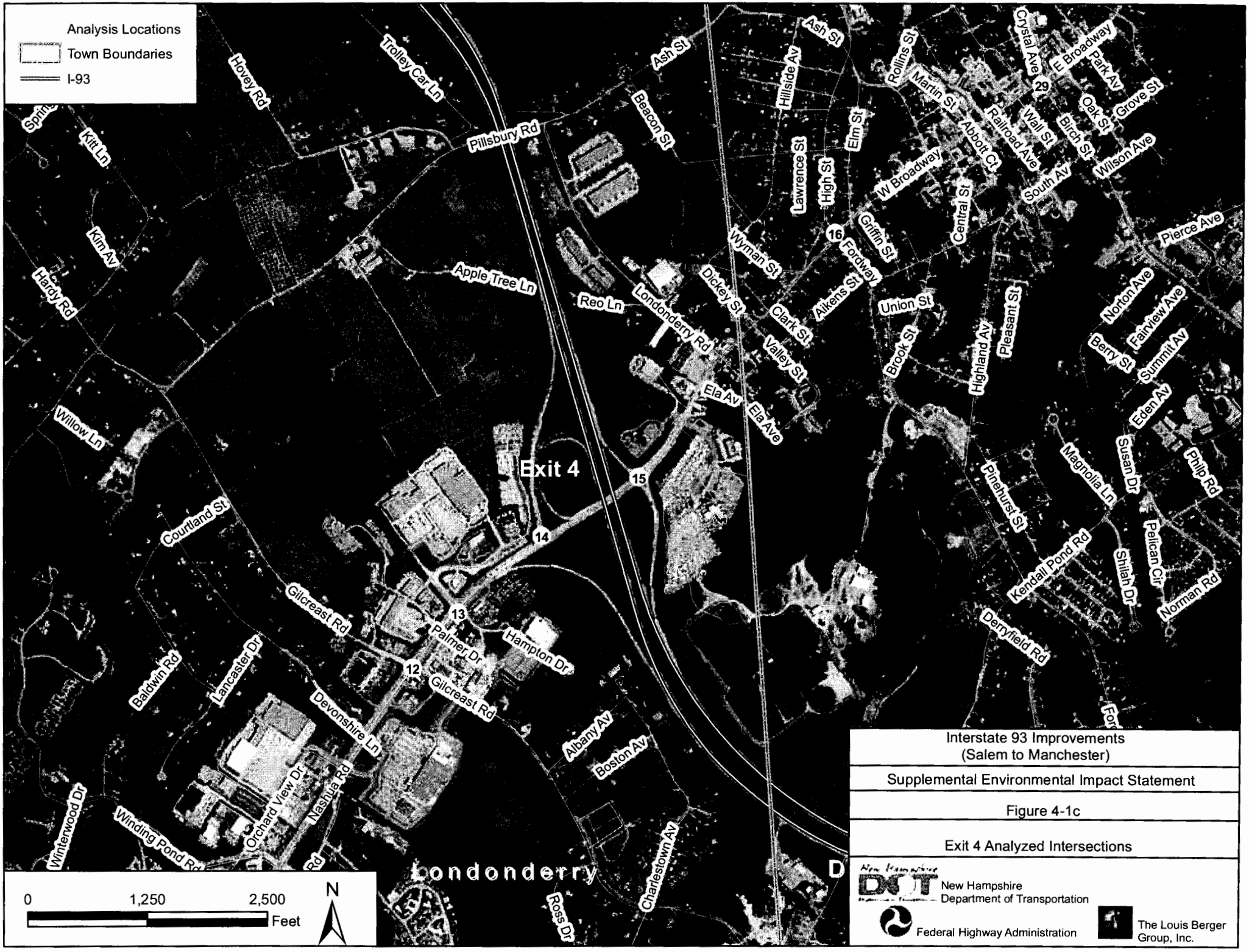
Figure 4-1b

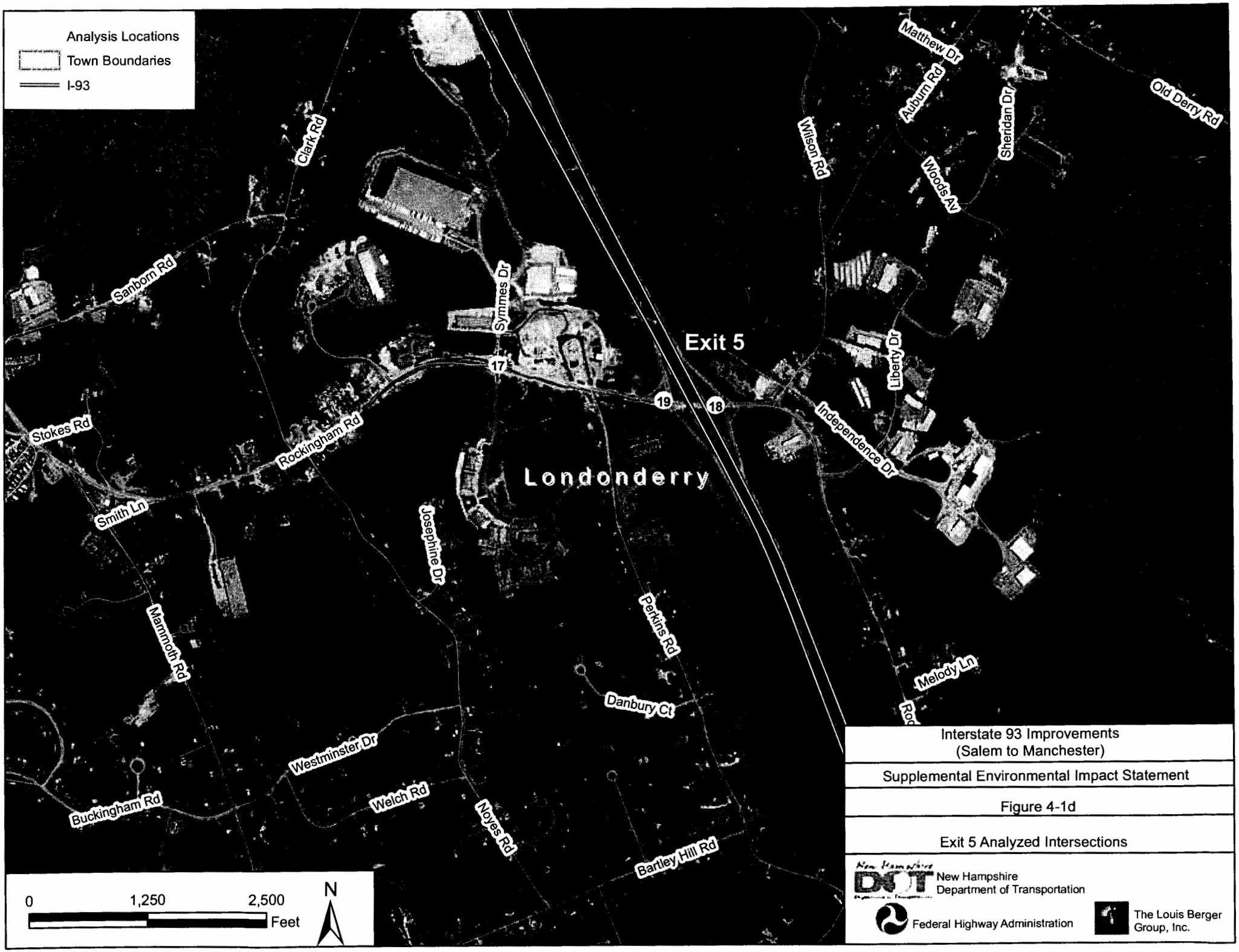
Exit 3 Analyzed Intersections

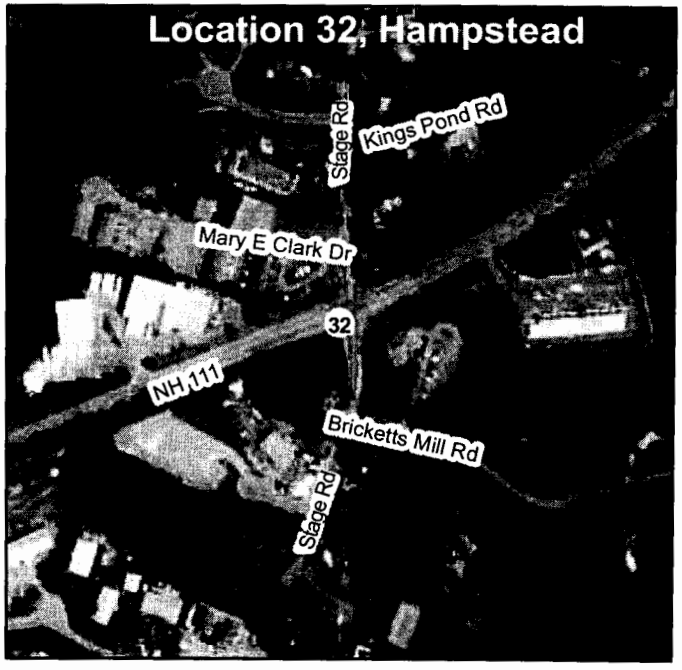
New Hampshire Department of Transportation

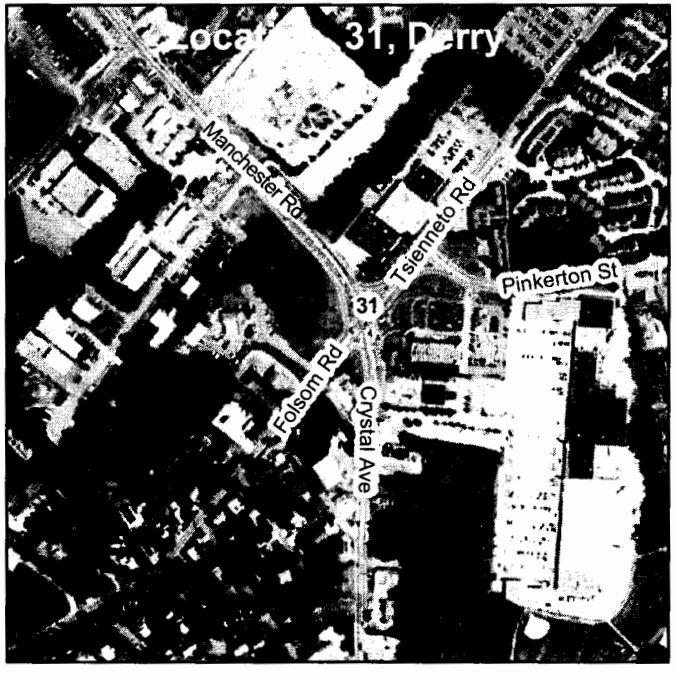
Federal Highway Administration

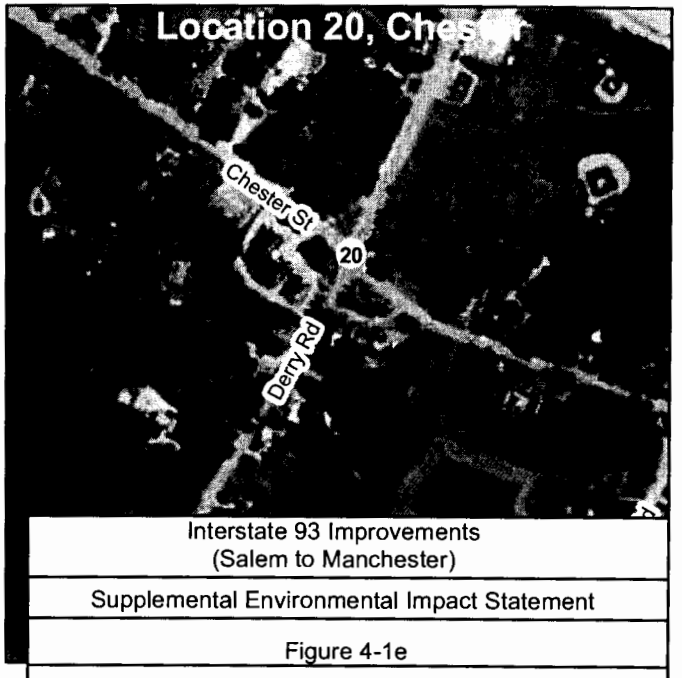
The Louis Berger Group, Inc.


Analysis Locations
Town Boundaries
I-93
Exit 4
Londonderry
Hovey Rd
Trolley Car Ln
Ash St
Beacon St
Pillsbury Rd
Kitt Ln
Kim Av
Hardy Rd
Apple Tree Ln
Reo Ln
Londonderry Rd
Willow Ln
Courtland St
Gilcreast Rd
Palmer Dr
Hampton Dr
Baldwin Rd
Lancaster Dr
Devonshire Ln
Albany Av
Boston Av
Winterwood Dr
Winding Pond Rd
Orchard View Dr
Nashua Rd
Ross Dr
Charlestown Av
Hillside Av
Rollins St
Crystal Ave
E Broadway
Park Av
Martin St
Railroad Ave
Wall St
Oak St
Grove St
Birch St
Wilson Ave
Elm St
Lawrence St
High St
W Broadway
Abbott Ct
South Av
Central St
Griffin St
Fordway
Wyman St
Dickey St
Aikens St
Clark St
Valley St
Union St
Brook St
Highland Av
Pleasant St
Pierce Ave
Norton Ave
Fairview Ave
Berry St
Summit Av
Eden Av
Susan Dr
Magnolia Ln
Philip Rd
Pinehurst St
Kendall Pond Rd
Pelican Cir
Shiloh Dr
Norman Rd
Derryfield Rd
Ela Av
Ela Ave
0
1,250
2,500
Feet
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 4-1c
Exit 4 Analyzed Intersections
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.


Analysis Locations
Town Boundaries
I-93
Clark Rd
Sanborn Rd
Symmes Dr
Exit 5
17
19
18
Stokes Rd
Rockingham Rd
Londonderry
Smith Ln
Josephine Dr
Mammoth Rd
Perkins Rd
Danbury Ct
Westminster Dr
Welch Rd
Buckingham Rd
Noyes Rd
Bartley Hill Rd
Matthew Dr
Auburn Rd
Wilson Rd
Woods Av
Sheridan Dr
Old Derry Rd
Liberty Dr
Independence Dr
Melody Ln
0
1,250
2,500
Feet
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 4-1d
Exit 5 Analyzed Intersections
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.







Interstate 93 Improvements
(Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 4-1e

Secondary Road Analyzed Intersections

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

Figure 4-2
2020 Scenario 1
Temporal Distribution of No Build and Build Average Daily Traffic in August
I-93 Northbound Between State Line and Exit 1

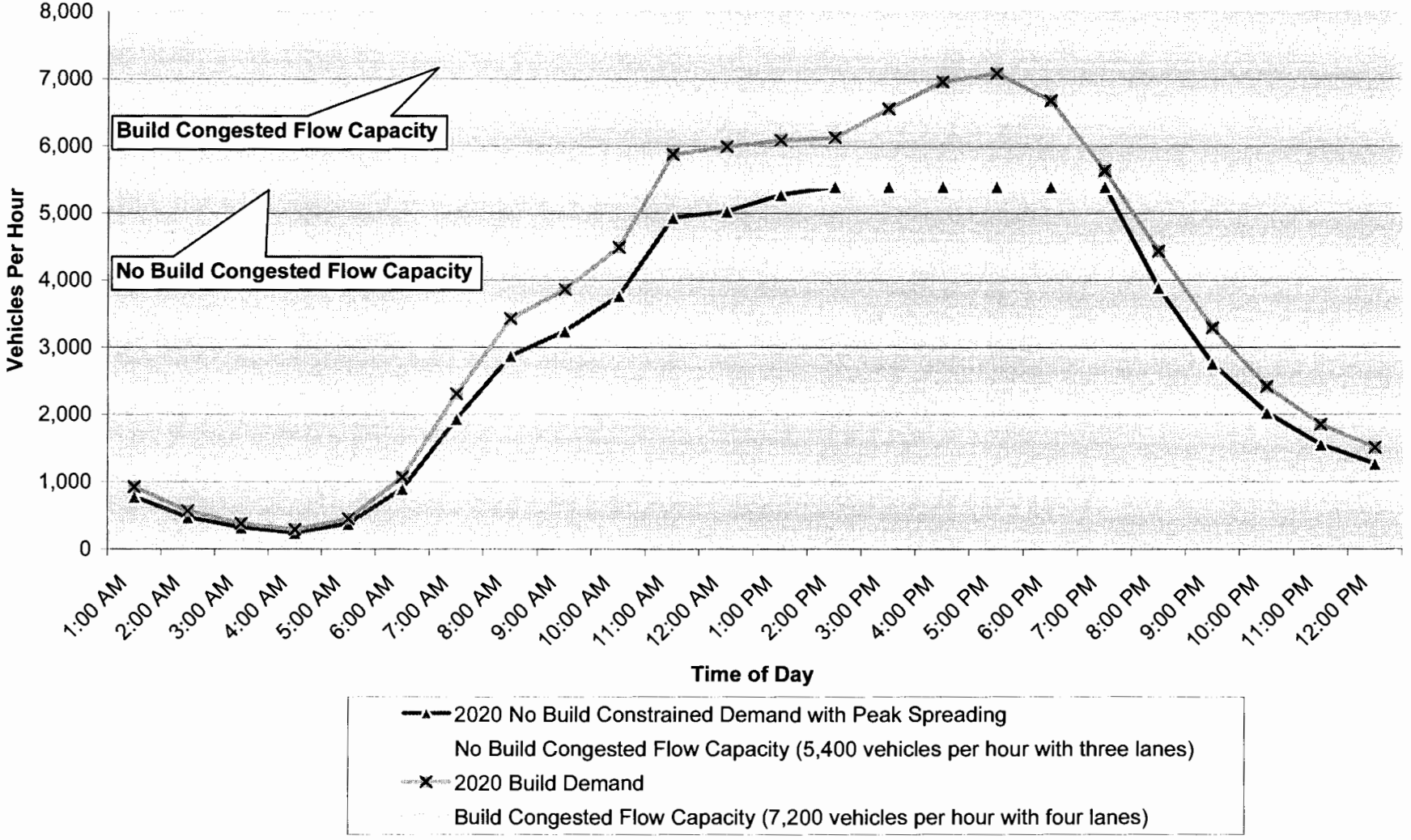


Figure 4-3
2020 Scenario 2
Temporal Distribution of No Build and Build Average Daily Traffic in August
I-93 Northbound Between State Line and Exit 1

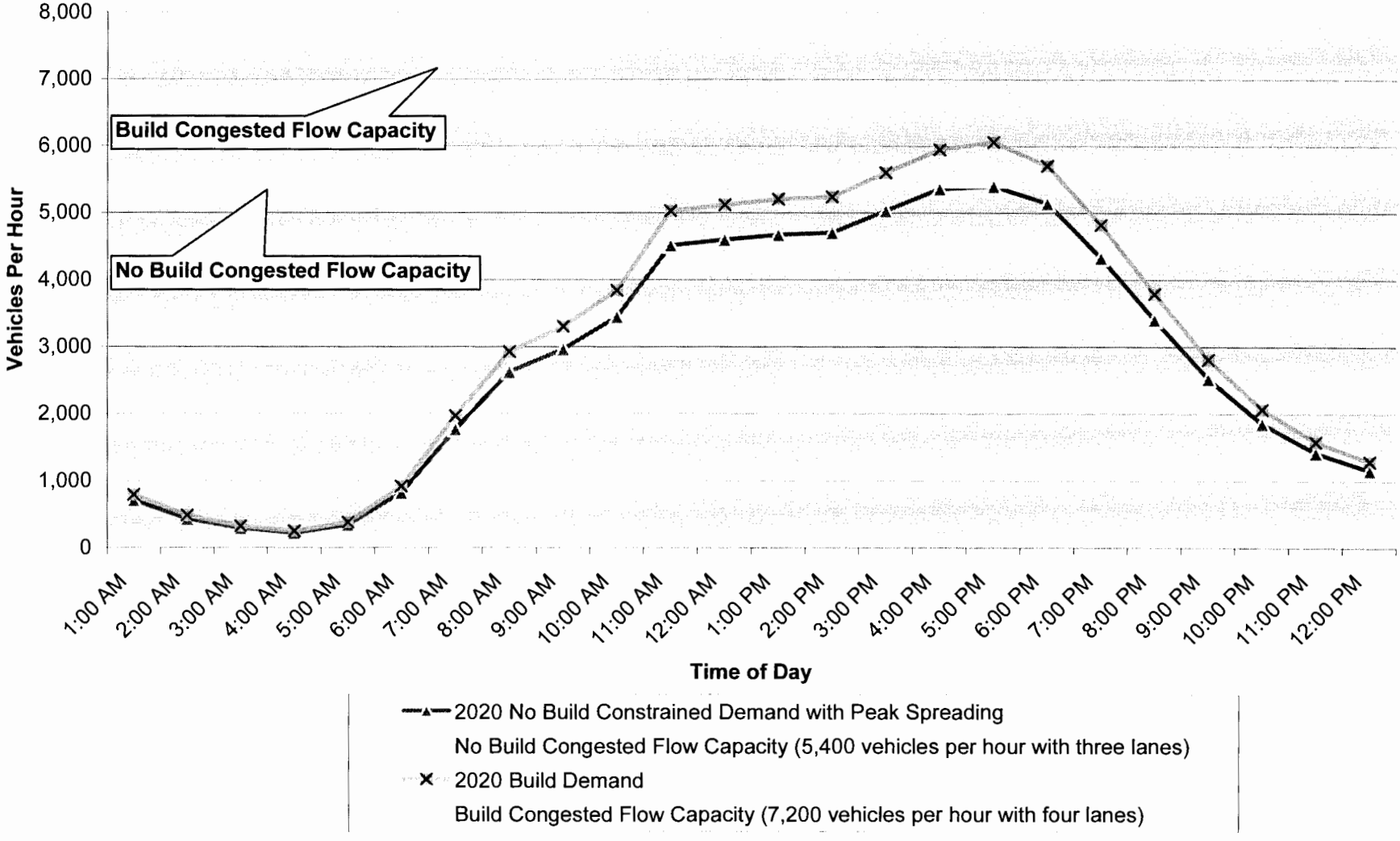
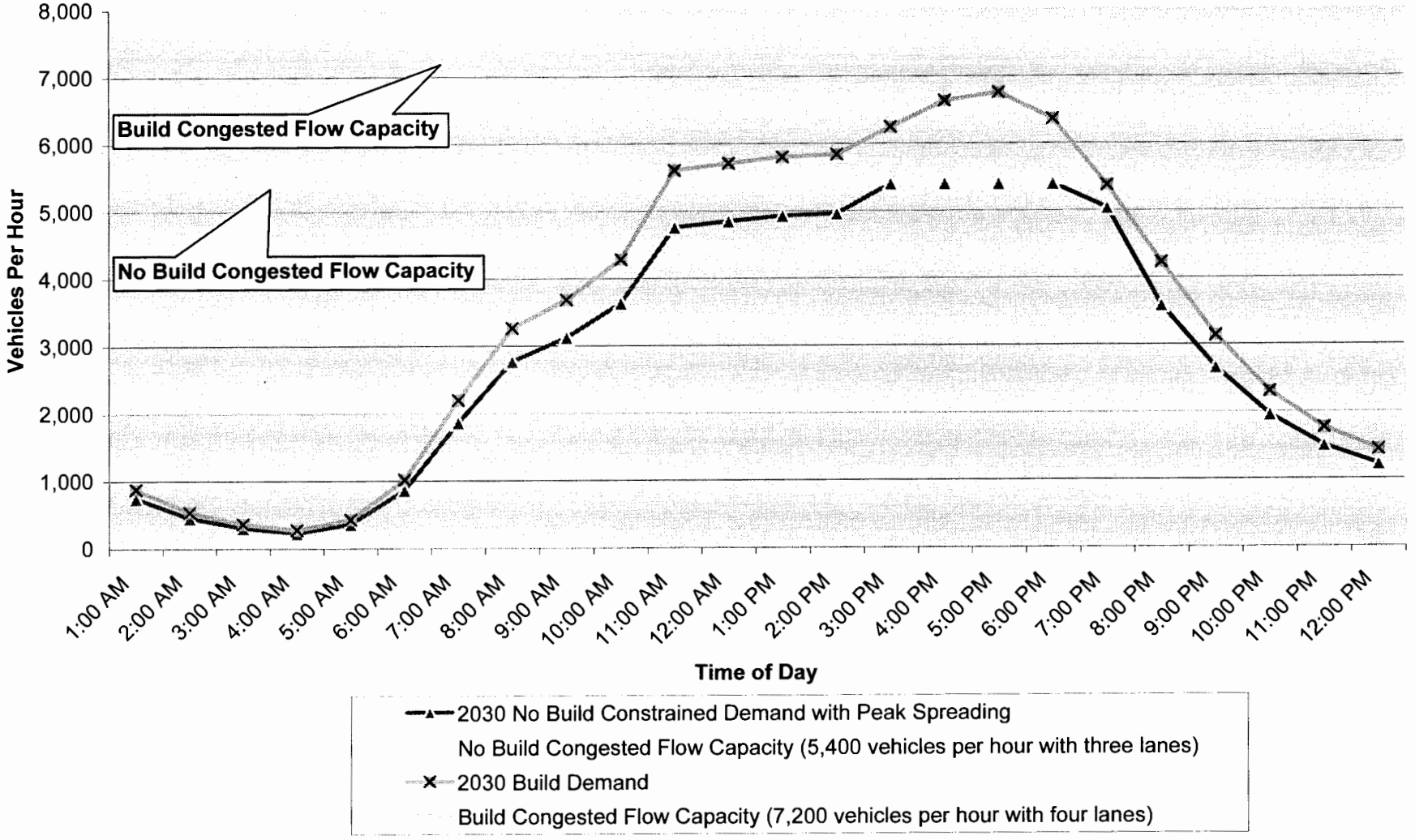


Figure 4-4
2030 Scenario 2
Temporal Distribution of No Build and Build Average Daily Traffic in August
I-93 Northbound Between State Line and Exit 1



5.0 AIR QUALITY

5.1 Introduction

This chapter provides a summary of the detailed information in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report. The microscale carbon monoxide, regional emissions sensitivity, and mobile source air toxics analyses have not changed since the DSEIS. However, this chapter does provide updated information on the transportation conformity determination resulting from modifications to the I-93 project construction schedule, consideration of updated guidance on assessing mobile source air toxics, and a qualitative assessment of the consistency of the project with the policy goals of the New Hampshire Climate Action Plan.

5.1.1 National Ambient Air Quality Standards

The Clean Air Act and its amendments led to the creation of National Ambient Air Quality Standards (NAAQS) by U.S. Environmental Protection Agency (EPA) for six criteria air pollutants: carbon monoxide, sulfur dioxide, ozone, particulate matter, nitrogen dioxide, and lead. The NAAQS are set at levels designed to protect public health. Areas that meet the NAAQS are classified as attainment areas. Areas that do not meet the NAAQS are classified as nonattainment areas for that pollutant. State Implementation Plans (SIPs) are designed to bring nonattainment areas into compliance with the NAAQS. Former nonattainment areas currently meeting the NAAQS are designated maintenance areas.

The counties surrounding the I-93 project corridor are attainment areas for sulfur dioxide, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide and lead. Southern New Hampshire contains a single nonattainment area for the 1997 8-hour ozone NAAQS which encompasses portions of Hillsborough, Rockingham, Merrimack, and Strafford counties. There are two carbon monoxide maintenance areas in southern New Hampshire, the City of Manchester and the City of Nashua.

Carbon Monoxide

Carbon monoxide (CO) is a colorless and odorless gas that results from the incomplete combustion of gasoline and other fossil fuels. Approximately 80 percent of CO emissions are from motor vehicles. Because CO disperses quickly, concentrations can vary greatly over relatively short distances. Elevated concentrations are usually limited to locations near crowded intersections and along congested roadways.

Ozone

Ozone is also a colorless gas and is a major constituent of photochemical smog at the earth's surface. The precursors in the formation of ozone are volatile organic compounds (VOCs) and nitrogen oxide (NOx). In the presence of sunlight, ozone is formed through a series of chemical reactions that take place in the atmosphere. Because the reactions occur as the pollutants are

diffusing downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants.

Transportation Conformity

Transportation conformity is a way to ensure that federal funding and approval goes to those transportation activities that are consistent with air quality goals. Transportation conformity applies to transportation plans, transportation improvement programs (TIPs), and projects funded or approved by Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) in nonattainment and maintenance areas. A conformity determination demonstrates that the total emissions projected for a plan or program are within the emissions limits ("budgets") established by the air quality plan or State Implementation Plan (SIP), and that transportation control measures (TCMs) are implemented in a timely fashion.

For projects in metropolitan areas, conformity is demonstrated by showing that the project is included in conforming Metropolitan Planning Organization (MPO) plans/TIPs and that the applicable hot-spot analysis requirements have been met. Hot spot analysis involves comparing localized CO, PM_{10}, and $PM_{2.5}$ concentrations to the NAAQS (e.g. around congested intersections). For the I-93 project, hot-spot analysis requirements for CO apply in the Manchester CO maintenance area. Section 5.3.3 explains the methodology for the microscale (or hot spot) CO analysis used to demonstrate that the project will not cause a new violation of the NAAQS or worsen existing violations. Hot spot analysis requirements for PM_{10}, and $PM_{2.5}$ do not apply because southern New Hampshire is an attainment area for these pollutants.

At the time of the preparation of the DSEIS, the most recently approved conformity determinations for New Hampshire were made in the "FY2007-2010 Conformity Determinations for Transportation Improvement Programs, Transportation Plans, and Regional Emissions Analysis of Transportation Projects in New Hampshire's Nonattainment Areas" (NHDOT, 2007). NHDOT prepared the FY2007-2010 conformity analysis document based on the regional emissions analyses conducted by the regional planning commissions in southern New Hampshire. The regional emissions analyses covered the years 2007 to 2026 and took into account the traffic effects of widening I-93 to four-lanes in each direction from Salem to Manchester, as well as most other major transportation projects included in MPO plans and TIPs.[1] The FY2007-2010 conformity analysis did not directly take into account the potential induced growth estimated by the Delphi Panel Blended Average Allocation, however it did take into account future population and employment levels anticipated by each regional planning commission. Therefore, as described in Section 5.3.4, a regional emissions sensitivity analysis was conducted as part of the DSEIS to determine the effect of the Scenario 1 and Scenario 2 population and employment estimates on the results of the FY2007-2010 conformity analysis.

Subsequent to the preparation of the regional emissions sensitivity analysis based on the 2007-2026 conformity analyses, conformity analyses for 2009-2035 have been completed by the

[1] The transportation conformity regulations require the regional emissions analysis to include federal transportation projects and all regionally significant transportation projects, regardless of their funding source (40 CFR §93.122(a)(1)). The regulations also define certain types projects as exempt from regional emissions analysis (40 CFR § 93.127 and 40 CFR §93.126).

Nashua Regional Planning Commission, the Southern New Hampshire Planning Commission, the Rockingham Planning Commission, and the Strafford Regional Planning Commission. NHDOT has summarized the 2009-2035 conformity analyses conducted by the MPOs in the document "Summary of Transportation Conformity Determinations in New Hampshire: 2009-2035" (NHDOT, 2008). As with the previous conformity analysis, the 2009-2035 analysis includes the widening of I-93 to four-lanes in each direction from Salem to Manchester. The 2009-2035 analysis incorporates a number of changes since the previous analysis, including the use of new motor vehicle emissions budgets for the Boston-Manchester-Portsmouth (Southeast), New Hampshire 8-hour ozone nonattainment area approved by EPA effective August 12, 2008. The 2009-2035 analysis shows that all future year emissions in nonattainment and maintenance areas will be well below their respective emissions budgets. Given that the future emissions are well under the budgets and the very small effect of the DSEIS population and employment levels on regional emissions indicated by the 2007-2026 regional emissions sensitivity analysis, it was not necessary to conduct an additional sensitivity analysis on the 2009-2035 conformity analysis.

On April 21, 2010, FHWA and FTA approved an updated 2009-2035 conformity analysis triggered by changes in the construction schedule for the I-93 improvements project. The schedule changes included an expected completion date for the project of 2020 (instead of 2017 as assumed in prior conformity analyses). Both the Southern New Hampshire Planning Commission and the Rockingham Planning Commission conducted new air quality conformity analyses taking into account the schedule changes. The updated 2009-2035 analysis shows that all future year emissions in nonattainment and maintenance areas will be well below their respective emissions budgets.

5.1.2 Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). Mobile Source Air Toxics (MSATs) are compounds emitted from highway vehicles and non-road equipment (e.g., volatile organic compounds, nonvolatile organics, diesel particulate matter/diesel exhaust gases, or metals). Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The entire list of air toxics currently identified by the Clean Air Act includes 188 air toxics. EPA has assessed this expansive list in their latest rule on the *Control of Hazardous Air Pollutants from Mobile Sources* (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources. In addition, EPA identified seven compounds with substantial contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. FHWA considers these seven compounds to be the priority MSATs (FHWA, 2009).

Previous EPA regulations and the 2007 EPA regulation *Control of Hazardous Air Pollutants from Mobile Sources* mentioned above require controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Among other measures, these regulations established fuel based standards (e.g. standards for the maximum allowable benzene content in gasoline) and emissions standards for passenger vehicles when operating at cold temperatures. MSAT emissions are also projected to decrease due to other mobile source regulations, such as the reformulated gasoline (RFG) program, the National Low Emission Vehicle (NLEV) standards, Tier 2 motor vehicle emission standards and gasoline sulfur control requirements, and proposed heavy duty engine and vehicle standards and on-going highway diesel fuel sulfur control requirements. At the national level, EPA expects a 65 percent reduction in MSAT emissions from on-road mobile sources between 1999 and 2020, despite a 57 percent increase in vehicle miles traveled (VMT) over this same time period (EPA, 2007).

5.1.3 Greenhouse Gas Emissions and Climate Change

Greenhouse gases are trace gases that trap heat in the earth's atmosphere. Some greenhouse gases occur naturally and are emitted into the atmosphere through natural processes and human activities. Naturally occurring greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Other greenhouse gases such as chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) are created and emitted solely through human activities. Certain human activities can also add to the levels of most of the naturally occurring gases. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases.

As a sector, transportation is a significant source of greenhouse gases. In 1998, transportation sources accounted for approximately one quarter of the total greenhouse gas emissions in the U.S. Transportation contributes to global warming through the burning of gasoline and diesel fuel. Any process that burns fossil fuels, such as gasoline and diesel fuel, releases CO_2 into the air. CO_2 from fossil fuel combustion is responsible for almost all greenhouse gas emissions from mobile sources, which include both transportation sources and non-transportation equipment, such as agricultural and construction equipment. CH_4 and N_2O emissions also result from fuel combustion, while HFC emissions are associated with motor vehicle air conditioners.

In contrast with trends in other air emissions, greenhouse gas emissions from transportation continue to rise, in large part because travel growth has outpaced improvements in vehicle energy efficiency. Transportation sector emissions have grown at an average rate of about 2.0 percent annually since 1990. The sector's emissions have grown considerably faster than those of other sectors, which averaged about 0.8 percent annually during the same period (U.S. DOT Center for Climate Change and Environmental Forecasting, 2008).

To date, no national standards have been established regarding greenhouse gases, nor has EPA established criteria or thresholds for greenhouse gas emissions applicable to transportation projects. On April 2, 2007, the Supreme Court issued a decision in *Massachusetts et al. v. Environmental Protection Agency et al.* 549 U.S. 497 (2007) that the EPA does have authority under the Clean Air Act to establish motor vehicle emissions standards for CO_2 emissions. In

response to the Court's decision, EPA issued an endangerment and cause or contribute finding for six greenhouse gases under Section 202(a) of the Clean Air Act on December 7, 2009. The endangerment finding states that current and projected greenhouse gas concentrations in the atmosphere threaten the public health and welfare. The cause or contribute finding states that certain greenhouse gas emissions from motor vehicles contribute to the atmospheric concentrations of greenhouse gases and to climate change. EPA's findings are the first steps towards the potential regulation of greenhouse gas emissions under the Clean Air Act and are a prerequisite to finalizing proposed greenhouse gas emissions standards for light-duty vehicles.[2] However, the endangerment and cause and contribute findings do not have any direct implications on requirements for developing transportation projects at this time.

On February 18, 2010, the Council on Environmental Quality issued "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions" for public review and comment. The Draft Guidance addresses when and how to evaluate both the greenhouse gas emissions from proposed actions and the potential impacts of climate change on proposed actions. The Draft Guidance recommends 25,000 metric tons of direct CO_2-equivelent emissions per year as an indicator for when a quantitative greenhouse gas emissions analysis may be appropriate to include in NEPA documents. The Draft Guidance does not have direct implication on developing transportation projects at this time because it is still under public review and subject to substantial change depending on the comments received.

In December 2007, New Hampshire established a Climate Change Policy Task Force and charged the task force with developing a Climate Change Action Plan that establishes climate change goals and recommends meaningful steps to meet those goals, based on Executive Order Number 2007-3. The New Hampshire Department of Environmental Services (NHDES) is designated as the lead agency for the task force. The "2009 New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future" was published in March 2009 (NHDES, 2009). The plan recommends a long-term goal of reducing greenhouse gas emissions by 80 percent below 1990 levels by 2050 and a mid-term goal of reducing greenhouse gas emissions 20 percent below 1990 by 2025. The plan contains 67 recommended actions for individuals, businesses and government organized around the following 10 overarching strategies:

1. Maximize energy efficiency in buildings.
2. Increase renewable and low-CO2-emitting sources of energy in a long-term sustainable manner.
3. Support regional and national actions to reduce greenhouse gas emissions.
4. Reduce vehicle emissions through state actions.
5. Encourage appropriate land use patterns that enable fewer vehicle-miles traveled.
6. Reduce vehicle-miles traveled through an integrated multimodal transportation system.
7. Protect natural resources (land, water, wildlife) to maintain the amount of carbon fixed or sequestered.
8. Lead by example in government operations.
9. Plan for how to address existing and potential climate change impacts.

[2] Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards- Federal Register Vol. 74, No. 186, September 28, 2009.

10. Develop an integrated education, outreach and workforce training program.

5.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

5.2.1 Microscale Carbon Monoxide Analysis

The 2004 FEIS analyzed microscale CO concentrations for existing conditions (1997), the estimated year of completion (2010), and the design (2020) years for the No-Build and Build Alternatives using the EPA emission model (MOBILE5B) and dispersion model (CAL3QHC) computer models. Based on the study area roadway configurations, land use, and traffic patterns, and the level of service associated with the intersections, nine (9) microscale CO analysis sites were analyzed. The predicted CO pollutant concentration levels for the No Build and Build conditions were compared to the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO) (1-hour and 8-hour concentration thresholds of 35 parts per million (ppm) and 9 ppm; respectively). The results presented in the 2004 FEIS showed that future No Build and Build concentrations would be below the NAAQS at all of the receptor locations.

Four of the analysis sites (Route 28A at Huse Road, Cilley Road, Candia Road, and Massabesic Road) were located in the City of Manchester, a maintenance area for CO. These sites were used to meet CO hot spot analysis requirements under the transportation conformity regulations (40 CFR 93.116 and 40 CFR 93.123).

5.2.2 Transportation Conformity

The 2004 FEIS concluded that the 2005 Selected Alternative was in compliance with the 1990 Clean Air Act Amendments and the New Hampshire SIP. The results of the microscale analysis demonstrated that the 2005 Selected Alternative would not create CO violations in locations where violations currently do not exist and that all modeled CO concentrations would be below the NAAQS. The 2005 Selected Alternative also satisfied the regional transportation conformity requirements for ozone and CO because it was evaluated as part of NHDOT's "Fiscal Year 2003-2005 Conformity Determination for Transportation Improvement Programs, Transportation Plans, and Regional Emission Analysis of Transportation Projects" which was reviewed by EPA and found to conform by U.S. DOT, as documented in the conformity determination dated November 2002.

5.2.3 Record of Decision Commitments/Mitigation

The Record of Decision made the following commitments with respect to air quality:

- Air quality will continue to be addressed for the project through the regional transportation conformity analyses conducted by the MPOs and NHDOT. The project is, and will continue to be, included in conforming TIPs, and MPO plans.
- Mitigation measures for controlling fugitive dust emissions during construction will include wetting and stabilization of all work areas, cleaning paved roadways, and scheduling construction to minimize the amount and duration of exposed earth.

- NHDOT will require that contractors involved with the reconstruction of I-93 include air pollution control devices on heavy diesel construction equipment in accordance with applicable State and Federal laws at the time of construction. The merits and practicality of more stringent or voluntary specification measures will be considered during the final design process and in consultation with the contracting community at large.

5.3 Methodology

5.3.1 Updated Traffic Data

All of the quantitative air quality analyses conducted for this SEIS were conducted using updated traffic data generated to explicitly account for the additional travel generated by induced population and employment growth. The microscale carbon monoxide analysis was based on SEIS traffic data for Scenario 1 and Scenario 2. The methodology used to generate the SEIS traffic data with the New Hampshire Statewide Model is explained in Chapter 4: Traffic. For the regional emissions sensitivity analysis, traffic data was generated from local MPO transportation models using the Scenario 1 and Scenario 2 population and employment estimates as inputs.

5.3.2 Updated Emissions Model

The EPA approved emissions model used in the 2004 FEIS was MOBILE5B. The air quality analyses conducted for this SEIS utilize an updated version of the EPA approved emissions model, MOBILE6.2.

5.3.3 Microscale Carbon Monoxide Analysis

The 2004 FEIS CO microscale analysis was conducted for nine sites, including four located within the Manchester CO maintenance area in order to meet transportation conformity hot-spot analysis requirements. The updated microscale analysis includes the nine analysis sites from the 2004 FEIS and three additional analysis sites along secondary roadways to meet the requirements of the court order (See Figure 5-1). The three additional sites were selected based on a screening process that used the SEIS updated traffic analysis results to identify the intersections with the largest change (increase or decrease) in traffic volumes between the No Build and Build conditions. The screening analysis considered traffic data from Scenario 1 and Scenario 2 in identifying the additional analysis locations. Large traffic volume changes as a result of the 2005 Selected Alternative are indicative of potential microscale air quality impacts warranting detailed analysis. The following secondary road analysis sites were selected based on the results of the screening assessment of traffic volume changes:

- I-93 Exit 3 Southbound on ramp at NH 111
- NH 28 at Rockingham Park Boulevard
- NH 128 at NH 102

At each microscale receptor location, maximum 1-hour and 8-hour CO concentrations for the existing, No Build, and Build conditions were calculated. The air pollutant dispersion model CAL3QHC was used to simulate mathematically how traffic, emissions, meteorology, and

geometry combine to affect pollutant concentrations. CAL3QHC predicted CO levels were then added to background levels to obtain the predicted total ambient concentrations at analyzed receptor locations for comparison with the NAAQS. Based on 2005-2007 New Hampshire monitoring data, the background concentration used in the 1-hr analysis was 4.5 ppm and the background concentration used in the 8-hr analysis was 2.2 ppm. The 2004 FEIS used a background concentration of 2.0 ppm for both the 1-hour and 8-hour analysis.

5.3.4 Regional Emissions Sensitivity Analysis

A sensitivity analysis was conducted to determine the effect of the Scenario 1 and Scenario 2 population and employment levels on the FY2007-2010 conformity analyses for CO and ozone nonattainment and maintenance areas in southern New Hampshire. The sensitivity analysis was proposed in response to the court order requirement that the SEIS address the potential air quality effects of induced growth. The analysis methodology was agreed upon through coordination between FHWA, NHDOT, Nashua Regional Planning Commission (NRPC), Southern New Hampshire Planning Commission (SNHPC), and the Rockingham Planning Commission (RPC).

The FY2007-2010 regional emissions analyses are for the years 2017 and 2026 to coincide with the SIP years for emissions budgets under the Clean Air Act. The SEIS future analysis years are 2020 (Scenario 1 and 2) and 2030 (Scenario 2 only). For the sensitivity analysis, 2020 Build population and employment data were used in the 2017 analysis and the 2030 Build population and employment data were used in the 2026 analysis. This is a conservative approach as the 2020 population and employment projections are greater than projected for 2017 and the population and employment projections for 2030 are greater than projected for 2026.

NRPC, SNHPC, and RPC each utilized the SEIS Build population and employment levels for Scenario 1 and Scenario 2 as inputs in their regional transportation models. The resulting estimates of CO, VOC and NOx emissions for each Scenario and analysis year were provided to NHDOT for processing in order to generate results comparable to the FY2007-2010 conformity analysis. DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report provides the sensitivity analysis modeling results reported by NRPC, SNHPC, and RPC.

For CO, the geographic units of analysis were Manchester and Nashua, the two CO maintenance areas in New Hampshire. For VOCs and NOx, the geographic units of analysis were the former Southern Serious and Seacoast Serious 1-hour ozone nonattainment areas, and areas outside the Seacoast and Southern areas, but within the boundaries of the 8-hour ozone nonattainment area (See Figure 5-2). Since a SIP for the 8-hour ozone had not been approved or the motor vehicle emissions budgets found adequate by EPA at the time of the FY2007-2010 conformity analysis, NHDOT used the 1-hour mobile source emission budgets to demonstrate conformity for the Southern Serious and Seacoast Serious nonattainment areas. For the towns outside of the Southern and Seacoast nonattainment areas, but within the boundaries of the 8-hr nonattainment area, there was no approved emissions budget. For this area (includes Auburn, Bedford, Candia, Chester, Epping, Freemont, Goffstown, Hooksett, Manchester, and Raymond), conformity was demonstrated by showing that Build emissions would be less than 2002 baseline emissions and less than No Build emissions.

5.3.5 Mobile Source Air Toxics Analysis

The MSAT analysis was prepared with reference to FHWA's 2006 *Interim Guidance on Air Toxic Analysis in NEPA Documents*. The 2006 Interim Guidance provided a three-level analytical approach for assessing MSATs. A Level 3 quantitative analysis was performed. Traffic volumes on certain segments of I-93 have been projected to be at or near the 140,000 to 150,000 annual average daily traffic (AADT) thresholds for a Level 3 analysis. The analysis used the New Hampshire Statewide Model to identify those roadway links that had a 5 percent or greater change in the traffic volume between the No-Build and Build conditions, for Scenario 1 and Scenario 2, as recommended by FHWA. The emissions analyses were performed using MOBILE6.2 on the vehicle miles traveled (VMT) for these identified roadways links.

At the time of the preparation of the 2006 Interim Guidance, EPA had identified six priority MSATs (benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene). Five of these six MSATs were analyzed (all except diesel particulate matter/diesel exhaust organic gases).[3]

On September 30, 2009, FHWA issued an update to the MSAT interim guidance. The 2009 Interim Guidance was reviewed during the preparation of this FSEIS to determine if an update to the MSAT analysis conducted for the DSEIS was warranted. The updates to the MSAT Interim Guidance include regulatory changes since the issuance of the 2006 Interim Guidance and some organizational improvements. One of the changes incorporated in the 2009 Interim Guidance is an updated list of seven "priority MSATs" recommended for analysis, replacing the previous list of six priority MSATs. The current list of seven priority MSATs does not include acetaldehyde, but adds two other MSATs-- naphthalene and polycyclic organic matter.

NHDOT and FHWA determined that it was not necessary to update the quantitative MSAT analysis to take into account naphthalene and polycyclic organic matter emissions for the following reasons:

- The quantitative analysis of the five MSATs presented in the DSEIS showed that the 2005 Selected Alternative would reduce MSAT emissions in comparison to the No Build Alternative. Similar results would be expected if naphthalene and polycyclic organic matter emissions were analyzed.

[3] Particulate matter is also a criteria pollutant. As discussed in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report, New Hampshire is an attainment area for PM 2.5. Based on a review of the most recent 3-year State monitoring data, the 24-hour PM2.5 levels within the study area (i.e. Hillsborough and Rockingham counties in New Hampshire), and the neighboring Essex County in Massachusetts have been consistently well below the revised 24-hour PM2.5 standard. It is unlikely that a project in an attainment area would result in air quality impacts. Attainment areas are not subject to the conformity requirements under 40 CFR Part 93. Therefore, a project level conformity analysis under the PM2.5 standard is not required. In addition, quantitative hotspot modeling for particulate matter was not included in the SEIS update because it would be inconsistent with the March 10, 2006 EPA rulemaking stating that this type of analysis is not appropriate at this time given the limitations of the available technical tools.

- Emissions of these pollutants will likely be lower than present levels in 2020 and 2030 as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

The 2009 Interim Guidance does not change the three-level analytical approach for assessing MSATs presented in the 2006 Interim Guidance. Therefore, no additional MSAT analysis is necessary as a result of the 2009 Interim Guidance.

5.3.6 Tolling Sensitivity Analysis

The tolling sensitivity analysis framework is explained in Section 1.3.1. While the tolling proposal on I-93 southbound in Salem under consideration at the time of the DSEIS is no longer considered a practicable option, the tolling sensitivity analysis is presented in this FSEIS for information disclosure purposes. For air quality, the tolling sensitivity analysis involved microscale carbon monoxide analysis and MSAT analysis for the Build with Toll condition for Scenario 2 (2020 and 2030).

The microscale carbon monoxide analysis utilized the same methodology as explained in Section 5.3.3. The traffic analysis for the Build with Toll condition included 18 intersections in the Exit 1 to Exit 3 area where diversions of traffic from I-93 to secondary roads were expected. Two intersections out of the 18 intersections were selected for the microscale carbon monoxide analysis. The intersections selected had the highest increase in traffic volumes under the Build with Toll condition in comparison to the Build without Toll condition. The two analysis sites are the intersection of the I-93 Exit 3 southbound ramp and NH 111 and the intersection of the I-93 Exit 2 southbound ramp and Pelham Road. Microscale analyses were not conducted for all 12 sites included in the SEIS Scenario 1 and Scenario 2 No Build and Build analyses because the purpose of the tolling sensitivity analysis was to consider the potential impacts of tolling in the locations where these impacts would be the most likely. Based on the traffic analysis results which generally show traffic volume and congestion reductions in the I-93 corridor as a result of the toll, microscale analysis of additional sites was not warranted.

A quantitative MSAT analysis was conducted for the Build with Toll condition using the same methodology as described in Section 5.3.5. The MSAT analysis compares the change in emissions between the Build with Toll and Build without Toll conditions.

Regional emissions analyses for CO and ozone precursors were not conducted as part of the tolling sensitivity analysis. The purpose of the regional emissions sensitivity analysis was to determine the effect of Scenario 1 and Scenario 2 population and employment levels on the FY2007-2010 conformity analyses (see Section 5.3.4). A regional emissions analysis for the Build with Toll condition is not required for transportation conformity because the tolling proposal on I-93 southbound in Salem under consideration at the time of the DSEIS is no longer being considered (See Section 1.3.1).

5.3.7 Greenhouse Gas Analysis

It is not useful or informative at this point to consider greenhouse gas emissions as part of the I-93 SEIS. Climate change is inherently a global issue. The sources of greenhouse gas emissions that scientists believe are causing the current change in climate are from all over the world, and climate change does not easily lend itself to an analysis at a local level. Further, nothing in National Environmental Policy Act (NEPA) law explicitly requires an analysis of greenhouse gases at the project level and no national standards have been established. The 2009 New Hampshire Climate Change Action Plan contains recommended actions for reducing greenhouse gas emissions; it does not regulate greenhouse gas emissions or require greenhouse gas analysis of specific projects.

It is also not useful or informative to make greenhouse gas emission comparisons among the SEIS analysis scenarios. Relative to the global scope of the problem of climate change, any difference in greenhouse gas emissions between Scenario 1 and Scenario 2 are not likely to be significant. The magnitude of the changes in climate caused by these scenarios and any corresponding impacts on environmental resources would be too small to measure, as current analytical tools are not sophisticated enough to accurately reflect such minute differences. Attributing any environmental consequence to the differences in emissions between Scenario 1 and Scenario 2 or assessing how each contributes to impacts occurring around the world is not possible in a meaningful way. As a result, the comparison of greenhouse gas emissions resulting from each analysis scenario will not provide information that will be helpful to the public or relevant to project decision-making.

Greenhouse gases are quantitatively and qualitatively different from other motor vehicle emissions, and their magnitude and breadth appear to require a different approach to address their potential climate impacts. First, pollutant emissions are of concern, and thus regulated, in individual metropolitan or smaller areas. The climate impacts of CO_2 emissions, on the other hand, are global in nature. From a NEPA perspective, it is analytically problematic to conduct a project level cumulative effects analysis of greenhouse gas emissions on a global-scale problem. Secondly, criteria pollutant emissions last in the atmosphere for perhaps months; CO_2 emissions remain in the atmosphere far longer - over 100 years - and therefore require a much more sustained, intergenerational effort. Finally, due to the interactions between elements of the transportation system as a whole, project-level emissions analyses would be less informative than ones conducted at regional, state, or national levels. Because of these concerns, Federal Highway Administration (FHWA) concludes that CO_2 emissions cannot be usefully evaluated in the same way as other vehicle emissions are addressed.

The NEPA process is meant to concentrate on the analyses of issues that can be truly meaningful to the consideration of project alternatives, rather than simply "amassing" data. In the absence of a regional or national framework for considering the implications of a project-level greenhouse gas analysis, such an analysis would not inform project decision-making, while adding to the administrative burden.

5.4 Existing Conditions

CO concentrations at the 12 microscale analysis locations for 2005 are reported in Table 5-1. The existing estimated concentrations are all below the NAAQS.

Table 5-1
2005 Existing Conditions
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentration[1]	8-Hour CO Concentration[2]
1	Fordway Extension and NH 102	6.80	3.81
2	I-93 Exit 3 Northbound Ramp and NH 111	9.00	5.35
3	I-93 Exit 3 Southbound Ramp and NH 111	7.40	4.23
4	I-93 Exit 2 Southbound Ramp and Pelham Road	9.60	5.77
5	I-93 Exit 2 Northbound Ramp and Pelham Road	10.10	6.12
6	I-93 Right-of-Way near Mass Border	7.40	4.23
7*	Route 28A at Huse Road	7.40	4.23
8*	Route 28A at Cilley Road	7.80	4.51
9*	Route 28A at Candia Road	8.10	4.72
10*	Route 28A at Massabesic Road	8.20	4.79
11	NH Route 28 and Rockingham Park Boulevard	8.60	5.07
12	NH Route 128 and NH 102	7.70	4.44

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

* Site located in Manchester CO maintenance area.

5.5 Impacts

5.5.1 Scenario 1 (Delphi Panel Blended Average Allocation)

Microscale Carbon Monoxide Analysis

The results of the microscale air quality analysis show that the concentrations estimated for all locations analyzed were below the NAAQS. The predicted maximum 1-hour and 8-hour concentrations for 2020 are presented in the Table 5-2. For the analysis locations in Manchester (a maintenance area for CO), the results demonstrate that the 2005 Selected Alternative would not create new violations of NAAQS, or worsen existing violations. Therefore, it complies with the transportation conformity regulations for CO hotspot analysis.

For both the 1-hr and 8-hr analyses, the results show locations with small increases in CO concentrations as a result of the 2005 Selected Alternative, and other locations with relatively no change in CO concentrations. However, as shown in Table 5-2, none of the increases in CO concentrations are enough to exceed the NAAQS.

Table 5-2
Scenario 1 (2020 Delphi Panel Blended Average Allocation)
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentrations[1]		8-Hour CO Concentrations[2]	
		No Build	Build	No Build	Build
1	Fordway Extension and NH 102	5.70	5.80	3.04	3.11
2	I-93 Exit 3 Northbound Ramp and NH 111	6.90	7.00	3.88	3.95
3	I-93 Exit 3 Southbound Ramp and NH 111	6.20	7.40	3.39	4.23
4	I-93 Exit 2 Southbound Ramp and Pelham Road	8.60	9.80	5.07	5.91
5	I-93 Exit 2 Northbound Ramp and Pelham Road	8.20	11.30	4.79	6.96
6	I-93 Right-of-Way near Mass Border	6.30	6.70	3.46	3.74
7*	Route 28A at Huse Road	5.60	6.30	2.97	3.46
8*	Route 28A at Cilley Road	5.70	6.20	3.04	3.39
9*	Route 28A at Candia Road	5.90	6.50	3.18	3.60
10*	Route 28A at Massabesic Road	5.80	6.10	3.11	3.32
11	NH Route 28 and Rockingham Park Boulevard	7.60	7.60	4.37	4.37
12	NH Route 128 and NH 102	6.00	6.00	3.25	3.25

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

* Site located in Manchester CO maintenance area.

Regional Emissions Sensitivity Analysis

This section summarizes the results of the regional emissions sensitivity analysis for Scenario 1. Detailed results tables and supporting documentation are provided in DSEIS Appendix B: Air Quality Written Re-evaluation/Technical Report. Note that a widened I-93 (four-lanes in each direction) is included in both the FY2007-2010 conformity analysis and the sensitivity analysis conducted for this SEIS. Therefore, the differences between the results of the FY2007-2010 conformity analysis and the sensitivity analysis are attributable to differences in the magnitude and distribution of future population and employment.

Carbon Monoxide

The results of the CO sensitivity analysis results for Manchester and Nashua show that total CO emissions for Scenario 1 would be well under the CO emissions budgets. In Manchester, emissions under Scenario 1 would be about 4.45 tons per day higher than the total emissions of 24.6 tons per day predicted by the FY2007-2010 conformity analysis, an 18 percent increase. The CO emissions budget for Manchester is 55.83 tons per day. In Nashua, emissions under Scenario 1 would be about 6.49 tons per day higher than the total emissions of 23.40 tons per day predicted by the FY2007-2010 conformity analysis, a 28 percent increase. The CO emissions budget for Nashua is 60.13 tons per day. Figures 5-3 and 5-4 summarize the results of the CO sensitivity analysis for Manchester and Nashua, respectively.

Ozone

The results of the VOC and NOx sensitivity analyses for the Southern Serious and Seacoast Serious nonattainment areas show that total VOC and NOx emissions for Scenario 1 would be well under their respective emissions budgets.

In the Southern Serious nonattainment area, VOC emissions under Scenario 1 would be 0.58 tons per day higher than the total emissions of 3.62 tons per day predicted by the FY2007-2010 conformity analysis, a 16 percent increase. The VOC emissions budget for the Southern Serious nonattainment area is 10.72 tons per day. NOx emissions would be 0.68 tons per day higher than the total emissions of 5.20 tons per day predicted by the FY2007-2010 conformity analysis, a 13 percent increase. The NOx emissions budget for the Southern Serious nonattainment area is 21.37 tons per day. The emissions estimates for the Southern Serious nonattainment area in Scenario 1 include the induced growth added to the towns of Londonderry, Derry, Windham, Pelham, Salem, Sandown, Atkinson, and Danville by the Delphi PBAA. Figures 5-5 and 5-6 summarize the results of the Southern Serious nonattainment area sensitivity analysis for VOC and NOx, respectively.

The former Seacoast Serious nonattainment area does not include any of the towns in the Delphi panel study area (Scenario 1). The sensitivity analysis results for this area show that emissions would differ by less than one percent under Scenario 1 compared to the FY2007-2010 conformity analysis. As shown in Figure 5-2, the former Seacoast Serious nonattainment area is a substantial distance from the I-93 corridor. The detailed emissions estimates for the former Seacoast Serious nonattainment area are provided in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report.

For the nonattainment area outside of the Southern and Seacoast budget areas, but within the 8-hr nonattainment area, the sensitivity analysis results show that total emissions would be less than the 2002 baseline emissions, which were 8.21 tons/day for VOCs and 14.82 tons/day for NOx. Under Scenario 1, emissions would be less than one percent higher than the FY2007-2010 conformity analysis for 2017. The detailed emissions estimates for the nonattainment area outside of the Southern and Seacoast budget areas are provided in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report.

Mobile Source Air Toxics Analysis

Table 5-3 shows that mesoscale MSAT emissions are estimated to decrease between 2005 existing conditions and 2020 No Build conditions under Scenario 1. These reductions reflect the effects of phased increases in fuel content and engine operation standards (e.g. new standards that reduce MSAT emissions). As a result of project related reductions in congested operating conditions, additional emission reductions over the No Build condition would occur with the 2005 Selected Alternative in Scenario 1, however, the effect is very small in comparison to fuel and engine standard-related reductions expected under the No Build.

Refer to Section 5.5.5 for a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT health impacts.

Table 5-3
Scenario 1
Mobile Source Air Toxic Emissions

Pollutant	Change in Emissions between 2005 Existing Conditions and 2020 No Build (lbs per day)	Change in Emissions between 2020 No Build and 2020 Build (lbs per day)
1,3 Butadiene	-632.60	-4.34
Formaldehyde	-1,381.05	-12.61
Acetaldehyde	-509.76	-3.96
Acrolein	-70.01	-0.61
Benzene	-5,226.47	-29.19

5.5.2 Scenario 2 (Current State Projections)

Microscale Carbon Monoxide Analysis

The results of the microscale air quality analysis show that the concentrations estimated for all locations analyzed were below the NAAQS. The predicted maximum 1-hour and 8-hour concentrations for 2020 and 2030 are presented in the Tables 5-4 and Table 5-5. For the analysis locations in Manchester (a maintenance area for CO), the results demonstrate that the 2005 Selected Alternative would not create new violations of NAAQS, or worsen existing violations. Therefore, it complies with the transportation conformity regulations for CO hotspot analysis.

For both the 1-hr and 8-hr analyses, the results show locations with small increases in CO concentrations as a result of the 2005 Selected Alternative, and other locations with other locations with relatively no change in CO concentrations. However, as shown in the tables mentioned above, none of the increases in CO concentrations are enough to exceed the NAAQS.

Table 5-4
Scenario 2, 2020
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentrations[1]		8-Hour CO Concentrations[2]	
		No Build	Build	No Build	Build
1	Fordway Extension and NH 102	5.60	5.50	2.97	2.90
2	I-93 Exit 3 Northbound Ramp and NH 111	6.80	6.90	3.81	3.88
3	I-93 Exit 3 Southbound Ramp and NH 111	6.10	7.10	3.32	4.02
4	I-93 Exit 2 Southbound Ramp and Pelham Road	7.10	7.10	4.02	4.02
5	I-93 Exit 2 Northbound Ramp and Pelham Road	7.60	9.70	4.37	5.84
6	I-93 Right-of-Way near Mass Border	6.20	6.30	3.39	3.46
7*	Route 28A at Huse Road	5.80	5.90	3.11	3.18
8*	Route 28A at Cilley Road	5.70	5.90	3.04	3.18
9*	Route 28A at Candia Road	6.00	6.20	3.25	3.39
10*	Route 28A at Massabesic Road	5.90	6.30	3.18	3.46
11	NH Route 28 and Rockingham Park Boulevard	7.20	7.10	4.09	4.02
12	NH Route 128 and NH 102	5.90	5.90	3.18	3.18

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

* Site located in Manchester CO maintenance area.

Table 5-5
Scenario 2, 2030
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentrations[1]		8-Hour CO Concentrations[2]	
		No Build	Build	No Build	Build
1	Fordway Extension and NH 102	5.50	5.50	2.90	2.90
2	I-93 Exit 3 Northbound Ramp and NH 111	7.20	7.10	4.09	4.02
3	I-93 Exit 3 Southbound Ramp and NH 111	6.20	7.50	3.39	4.30
4	I-93 Exit 2 Southbound Ramp and Pelham Road	7.40	8.40	4.23	4.93
5	I-93 Exit 2 Northbound Ramp and Pelham Road	7.20	10.70	4.09	6.54
6	I-93 Right-of-Way near Mass Border	6.20	6.60	3.39	3.67
7*	Route 28A at Huse Road	5.90	5.90	3.18	3.18
8*	Route 28A at Cilley Road	5.80	5.90	3.11	3.18
9*	Route 28A at Candia Road	5.90	6.30	3.18	3.46
10*	Route 28A at Massabesic Road	5.90	6.60	3.18	3.67
11	NH Route 28 and Rockingham Park Boulevard	7.20	7.00	4.09	3.95
12	NH Route 128 and NH 102	5.90	5.80	3.18	3.11

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

* Site located in Manchester CO maintenance area.

Regional Emissions Sensitivity Analysis

This section summarizes the results of the regional emissions sensitivity analysis for Scenario 2. Detailed results tables and supporting documentation are provided in DSEIS Appendix B: Air Quality Written Re-evaluation/Technical Report. Note that a widened I-93 is included in both the FY2007-2010 conformity analysis and the sensitivity analysis conducted for this SEIS. Therefore, the differences between the results of the FY2007-2010 conformity analysis and the sensitivity analysis are attributable to differences in the magnitude and distribution of future population and employment.

Carbon Monoxide

The results of the CO sensitivity analysis results for Manchester and Nashua show that total CO emissions for Scenario 2 would be well under the CO emissions budgets. In Manchester, emissions under Scenario 2 would be about 2.18 tons per day higher than the total emissions of 24.66 tons per day predicted by the FY2007-2010 conformity analysis in 2017 (a 9 percent increase), and 1.87 tons per day higher than the total emissions of 24.49 tons per day predicted by the FY2007-2010 conformity analysis in 2026 (a 8 percent increase). The CO emissions budget for Manchester is 55.83 tons per day. In Nashua, emissions under Scenario 2 would be about 7.04 tons per day higher than the total emissions of 23.40 tons per day predicted by the FY2007-2010 conformity analysis in 2017 (a 30 percent increase) and 2.57 tons per day higher than the total emissions of 23.56 tons per day predicted by the FY2007-2010 conformity analysis in 2026 (a 11 percent increase). The CO emissions budget for Nashua is 60.13 tons per day. Figures 5-3 and 5-4 summarize the results of the CO sensitivity analysis for Manchester and Nashua, respectively.

Ozone

The results of the VOC and NOx sensitivity analysis for the Southern Serious and Seacoast Serious nonattainment areas show that total VOC and NOx emissions for Scenario 2 would be well under their respective emissions budgets.

In the Southern Serious nonattainment area in 2017, VOC emissions under Scenario 2 would be 0.52 tons per day higher than the total emissions of 3.62 tons per day predicted by the FY2007-2010 conformity analysis (a 14 percent increase). The VOC emissions budget for the Southern Serious nonattainment area is 10.72 tons per day. NOx emissions in 2017 would be 0.59 tons per day higher than the total emissions of 5.20 tons per day predicted by the FY2007-2010 conformity analysis (a 11 percent increase). The NOx emissions budget for the Southern Serious nonattainment area is 21.37 tons per day. By 2026 the difference between the Scenario 2 emissions estimates and the FY2007-2010 conformity analysis would decrease to 8 percent for VOC and 3 percent for NOx. The sensitivity analysis emissions estimates for the Southern Serious nonattainment area include the accessibility based estimates of induced population and employment growth in I-93 corridor towns such as Derry, Londonderry, Windham, and Salem. Figures 5-5 and 5-6 summarize the results of the Southern Serious nonattainment area sensitivity analysis for VOC and NOx, respectively.

The Scenario 2 accessibility analysis showed that the 2005 Selected Alternative would have very little effect on the Seacoast Serious nonattainment area (increases or decreases in population and employment of less than one percent compared to the No Build). The sensitivity analysis results for this area show that emissions would differ by two percent or less under Scenario 2 compared to the FY2007-2010 conformity analysis. As shown in Figure 5-2, the former Seacoast Serious nonattainment area is a substantial distance from the I-93 corridor. The detailed emissions estimates for the former Seacoast Serious nonattainment area are provided in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report.

For the nonattainment area outside of the Southern and Seacoast budget areas, but within the 8-hr nonattainment area, the sensitivity analysis results show that total emissions would be less than the 2002 baseline emissions, which were 8.21 tons/day for VOCs and 14.82 tons/day for NOx. Under Scenario 2, emissions would be approximately eight percent lower than the FY2007-2010 conformity analysis for both 2017 and 2026. The detailed emissions estimates for the nonattainment area outside of the Southern and Seacoast budget areas are provided in DSEIS Appendix B: Air Quality Written Reevaluation/Technical Report.

Mobile Source Air Toxics Analysis

Table 5-6 shows that mesoscale MSAT emissions are estimated to decrease between 2005 existing conditions and 2020 No Build conditions under Scenario 2. These reductions reflect the effects of phased increases in fuel content and engine operation standards (e.g. new standards that reduce MSAT emissions). As a result of project related reductions in congested operating conditions, additional emission reductions over the No Build condition would occur with the 2005 Selected Alternative in Scenario 2. However, the effect is very small in comparison to fuel and engine standard-related reductions expected under the No Build. Mesoscale MSAT emissions would continue to decrease between 2020 and 2030 under 2005 Selected Alternative in Scenario 2.

Refer to Section 5.5.5 for a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT health impacts.

Table 5-6
Scenario 2 (2020 and 2030 Current State Projections)
Mobile Source Air Toxic Emissions

Pollutant	Change in Emissions between 2005 Existing Conditions and 2020 No Build (lbs per day)	Change in Emissions between 2020 No Build and 2020 Build (lbs per day)	Change in Emissions between 2020 Build and 2030 Build (lbs per day)
1,3 Butadiene	-642.69	-1.05	-10.23
Formaldehyde	-1,407.56	-3.98	-16.23
Acetaldehyde	-518.89	-1.01	-6.92
Acrolein	-71.17	-0.23	-0.96
Benzene	-5,309.10	-2.71	-105.99

5.5.3 Tolling Sensitivity Analysis

Tables 5-7 and 5-8 present the results of the microscale carbon monoxide analysis comparing the Build with Toll condition to the Build without Toll condition. The results show that the concentrations estimated for all locations analyzed are below the NAAQS in the Build with Toll condition.

Table 5-7
Tolling Sensitivity Analysis, 2020
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentrations[1]		8-Hour CO Concentrations[2]	
		Build without Toll	Build with Toll	Build without Toll	Build with Toll
3	I-93 Exit 3 Southbound Ramp and NH 111	7.1	6.3	4.02	3.46
4	I-93 Exit 2 Southbound Ramp and Pelham Road	7.1	8.0	4.02	4.65

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

Table 5-8
Tolling Sensitivity Analysis, 2030
Predicted Maximum 1-Hour and 8-Hour CO Concentrations (Parts Per Million)

Site Number	Site Name	1-Hour CO Concentrations[1]		8-Hour CO Concentrations[2]	
		Build without Toll	Build with Toll	Build without Toll	Build with Toll
3	I-93 Exit 3 Southbound Ramp and NH 111	7.5	6.6	4.30	3.67
4	I-93 Exit 2 Southbound Ramp and Pelham Road	8.4	8.3	4.93	4.86

1. The 1-hour CO NAAQS is 35 ppm. The reported concentrations include a background concentration of 4.5 ppm (2005 ~ 2007 monitoring data).
2. The 8-hour CO NAAQS is 9 ppm. The reported concentrations include a background concentration of 2.2 ppm (2005 ~ 2007 monitoring data).

Table 5-9 provides the results of the MSAT analysis comparing the Build with Toll and Build without Toll conditions. The toll results in regional reductions in VMT, which in turn leads to reduced MSAT emissions in the Build with Toll condition in both 2020 and 2030. The MSAT emissions reductions are very small in comparison to reductions expected between 2005 and 2020 under the No Build condition (see Table 5-6).

Table 5-9
Tolling Sensitivity Analysis
Mobile Source Air Toxic Emissions, 2020 and 2030

Pollutant	Change in Emissions between Build without Toll and Build with Toll Conditions (lbs/day)	
	2020	2030
1,3 Butadiene	-1.42	-1.28
Formaldehyde	-3.71	-3.43
Acetaldehyde	-1.28	-1.17
Acrolein	-0.16	-0.15
Benzene	-11.51	-10.30
MTBE	-0.37	-0.37

5.5.4 Consistency with the 2009 New Hampshire Climate Action Plan

Comments on the DSEIS requested an analysis of greenhouse gas emissions and the consistency of the project with the New Hampshire Climate Action Plan. While a quantitative greenhouse gas analysis was not conducted for the reasons discussed in Section 5.3.7, the consistency of the project with the New Hampshire Climate Action Plan was considered. Table 5-10 provides a summary of the overarching strategies and recommendations of the 2009 New Hampshire Climate Action Plan, and their relevance to the I-93 improvements project. The assessment shows that the project is generally consistent with the applicable strategies and recommendations of the 2009 New Hampshire Climate Action Plan. While the 2005 Selected Alternative does increase Vehicle Miles Traveled (VMT) overall, it also reduces severe congestion and improves travel speed.

Examples of recommendations that the I-93 improvements project addresses include:

- Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
- Improve Traffic Flow (TLU 1.D.3)
- Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
- Various policies related to improving and expanding bus service
- Various policies related to improving land use planning and zoning through the project's Community Technical Assistance Program (CTAP)[4]

As indicated in Table 5-10, most of the recommendations included in the 2009 New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. building efficiency, improve fuel economy standards, renewable energy generation etc.).

With respect to the recommendations related to reducing vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

[4] As discussed in Chapter 13, the Record of Decision committed $3.5 million for a Community Technical Assistance Program (CTAP) to help communities in the area influenced by this section of I-93 better manage growth and advance conservation efforts.

Table 5-10
Summary of New Hampshire Climate Action Plan Strategies and Consistency Analysis

Plan Strategies/ Recommendations		Components/ Description	Potentially Applicable to the Project?	Consistency Analysis
1	Maximize energy efficiency in buildings	•Maximize efficiency in new construction and exiting buildings •Install higher-efficiency equipment, processes and systems •Increase use of combined heat/power •Consider alternative rate design •Upgrade building energy codes •Increase building energy code compliance •Establish an energy properties section in real estate property listings •Conserve embodied energy in existing building stock	No – Energy policy	N/A
2	Increase renewable and low-CO_2-emitting sources of energy in a long-term sustainable manner	•Promote renewable energy through the electric portfolio standard •Increase renewable energy and low-CO_2-emitting thermal energy systems •Promote low- and non-CO_2-emitting electric generation •Identify and deploy the next generation of electric grid technologies •Promote low- and non-CO_2-emitting distributed generation •Encourage use of biogenic waste sources for energy generation •Implement Regional Greenhouse Gas Initiative •Enable importation of Canadian hydro and wind generation •Allow regulated utilities to build renewable generation	No – Energy policy	N/A
3	Support regional and national actions to reduce greenhouse gas emissions	•Support stricter corporate average fuel economy standards •Support fuel economy standards for heavy-duty vehicles •Adopt a low-carbon fuel standard •Promote advanced technology vehicles and supporting infrastructure •Support strong climate action at the federal level	No – Energy policy at regional and federal levels	N/A
4	Reduce vehicle emissions through State actions	•Adopt California low emission vehicle standards •Create a point-of-sale financial incentive for higher-efficiency vehicles •Install retrofits to address black carbon emissions •Implement commuter trip reduction initiative •Increase highway automobile efficiency •Address vehicle idling •Improve traffic flow	Yes	The 2005 Selected Alternative improves traffic flow, reduces congestion and increased speeds; and also includes a commuter trip reduction initiative.
5	Encourage appropriate land use patterns that reduce vehicle-miles traveled	•Assess greenhouse gas development impact fees •Streamline approvals for low- greenhouse gas development projects •Develop model zoning to support bus/rail transit •Develop model zoning for higher-density, mixed-use development •Continue/expand funding, education, and technical assistance to municipalities	Yes	The 2005 Selected Alternative is consistent with the various policies related to improving land use planning and zoning through the project's CTAP commitment.

Plan Strategies/ Recommendations		Components/ Description	Potentially Applicable to the Project?	Consistency Analysis
6	Reduce vehicle-miles traveled through an integrated multi-modal transportation system	•Improve/expand existing local/intra-regional transit (bus) service •Improve existing inter-city bus service •Expand/improve bicycle and pedestrian infrastructure •Maintain/ expand passenger rail service •Maintain/ expand freight rail service •Implement a stable funding stream to support public transportation •Expand park-and-ride infrastructure	Yes	The project includes substantial improvements to public transportation services, including new park-and-ride lots; improvements an existing park-and-ride facility; and new bus terminals. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor (i.e., Boston Express bus service that operates 7 days a week).
7	Protect natural resources (land, water, wildlife) to maintain the amount of carbon fixed or sequestered	•Invest in forests to maximize carbon storage/avoid net forest land conversion •Optimize availability of biomass for electricity and heating within sustainable limits •Promote durable wood products •Protect agricultural land •Maximize source reduction, reuse and recycling	No	N/A
8	Lead by example in government operations	•Establish an energy management unit to address state energy use and greenhouse gas emissions •Establish an energy consumption and greenhouse gas emissions baseline inventory for State government •Establish a self-sustaining fund for energy efficiency projects in State government •Provide for the establishment of local energy commissions •Include climate change adaptation and mitigation in programs and planning •Promote public school siting and building aid to reduce energy use	No	N/A
9	Plan for how to address existing and potential climate change impacts	•Develop a Climate Change Adaptation Plan for the State •Develop and distribute critical information on climate change •Promote policies and actions to help populations most at risk •Charge and empower public health officials to prepare for climate change •Strengthen protection of the State's natural systems •Increase resilience to extreme weather events •Strengthen the adaptability of the State's economy to climate change	No	N/A
10	Develop an integrated education, outreach, and workforce training program	•Develop an overarching outreach and education plan •Include energy efficiency and conservation in school curriculum •Increase energy efficiency through building management education programs •Reduce residential energy demand through education and outreach •Establish a comprehensive energy efficiency and renewable energy education program •Create an energy efficiency and sustainable energy system web portal	No	N/A

5.5.5 Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In accordance with 40 C.F.R. 1502.22, this section documents information that is incomplete or unavailable for a project specific assessment of MSAT health impacts.

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumptions and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSATs. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects". Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSATs, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, 2007) or in the future as vehicle emissions substantially decrease (HEI, 2009).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study (NCHRP, 2003), which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (HEI, 2007). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA and the HEI have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

5.6 Mitigation

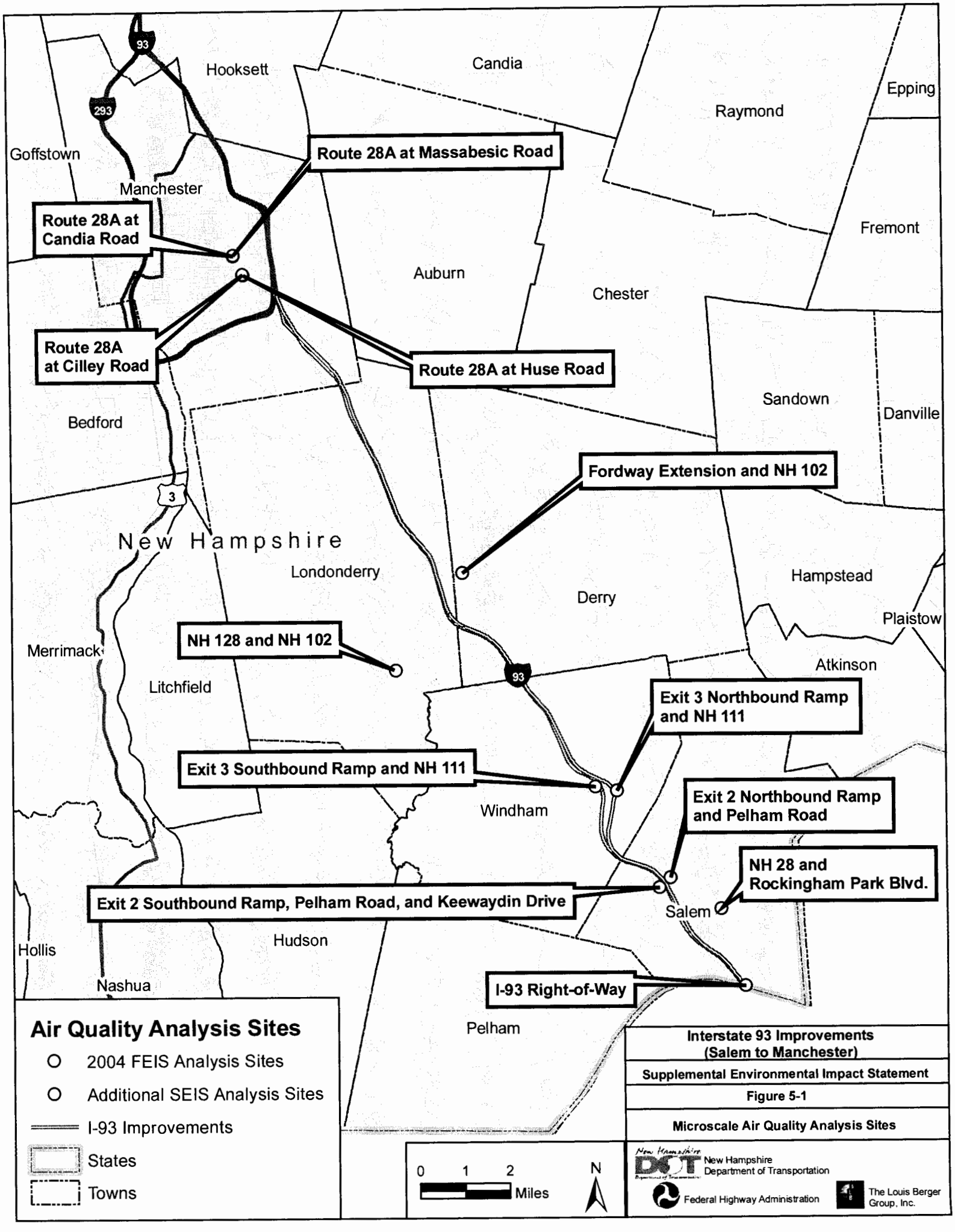
As no new adverse air quality impacts were identified by the SEIS air quality analyses, no new air quality mitigation measures are necessary or proposed. The air quality commitments from the 2004 FEIS and Record of Decision (Section 5.2.3) remain valid.

5.7 Conclusions

The SEIS air quality analyses show that the 2005 Selected Alternative would not contribute to any exceedences of the NAAQS for CO under all of the SEIS population and employment scenarios, including at three new analysis locations along the secondary road network. The 2005 Selected Alternative is in compliance with 40 CFR Part 93, the Clean Air Act Amendments and the New Hampshire SIP. The 2005 Selected Alternative is included in the currently conforming MPO plans and TIPs per 40 CFR 93.115. The regional emissions sensitivity analysis shows that the various SEIS population and employment scenarios would not alter the conclusions of the FY2007-2010 regional emissions conformity analyses—emissions would continue to be well below the applicable CO, VOC and NOx budgets. Finally, the MSAT analysis shows that MSAT emissions will decrease in the future under the No Build condition and decrease even further with the implementation of the 2005 Selected Alternative.

The tolling sensitivity analysis for air quality demonstrates that the $2 toll on I-93 southbound under consideration at the time of the DSEIS would not result in exceedences of the NAAQS for CO at congested intersections in the I-93 corridor. In addition, the regional effects of the toll on traffic patterns would reduce MSAT emissions.

The project is generally consistent with the applicable strategies and recommendations of the 2009 New Hampshire Climate Action Plan. While the 2005 Selected Alternative does increase overall VMT, it also reduces severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.


Hooksett
Candia
Epping
Raymond
Goffstown
Route 28A at Massabesic Road
Manchester
Route 28A at Candia Road
Fremont
Auburn
Chester
Route 28A at Cilley Road
Route 28A at Huse Road
Sandown
Danville
Bedford
Fordway Extension and NH 102
New Hampshire
Londonderry
Hampstead
Derry
Plaistow
NH 128 and NH 102
Merrimack
Atkinson
Litchfield
Exit 3 Northbound Ramp and NH 111
Exit 3 Southbound Ramp and NH 111
Exit 2 Northbound Ramp and Pelham Road
Windham
NH 28 and Rockingham Park Blvd.
Exit 2 Southbound Ramp, Pelham Road, and Keewaydin Drive
Salem
Hollis
Hudson
Nashua
I-93 Right-of-Way
Pelham
Air Quality Analysis Sites
2004 FEIS Analysis Sites
Additional SEIS Analysis Sites
I-93 Improvements
States
Towns
0 1 2
Miles
N
Interstate 93 Improvements (Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 5-1
Microscale Air Quality Analysis Sites
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.

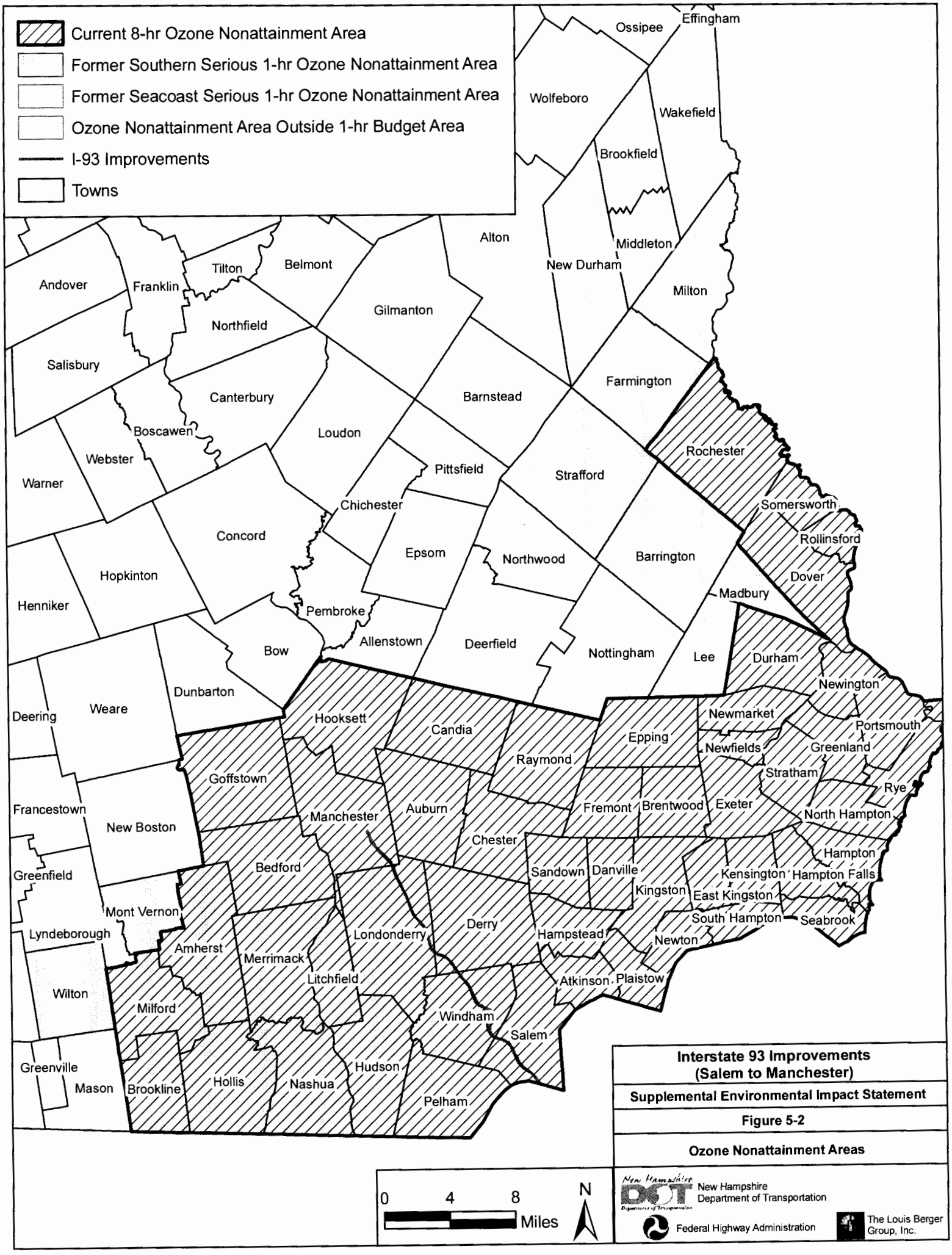
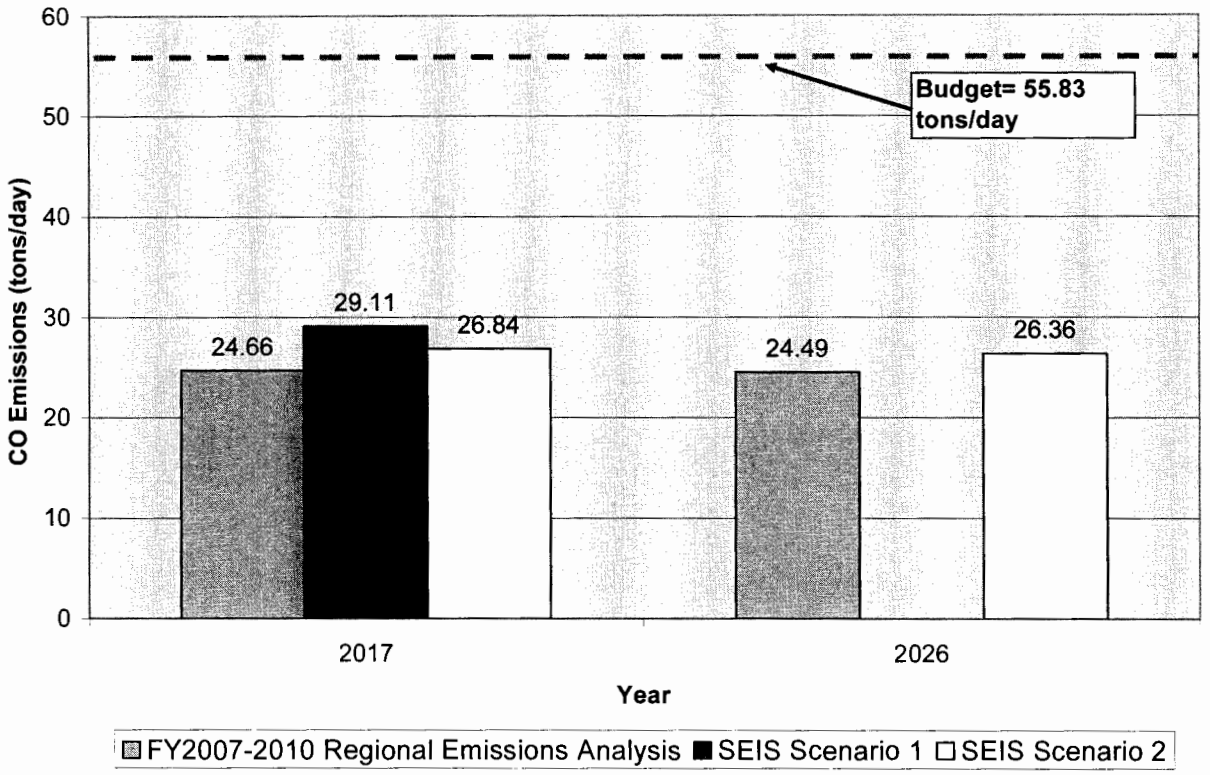
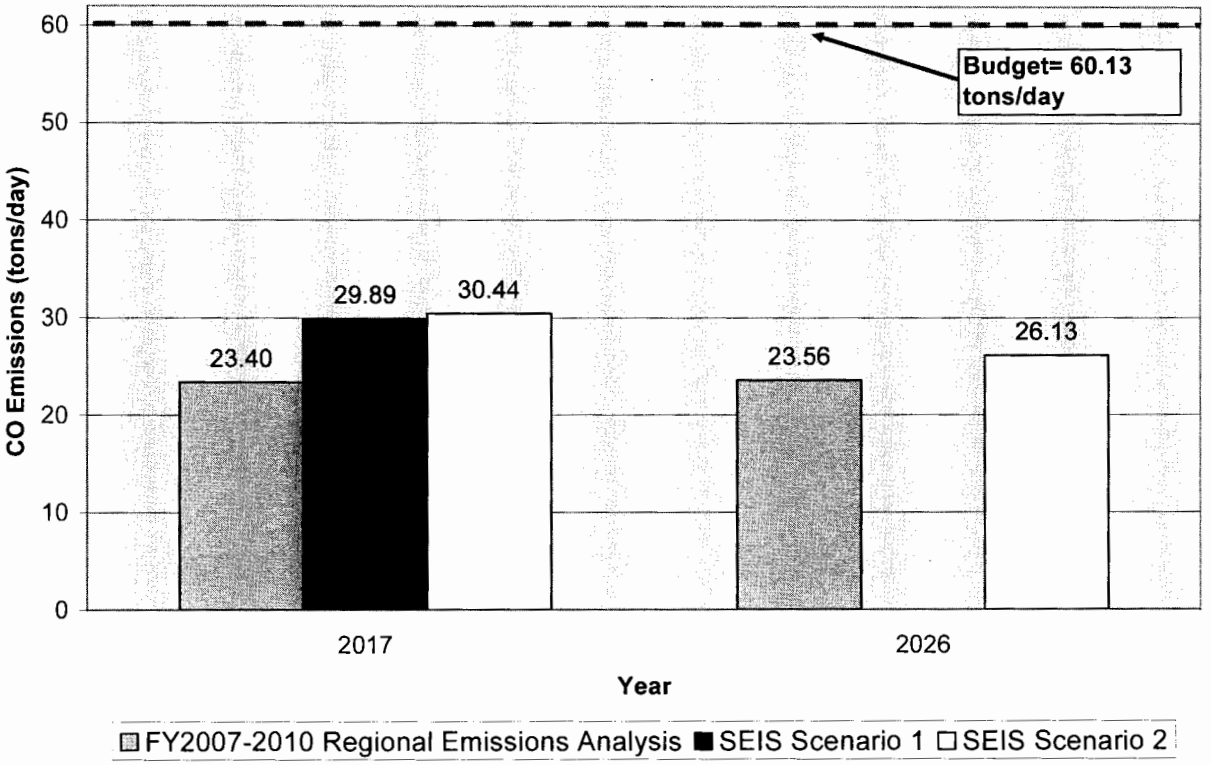

Current 8-hr Ozone Nonattainment Area
Former Southern Serious 1-hr Ozone Nonattainment Area
Former Seacoast Serious 1-hr Ozone Nonattainment Area
Ozone Nonattainment Area Outside 1-hr Budget Area
I-93 Improvements
Towns
Ossipee
Effingham
Wolfeboro
Wakefield
Brookfield
Alton
Middleton
New Durham
Milton
Andover
Franklin
Tilton
Belmont
Gilmanton
Northfield
Salisbury
Canterbury
Barnstead
Farmington
Boscawen
Loudon
Webster
Warner
Pittsfield
Strafford
Rochester
Chichester
Somersworth
Concord
Epsom
Northwood
Barrington
Rollinsford
Dover
Hopkinton
Henniker
Pembroke
Madbury
Bow
Allenstown
Deerfield
Nottingham
Lee
Durham
Dunbarton
Newington
Deering
Weare
Hooksett
Candia
Epping
Newmarket
Portsmouth
Newfields
Greenland
Raymond
Goffstown
Stratham
Rye
Francestown
New Boston
Manchester
Auburn
Fremont
Brentwood
Exeter
North Hampton
Chester
Hampton
Greenfield
Bedford
Sandown
Danville
Kensington
Hampton Falls
Kingston
East Kingston
Mont Vernon
South Hampton
Seabrook
Lyndeborough
Londonderry
Derry
Hampstead
Newton
Amherst
Merrimack
Litchfield
Atkinson
Plaistow
Wilton
Milford
Windham
Salem
Greenville
Mason
Brookline
Hollis
Nashua
Hudson
Pelham
0
4
8
Miles
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 5-2
Ozone Nonattainment Areas
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.

Figure 5-3
Manchester CO Sensitivity Analysis, 2017 and 2026



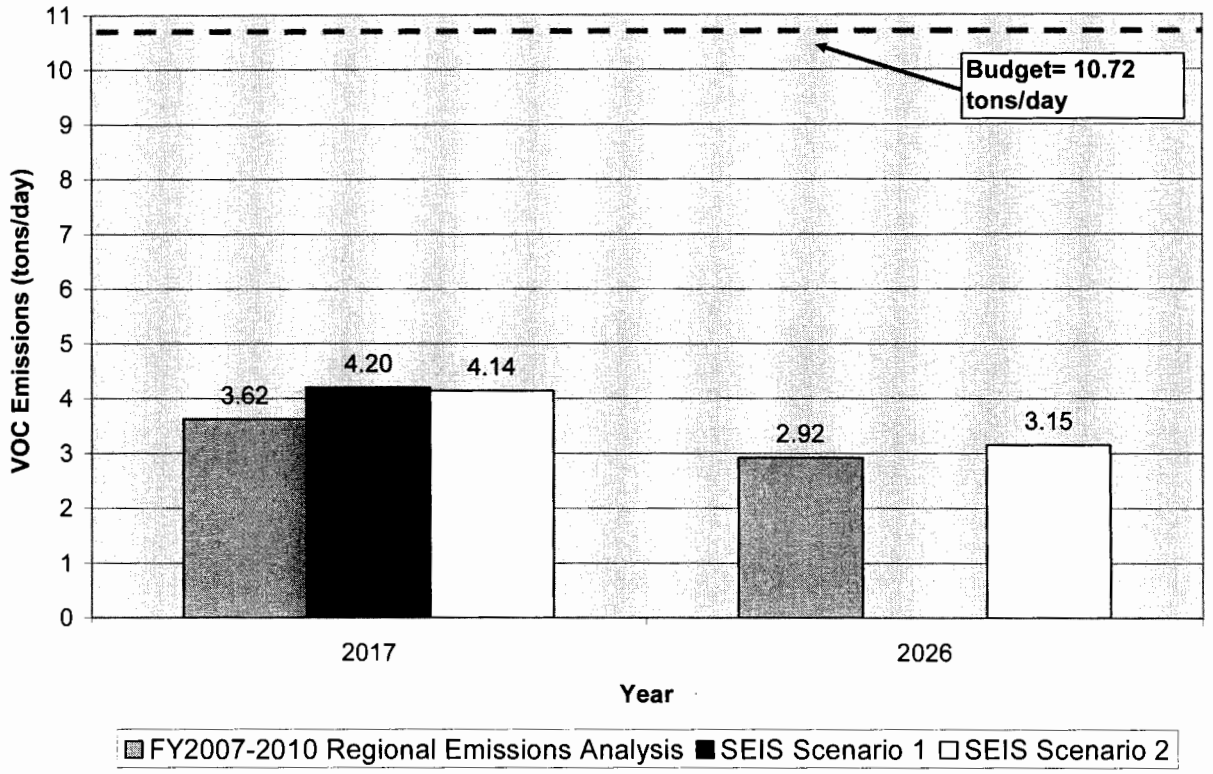
Note: There is no 2026 analysis for Scenario 1 because the Delphi Panel was based on a 2020 analysis year.

Figure 5-4
Nashua CO Sensitivity Analysis, 2017 and 2026



Note: There is no 2026 analysis for Scenario 1 because the Delphi Panel was based on a 2020 analysis year.

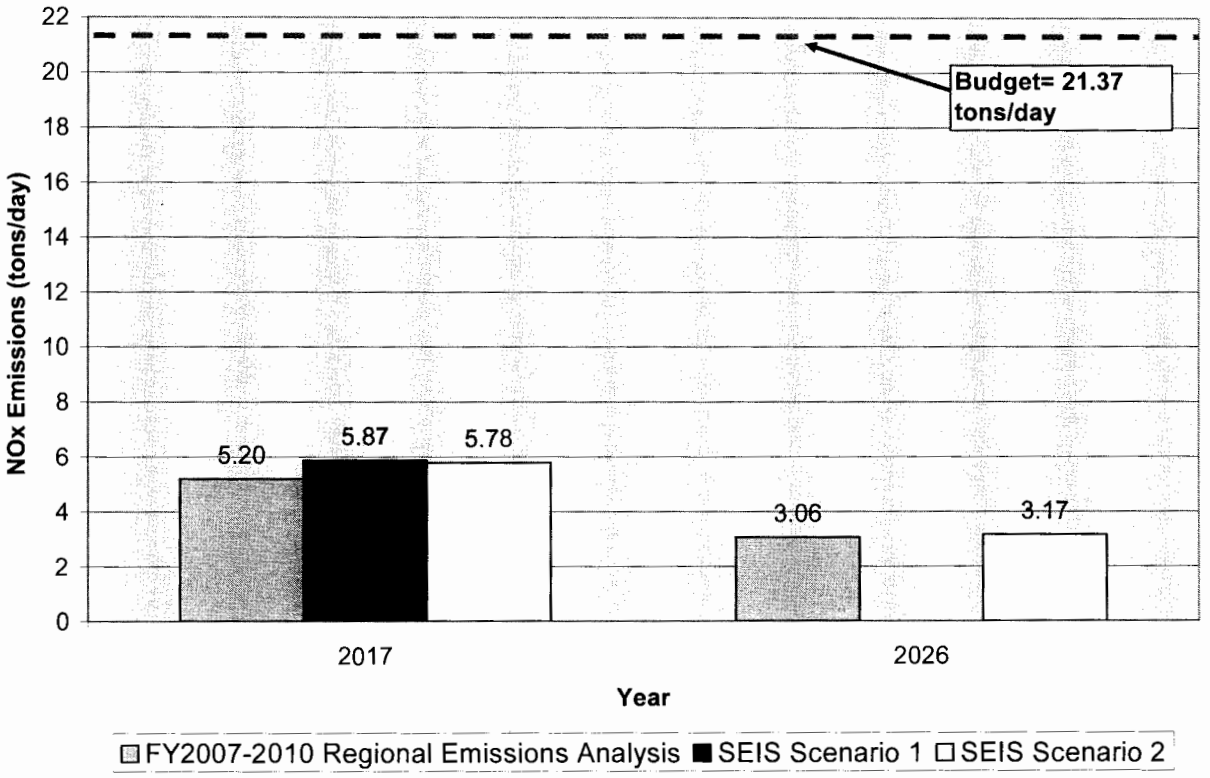
Figure 5-5
Southern Serious (Boston-Lawrence-Worcester NH) Nonattainment Area
VOC Sensitivity Analysis, 2017 and 2026



Notes: There is no 2026 analysis for Scenario 1 because the Delphi Panel was based on a 2020 analysis year.

The VOC emissions budget is the previous 1-hour emissions budget.

Figure 5-6
Southern Serious (Boston-Lawrence-Worcester NH) Nonattainment Area
NOx Sensitivity Analysis, 2017 and 2026



Note: There is no 2026 analysis for Scenario 1 because the Delphi Panel was based on a 2020 analysis year.

The NOx emissions budget is the previous 1-hour emissions budget.

6.0 NOISE

6.1 Introduction

No substantive changes have been made to the noise analyses since the DSEIS.

6.1.1 Characteristics of Noise

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, work, or recreation. The individual human response to noise is subject to considerable variability since there are many emotional and physical factors that contribute to the differences in reaction to noise.

Sound (noise) is described in terms of loudness, frequency, and duration. Loudness is the sound pressure level measured on a logarithmic scale in units of decibels (dB). For community noise impact assessment, sound level frequency characteristics are based upon human hearing, using an A-weighted (dBA) frequency filter. The A-weighted filter is used because it approximates the way humans hear sound. Table 6-1 presents a list of common indoor and outdoor sound levels. The duration characteristics of sound account for the time-varying nature of sound sources.

The most common way to account for the time-varying nature of sound (duration) is through the equivalent sound level measurement, referred to as L_{eq}. The L_{eq} averages the background sound levels with short-term transient sound levels and provides a uniform method for comparing sound levels that vary over time. The time period used for highway noise analysis is typically one hour. The peak hour L_{eq} represents the noisiest hour of the day/night and usually occurs during the peak periods of automobile and truck traffic. FHWA and NHDOT guidelines (discussed in Section 6.1.2) require the use of the one-hour L_{eq} for assessing highway noise impacts on different land uses.

The following general relationships exist between hourly traffic noise levels and human perception:

- A 1 or 2 dBA increase/decrease is not perceptible to the average person.
- A 3 dBA increase/decrease is a doubling/halving of acoustic energy, but is just barely perceptible to the human ear.
- A 10 dBA increase/decrease is a tenfold increase/decrease in acoustic energy, but is perceived as a doubling/halving in loudness to the average person.

Table 6-1
Examples of Common Sounds (A-weighted (dBA) Sound Level in Decibels)

A-weighted	Overall Level	Noise Environment
120	Uncomfortably loud (32 times as loud as 70 dBA)	Military jet airplane takeoff at 50 feet
100	Very loud (8 times as loud as 70 dBA)	Jet flyover at 1,000 feet Locomotive pass-by at 100 feet
80	Loud (2 times as loud as 70 dBA)	Propeller plane flyover at 1,000 feet. Diesel truck 40 mph at 50 feet
70	Moderately loud	Freeway at 50 feet from pavement edge Vacuum cleaner (indoor)
60	Relatively quiet (1/2 as loud as 70 dBA)	Air condition unit at 100 feet. Dish washer at 10 feet (indoor)
50	Quiet (1/4 as loud as 70 dBA)	Large transformers Small private office (indoor)
40	Very quiet (1/8 as loud as 70 dBA)	Birds calls. Lowest limit of urban ambient sound
10	Extremely quiet	Just audible (1/64 as loud as 70 dBA)
0		Threshold of hearing

6.1.2 Federal and State Highway Noise Policy

The Federal Aid Highway Act of 1970 required FHWA to develop noise standards for mitigating highway traffic noise. The law required the promulgation of traffic noise level criteria for various land use activities. FHWA developed traffic noise procedures and guidelines applicable to federally-aided highway projects. These procedures and guidelines are described in 23 C.F.R. § 772.7 and FHWA's *Highway Traffic Noise Analysis And Abatement Policy and Guidance* (FHWA, June 1995). These documents specify the requirements that state highway agencies must meet, in order to protect public health and welfare, when using federal funds for highway projects. These requirements include:

- Identification of land uses or activities that may be affected by traffic noise.
- Determination of existing noise levels through measurement of current conditions.
- Prediction of traffic noise for the No Build and Build Alternatives.
- Identification of noise impacts.
- Evaluation of noise abatement measures to reduce noise impacts.

For motor vehicle noise FHWA has developed Noise Abatement Criteria (NAC) based on the noise sensitivity of various land uses. These criteria are presented in Table 6-2.

Table 6-2
Noise Abatement Criteria (NAC)

Activity Category	Noise Abatement Criteria L_{eq} (dBA)	Description of Activity Category
A (Exterior)	57	Tracts of land for which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, open spaces, or historic districts dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B (Exterior)	67	Picnic areas, recreation areas, playgrounds, active sports areas, and parks that is not included in Category A; and residences, motels, hotels, public meeting rooms, schools, churches, libraries and hospitals.
C (Exterior)	72	Developed lands, properties or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E (Interior)	52	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: 23 C.F.R. Part 772 Table 1

A project is defined as having a noise impact when:

- Projected future traffic sound levels approach by one decibel, are at, or exceed the NAC shown in Table 6-2; or
- Projected future traffic sound levels substantially (equal to or greater than 15 dBA) exceed existing sound levels.

FHWA's regulations do not define approach or substantially increase; however, these terms are defined in NHDOT's *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects*. NHDOT defines "approach" as being within 1 dBA of the FHWA NAC for the corresponding land use category. NHDOT defines "substantially exceed" as 15 dBA or greater than the existing noise levels.

Where noise impacts are identified, mitigation measures, as specified in 23 C.F.R. § 772.13, may be considered either at the roadway, along the path of the noise or, in limited situations, at the noise receptor. NHDOT's noise policy provides guidance on the process and considerations in evaluating potential noise mitigation measures. Noise mitigation measures must be feasible and

reasonable. Feasibility deals with engineering and safety considerations (e.g. can a barrier be built given the existing geometry and topography). In order for a noise barrier to be considered feasible, the NHDOT noise policy requires the barrier to result in at least a 5 dBA noise reduction. Reasonableness is determined by multiple factors described in the NHDOT noise policy, including:

- Cost effectiveness index (cost per dwelling unit receiving protection),
- Timing of development in relation to the construction of the highway,
- Land use,
- Future noise levels greater than or equal to 66 dBA,
- Build vs. No Build noise levels,
- Views of the impacted receptors, and
- Unusual circumstances.

6.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The study area for the 2004 FEIS noise analysis was 1,000 feet on either side of I-93 between Salem and Manchester, New Hampshire. The study area was surveyed to identify receptor sites with outdoor activities sensitive to highway noise. Existing noise levels were determined at selected locations that contained noise-sensitive uses. Most of the receptor locations fall into the FHWA's "Activity Category B" while others fall under "Activity Category C."

The noise study area was subdivided into 35 locations, within which approximately 1,000 receptor sites were identified along the I-93 corridor. Future noise levels were calculated using the FHWA Traffic Noise Model (TNM) - Version 1.1. Measured existing noise levels were used to calibrate the noise model. The predicted future Build condition noise levels were then compared to FHWA's and NHDOT's NAC. Where noise impacts were identified, recommended mitigation measures were evaluated to determine if they were "reasonable" and "feasible" as defined by NHDOT noise policy.

The 2004 FEIS found that 2020 sound levels under the 2005 Selected Alternative would vary from 49 to 75 dBA, which represents up to a 5 dBA increase over existing sound levels. Noise impacts were predicted at 319 out of the approximately 1,000 receptors identified within the 35 noise study locations. The 2004 FEIS noise mitigation analysis recommended the installation of 11[1] noise barriers ranging between 12 and 14 feet in height and having a combined length of approximately 5.6 miles. The proposed barriers would abate noise for 238 impacted receptors as well as 102 non-impacted receptors, resulting in a total of 340 benefited receptors, while meeting the reasonable and feasible mitigation criteria in NHDOT's noise policy. The proposed noise barrier locations are shown in Figures 3.8.1 through 3.8.23 of the 2004 FEIS and are described in greater detail in Appendix F of the 2004 FEIS.

[1] Noise barriers were recommended at 12 locations in the 2004 FEIS. However, the noise barriers recommended at Location 7 and Location 9 were proposed to be combined. Thus, 11 individual barriers were proposed.

6.3 Methodology

6.3.1 I-93 Mainline

Noise Barrier Design Refinements and Reevaluations

As part of the final design process, NHDOT has continued to refine the design of the noise barriers proposed in the 2004 FEIS, as well as conduct evaluations of additional potential barrier locations. The updated noise barrier evaluations utilized the current version of the FHWA traffic noise model (TNM 2.5), final design roadway geometrics and updated survey data collected along the I-93 corridor. The process has included the reevaluation of noise barriers in locations where additional residential receptors have been constructed since the noise evaluation for the 2004 FEIS (e.g. Squire Armour Road in Windham). The detailed methodology and results of these noise barrier evaluations are reported in the following memorandums:

- Memorandum to Charles Hood, NHDOT from Thomas Wholley, VHB. RE: *I-93 Final Design Salem- Noise Barriers*. September 27, 2006. (Locations 1, 4 and 6).

- Memorandum to Charles Hood, NHDOT from Thomas Wholley, VHB. RE: *I-93 Final Design Salem and Windham- Noise Barriers*. October 6, 2006. (Locations 7, 8 and 9).

- Memorandum to Charles Hood, NHDOT from Thomas Wholley, VHB. RE: *I-93 Final Design: Noise Barriers Northern Segment: Derry -Manchester*. August 15, 2008. (Locations 19, 23, 24, 27, and 28).

- Memorandum to Charles Hood, NHDOT from Thomas Wholley, VHB. RE: *I-93- Noise Barriers Squire Armour*. February 12, 2009. (Location 10).

With the exception of the Squire Armour Road evaluation memo, the remainder of the noise evaluations conducted since the 2004 FEIS have been conducted using the 2004 FEIS 2020 traffic volume projections. The Squire Armour Road evaluation memo included consideration of SEIS Scenario 1 and Scenario 2 peak hour traffic volume projections.

Evaluation of SEIS Scenario 1 and Scenario 2 Traffic Volumes

The need to reanalyze noise impacts and mitigation along the I-93 mainline based on Scenario 1 and Scenario 2 traffic volumes was assessed based on the change in estimated future traffic volumes since the 2004 FEIS. Typically, a 100 percent increase in traffic volumes is needed to cause a barely perceptible (3 dBA) increase in noise levels.[2] Tables 6-3 and 6-4 summarize the percent change in peak hour traffic volumes between the 2004 FEIS results and the SEIS Scenario 1 and Scenario 2 results. Since the increase in AM and PM peak hour volumes under Scenario 1 and Scenario 2 are less than 100 percent greater than the 2004 FEIS volumes, no perceivable increase in noise levels from those estimated in the 2004 FEIS is expected.

[2] See for example: California Department of Transportation Technical Noise Supplement, 1998. Page 15.

Therefore, other than the evaluations of design refinements and additional receptors noted above, the noise barrier analyses conducted for the 2004 FEIS do not need to be updated.

Table 6-3
AM Peak Hour
Comparison of I-93 Mainline Traffic Volumes Between the 2004 FEIS and SEIS Scenario 1 and Scenario 2

	2004 FEIS 2020 Build	Scenario 1 2020 Build		Scenario 2 2020 Build		Scenario 2 2030 Build	
		Traffic Volume	Percent Change from 2004 FEIS	Traffic Volume	Percent Change from 2004 FEIS	Traffic Volume	Percent Change from 2004 FEIS
NH State Line to Exit 1	9,800	11,460	17%	9,000	-8%	9,665	-1%
Exit 1 to Exit 2	7,750	9,580	24%	7,605	-2%	8,400	8%
Exit 2 to Exit 3	7,775	8,985	16%	7,440	-4%	8,240	6%
Exit 3 to Exit 4	5,550	8,520	54%	6,450	16%	7,105	28%
Exit 4 to Exit 4A**	5,300	7,770	47%	6,345	20%	6,925	31%
Exit 4A to Exit 5	5,300	9,275	75%	6,885	30%	7,820	48%
Exit 5 to I-293	6,175	9,410	52%	7,255	17%	7,960	29%

** Exit 4A was not included in the 2004 FEIS analysis.

Table 6-4
PM Peak Hour
Comparison of I-93 Mainline Traffic Volumes Between the 2004 FEIS and SEIS Scenario 1 and Scenario 2

	2004 FEIS 2020 Build	Scenario 1 2020 Build		Scenario 2 2020 Build		Scenario 2 2030 Build	
		Traffic Volume	Percent Change from 2004 FEIS	Traffic Volume	Percent Change from 2004 FEIS	Traffic Volume	Percent Change from 2004 FEIS
NH State Line to Exit 1	12,175	13,100	8%	10,410	-14%	11,535	-5%
Exit 1 to Exit 2	10,075	10,105	0%	8,250	-18%	9,375	-7%
Exit 2 to Exit 3	10,125	10,650	5%	8,615	-15%	9,975	-1%
Exit 3 to Exit 4	7,175	9,075	26%	7,415	3%	8,570	19%
Exit 4 to Exit 4A**	6,875	8,160	19%	7,440	8%	8,570	25%
Exit 4A to Exit 5	6,875	9,935	45%	8,475	23%	10,295	50%
Exit 5 to I-293	7,600	10,640	40%	8,850	16%	10,445	37%

** Exit 4A was not included in the 2004 FEIS analysis.

6.3.2 Secondary Roads

The Court Order requiring the preparation of this SEIS did not require analysis of potential secondary road network noise impacts. However, a screening analysis for potential secondary roadway impacts was conducted to provide more information on the potential effects of the 2005 Selected Alternative. The secondary roadway noise screening analysis was conducted using FHWA's TNM 2.5 Look-up Tables. The objective of the look-up tables is to provide a quick screening tool in the form of pre-calculated TNM results for simple highway geometries.

Secondary roadways were selected for the screening analysis based on an evaluation of existing and future No Build and Build traffic data for Scenario 1 and Scenario 2. Three roadways with sensitive noise receptors were selected with the highest percentage increase in traffic volumes between existing and Build conditions and between No Build and Build conditions. Of the roadway segments with sensitive noise receptors, these roadways were expected to have the highest existing noise levels and would therefore be expected to have the highest increase in future build noise levels. The three roadway segments selected for analysis were:

- Main Street from Policy Street to NH 28/ Broadway;
- Folsom Road west of NH 28/Crystal Avenue; and
- Tsienneto Road east of NH 28/Crystal Avenue.

A review of the land use surrounding these roadways showed that most of the noise sensitive receptors fall under FHWA Activity Category B and are located a minimum of 55 feet from these roadways. Therefore, a receptor distance of 55 feet was used in the TNM Look-Up Tables. Noise levels were determined using Scenario 1 and Scenario 2, AM and PM peak hour traffic volumes and speeds.

6.3.3 Tolling Sensitivity Analysis

The tolling sensitivity analysis framework is explained in Section 1.3.1. While the tolling proposal on I-93 southbound in Salem under consideration at the time of the DSEIS is no longer considered a practicable option, the tolling sensitivity analysis is presented in this FSEIS for information disclosure purposes. For noise, the tolling sensitivity analysis involved a secondary road analysis using the same methodology described in Section 6.3.2, except that roadway links were selected for analysis based on the percentage increase in traffic volumes between the Build with Toll and Build without Toll conditions. The three roadway links selected for the tolling sensitivity analysis were:

- NH 111A/Windham Road north of Nashua Road/Main Street;
- Lowell Road south of NH 111; and
- NH 28/Crystal Avenue south of Folsom Road/Tsiennetto Road.

A review of the land use surrounding these roadways showed that most of the noise sensitive receptors fall under FHWA Activity Category B and are located at a minimum of 100 feet from these roadways. Therefore, a receptor distance of 100 feet was used in the TNM Look-Up Tables.

6.4 Impacts and Mitigation

6.4.1 I-93 Mainline

Table 6-5 summarizes the changes in the noise impacts and mitigation measures as a result of design refinements and noise barrier reevaluations conducted since the 2004 FEIS.

At Location 10, a noise barrier was reevaluated based on the construction of additional residences on Squire Armour Road. Three alternative barrier configurations were considered in this area, but none would meet the NHDOT noise policy cost effectiveness index criterion ($30,000 per benefited residence). The possibility of extending the barrier proposed at Location 8 (May Lane Drive and Jewell Drive) to the Squire Armour Road area was evaluated, but the combined barrier would not meet the cost effectiveness index criterion.

At Location 28, the extension of the barrier proposed for the Bodwell Road area to cover new residences on Marathon Way met the cost effectiveness index criterion and was recommended.

In the Brickett Hill Road area in Manchester, a barrier was evaluated as part of the final design process, but was not recommended because it would not meet the cost effectiveness index criterion.

In addition to the evaluations summarized in Table 6-5, the update analysis also identified three locations from the 2004 FEIS that came the closest to meeting the NAC, but fell short. The three locations were:

- Location 14 East in Windham,
- Location 25 in Londonderry, and
- Location 26 in Londonderry

The cost per benefited receptor for noise barriers at these locations ranged from $56,000 at Location 26 to $140,000 at Location 25. Noise barriers are not recommended at these locations because they would not meet the cost effectiveness index criterion. It is possible that the increase in traffic volumes under the SEIS population and employment scenarios could result in one or more of these locations meeting the NAC. However, these locations would still not qualify for a noise barrier because they would not meet the cost effectiveness index criterion.

Table 6-5
Summary of Final Design Noise Barrier Evaluations

Location Number	Town	Location Description	2004 FEIS Analysis		Final Design Update Analysis	
			Number of Benefited Residences[1]	Noise Barrier Recommended	Number of Benefited Residences[1]	Noise Barrier Recommended
1	Salem	I-93 Northbound, including residences along Haigh Avenue, Streeter Avenue, Hanson Avenue, Spencer Avenue and Azarian Drive	90	Yes	90	Yes
4	Salem	I-93 Northbound, including residences along McLarnon Road, MacGregor Street, Mcfarland Road and South Policy Street.	22	Yes	24	Yes
6	Salem	I-93 Southbound, including residences along Lowell Road and Fern Road.	26	Yes	31	Yes
7 and 9	Salem and Windham	I-93 Northbound, including residences along Brookdale Road and South Shore Road.	29	Yes	25	Yes
8	Salem	I-93 Southbound, including residences along May Lane Drive and Jewell Drive.	19	Yes	18	Yes
10	Windham	I-93 Southbound, including residences along Squire Armour Road.	3	No	3-11	No
19	Derry	I-93 Northbound, including residences along Matthew Drive, Derryfield Road and Friar Tuck Lane.	26	Yes	50	Yes
23	Londonderry	I-93 Southbound, including residences along Trolley Car Lane.	28	Yes	28	Yes
24	Londonderry	I-93 Northbound, including residences along Seasons Lane.	19	Yes	21	Yes

Location Number	Town	Location Description	2004 FEIS Analysis		Final Design Update Analysis	
			Number of Benefited Residences[1]	Noise Barrier Recommended	Number of Benefited Residences[1]	Noise Barrier Recommended
27	Manchester	I-93 Northbound, including residences along Newton's Meadow Way.	36	Yes	45	Yes
28	Manchester	I-93 Northbound, including residences along Bodwell Road.	27	Yes	60[2]	Yes
N/A	Manchester	I-93 Northbound, including residences along Brickett Road and Cohas Avenue	N/A	N/A	12	No

1. A benefited residence receives a 5 dBA or greater reduction in sound levels as a result of the noise barrier.
2. Includes barrier extension to cover new residences on Marathon Way (north of Bodwell Road).

6.4.2 Secondary Roads

Scenario 1

Table 6-6 shows that noise levels along the secondary roadways would not be at, approach or exceed the Category B NAC (67 dBA) under the Scenario 1 Build condition. The difference in sound levels between existing conditions and the Build condition is less than 3.5 dBA in the AM and PM peak hours. No noise impacts are expected along secondary roadways based on the results of the screening analysis for Scenario 1; therefore no consideration of mitigation is warranted.

Table 6-6
Secondary Road Noise Screening Analysis
Scenario 1, 2020

Roadway	Distance from Roadway	Existing Leq (dBA)		AM Peak Leq (dBA)		PM Peak Leq (dBA)	
		AM Peak	PM Peak	No Build	Build	No Build	Build
Main Street: From Policy Street to NH 28/ Broadway	55	59.6	59.4	59.6	60.5	59.4	59.8
Folsom Road: West of NH 28/Crystal Avenue	55	59.9	61.2	63.1	63.2	64.2	64.4
Tsienneto Road: East of NH 28/Crystal Avenue	55	62.8	61.0	61.9	62.1	62.3	62.6

Scenario 2

Table 6-7 shows that noise levels along the secondary roadways would not be at, approach or exceed the Category B NAC (67 dBA) under the Scenario 2 Build condition. The difference in sound levels between existing conditions and the Build condition is 5.5 dBA or less in the AM and PM peak hours. No noise impacts are expected along secondary roadways based on the results of the screening analysis for Scenario 2; therefore no consideration of mitigation is warranted.

Table 6-7
Secondary Road Noise Screening Analysis
Scenario 2, 2020 and 2030

Roadway	Distance from Roadway	Existing Leq (dBA)		2020 AM Peak Leq (dBA)		2020 PM Peak Leq (dBA)		2030 AM Peak Leq (dBA)		2030 PM Peak Leq (dBA)	
		AM Peak	PM Peak	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Main Street: From Policy Street to NH 28/ Broadway	55	59.6	59.4	62.1	64.1	62.0	63.2	60.2	61.7	59.9	61.4
Folsom Road: West of NH 28/Crystal Avenue	55	59.9	61.2	64.1	65.4	64.7	65.4	62.5	63.3	63.7	64.1
Tsienneto Road: East of NH 28/Crystal Avenue	55	62.8	61.0	63.0	64.3	63.5	64.6	61.9	62.8	62.3	63.2

6.4.3 Tolling Sensitivity Analysis

Table 6-8 shows that noise levels along the secondary roadways would not be at, approach or exceed the Category B NAC (67 dBA) under the Scenario 2 Build with Toll condition. While noise levels would increase (primarily on NH 111A) in the Build with Toll condition as compared to the Build without Toll condition, no noise impacts would occur and no consideration of mitigation is warranted.

Table 6-8
Secondary Road Noise Tolling Sensitivity Analysis
Scenario 2, 2020 and 2030

Roadway	Distance from Roadway	Existing Leq (dBA)		2020 AM Peak Leq (dBA)		2020 PM Peak Leq (dBA)		2030 AM Peak Leq (dBA)		2030 PM Peak Leq (dBA)	
		AM Peak	PM Peak	Build with Toll	Build w/o Toll	Build with Toll	Build w/o Toll	Build with Toll	Build w/o Toll	Build with Toll	Build w/o Toll
NH 111A/ Windham Road: North of Nashua Road/Main Street	100	50.5	48.6	55.2	52.6	54.6	52.1	57.6	54.4	57.4	54.0
Lowell Road: South of NH 111	100	56.3	54.6	57.1	58.1	56.4	56.9	58.1	58.3	57.8	57.8
NH 28 /Crystal Avenue: South of Folsom Road/ Tsiennetto Road	100	53.1	54.3	54.9	54.5	56.0	55.9	55.5	55.1	56.6	56.6

6.5 Conclusions

The final design noise barrier evaluations identified one barrier location (Location 28 in Manchester) where the barrier could be extended to cover new residential receptors and still meet the NHDOT noise policy cost effectiveness index criterion. While barriers were evaluated at other locations with new residential receptors, barriers in these locations would not be reasonable under the NHDOT noise policy (e.g. the cost per benefited receptor would be greater than $30,000). With some minor design refinements, noise barriers are still proposed at all the locations where noise barriers were recommended in the 2004 FEIS. The secondary road screening assessment did not identify any receptors which would approach, be at, or exceed the NAC based on Scenario 1 and Scenario 2 traffic volumes.

7.0 SOCIOECONOMICS

7.1 Introduction

Social and economic characteristics of communities are measured through indicators such as population, housing, employment, and wages. Transportation projects may directly impact socioeconomic conditions in communities through property acquisitions that require the relocation of residents or businesses.

This chapter provides a summary of the detailed information in DSEIS Appendix D: Socioeconomics Written Reevaluation/Technical Report. No substantive changes have been made to the socioeconomics analyses since the DSEIS.

7.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The 2004 FEIS study area for socioeconomics consisted of the five I-93 project corridor municipalities: Salem, Windham, Derry, Londonderry, and Manchester. The 2004 FEIS presented information on population and housing trends based on U.S. Census data and New Hampshire Office of State Planning reports. The 2004 FEIS presented employment by industry, wages, and unemployment rates using data from the New Hampshire Employment Security, Economic, and Labor Market Information Bureau.

The 2004 FEIS impact analysis identified 21 residential full acquisitions, and 14 business full acquisitions that would require the relocation of residents or businesses. The 2005 Selected Alternative would also require partial property acquisitions totaling 346 acres. These acquisitions would not require the relocation of residents or businesses. The 2004 FEIS concluded that the direct impacts of the 2005 Selected Alternative would not impact local demographics, housing or employment. There would be adequate replacement residential units and commercial sites available in the area. The loss in assessed value associated with the 2005 Selected Alternative property acquisitions would be a very minor portion of the Towns' total assessed value and was expected to be offset over time by new growth and redevelopment.

The people in the households that may potentially be displaced appeared to have the same social and economic characteristics as the rest of the residents in their towns of residency. The race, or ethnicity, of the potentially displaced persons also appeared to be similar to the rest of the residents in their towns. In addition, the 2004 FEIS noted that prior to the acquisition stage, special arrangements would be made to deal with the needs of any disabled or elderly people identified.

7.2.1 Record of Decision Commitments/Mitigation

Properties requiring acquisition are appraised utilizing recognized and accepted appraisal practices and in conformity with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and applicable to New Hampshire State Law. The amount offered for partial acquisitions is the difference between the fair market value of the

property before the partial acquisition and its value after the portion needed for the highway has been acquired. Completed appraisals are carefully reviewed by an independent appraiser to insure that requirements of condemnation law and acceptable appraisal methods are met. The displaced residences will be eligible for relocation benefits, which include:

- Relocation advisory assistance services;
- Payments for moving and relocation costs;
- Replacement housing payments for home owners;
- Residential mortgage interest differential payments and closing costs; and
- Replacement housing payments for tenants

The displaced businesses will be eligible for relocation benefits, which include:

- Fair market value for acquired property;
- Relocation advisory assistance services;
- Payments for actual reasonable moving; and
- Business re-establishment costs.

Should identifying affordable housing for any residents displaced by the 2005 Selected Alternative (owners or renters) within the existing housing stock and assistance programs prove unfeasible, last resort housing will be made available, if necessary, in accordance with Section 206 of the Uniform Act and governing regulations. The right-of-way acquisition process will ensure that the needs of the displaced residents and businesses are adequately addressed fairly and without discrimination.

The New Hampshire Department of Transportation (NHDOT) will continue to coordinate through the design process with the communities to develop project improvements in keeping with their planning goals for potential redevelopment in impacted interchange areas.

7.3 Methodology

The existing conditions year for the SEIS updated analyses is 2005, the base year of the updated New Hampshire Statewide model (the existing conditions year for the 2004 FEIS was 2000). The socioeconomics update analysis used New Hampshire Office of Energy and Planning (OEP) municipal-level population estimates for 2005 provided to NHDOT in October 2007. These population estimates were also used as inputs in the New Hampshire Statewide model for traffic, air quality, and indirect effects analyses.

For year 2005 employment, data from the New Hampshire Statewide model was used because it accounts for employment at the municipal level. These employment estimates were based on a model update process that utilized New Hampshire Economic and Labor Market Information Bureau employment estimates. The model update process also included extensive coordination with the regional planning commissions to adjust the employment estimates and forecasts based on local knowledge of upcoming developments and conditions at the time of the Statewide model update (see DSEIS Appendix G: Indirect Effects Reevaluation/Technical Report).

Updated information on housing units by type was obtained from the OEP report *Current Estimates and Trends in New Hampshire's Housing Supply Update: 2006.* Updated average weekly wage and unemployment rate information was based on New Hampshire Economic and Labor Market Information Bureau data for 2005 and 2007.

7.4 Existing Conditions

This section summarizes key trends in population, housing, employment, and wages based on the review of updated data. Detailed tables presenting this information are provided in DSEIS Appendix D: Socioeconomics Written Reevaluation/Technical Report.

7.4.1 Population

The population data shows that Derry, Londonderry, and Manchester all experienced slower growth rates between 2000 and 2005 than they did between 1990 and 2000. This trend was most dramatic in Derry, which grew by 0.37 percent annually between 2000 and 2005, compared to 1.4 percent between 1990 and 2000. Despite a slower growth rate, the largest absolute population increase between 2000 and 2005 was for Manchester, which added nearly 3,000 people, bringing its population to almost 110,000.

Salem and Windham experienced faster population growth between 2000 and 2005 than they did between 1990 and 2000. Windham is the least populous municipality in the study area, but is also the fastest growing, with an average annual population growth rate of 3.23 percent between 2000 and 2005, up from 1.76 percent between 1990 and 2000. Both Salem and Windham added over 1,800 persons between 2000 and 2005.

7.4.2 Housing

With the exception of Derry, the remaining study area municipalities experienced increased housing unit growth rates between 2000 and 2005 as compared to 1990 to 2000. The housing unit growth rate in Derry slowed slightly from 0.71 percent per year between 1990 and 2000 to 0.68 percent per year between 2000 and 2005. As with population, housing unit growth between 2000 and 2005 was the fastest in Windham (831 units or 3.93 percent per year) and Salem (1,144 units or 2.02 percent per year).

Since 2000, Salem and Windham have experienced an increase in the proportion of multi-family housing units. The proportion of multi-family units increased from 22 percent to 25 percent of all housing units in Salem and from 7 percent to 12 percent in Windham. This trend represents a reversal of the 1990 to 2000 pattern of an increasing proportion of single family units and decreasing proportion of multi-family units in these towns.

Between 2000 and 2005 Derry experienced a less than one percent decrease in the proportion of multi-family units, with a corresponding increase in the proportion of single family units. Londonderry experienced the reverse, with a less than one percent decrease in the proportion of single family units, and a corresponding increase in the proportion of multi-family units. Since 2000, Manchester has not experienced any noteworthy change in housing unit composition.

Consistent with statewide and county trends, none of the study area municipalities experienced substantial change in the proportion of manufactured homes between 2000 and 2005.

7.4.3 Employment

Manchester remains a major employment center, with a total number of jobs in 2005 at over 70,000, greater than the four other study area municipalities combined. Salem has the second largest employment, at 24,714, while Windham has the smallest at 2,531. Notable employment patterns include the concentration of manufacturing jobs in Londonderry (37 percent of employment) and retail in Salem (31 percent of employment). The largest employment category in Windham, Derry, and Manchester is "Other", which includes agriculture and forestry related employment, non-metallic minerals, self-employed, and unpaid family workers.

Unemployment rates increased in all five study area municipalities between 2000 and 2005; however the unemployment rates have remained lower than 1990 levels. Salem had the highest unemployment rate in 2005 at 5.6 percent, while Londonderry had the lowest at 3.7 percent. Study area unemployment rates were higher than the New Hampshire statewide unemployment rate of 3.6 percent in 2005.

In comparison to 2005, unemployment rates in 2007 have decreased or remained the same. Salem had the highest unemployment rate in 2007 at 5.0 percent, while Londonderry had the lowest at 3.6 percent. Londonderry's unemployment rate was lower than the New Hampshire statewide unemployment rates, while all other study area unemployment rates were higher than the statewide unemployment rate.

7.4.4 Wages

Considering all types of employment, 2005 average weekly wages were the highest in Manchester ($834) and the lowest in Derry ($718). Similarly, 2007 average weekly wages were the highest in Manchester ($1,369) and the lowest in Derry ($831). Average weekly wages in Salem, Windham, Derry and Londonderry were below the Rockingham County, Hillsborough County, and New Hampshire averages in 2005 and 2007. Across all of the study area municipalities, the highest paying sectors included manufacturing, wholesale trade, information, finance and insurance, professional and technical services, and management of companies/enterprises. The lowest paying sectors included retail trade, arts, entertainment, and recreation, and accommodation and food services.

7.5 Impacts

As a result of design refinements since the 2004 FEIS, the number of full property acquisitions has changed. The number of residential acquisitions has decreased from the 21 estimated in the 2004 FEIS to 19 based on current right-of-way plans. The number of business relocations has increased from the 14 estimated in the 2004 FEIS to 23 based on current right-of-way plans. These minor changes do not change the conclusion of the 2004 FEIS that the 2005 Selected Alternative would not directly impact local demographics, housing or employment.

Potential indirect effects on local and regional demographics are discussed in Chapter 12: Indirect Effects.

7.6 Mitigation

The mitigation measures for the relocation and compensation of displaced residences and businesses described in the 2004 FEIS and Record of Decision, including compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, remain valid (See Section 7.2.1).

7.7 Conclusions

There have been changes in the socioeconomic setting of the study area since the 2004 FEIS, including additional population and employment growth. Due to design refinements, there have been minor changes in the residential and business acquisitions required for the 2005 Selected Alternative. However, the updated information does not change the conclusion of the 2004 FEIS that the 2005 Selected Alternative would not directly impact local demographics, housing or employment.

8.0 LAND USE

8.1 Introduction

Land use describes the ways in which communities use the land for homes, economic activity, community services, and recreation. Existing land use has emerged over time through historic practice shaped by the need for households and businesses to be near resources and energy sources, and near each other to facilitate trade and communications. More recently, patterns of settlement, development, and the use to which land is put have been shaped by deed restrictions, local and state regulation, and the provision of infrastructure, utilities, and services.

In New Hampshire, land use is primarily regulated at the local level by municipalities through zoning and subdivision regulations. Zoning describes the economic and residential uses to which land can be put, and the bulk and form built improvements to the land can take. Subdivision regulations describe the procedure and performance requirements for the creation and development of new parcels of land. Land use is also influenced by other public policy goals articulated at the local, regional, and state levels as part of land use, transportation, and infrastructure planning processes.

This chapter provides a summary of the detailed information in DSEIS Appendix E: Land Use Written Reevaluation/Technical Report. In addition, three planning documents released since the DSEIS was prepared are summarized in this chapter—Londonderry's Northwest Small Area Plan (June, 2009), Manchester's Master Plan (December, 2009) and the NH 102 Access Management Plan (August, 2009).

8.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

8.2.1 Land Use and Zoning

A combination of existing documentation, windshield surveys, and interviews with municipal officials was employed to determine existing land uses and zoning within the I-93 project corridor in preparation of the 2004 FEIS.

The 2004 FEIS impact analysis identified 21 residential full acquisitions, and 14 business full acquisitions that would require the relocation of residents or businesses. The 2005 Selected Alternative would also require partial property acquisitions totaling 346 acres. These acquisitions would not require the relocation of residents or businesses. The 2004 FEIS concluded that the direct impacts of the 2005 Selected Alternative would not cause any fundamental shift in land use patterns, which are influenced primarily by the real estate market, road access, and local regulatory decisions.

Refer to Chapter 7: Socioeconomics, Section 7.2.1 for the Record of Decision mitigation commitments relative to property acquisitions.

8.2.2 Farmlands

The 2004 FEIS mapped and described the Natural Resources Conservation Service (NRCS)-designated important farmland soils addressed by the Farmland Protection Policy Act of 1984 and lands that were in active agricultural use in the I-93 corridor. Farmland soil impacts were calculated in accordance with NRCS regulations and the Farmland Conversion Impact Rating Form was completed.

The Farmland Conversion Impact Rating Form submitted to NRCS overestimated important farmland soil impacts because it included the impacts associated with the bike path that is no longer part of the design of the 2005 Selected Alternative. Excluding the bike path impacts, the 2004 FEIS estimated that the 2005 Selected Alternative would impact 9.4 acres of important farmland soils. This would include impacts to one acre of active farmlands. The worst-case four lane alternative evaluated on the Farmland Conversion Impact Rating Form received a score of 73 points. Alternatives receiving a score of less than 160 points are given a minimal level of consideration for protection and no additional alternatives needed to be identified. Based on these results, no further coordination with NRCS was required.

The Record of Decision made the following commitments with respect to farmlands:

For impacts that cannot be avoided, owners will be compensated through the right-of-way acquisition process.

Topsoil will be salvaged during construction and will be re-used on roadway side slopes for revegetation and stabilization.

8.3 Methodology

Updated information on land use and zoning conditions was obtained by gathering and reviewing recent land use plans and zoning regulations, and through interviews with local and regional officials. Windshield surveys were conducted in June of 2008 to confirm existing land uses and report any previously undocumented new development in the I-93 corridor municipalities of Salem, Windham, Derry, Londonderry and Manchester. Information on land use change and developments since the 2004 FEIS was gathered through a series of telephone interviews with local planners in May through November 2008.

8.4 Existing Conditions

8.4.1 Land Use Plans and Policies

Town of Salem

No new municipal plans, reexamination reports, or studies have been released since the issuance of the 2004 FEIS.

Town of Windham

2005 Master Plan. Windham's 2005 Master Plan identifies issues with regard to future land use including a vibrant new village center that will connect to the different elements of the nearby built environment (the historic town center, Fellows Road, the post office, and the Town Commons). The Plan encourages new economic development, in particular around the I-93 Exit 3 Interchange, among other areas. The Plan indicates that fast food chains, drive-through establishments, and large-scale, free-standing signage will be discouraged at Exit 3.

Town of Derry

2008 Land Development Control Regulations. The land development control regulations are intended to be construed broadly to prevent against the scattered or premature subdivision of land that would involve danger or injury to health, safety, or prosperity by reason of the lack of water supply, drainage, transportation, schools, fire protection, or other public services; or would necessitate the excessive expenditure of public funds for the supply of such services. It also requires suitably located streets of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air, and access for firefighting apparatus and equipment to buildings, and to be coordinated so as to compose a convenient system.

2009 NH 102 Access Management Plan. Prepared by the Southern New Hampshire Planning Commission (SNHPC), the NH 102 Access Management Plan addresses the East/West Broadway corridor between I-93 Exit 4 in Londonderry and NH 28 (Crystal Avenue) in Derry. The plan identifies turning movements to and from the numerous side streets and uncontrolled driveways along NH 102 as a substantial cause of traffic congestion and safety issues. The plan makes a number of recommendations related to closing driveways, delineating curb cuts, consolidating driveways and developing internal street connections. The plan notes that implementation of the recommended access management improvements is not likely in the short-term due to the need for cooperation from the private property owners along the corridor. However, the recommendations can be used as a planning tool by the towns in evaluating future development proposals and implemented as opportunities arise when working with property owners during the planning process.

Town of Londonderry

2004 Master Plan. The Plan is an update to the town's 1997 Master Plan, but it does not supplant the town's previous work. As such, many recommendations outlined in the 1997 Plan are still relevant, do not require updating, and would continue to be assessed by the Town. The Plan identifies undeveloped, industrially zoned areas within the vicinity of the Manchester Airport and Jack's Bridge Road (northwest of NH Route 28) as prime for future development due to their proximity to both the airport and I-93. In this area, many recently established businesses are involved in distribution and warehousing, which rely on adequate road networks to conduct business. The Plan recommends that zoning regulations for these areas be revisited to ensure the proper mix of uses, design, and intensity of development.

2008 Subdivision Regulations. These regulations have been designed to prevent the scattered or premature subdivision of land. It encourages the harmonious development within the municipality, requiring suitably located streets of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air, and access for emergency equipment, fire fighting apparatus and equipment to buildings. The regulations prescribe minimum lot areas so as to assure conformance with local zoning ordinances, and to assure such additional areas as may be needed for each lot for on-site sanitary facilities.

2009 Northwest Small Area Plan. The purpose of this small area plan is to identify opportunities and propose strategies for guiding the future growth and development for the Northwest Area of Londonderry. The Northwest Area is bounded by I-93 to the east; Stonehenge and Litchfield Roads to the south; the City of Manchester to the north; and the towns of Bedford, Merrimack and Litchfield to the east. The recommendations of the plan include implementing zoning changes to encourage mixed-use and transit-oriented development around I-93 Exit 5.

City of Manchester

2006 Downtown Strategic Plan & 2006 Downtown Manchester Parking Study. The downtown strategic plan and parking study analyze opportunities to develop Manchester's downtown area, located to the northwest of the I-93 corridor study area. Although both indirectly take into account I-93 as a highway access point, the zoning and land use recommendations of these studies are located outside of the I-93 corridor.

2009 Master Plan. Manchester's 2009 Master Plan recommends a number of changes to the zoning ordinance and subdivision regulations to allow mixed-use development at higher densities and to encourage sustainable building design. Updates to the future land use map portion of the plan include an expansion of the Central Business District, identification of additional conservation land, identification of neighborhood business centers and elimination of the lowest density zone (R-S). To the east of the I-93 corridor, the plan recommends a medium-density residential area along Bodwell Road and identifies a neighborhood center for the Southeast neighborhood of Manchester in this location. The land to the west of the I-93 corridor (south of I-293) is part of a low-density residential zone. A conservation zone is identified around Crystal Lake.

8.4.2 Land Use

Town of Salem

Table 8-1 and Figure 8-1 summarize the land use changes since 2004 in the Town of Salem. New residential development in Salem since the 2004 FEIS includes a 93-unit senior housing building which has been built on Braemoor Woods Road (S1). In addition, new commercial developments that have been approved or are under construction since the 2004 FEIS include:

- 61,800 sf retail plaza on North Broadway Road (S2);
- 50,663 sf retail building in Kelly Road (S3);
- 78,000 sf (2 buildings) on Stiles Road (S4);

- 8,064 sf office building on Main Street (S5);
- Canobie Lake Park water playground expansion (S6); and
- 15,000 sf office development on Northeastern Boulevard (S7).

The following commercial developments have recently been completed or are currently under construction and are located within 500 to 1,000 feet of I-93:

- 6,000 sf CARS auto sales/repair building on Raymond Avenue (S8);
- 65,460 sf office building on Pelham Road (S9);
- Salem Athletic Club parking lot expansion on Manor Parkway (S10);
- 30,000 sf office building on Keewaydin Drive (S11);
- 61,000 sf health club/medical office on Pelham Road (S12);
- 20,000 sf office development on Keewaydin Drive (S13);
- Play Ball indoor batting cages on Industrial Drive (S14); and
- 35,721 sf office development on Keewaydin Drive (S15).

Finally, several small industrial developments have been built on South Policy Street (S16), off of Lowell Road in areas west of I-93 (S17), and a 10,250 sf industrial addition (S18) on Industrial Way was approved in 2005.

Table 8-1
Town of Salem
Land Use Changes Since 2004

Map ID*	Description	Land Use	Address
S1	93-unit senior housing	Residential	Braemoor Woods Road
S2	Retail development - plaza	Commercial	232-242 North Broadway Road
S3	Retail development	Commercial	14 Kelly Road
S4	(2) office developments	Commercial	29-31 Stiles Road
S5 S6	Office development Water playground	Commercial Commercial	204 Main Street 85 North Policy Street
S7	Office development	Commercial	5 Northeastern Boulevard
S8	Auto sales/repair development	Commercial	8 Raymond Avenue
S9	Office development	Commercial	25-27 Pelham Road
S10	Parking lot expansion	Commercial	16 Manor Parkway
S11	Office development	Commercial	11 Keewaydin Drive
S12	Health club/medical development	Commercial	16 Pelham Road
S13	Office development	Commercial	17 Keewaydin Drive
S14	Indoor batting cages	Commercial	16 Industrial Drive
S15	Office development	Commercial	21 Keewaydin Drive
S16	Small industrial development	Industrial	South Policy Street (east of I-93)
S17	Small industrial development	Industrial	West of I-93
S18	Industrial development	Industrial	12 Industrial Way

*See Figure 8-1

Town of Windham

Table 8-2 and Figure 8-2 summarize the land use changes since 2004 in the Town of Windham. Residential development has occurred west of the I-93 corridor off of Searles Road (W1) and along Tarbell Road (W2). There has also been residential development along Locust (W3), Range (W4), and Squire Armour (W5) Roads. A reconfiguration of the Common Man Restaurant on Range Road has occurred (W6). A high school is under construction on London Bridge Road and scheduled to be open for the 2009-2010 academic year (not shown on Figure 8-2).

Table 8-2
Town of Windham
Land Use Changes Since 2004

Map ID*	Description	Land Use	Address
W1	Residential development	Residential	Castle Reach development, off Searle Road
W2	Residential development	Residential	Tarbell Road
W3	Residential development	Residential	Locust Road
W4	Residential development	Residential	Range Road
W5	Residential development	Residential	Squire Armour Road
W6	Expansion	Commercial	88 Range Road

*See Figure 8-2

Town of Derry

Table 8-3 and Figure 8-3 summarize the land use changes since 2004 in the Town of Derry.

Approximately one mile east of the I-93 Exit 4 Interchange, a new age-restricted 116–condominium community called Bunker Estates has recently been completed along Fordway Extension (D1). Along North High Street and opposite of Ash Street, the recently constructed Reserve Covey Run has 24 new town homes (D2). A small area to the north of I-93 in Derry, adjacent to the Londonderry Town line, has experienced a rapid increase of commercial development (D3). This area is within the new Industrial IV zoning district west of North High Street, located on Corporate Park Drive and Ash Street Extension and has been developed into the Derry Business Center comprising commercial, office, and manufacturing uses.

Table 8-3
Town of Derry
Land Use Changes Since 2004

Map ID*	Description	Land Use	Address
D1	116-unit senior housing	Residential	65 Fordway Extension
D2	24 new town homes	Residential	81 North High Street
D3	Commercial, office, and manufacturing development	Commercial	Corporate Park Drive Ash Street Extension

*See Figure 8-3

Town of Londonderry

Table 8-4 and Figure 8-3 summarize the land use changes since 2004 in the Town of Londonderry.

New age-restricted developments in Londonderry were constructed (or are being constructed) at the following locations:

- 120 units at the Nevins on Nevins Drive (L2),
- 65 units at Forest Hills on Sawgrass Circle and St Andrews Way (L3),
- 32 units at Parrish Hills on South Parrish Road (L4), and
- 36 units at Sugar Plum Court on Sugar Plum Court (L5).

Single family, non-age restricted developments included 35 units at Tanager Way/Whippoorwill Circle (L6), 16 units at Essex Court and Abington Way (L7), 10 units at Berlang Road (L8), and 5 units at Deer Crossing Circle (L9), in addition to other smaller in-fill or single lot developments. A 243-unit multi family housing complex has been constructed on Vista Ridge Road and Crestview Circle (L1).

Notable non-residential development has included Hannaford's Supermarket on Hampton Drive (L10), the buildout of Londonderry Commons on Commons Drive (L11), the addition of Harvey Industries on Jacks Bridge Road (L12), Elliot Medical Center on Buttrick Road (L13), an expansion of Insight Technology on Akira Way (L14), and numerous smaller expansions or new businesses in existing commercial areas.

Londonderry is promoting mixed use development in several areas throughout the town. These include commercial and residential development at Exit 4 (Route 102) (L15), Exit 5 (L16), Jacks Bridge Road (L24), and Page Road (L17). Partially as a result of recent developments and in anticipation of future growth, on NH 128 (Mammoth Road) a new police station and Town Hall (L18) have been built, and an addition was put on the Leach Library (L20). Also, a kindergarten school (L19) has been built on Pillsbury Road.

Industrial development has occurred in the northern portion of Londonderry, particularly within the vicinity of the Manchester Airport along Harvey Road (L21) and Grenier Road (L22). In addition, an airport connector road from F.E. Everett Turnpike in Bedford over the Merrimack River currently under construction by NHDOT will open approximately 800 acres of

undeveloped land just south of Manchester-Boston Regional Airport for anticipated future development (L23). Northeast of Route 28, properties along Jacks Bridge Road are zoned for industrial uses and are anticipated to accommodate future development (L24 and L26). In addition, the possible construction of I-93 Exit 4A, between Exit 4 and Exit 5, and the associated connector roadway would provide access to land for commercial and industrial development on the east side of I-93 (L25). I-93 Exit 4A is a separate project from the I-93 Improvements project and has been proposed by the towns of Derry and Londonderry. A Draft EIS for the Exit 4A project was published in July 2007.

Table 8-4
Town of Londonderry
Land Use Changes Since 2004

Map ID*	Description	Land Use	Location / Address
L1	243-unit multi-family housing	Residential	Vista Ridge Drive Crestview Circle
L2	120-unit Age Restricted Residential development	Residential	Nevins Drive
L3	65-unit Age Restricted development	Residential	Sawgrass Circle / St Andrews Way
L4	32-unit Age Restricted development	Residential	South Parrish Drive
L5	36-unit Age Restricted development	Residential	Sugar Plum Court
L6	35-unit Single-family Residential development	Residential	Tanager Way / Whippoorwill Circle
L7	16-unit Single-family Residential development	Residential	Essex Court / Abington Drive
L8	10-unit Single-family Residential development	Residential	Berlang Road
L9	5-unit Single-family Residential development	Residential	Deer Crossing Circle
L10	Hannaford's Supermarket	Commercial	Hampton Drive (Exit 4)
L11	Office Building	Commercial	Londonderry Commons
L12	Harvey Industries	Industrial	Jacks Bridge Road
L13	Elliot Medical Center	Commercial	Buttrick Road
L14	Insight Technology Expansion	Industrial	Akira Way
L15	Commercial development	Commercial / Residential	Exit 4 (Route 102)
L16	Mixed use development (anticipated)	Commercial / Residential	Exit 5
L17	Mixed use development (anticipated)	Commercial / Residential	Page Road Area
L18	Police station and Town Hall	Civic/Institution	268 Mammoth Road
L19	Kindergarten school	Civic/Institution	150 Pillsbury Road
L20	Leach Library Expansion	Civic/Institution	276 Mammoth Road
L21	Industrial development	Industrial	Harvey Road
L22	Industrial development	Industrial	Grenier Field Road

Map ID*	Description	Land Use	Location / Address
L23	Industrial development (anticipated)	Industrial	South of Manchester Airport
L24	Industrial development (anticipated)	Industrial	Northwest of Route 28
L25	Development associated with the potential Exit 4A (anticipated)	Industrial/ Commercial	East of I-93
L26	Industrial development (anticipated)	Industrial	Jacks Bridge Road

*See Figure 8-3

City of Manchester

Local and regional officials are working to encourage civic and business growth in the region as reflected in recent master plans. To promote an adequate supply of affordable housing and economic development in the area, municipal officials have identified certain areas for development in which new zoning regulations have been adopted, new roads built and sewers installed. These areas, identified as the major centers of growth and development, include the Manchester Airport/South Willow Street area and the Manchester Central Business District. There have been no major changes in land uses along the I-93 corridor in Manchester.

8.4.3 Zoning

Town of Salem

Table 8-5 summarizes the new or expanded zoning districts and permitted land uses in the I-93 project area in the Town of Salem since the 2004 FEIS. The new Commercial-Industrial C zoning district (previously the Highway-Commercial District) allows retail, office, restaurants, service shops, storage uses, amusement parks, hotels, manufacturing, and assembly uses. However, permitted land uses and the geographic area of this district have not changed. As shown on Figure 8-1, the areas on both sides of the NH Route 28 Corridor and between Main Street and the Massachusetts State line have this zoning designation.

In addition, the Garden Apartment District was added to an area located along Cluff Crossing Road at the I-93 Exit 1 Interchange previously zoned Commercial Industrial. This zoning district allows residential units of 2 or more families with no more than one office or studio for every 25 dwelling units.

Table 8-5
Updated Zoning Districts in Salem

Zoning District	Permitted Uses
Commercial-Industrial C	Retail, office, restaurants, service shops, storage uses, amusement parks, hotels, manufacturing, assembly uses
Garden Apartments	Residential units of 2 or more families; no more than one office or studio for every 25 dwelling units.

Source: Town of Salem, 2008c.

Town of Windham

Table 8-6 summarizes the new or expanded zoning districts and permitted land uses in the I-93 project area in the Town of Windham since the 2004 FEIS.

Windham has rezoned the I-93 Exit 3 area to Gateway Commercial District (previously Business Commercial) (See Figure 8-2). The Gateway Commercial District allows retail, medical and professional office, and school and eating establishments where consumption is primarily intended to be on the premises. The purpose of the Gateway Commercial District is to take advantage of Windham's proximity to and visibility from the Interstate Highway and from NH Routes 111 and 111A, provide an area of high quality community development at the major highway interchange, allow mixed uses of retail and professional offices, and minimize sprawl and encourage sustainable community development.

The area north of NH 111A and south of Cobbetts Pond (west of I-93) has been rezoned from a Residential to a Rural District. The Rural District allows single-family residential with 50,000 square feet minimum lot (in agricultural landscapes).

Table 8-6
Updated Zoning Districts in Windham

Zoning District	Permitted Uses
Gateway Commercial	Retail, medical and professional office, school and eating establishments where consumption is primarily intended to be on the premises
Rural	Single family residential with 50,000 square feet minimum lot size (in agricultural landscapes)

Town of Derry

An area east of I-93 and along Derry's border with Londonderry has been rezoned to include a small Industrial VI district. The Industrial VI district is located along Ash Street and west of North High Street (See Figure 8-3). Industrial VI uses include office and light manufacturing.

Town of Londonderry

Numerous parcels fronting Rockingham Road, from Exit 5 west to Mammoth Road have been designated part of the Route 28 Performance Overlay District (POD). The POD was established in 2004 to guide the development of land through the use of performance standards, incentives for quality development, and impact assessments ensuring the desired development pattern along the major traffic corridors of Londonderry.

The goals of the POD are to minimize adverse traffic impacts on the corridors and surrounding local roadways, promote and attract high quality, diverse, and sustainable economic development by utilizing performance standards and flexibility and providing for development that preserves appropriate open space and builds upon the landscaping design and visual character standards, to minimize negative impacts to the environment such as water quality, air quality, prevention of noise pollution, light pollution, and to other important natural and cultural resources, to protect

the remaining aquifers within the Town of Londonderry, and to provide an appropriate mix of uses for the areas abutting the natural environment.

City of Manchester

There have been no zoning changes in the vicinity of the I-93 corridor in Manchester since the 2004 FEIS.

8.4.4 Farmlands

The land use change evaluation did not identify any new active farming adjacent to the I-93 corridor.

8.5 Impacts

As a result of design refinements since the 2004 FEIS, the number of full property acquisitions has changed. Based on current right-of-way plans, the number of residential acquisitions has decreased from the 21 estimated in the 2004 FEIS to 19 and the number of business relocations has increased from the 14 estimated in the 2004 FEIS to 23. These minor changes do not change the conclusion of the 2004 FEIS that the 2005 Selected Alternative would not directly cause any fundamental shift in land use patterns.

Potential indirect effects on local and regional demographics are discussed in Chapter 12: Indirect Effects.

The final design important farmland soil impacts are less than that of the worst case four-lane alternative evaluated in the 2004 FEIS Farmland Conversion Impact Rating Form (which had included impacts due to a proposed bicycle path). No adverse impacts under the Farmland Protection Policy Act would occur to farmlands due to the design refinements and no further coordination with the NRCS is therefore required.

8.6 Mitigation

The mitigation measures for the relocation and compensation of displaced residences and businesses described in the 2004 FEIS and Record of Decision remain valid (See Section 7.2.1).

8.7 Conclusions

There has been additional development in the I-93 corridor municipalities since the 2004 FEIS and minor changes in planning and zoning. Due to design refinements, there have been minor changes in the residential and business acquisitions required for the 2005 Selected Alternative. However, the direct land use and farmlands impacts of the 2005 Selected Alternative have not changed substantially since the 2004 FEIS.

Land Use Changes (See Table 8-1)

Zoning Changes

- Commercial-Industrial C District
- Garden Apartments District

0 0.25 0.5 Miles

N

Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 8-1

Salem Land Use and Zoning Changes

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.


W2
W1
W6
W3
W4
W5
Exit 3
93
003 B
Lowell Rd
Morrison Rd
Fineview Rd
E Nashua Rd
County Rd
Bedros St
Kent St
Londonderry Rd
Golf View
Cardinal Rd
Oriole Rd
Mockingbird Hill
Mockingbird Rd
Netherwood Rd
Gov Dinsmore Rd
Bissell Camp Rd
Rouiston Rd
Rockingham Rd
Harris Rd
Searles Rd
Lamson Rd
Wyman
Indian Rock Rd
Church Rd.
Hayes Hart Rd.
Tenney Rd
Woodvue Rd
Hardwood Road
Armstrong Rd
Horseshoe Rd.
Ministerial Rd.
Birchwood Rd
Johnston St.
Cabbots Pond Rd
Turtle Rock Rd
Lake Shore Av.
Policy St
Alpine Rd
Bayberry Rd
Land Use Changes (See Table 8-2)
Zoning Changes
Gateway Commercial District
Rural District
0
0.25
0.5
Miles
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 8-2
Windham Land Use and Zoning Changes
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.

Land Use Changes (See Tables 8-3 and 8-4)

Londonderry Zoning Changes

RT28 Performance Overlay District

Derry Zoning Changes

Industrial VI District

0 0.5 1 Miles

N

Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 8-3

Derry and Londonderry Land Use and Zoning Changes

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

9.0 CONTAMINATED PROPERTIES AND HAZARDOUS MATERIALS

9.1 Introduction

Typically, roadway projects in developed areas encounter contaminated materials during construction activities such as excavation and earthwork, dewatering and building demolition. Contaminated materials that may be encountered include petroleum products, metals, chemicals, and asbestos and lead-based paint in building materials and bridges.

No substantive changes have been made to the contaminated properties and hazardous materials analyses since the DSEIS.

9.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The 2004 FEIS petroleum, hazardous materials and solid waste evaluation was based on a search of available environmental databases for information related to sites with confirmed releases and sites that have the potential for soil and/or groundwater contamination. In addition to the database review, the following sources of information were consulted:

- New Hampshire Department of Environmental Services (NHDES), Waste Management Division, list of "CERCLIS Sites" (March 26, 1992);
- NHDES, Waste Management Division, list of hazardous waste generators (September 18, 1992);
- NHDES, Groundwater Protection Bureau, listing of sites (July 2, 1992);
- NHDES, Waste Management Division, list of "solid waste" sites (April 10, 2003);
- NHDES, Waste Management Division, list of "MSW Incinerators" Operating in 2001 (November 2001);
- NHDES, Waste Management Division, list of used "tire sites" (December 4, 2001);
- NHDES, Waste Management Division, list of "MSW and ash landfills" operating in 2001 (August 2002);
- NHDES, Waste Management Division, list of collection, storage, and "transfer facilities" (September 2002);
- NHDES, Waste Management Division, list of "infectious waste incinerators" operating in 2001 (August 2002).
- NHDES, Waste Management Division, list of "composting facilities" (September 4, 2001);
- NHDES, Waste Management Division, email of "Asbestos Disposal Sites (ADS)" in Salem, Derry, Londonderry and Manchester (June 3, 2003);
- NHDES, Waste Management Division, list of "Materials Recovery Facilities (MRF)" (January 14, 2003); and
- A Site reconnaissance of the project corridor to identify suspect properties not identified in environmental databases or the above listed sources.

The properties identified in the environmental database search were further evaluated to generate a smaller subset of properties that would require additional investigations (i.e., soil sampling, groundwater testing, etc.) to determine whether the potential exists to encounter any contamination during construction. The subset of properties requiring additional investigation was developed based on the following selection criteria:

- Relative distance to the proposed I-93 corridor of approximately 500 feet;
- Windshield survey of current land uses of properties;
- Federal, state, and local regulatory agencies file review; and
- A review of the "mapped site" details provided in the environmental database report which indicated that the potential of encountering hazardous materials contamination on the subject property was not likely.

The 2004 FEIS referred to these non-intrusive evaluations as Initial Site Assessments (ISAs). Preliminary Site Investigations (PSIs) were recommended for properties where further information was required to determine if there exists a potential to encounter any contamination during construction and operation of the proposed project.

The analysis presented in the 2004 FEIS also included a review of potential acquisition properties that may contain buildings and/or structures possessing regulated materials requiring removal prior to demolition. Based on the age of the buildings, regulated materials may include the following:

- Asbestos;
- Lead-based paint;
- Polychlorinated biphenyls (PCBs) within fluorescent light ballasts;
- Electrical transformers that may contain PCB dielectric oil;
- Mercury-containing fluorescent light bulbs;
- Mercury thermostats;
- Miscellaneous containers of oil or hazardous materials;
- Refrigerants (air conditioners, refrigerators);
- Hydraulic lifts;
- Aboveground storage tanks; and
- Underground storage tanks.

The environmental database report revealed 83 properties within the study area analyzed as being solid waste sites or petroleum and hazardous material release sites. Upon further evaluation, 13 sites were recommended for PSIs to determine the potential of encountering any contamination during construction. These sites included maintenance garages and gasoline stations, among other uses.

Based on the review of potential property acquisitions and associated buildings and structures, the 2004 FEIS concluded that up to 49 properties containing 55 structures may require demolition as a result of the 2005 Selected Alternative (Section 3.12.4 of the 2004 FEIS).

9.2.1 Record of Decision Commitments/Mitigation

The Record of Decision made the following commitments with respect to contaminated properties and hazardous materials:

- ISAs and PSIs of properties to be acquired will be performed to address potential and confirmed areas of soil or groundwater contamination (as necessary).
- Based on the results of the PSIs, contamination may be identified. In the event that contamination is identified, the following scenarios are likely:
    - Contamination is limited to groundwater that does not warrant remediation and the groundwater will not be encountered during construction;
    - Contamination is limited to soils that do not warrant remediation and the contaminated soil will not be encountered during construction;
    - The contaminated soil or groundwater identified requires remediation by NHDOT following property acquisition;
    - The contaminated groundwater encountered will not be encountered during construction and assessment/remediation is ongoing by the existing property owner as part of an existing Groundwater Management Zone (GMZ) permit; and
    - Limits of solid waste will be categorized. Removal or consolidation of solid waste on-site will be performed in consultation with NHDES.

- If contaminated materials are expected to be encountered during construction, appropriate worker health and safety provisions and waste management provisions will be included in the construction documents. All work will be performed in accordance with applicable NHDES regulations and NHDES approved remedial action plans.

- A comprehensive building audit will be performed prior to any scheduled demolition to identify and quantify all regulated building materials and special wastes. Abatement plans will be prepared to address the removal of all regulated building materials.

9.3 Methodology

An updated environmental database search was performed using information supplied by Environmental Data Resources (EDR) of Milford, Connecticut and a query of ongoing remediation projects under the purview of NHDES from their One Stop Data Retrieval website[1]. NHDOT's Risk Assessment Survey for Contamination and Appraisal of Land (RASCAL) database was also reviewed to identify updated information on known hazardous material concerns along the corridor, including the results of ISAs and PSIs completed since the 2004 FEIS. No site reconnaissance and/or windshield surveys were conducted as part of the update analysis.

[1] <http://www.des.state.nh.us/OneStop.htm>, accessed 5/29/08 through 6/2/08.

The environmental regulatory agency database report was obtained from EDR for information regarding documented and/or suspected releases of regulated hazardous substances and/or petroleum products in the I-93 corridor. The environmental record sources contained in the database report are consistent with the standard environmental record sources defined in the American Society of Testing and Materials (ASTM) Standard Practice E 1527-05, in accordance with the "due diligence" regulations of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and in accordance with Section 9601 (35)(b) of the Superfund Amendments and Reauthorization Act (SARA), which requires that "all appropriate inquiry" be made into the presence or potential presence of hazardous substances or petroleum products on a site.

9.4 Impacts

The review of the EDR and NHDES databases did not identify any potentially contaminated properties along the I-93 corridor that were not already accounted for in the RASCAL database.

Since the 2004 FEIS, there have been design refinements to the 2005 Selected Alternative, changes in the proposed property acquisitions and additional hazardous material studies. The additional hazardous material studies have eliminated some sites as areas of concern and identified some new sites where additional testing would be warranted if the property will be impacted. Table 9-1 summarizes the current status of the sites listed in the RASCAL database where additional testing or construction monitoring is recommended.

Major changes since the 2004 FEIS with respect to hazardous material issues include:

- Design changes to avoid substantial groundwater contamination at the Keewaydin Drive site (S74). The stormwater detention basin previously proposed for this site will be relocated to avoid the contamination.

- Evaluation of alternative mitigation sites to avoid the substantial contamination issues associated with the Salem Waste Water Treatment (WWTP) site (S2058). More information about this change in the project wetland and floodplain mitigation commitments is provided in Section 10.6.2.

- NHDOT is considering purchasing the remainder of a parcel at Exit 5 in Londonderry, adjacent to the new park-and-ride lot (L82-1 and L82-2). The parcel would be used for construction staging and would provide an area for expanding the capacity of the Exit 5 park-and-ride as needed to meet future demand. The eight-acre parcel, formerly owned by Waste Management, Inc. is currently vacant. An ISA conducted for the site as part of the 2004 FEIS identified potential contamination related to a former landfill. A portion of this site was acquired for the park-and-ride and remedial work was conducted to remove construction debris and potential putrescible household waste. The material excavated from the site was disposed of in accordance with State and Federal

regulations.[2] Prior to the purchase of the remainder of the site, additional on-site environmental evaluations would be conducted to determine the potential extent of contamination and remediation costs.

Table 9-1
Summary of Petroleum and Hazardous Material Site Status/Recommendations

Town	NHDOT Parcel ID	Site Name/Address	Current Status/ Recommendations
Salem	S73	West side of I-93 off Keewaydin Drive	Construction monitoring due to known contaminated property to the north (S74)
Salem	S74	Keewaydin Drive/ 13-21 Keewaydin Drive	Contaminated groundwater present on site. Remedial activities are ongoing and a revised Groundwater Management Permit (GWP) was issued on January 16, 2007. The detention basin proposed for this site be relocated to parcel S175
Salem	S75	11 Keewaydin Drive	Construction monitoring due to known contaminated property to the south.
Salem	S173	Flight Line/Bosch Service/Line X/Tech Mark	Install groundwater monitoring wells and conduct soil sampling.
Salem	S2058	Salem WWTP/ 33 Geremonty Drive	Contaminated groundwater present on the site and remediation activities are ongoing. NHDOT is considering alternative mitigation sites to avoid the hazardous materials issues associated with this site.
Salem	S226	Salem DPW/ 19 Cross Street	Construction monitoring
Windham	W35	Former Computer Auto Sales/ 61 Indian Rock Road	Conduct sampling if this property is impacted.
Windham	W42	87 Indian Rock Road	Remove the above ground storage tank present on site with proper management. Conduct sampling if staining or damage to the AST is observed during removal.
Windham	W44	Exxon/ 1Wyman Road	Construction monitoring due to the presence of soil and groundwater contamination. Some contaminated soil has been removed and groundwater monitoring is ongoing in coordination with NHDES. For information on groundwater contamination and monitoring associated with blasting at Exit 3, refer to Section 14.4.4.
Windham	W51	Wall Street	Conduct soil sampling if the southwestern portion of the site will be disturbed, otherwise no further investigations needed.
Windham	W99	Windham Sunoco	Continue groundwater monitoring.

[2] Remedial Action Implementation Report- I-93 Exit 5 Park and Ride, Portion of the Former Spartan Transfer Station, Londonderry, New Hampshire, NHDES #198804014. Prepared by Golder Associates, Inc. October 29, 2007.

Town	NHDOT Parcel ID	Site Name/Address	Current Status/ Recommendations
Windham	W104	90 Range Road	A pre-demolition audit identified asbestos, lead paint and other regulated materials that would need to be handled and disposed of in accordance with federal and state regulations. A subsurface investigation is recommended to determine if the site is affected by contaminated groundwater from nearby inactive hazardous waste sites.
Derry	D26	Derry Town Landfill/ 29 Kendall Pond Road	Conduct sampling as part of geotechnical drilling in the I-93 right-of-way near the landfill.
Derry	D2072A	Former Sybiak Farm/ 79 Windham Road	Limited subsurface investigation in debris area of former house and barn. Investigate contents of drums present on the site and remove.
Londonderry	L73	3 Symmes Drive	If purchased, inventory and remove all chemicals stored at property
Londonderry	L78	8 Jack's Bridge Road	Soil sampling identified contaminated soils. Remove the contaminated soil for off-site disposal as landfill material.
Londonderry	L79	Cycle World/ 168 Rockingham Road	ISA recommended due to proximity to the North Londonderry Exxon and the Coca-Cola bottling company sites. Four USTs are located on the site.
Londonderry	L80	164 Rockingham Road	ISA recommended because the property adjoins North Londonderry Exxon, which is a site remediation, LUST, active hazardous waste site, and vapor recovery site.
Londonderry	L81	Exxon / 162 Rockingham Road	Contaminated soil and groundwater present on the site. Conduct soil and groundwater sampling along NH 28 and the WMNH property.
Londonderry	L82-2 and L82-1	Waste Management/ 160 Rockingham Road	Landfilled debris and high levels of methane gas present at site. Remediation activities and sampling are ongoing in coordination with NHDES. Additional groundwater and soil sampling and removal of landfilled debris would occur before this parcel is purchased.
Londonderry	L94	Poor Boy's Diner	Construction monitoring due to nearby Sunoco/RNZ Truck Stop. Collect samples as part of geotechnical drilling along NH 28 between Poor Boy's Diner and the Sunoco station.
Londonderry	L96	LBP Towing/ 5 Auburn Road	Conduct sampling along the road in front of the site during geotechnical drilling. Conduct interior site walk and interview site personnel.
Londonderry	L130	Sunoco/ RNZ Truck Stop 133-137 Rockingham Road	Conduct soil sampling for total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) during geotechnical drilling.
Londonderry	L173	Tisdell Transmission/ 27 Ash Street	Conduct sampling during geotechnical drilling. Conduct interior site walk and interview site personnel.
Londonderry	L181	Shell Gas Station	Contaminated groundwater present on site. Conduct soil and groundwater sampling during geotechnical drilling down gradient from the site.
Londonderry	L182	Derry Plaza	Conduct sampling during geotechnical drilling. Conduct interviews and interior site walk at laundromat and paint store on site.

Town	NHDOT Parcel ID	Site Name/Address	Current Status/ Recommendations
Londonderry	L183	Sunoco Gas Station	Conduct sampling during geotechnical drilling.
Londonderry	L185	Gulf Gas Station	Conduct sampling during geotechnical drilling.
Londonderry	L186	Citgo Gas Station	Conduct sampling during geotechnical drilling.
Londonderry	L187	Mobil Gas Station	Conduct sampling during geotechnical drilling.
Londonderry	L188	Auto Auction of New England/ 9 Action Boulevard	Conduct sampling during geotechnical drilling.
Londonderry	L189	Derry Wastewater Treatment Plant	Soil and groundwater sampling has been conducted, results are below the applicable standards.
Londonderry	L191	Luk-Oil Station/ 6 Nashua Road	Conduct sampling during geotechnical drilling.
Londonderry	L197	S&S Metals Recycling, Inc./ 196 Rockingham Road	Conduct sampling during geotechnical drilling.
Londonderry	L199	Lemire's Auto Service/ 190 Rockingham Road	Conduct sampling during geotechnical drilling.

Source: RASCAL database, 01/29/2009. Does not include sites beyond the limits of the I-93 expansion, sites where no further action is recommended, sites where the only recommended action is the removal of debris, and sites where the only recommended action is a site walkover prior to purchase.

9.5 Mitigation

Additional testing where warranted and appropriate mitigation measures will be implemented in accordance with the Record of Decision commitments, see Section 9.2.1.

9.6 Conclusions

Since the 2004 FEIS, there have been design refinements to the 2005 Selected Alternative, changes in the proposed property acquisitions and additional hazardous material studies. Additional site testing, worker safety provisions, and material disposal procedures have been and will continue be implemented in accordance with state and federal regulations at potentially contaminated sites.

10.0 NATURAL RESOURCES

10.1 Introduction

This chapter provides a summary of the detailed information in DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report. In addition, this chapter incorporates information on wetland impacts, phosphorus loadings and chloride studies that was not available at the time the DSEIS was prepared.

10.1.1 Water Resources

In the absence of appropriate stormwater treatment practices, surface water resources may be impacted by additional stormwater runoff that occurs as a result of increasing the roadway pavement area within a watershed. Roadway stormwater runoff may include sediments, nutrients, and deicing salt which can potentially reduce stream water quality and impact aquatic biota. Roadway stormwater runoff impacts from sediments and nutrients on surface water can be reduced by stormwater treatment practices such as detention basins and grass lined swales. Deicing salt in stormwater runoff cannot be removed by these stormwater treatment practices, but can be addressed by load reduction Best Management Practices (BMPs).

Phosphorus

Stormwater runoff containing phosphorus is a principal concern for some waterbodies, including Cobbetts Pond in the I-93 corridor. Phosphorus is generally the limiting nutrient for plant and algae growth in fresh waters. Increased inputs of phosphorus to lakes can stimulate and promote algal growth, which can lead to excessive vegetative growth that can interfere with the recreational use of the lake and could lead to a decline in water quality conditions. As algal growth increases, water clarity decreases, which reduces the sunlight penetration to the bottom layers and affects the aquatic life communities and certain beneficial plant species. Each year as algal cells die off, the organic matter sinks to the bottom and consumes oxygen as part of the decomposition process. As this cycle progresses, lakes continue to have increasing algal growth and tend to have little to no oxygen in the bottom layers for extended periods of the year. Highly productive lakes, with an abundance of aquatic weed and algal growth are generally referred to as being "eutrophic", while lakes having minimal algal productivity and excellent water clarity are classified to be "oligotrophic". Lakes that are moderately productive are classified as being "mesotrophic."

Chloride

Chloride from dissolved deicing salt cannot be removed with stormwater treatment structures. Both the U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services (NHDES) have established a secondary drinking water standard of 250 mg/l for chloride (Env-Ws 316.01: State Water Quality Standards) to avoid aesthetic problems associated with taste. NHDES has also established aquatic life criteria for chloride in fresh water resources to protect aquatic life (Env-Wq 1700). The chronic and acute criteria for chloride have been set at 230 and 860 mg/l, respectively, to protect aquatic life.

Clean Water Act

The Clean Water Act (CWA) was promulgated to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. § 1251). EPA is required to develop programs for preventing, reducing or eliminating pollution and improving the sanitary condition of the nation's waters. As mandated by EPA, NHDES has established water quality standards in the New Hampshire Surface Water Quality Regulations in Env-Wq 1700.

Section 303 (d) of the CWA requires states to identify and publish every two years a list (303 (d) list) of surface waters that are water quality impaired. Water quality impairment occurs when a waterbody fails to meet the applicable water quality standards (33 U.S.C. § 1313). Section 303 (d) of the CWA also requires development of a pollutant loading and reduction plan, called a Total Maximum Daily Load (TMDL), for each waterway on the 303(d) list (33 U.S.C. § 1313). The purpose of the TMDL is to identify existing loads in order to identify and eliminate the impaired status. In New Hampshire, NHDES is the agency responsible for conducting TMDL studies and establishing TMDLs. The TMDL process studies existing loadings, identifies responsible parties and establishes the allowable loadings of pollutants for a waterbody based on the relationship between pollutant sources and instream water quality conditions. The States establish water quality based controls to reduce pollution from the identified sources and restore water quality.

10.1.2 Floodplains

Floodplains are defined as the land along waterbodies that is inundated with water during floods. Beneficial floodplain functions include flood attenuation, water quality maintenance, groundwater recharge, riparian plant and wildlife habitat, natural beauty, open space, and agriculture. Absent appropriate design of fill placement and the hydraulic capacity of structures (e.g., culverts and bridges), roadway construction in floodplains can potentially raise flood elevations.

The Federal Emergency Management Agency (FEMA) oversees Flood Insurance Rate Mapping maps which depict 100-year and 500-year floodplains, floodways and base flow elevations in some areas. The 100-year floodplain map shows the area with a one percent risk of flooding each year. The "Regulatory Floodway" is generally defined as the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point.

10.1.3 Wetland Resources

Wetlands are defined in the Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1, (January, 1987) as: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted to life in saturated soil conditions." Studies over the past few decades have found that wetlands provide habitat for numerous aquatic plant and animal species, and function in the protection and enhancement of surface and

groundwater resources. Wetlands help to filter and purify water by trapping soil particles along with the pollutants they carry before these pollutants enter watercourses. Wetlands have an ability to absorb nutrients such as nitrogen and phosphorus, and later release these nutrients when they are less likely to degrade water quality. Wetlands act to regulate the release of stormwater by acting as temporary storage basins, which can lower flood crests and reduce the destructive potential of severe storms. Wetlands stabilize the shores along rivers and lakes, and further buffer the destructive forces of storms by absorbing the impact of waves. Some wetlands also augment groundwater supplies by passing surface water and direct precipitation through the wetland soil into the underlying aquifers.

Federal protection is accorded wetlands under Section 404 of the Clean Water Act and Section 10 of the Federal Rivers and Harbors Act. The U.S. Army Corps of Engineers (ACOE) is charged with the duty of overseeing and regulating activities in wetlands at the Federal level. EPA also reviews projects that may impact wetlands and has veto authority over discharges they find unacceptable.

The State of New Hampshire regulates activities in wetlands under RSA 482-A, which grants regulatory authority to NHDES. Communities in New Hampshire possess, at minimum, recommendation authority to NHDES as to whether a permit to dredge or fill wetlands should be issued. Communities also have the ability to enact their own ordinances to regulate activities in wetlands.

10.1.4 Wildlife Resources

Wildlife habitat is the land or water area and resources that species need to survive and reproduce. Wildlife habitat requirements are different for different species, some requiring more area than others, specific types of vegetation, or access to water. Areas with a high amount of residential and commercial development typically provide lower quality habitat than undeveloped areas. New Hampshire has 318 species of terrestrial wildlife (vertebrates other than fish) species that occur as either migrants or residents. This variety of wildlife species is valuable to the state both economically relative to tourism and recreational activities, and as integral components of ecological food webs, energy flow, and biodiversity.

The U.S. Fish and Wildlife Service (USFWS) has been charged with responsibility for the listing and management of threatened and endangered species native to the United States by the federal Endangered Species Act, which was enacted in 1973. An endangered species is defined as being in danger of extinction throughout all or a substantial portion of its range. A threatened species is defined as likely to become endangered in the foreseeable future (USFWS, 2005). The State of New Hampshire also protects threatened and endangered species under the Endangered Species Conservation Act of 1979. The New Hampshire Fish and Game Department (NHF&GD) designates state-listed threatened and endangered species.

10.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

10.2.1 Water Resources

Surface Water

Stormwater Runoff
The 2004 FEIS analyzed potential stormwater runoff impacts using a preliminary design for stormwater treatment practices and assumptions capturing a half inch of runoff and a 60 percent removal efficiency for pollutants associated with particulates. It was determined that 50 extended detention basins and 24 vegetated swales could adequately treat all the stormwater from the project. The 2004 FEIS found that in at least 13 of the corridor watersheds, extended detention basins could treat runoff from nearly 100 percent of the new and reconstructed roadway area. This level of treatment would result in stormwater pollutant loadings less than the loadings under existing conditions. In five other watersheds, at least 80 percent of the new and reconstructed roadway area would be directed to extended detention basins while the remaining 20 percent would be directed to grass swales. This level of treatment would result in no substantial increase in pollutant loadings in comparison to existing conditions.

In the remaining three watersheds (tributary to Porcupine Brook at Exit 1, the north tributary to Flatrock Brook, and the south tributary to Beaver Brook), approximately 65 to 75 percent of the new and reconstructed roadway area would be treated by extended detention basins, with the remaining area being treated by grass swales. In these three watersheds where less than 80 percent of the total roadway area is being proposed for treatment by extended detention basins, there is the potential for a slight increase in pollutant concentrations from highway runoff. However, the 2004 FEIS concluded that given the conservative assumptions used in the analysis, the level of increase would be expected to be minimal and not result in any measurable impact to water quality or the designated uses of the affected waterbodies.

Lake Phosphorus Concentrations
Average annual in-lake phosphorus concentrations attributable to I-93 were calculated using a modified version of the Vollenweider model, as presented in the Federal Highway Administration (FHWA) report *Pollutant Loadings and Impacts from Highway Stormwater Runoff, Volume 1: Design Procedures* (Driscoll et al., 1990). Assuming a phosphorus removal efficiency of 40 percent with extended detention basins, the 2004 FEIS found that the 2005 Selected Alternative could increase phosphorus concentrations by 0.7 and 0.6 µg/l in Canobie Lake and Cobbetts Pond, respectively. Even if a removal efficiency of only 20 percent were assumed (grass swales), the in-lake phosphorus concentrations would increase by only 1.5 and 1.6 µg/l, to 13.5 µg/l and 12.6 µg/l respectively. The 2004 FEIS concluded that these theoretical increases were relatively minor given the existing lake phosphorus concentrations and would not be expected to cause a discernable or measurable change in quality conditions in either lake. The total amount of new and reconstructed roadway area would represent 2.2 and 2.4 percent of the overall lake watershed area for Cobbetts Pond and Canobie Lake, respectively. Less than a third of the total predicted future phosphorus concentrations would be associated with highway runoff, meaning that the majority of the phosphorus inputs would continue to be derived from other sources.

Deicing Salt

A mass balance analysis was conducted as part of the 2004 FEIS to estimate the long-term average annual concentrations of chloride in receiving streams attributable to the I-93 roadway. The deicing salt mass-balance analysis found that future chloride concentrations could potentially exceed the chronic life criteria (230 mg/l) in four streams under the 2005 Selected Alternative:

- Tributary to Harris Brook,
- South Tributary to Canobie Lake,
- North Tributary to Canobie Lake and
- Dinsmore Brook.

Also, Policy Brook had currently elevated chloride levels and a predicted future concentration that approached the chronic criteria. For tributary to Harris Brook, Policy Brook, and the North Tributary to Canobie Lake, most of the existing chloride concentrations were attributed to sources other than the I-93 roadway, given that the upstream concentrations were elevated. The elevated upstream chloride concentrations in the North Tributary to Canobie Lake were potentially linked to the water softening process at the nearby Pennichuck Water Works wells.

The 2004 FEIS concluded that Dinsmore Brook and the South Tributary to Canobie Lake could be affected the most by the 2005 Selected Alternative based on the predicted increases in average annual chloride concentrations. Dinsmore Brook and the South Tributary to Canobie Lake are small waterbodies with watershed areas of about 200 acres or less. The relatively large increase predicted for the South Tributary to Canobie Lake was largely due to a change in the drainage direction, where nearly 0.5 miles of the roadway that currently drains to Porcupine Brook would be diverted back to the Canobie Lake watershed. This change was made based on a request from the Salem Board of Selectmen and the Water Department officials to maximize the surface recharge of the lake.

Aquatic Life

The 2004 FEIS found that the majority of the stream bed impacts of the 2005 Selected Alternative would be due to culvert lengthening, typically ranging from 50 to 200 feet. Exceptions where larger areas of disturbance could occur included the realignment of 750 feet of the Tributary to Harris Brook in Salem and the relocation of 2,400 linear feet of stream channel in the Wheeler Pond Tributary in Londonderry due to highway widening and sound wall construction.

Two tributaries to the Merrimack River, Cohas Brook in Manchester and Little Cohas Brook in Londonderry were evaluated for potential impacts on the designated essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for Atlantic Salmon. Coordination with National Marine Fisheries Service (NMFS) and completion of the EFH Assessment Worksheet indicated that the 2005 Selected Alternative would have an

"adverse effect" on EFH that is "not substantial." For more information on the EFH impact analysis, see DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report.

Groundwater

The 2005 Selected Alternative would increase the area of impervious surface within the stratified-drift aquifers in the project corridor by 82 acres, a small percentage of the overall aquifer size (over 5,000 acres). Given the low transmissivity and the limited overall use of the affected aquifers for water supply, the expected increase in roadway area under the 2005 Selected Alternative was not expected to result in any measurable adverse impacts to the aquifer. The sodium and chloride groundwater analysis found that even with the doubling of roadway lane miles under the 2005 Selected Alternative, average sodium and chloride concentrations in groundwater at the edge of the right-of-way were projected to be well below the 250 mg/l secondary drinking water standard for sodium and chloride.

The 2004 FEIS identified protection measures consistent with the NHDES guidelines based on the results of the wellhead protection area encroachment analysis. The sodium and chloride analysis for public wells identified four wells with greatest potential for impact—the Pennichuck Water Works wells located along the west side of Canobie Lake, the Yankee Trader (Citizens Bank) and the Plaza-93 wells, that are both located along Route 111 within the Exit 3 interchange, and the Boumil Grove Condominium complex in Londonderry, just south of the Exit 4 interchange.

10.2.2 Floodplains

Floodplain impacts calculated for the 2005 Selected Alternative in the 2004 FEIS were 43.4 acre-feet (across eight waterbodies) plus floodway impacts of 6.3 acre-feet (across five waterbodies), for a total impact of 49.7 acre-feet. A detailed hydraulic analysis conducted for Policy Brook and Spicket River in Salem concluded that the 100-year flood elevation would experience minor, if any, change as a result of the proposed highway improvements. As such, the 2005 Selected Alternative was expected have a negligible impact on these watercourses' ability to convey floodwaters.

Taking into account the proposed floodplain mitigation measures (See Section 10.2.5), the 2004 FEIS made a floodplain finding in accordance with Executive Order 11988 *Floodplain Management*, and 23 CFR 650A *Location and Hydraulic Design of Encroachments on Floodplains*, that there was no practicable alternative to the proposed construction in floodplains and that the 2005 Selected Alternative includes all practicable measures to minimize harm to floodplains.

10.2.3 Wetland Resources

Wetlands

The 2004 FEIS identified 77 acres of wetland impacts for the 2005 Selected Alternative. The majority of the wetland impacts were located along the edge of wetland systems that have

already been impacted by highway construction. The 2004 FEIS concluded that in most cases, these "edge impacts" represent only a small percentage of the total wetland acreage within the system and, while representing an incremental loss of wetland area, will not eliminate the functions and values performed by the remaining wetland. Based on consideration of the extent and type of wetland impacts, and of the proposed wetlands mitigation plan, FHWA made a wetlands finding pursuant to Executive Order 11990 that there was no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may results from such use.

Vernal Pools

The 2004 FEIS found that the 2005 Selected Alternative would impact three vernal pools. North of Exit 3, the 2005 Selected Alternative would impact vernal pool #13, which is located within the highway median. The functioning of this pool would likely be eliminated as 1,350 square feet or 90 percent of the areal extent of the pool would be filled. Vernal pool #13 has limited use by breeding amphibians, probably due to inadequate upland habitat around the pool and water quality degradation.

The 2005 Selected Alternative would impact portions of vernal pools #21 and #22, located on the east side of I-93 north of Exit 4. The 2005 Selected Alternative would impact the western edges (that currently exhibit signs of habitat degradation, i.e. filamentous algae, trash) of the pools amounting to approximately 3,000 square feet, or 30 percent of vernal pool #20 and 3,000 square feet or 15 percent of vernal pool #21 being filled.

10.2.4 Wildlife Resources

Wildlife Resources

The 2004 FEIS described potential wildlife habitat impacts related to the construction noise and disturbance, home range impacts, wildlife/vehicle collisions, and riparian corridors. The 2005 Selected Alternative would convert 260 acres of land outside the existing right-of-way. An estimated 60 percent (156 acres) of this is useable wildlife habitat, i.e., wetland, upland forest and shrubland, or agriculture. In drawing conclusions regarding wildlife habitat impacts, the 2004 FEIS cited comments from NHF&GD stating that it "recognizes that the improvements, involving for the most part the widening of an existing interstate facility, are of less consequence to wildlife and fishery resources than would otherwise be the case with the construction of a brand new facility on new location. As such, fragmentation of the wildlife habitat is not an issue. The acreage of impact is substantial, but given that the area impacted is directly adjacent to an existing interstate facility, the wildlife, wetlands, and habitat resources are of lesser quality or only peripherally affected by the widening."

Threatened and Endangered Species

The 2004 FEIS identified one state-listed threatened plant that may be affected by the 2005 Selected Alternative. A small population of the perennial wildflower wild lupine (*Lupinua*

perennis) is located within 15 feet from the travel lane on the west side of I-93 between Exits 1 and 2 within the currently maintained right-of-way.

Correspondence with New Hampshire Natural Heritage Bureau identified the eastern hognose snake as the only known state-listed wildlife species in the project vicinity. The 2004 FEIS noted that due to the difficulty of surveying for this species in the wild, an accurate assessment of project impacts is difficult. Through consultations with NHF&GD it was determined that impacts to the eastern hognose snake cannot be entirely ruled out due to the fact potential habitat appears to occur within the highway corridor.

In their review of the project USFWS expressed the opinion that the project would have no effect on the occasional, transient threatened bald eagles that may occur in the project area.

The field investigation for the candidate species New England cottontail did not locate any populations of the New England cottontail within the study corridor or the proposed mitigation sites, despite surveying all potentially suitable habitats.

10.2.5 Permit Conditions/Mitigation

Water Resources

The Record of Decision commits the New Hampshire Department of Transportation (NHDOT) to an adaptive management approach to maintain salt usage/chloride loadings at existing levels through incremental implementation of the project in the event that TMDL load reductions for state roads are not met. The Record of Decision made several other commitments to reduce surface water resource impacts through treatment practices, and best management practices for deicing salt application. Refer to DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report for the complete list of the commitments.

The I-93 Salem to Manchester Section 401 Water Quality Certification was issued by NHDES on May 2, 2006. By issuing the Water Quality Certification NHDES has determined that any discharge associated with the project will not violate surface water quality standards, or cause additional degradation in surface waters not presently meeting water quality standards. The Water Quality Certification conditions include and/or require:

- Inspection and maintenance plans for construction soil erosion control BMPs (Condition E-2).
  Stormwater BMPs be designed, implemented and maintained as proposed in the 2004 FEIS and ROD (Condition E-4).
- Design plans for stormwater BMPs along with pollutant load and removal efficiency estimates for sediments, phosphorus and nitrogen be submitted to NHDES for concurrence (Condition E-4).
- Design and implementation of a water quality monitoring plan for affected surface waters (Condition E-5).
- Design and implementation of a monitoring plan for chlorides (Condition E-6).

- Fund and participate in TMDL studies for surface waters impaired for chlorides (Condition E7-E11).

DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report provides more information on the Water Quality Certification conditions.

Floodplains

The Record of Decision made the following commitments with respect to floodplains:

- Direct impacts to the 100-year floodplain and floodways will be minimized during final design, by steepening highway embankments and/or utilizing retaining walls where appropriate.
- A series of up to 14 basins will be constructed at locations immediately adjacent to impacted floodplains or where natural valley storage is being lost.
- Additional flood storage compensation will be created at locations adjacent to flood-susceptible brooks and rivers, or locations upgradient from flood-prone areas. Detention basins are being proposed for stormwater treatment and floodwater storage at a number of locations along the widened highway. These basins are typically designed to store up to a 50-year storm event before discharging to nearby watercourses.
- The design of the wetland creation sites will include the goal of providing both floodflow alteration and compensatory flood storage. These sites include the Pelham Road Mitigation Site, Waste Water Treatment Plant Site, and Baggett Site in Salem, Highway Median Site in Windham; and the South Road Mitigation Site in Londonderry.

The 2004 FEIS estimated that 155-161 acre-feet of flood storage would be provided by the proposed mitigation measures.

Wetland Resources

The Record of Decision made the following commitments with respect to wetlands:

Compensation for unavoidable losses of wetlands and project impacts will include a combination of creation, restoration/enhancement, and preservation of the following project mitigation/enhancement package, involving protection of approximately 1,000 acres at 16 sites throughout the study corridor. The recommended mitigation sites are summarized as follows:

Salem
Total mitigation provided by four sites in Salem will amount to 90 acres (including creation, preservation, and flood storage replacement elements). These sites are:

- Cluff Crossing Road (Site #30), 27 acre parcel
- Pelham Road Mitigation Site (Site #31), 25 acre parcel

- Salem Wastewater Treatment Plant Site (Site #32), 32 acre site
- Baggett Property (Site #38) about six acres in size

Windham
Total mitigation provided by three sites in Windham will amount to nearly 318 acres (creation, preservation, and flood storage replacement). Each of the sites is described below.

- Highway Median Site (Site # 24), 17 acres
- Armstrong Property (Site #49), 11 acre parcel
- Southeast Lands Area (Site #45), approximately 290 acres

Derry
Total mitigation provided by the site in Derry would amount to nearly 200 acres (preservation). The proposed mitigation site is described below.

- Sybiak Farm Property (Site #16)

Londonderry
Total mitigation provided by four sites will amount to approximately 290 acres, including preservation, creation, and flood storage replacement. Each of these sites is discussed below.

- South Road Mitigation Site (Site #14 and 15), 75 acre parcel
- Norwood Site (Site #63), 37 acre parcel
- Musquash Brook Parcels (Site #61), 110 acres
- Scobie Pond Area Properties (Site #58), 70 acres

Manchester
Total mitigation provided by the five Crystal Lake area sites in Manchester will amount to about 120 acres (preservation). The sites are described below.

- Filip Farm Site, Filip Glen Phase 2 (Site #3), 16 acres
- Giovagnoli Farm Property (Site #44), 20 acres
- Podsadowski Property - The Hill (527 Corning Road Realty) (Site 46), 34 acres
- Greek Picnic Grounds (Potomac Glen) (Site 47), 40 acres
- Demers Property (Site 53), 10 acres

The Clean Water Act Section 404 permit for the 2005 Selected Alternative was issued by the ACOE on March 29, 2007 (permit number NAE-2004-233). In May 2006, NHDES issued the

state wetland permit for the I-93 Improvements project, with conditions (permit number 2002-02033).

The Section 404 permit and NHDES permit conditions include standard provisions related to the restoration of disturbed areas, sedimentation and erosion control practices, and the requirement to comply with the conditions of the Section 401 Water Quality Certification. The permit conditions include the completion of the wetlands compensatory mitigation package as described in the 2004 FEIS and ROD, and adherence to the Memorandum of Agreement on historic properties between NHDOT, FHWA and the State Historic Preservation Officer signed August 8, 2002.

Wildlife Resources

The Record of Decision included the following commitments with respect to wildlife and fisheries resources:

- Direct habitat loss, in particular to wetlands, will be offset through the project mitigation in the form of extensive habitat preservation. Generally the preservation sites will be contiguous with adjacent undeveloped or protected properties to create larger unfragmented blocks and provide opportunity to manage portions for varying successional stages.
- The design of the wetland creation sites will include the goal of replacing the wildlife functions of impacted wetlands.
- All culverts and bridges at the major stream crossings along the highway corridor (i.e. Cohas Brook, Beaver Brook, Porcupine Brook and Policy Brook) will be examined during final design to determine how a dry-land passage ("shelf") for mammals can be incorporated into the structures. Other culvert crossings for smaller perennial streams will also be examined to ensure there are no blockages to wildlife or fish passage.
- Several measures will be taken during construction to further reduce impacts on wildlife habitat. The amount of land cleared of vegetation will be limited as practical, especially in areas where there are currently only narrow buffer strips between the highway and other human development. Re-vegetation of the land disturbed by construction activities will take place as soon as possible after construction is completed, so that erosion is minimized and wildlife habitat is restored. Brush clearing or tree thinning in forests adjacent to the construction areas will not be proposed.

The Record of Decision made the following commitments with respect to threatened and endangered species:

- Mitigation of impacts to wild lupine south of Exit 3 will focus on relocating these individuals by means of re-seeding or transplantation. A written mitigation plan specific to this population will be completed in consultation with the New Hampshire Natural Heritage Inventory prior to construction.

- A preconstruction study conducted in conjunction with the NHF&GD of potential eastern hognose snake habitat using GIS-level analysis and/or other means will evaluate a sample of known occupied habitats within southern New Hampshire to determine their characteristics. This effort will help identify potential habitat within the project area that might be affected. Construction contractor personnel will be trained to recognize the hognose snake and be informed of its protected status through a cooperative effort of NHDOT and NHF&GD. Procedures for reporting occurrences of the snake will be established to ensure proper response and reporting of the snake, if encountered during construction.

10.3 Methodology

10.3.1 Water Resources

On May 24, 2007, NHDES issued a document entitled Interim Guidance for the Structural Design of Stormwater Best Management Practices Needed to Achieve Results of Pollutant Loading Analyses. NHDOT agreed to strive to design and analyze the permanent stormwater treatment BMPs for the I-93 project in accordance with the new guidance. Key changes to the water resources impact analysis assumptions since the 2004 FEIS as a result of the new guidance include:

- The runoff or Water Quality Volume that needs to be treated increased from the first half-inch to a full inch.
- The analysis needed to include Total Nitrogen (TN) and Total Phosphorus (TP), as specified in the Water Quality Certificate.
- Restrictions on placing the Stormwater Treatment Structures in wetlands

The interim guidance substantially changed the design of the project stormwater treatment BMPs. The number of basins proposed has increased from 50 to approximately 100, and the predominant type of basins has been changed from dry extended detention basins to wet extended detention basins and gravel wetlands to maximize removal efficiencies for TN and TP. NHDOT has been and will continue to coordinate with NHDES regarding the project stormwater treatment BMPs, including NHDES review of design plans and pollutant loading analysis for these structures. While the design of the project stormwater treatment BMPs was ongoing at the time of the preparation of the DSEIS, it is anticipated that sufficient treatment capacity will be provided to meet or exceed the 2004 FEIS and ROD commitments with respect to highway runoff. Where feasible and consistent with other environmental and design considerations, NHDOT will continue to strive to design the stormwater treatment structures in accordance with the NHDES interim guidance. See DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report for a more detailed explanation of stormwater treatment on the project.

10.3.2 Floodplains

On May 17, 2005, the Federal Emergency Management Agency (FEMA) issued a Digital Flood Insurance Rate Map (DFIRM) for Rockingham County, New Hampshire. The DFIRM data is made available to the public through the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT). The 2005 DFIRM replaces the previous paper FIRMs.

As part of the final design process, NHDOT has conducted an update of the I-93 widening floodplain impacts, including the use of the 2005 DFIRM for Rockingham County. It should be noted that mapped FEMA floodplain boundaries typically do not accurately reflect site-specific topography in many locations. Often times the floodplain boundary presented on a FEMA map will cross contours in a manner that is obviously impossible given the estimated flood elevation compared to actual ground elevations. For this reason, NHDOT prepared a "corrected floodplain" boundary for the updated floodplain impact analysis. The corrected floodplain map was developed by incorporating the 2005 DFIRM data with the topographic and roadway data included in project plans. This enabled the identification of areas where the DFIRM flood boundary clearly did not reflect or was inconsistent with the existing topography information. The floodplain boundary was then modified to reflect topographic conditions and the resultant floodplain data was developed into a computer file containing the digital 100-year floodplain and floodway mapping. The corrected floodplain mapping is a more accurate representation of the estimated 100-year floodplain for the project corridor than the unaltered DFIRM data.

10.3.3 Wetland Resources

In 2006, the I-93 corridor wetland boundaries were verified and delineated to just beyond the proposed toe-of-slope or the proposed edge of right-of-way, which ever was furthest. The delineation was based on the three parameter approach, which considers plants, soils and hydrology in the determination of the wetland/upland boundaries, as detailed in the 1987 *Corps of Engineers Wetland Delineation Manual* (ACOE, 1987), and utilized GPS units and field sketches to create revised wetland boundary information on updated base maps.

The 2004 FEIS wetland impact calculations were based on preliminary design information and did not include impacts related to drainage structures since those structures had not yet been designed. As the final design has progressed on the first 11 construction contracts (10418E, 10418I, 10418N, 10418G, 13933C, 14633E, 13933K, 13933F, 14633F, 13933G and 13933D), updated wetlands impacts have been calculated.[1] The updated impact calculations incorporate the results of the 2006 wetland delineations.

10.3.4 Wildlife Resources

For the SEIS, updated information on the occurrence of rare, threatened and endangered species near the I-93 corridor was obtained from the New Hampshire Natural Heritage Bureau on July

[1] Maps and descriptions of the I-93 construction contracts are available on the project website-http://www.rebuildingi93.com/content/maps/breakout/

21, 2008. Information was also requested from USFWS, however no response to the request was received.

The 2004 FEIS commitment to study wildlife crossing structure opportunities during final design has been met. Detailed reports were prepared documenting the characteristics of the existing crossing structures at stream crossings along the corridor, the availability and quality of upstream and downstream habitat at each crossing, and the engineering feasibility of potential wildlife/fish passage enhancements.[2] The specific measures that will be implemented continue to be coordinated with the resource agencies.

10.4 Existing Conditions

10.4.1 Water Resources

Since the 2004 FEIS there has been a substantial increase in the amount of data available to characterize chloride concentrations and loadings in the I-93 corridor as a result of post-FEIS monitoring by NHDOT, NHDES and EPA, TMDL studies for four corridor waterbodies, and chloride surveillance monitoring of streams outside the TMDL watersheds. Updated information on phosphorus concentrations in Canobie Lake and Cobbetts Pond is available from the Volunteer Lake Assessment Program (VLAP).

Chloride Total Maximum Daily Load (TMDL) Studies

Prior to beginning chloride TMDL studies, NHDES, NHDOT, EPA and the U.S. Geological Survey (USGS) developed and agreed to roles and responsibilities, technical tasks, and detailed analysis procedures for all TMDL studies. These procedures are documented in the report entitled *Total Maximum Daily Loads for Chloride for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH Quality Assurance Project Plan* (NHDES, 2006). The TMDL study included the collection of road salt loading information from the State and Municipalities, estimates of road salt loading for private entities, and in-stream chloride concentration, specific conductance, water temperature, and stream flow data for the four chloride impaired waterbodies from 7/1/06 to 6/30/07. The data obtained through the study is analyzed and presented in a document entitled *Data Report for the Total Maximum Daily Loads for Chloride For Waterbodies in the Vicinity of the I-93 Corridor From Massachusetts to Manchester, NH: Policy-Porcupine Brook Beaver Brook Dinsmore Brook North Tributary to Canobie Lake* (NHDES, 2007).

Following an opportunity for public comment on Draft TMDL reports for Beaver Brook, Dinsmore Brook, the north tributary to Canobie Lake, and Policy Brook in 2007, Final TMDL reports were submitted by NHDES to EPA for approval in April 2008. On January 22, 2009, EPA issued a letter to NHDES approving the TMDL reports as meeting the requirements of Section 303(d) of the Clean Water Act and EPA's regulations (40 CFR 130).

[2] *Wildlife/Fish Corridor Enhancements. I-93 Improvements Project Windham to Manchester, New Hampshire.* Prepared by The Smart Associates, Inc. 2007. and *Wildlife and Fish Passage Inspection Report Salem to Manchester, IM-IR-93-1(174)0, 10418-C.* Prepared by The Louis Berger Group, Inc. 2008.

While EPA approves the TMDL reports establishing the total reduction in chloride loadings needed to achieve water quality standards, NHDES is responsible for the implementation of the TMDLs. For the chloride impaired waterbodies in the I-93 corridor, NHDES will prepare an Implementation Plan containing chloride load allocations. The load allocations will be distributed among the various entities responsible for chloride loadings (e.g. NHDOT for roads maintained by the State, individual municipalities for municipal roads, etc.). The individual chloride source entities are allowed to develop their own proposed implementation plans for submission to NHDES, but the load allocations will ultimately be determined by the NHDES Implementation Plan. There will be an opportunity for public comment on the NHDES TMDL Implementation Plan.

TMDL implementation monitoring data for the 2007-2008 and 2008-2009 seasons is provided in the following two reports: *FY08 TMDL Implementation Monitoring Data Report and Quality Assurance Audit for the Total Maximum Daily Loads for Chloride for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Policy-Porcupine Brook, Beaver Brook, Dinsmore Brook, North Tributary to Canobie Lake* (NHDES, August 2008); and *FY09 TMDL Implementation Monitoring Data Report and Quality Assurance Audit for the Total Maximum Daily Loads for Chloride for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Policy-Porcupine Brook, Beaver Brook, Dinsmore Brook, North Tributary to Canobie Lake* (NHDES, October 2009). All of the chloride TMDL related documents referenced in this section are available on the I-93 project website (http://www.rebuildingi93.com/).

Beaver Brook[3]

The Beaver Brook watershed assessed in the TMDL study is 30.33 square miles in size, covering portions of Derry, Londonderry, Auburn and Chester. The waterbody was placed on the 303(d) list in 2006 based on violations of the chronic water quality standard (230 mg/l) in 2004 and 2005. During the 2006-2007 TMDL study data collection, no violations of the chronic water quality standard were recorded; as such, NHDES used data from previous years to establish a load reduction. Based on this data, NHDES estimated that the major sources of chloride loadings in the watershed were parking lots (44 percent or 5,506 tons) and municipal roads (37 percent or 4,703 tons). State roads were estimated to contribute 10 percent (1,290 tons) of total loadings to Beaver Brook. The chloride TMDL for Beaver Brook (using the percent reduction goal method[4]) was set at 9,069 tons of salt per year. In the 2006-2007 season, when chronic violations did not occur, salt imports to the watershed were below the goal (6,380 tons/year) (although violations of the acute standard (860 mg/l) were recorded during the 2006-2007 TMDL study at two monitoring stations located upstream from I-93 (08-SHB, and I93-BVRU03-01)).

During the 2007-2008 season, one violation of the chronic standard was recorded upstream of I-93 (5.3 days at 10A-BVR) and no violations of the chronic standard were recorded downstream

[3] Total Maximum Daily Load (TMDL) Study For Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Beaver Brook in Derry and Londonderry, NH (NHDES, 2008).

[4] The percent reduction goal calculation was based on the reduction in loadings needed to achieve the standards during the "dry" hydrologic condition (e.g.). For detailed technical information on how the percent reduction goal calculations were performed, refer to the Quality Assurance Project Plan (NHDES, 2006).

of I-93. No violations of the acute standard in Beaver Brook were recorded during the 2007-2008 season. During the 2008-2009 season, no violations of the chronic or acute standards were recorded at the two monitored locations (10A-BVR and 09-BVR).

Dinsmore Brook[5]

The Dinsmore Brook watershed is located within the Town of Windham and is 0.55 square miles in size. The waterbody was placed on the 303(d) list in 2006 based on violations of the chronic water quality standard (230 mg/l) through 2005. During the 2006-2007 TMDL study data collection, the chronic standard was exceeded for 68.5 days of the year (18.8 percent) at the monitoring location downstream of I-93 before the Dinsmore Brook empties into Cobbetts Pond (I93-DIN-01), primarily during the period between July and the end of September. The TMDL study estimated that state roads were the largest source of chloride loadings to Dinsmore Brook at 50 percent (81.7 tons), followed by parking lots (26 percent or 43.4 tons) and private roads (21 percent or 34.3 tons). This result is not surprising given the small size of the watershed and that I-93 Exit 3 interchange is located in the watershed. The chloride TMDL for Dinsmore Brook using the percent reduction goal method was set at 126 tons of salt per year, or 24.3 percent less than the 166.5 tons applied in the watershed in the 2006-2007 season.

During the 2007-2008 season, 20 violations of the chronic standard were recorded downstream of I-93 (81.4 days at I93-DIN-01). During the 2008-2009 season, four violations of the chronic standard were recorded (14.5 days at I93-DIN-01). No violations of the acute standard in Dinsmore Brook were recorded during the 2007-2008 or 2008-2009 seasons.

North Tributary to Canobie Lake[6]

The North Tributary to Canobie Lake is located in the Town of Windham and has a watershed area of 0.2 square miles. The North Tributary to Canobie Lake is a sub-watershed of Policy Brook and one implementation plan will be established for both of these watersheds. The waterbody was placed on the 303(d) list in 2006 based on violations of the chronic water quality standard (230 mg/l) in 2003 through 2005. During the 2006-2007 TMDL study data collection, the chronic standard was exceeded for 68.1 days of the year (18.7 percent) at a sampling location (I93-NTC-01) located downstream of I-93 prior to this waterbody emptying into Canobie Lake. State roads, including I-93 were estimated to contribute 84 percent (38.8 tons) of the chloride loadings. However, this figure may be misleading because a water softener was formerly the largest source of salt to the watershed (approximately 55 tons per year) resulting from the discharge of brine, from a community water supply well field directly into a wetland. The brine discharges were stopped in September 2005, but it is likely that large quantities of chloride from past discharges reside in the groundwater. The chloride TMDL for North Tributary to Canobie Lake using the percent reduction goal method was set at 28.1 tons of salt per year, or 39.6 percent less than the 46.5 tons imported in the watershed in the 2006-2007 season.

[5] Total Maximum Daily Load (TMDL) Study For Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Dinsmore Brook in Windham, NH (NHDES, 2008).
[6] Total Maximum Daily Load (TMDL) Study For Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: North Tributary to Canobie Lake in Windham, NH (NHDES, 2008).

The I93-NTC-01 station was not monitored during the 2007-2008 season. During the 2008-2009 season, two violations of the acute standard were recorded, while the chronic standard was not exceeded during the monitoring.

Policy-Porcupine Brook[7]

The Policy-Porcupine Brook watershed is located in the Towns of Salem and Windham and is 10.8 square miles in size. The waterbody was placed on the 303(d) list in 2006 based on violations of the chronic water quality standard (230 mg/l) in 2003 through 2005. During the 2006-2007 TMDL study, the chronic chloride standard was exceeded for 87.7 days of the year (24 percent) at the outlet station for the Policy-Porcupine Brook watershed (Station I93-POL-01V). At station I93-POL-04X, which is upstream of I-93, 66 days were in violation of the chronic standard (18 percent), along with three violations of the acute standard. The TMDL study estimated that the major sources of chloride loadings in the watershed were parking lots (50 percent or 2,426 tons) and municipal roads (27 percent or 1,305 tons). State roads were estimated to contribute nine percent (456 tons) of total loadings to Policy-Porcupine Brook. The chloride TMDL for Policy-Porcupine Brook using the percent reduction goal method was set at 3,635 tons of salt per year, or 24.5 percent less than the 4,814 tons applied in the watershed in the 2006-2007 season.

During the 2007-2008 season, 13 violations of the chronic standard were recorded upstream of I-93 (56.2 days at I93-POL-04X) and 52 violations of the chronic standard were recorded at the outlet station (200.9 days at I93-POL-01V). During the 2008-2009 season 16 violations of the chronic standard were recorded at the outlet station (62.2 days at I93-POL-01V). No violations of the acute standard were recorded in the 2007-2008 and 2008-2009 seasons. The I93-POL-04X station was not monitored during the 2008-2009 season.

NHDOT TMDL Implementation Plan

In May 2009, NHDOT submitted a TMDL implementation plan specific to State highways to NHDES.[8] The objective of the NHDOT implementation plan is to continue to provide reasonably safe highway conditions during winter weather, while addressing the need to reduce salt use in the TMDL watersheds. The NHDOT implementation plan also takes into account the salt loadings from the proposed widening of I-93 to four lanes in each direction, provides an estimated timeline for the implementation of various deicing BMPs, and outlines monitoring procedures to assess NHDOT salt use in comparison to objectives of the plan. The salt load allocations proposed in the NHDOT implementation plan include salt loading savings resulting from a 20 percent improvement in application efficiency over past practices. In addition, the current and future salt loads were compared to an independent variable, vehicle usage (e.g. traffic volumes and vehicle lane miles). The vehicle usage comparison allowed NHDOT to assess the efficiency (how many vehicles are served by the application of salt), by sector (State,

[7] Total Maximum Daily Load (TMDL) Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Policy-Porcupine Brook in Salem and Windham, NH (NHDES, 2008).
[8] Implementation Plan to Increase the Efficiency and Effectiveness of Road Salt Use To Meet Total Maximum Daily Load For Chloride In Water Bodies Along the I-93 Corridor From Salem to Manchester, NH: Beaver Brook, Dinsmore Brook, North Tributary to Canobie Lake and Porcupine-Policy Brook (NHDOT, 2009).

Municipal and Private applicators). The NHDOT TMDL implementation plan report is available on the project website (http://www.rebuildingi93.com/).

Chloride Surveillance Monitoring

On October 19, 2006 NHDOT and NHDES published the *I-93 Expansion Chloride Surveillance Monitoring Plan*. The purpose of the plan was to establish the sampling and analysis procedures for meeting the Section 401 Water Quality Certificate condition (E-6) requiring chloride monitoring outside of the TMDL watersheds. Chloride monitoring involves eight rounds of sampling per year at the following locations:

- NH Route 28 Bypass / Cohas Brook
- Symmes Drive / Little Cohas Brook
- Parmenter Road / Nesenkeag Brook
- Island Pond Road / Taylor Brook
- NH Route 28 / Flatrock Brook
- Church Road / Golden Brook

Since sampling began in June 2007, no violations of the chronic or acute chloride standards have been recorded at any of the chloride surveillance sites. It is not possible to describe long-term trends in chloride concentrations in these streams due to the limited dataset available at this point.

Public Water Supply

The sodium and chloride analysis for the 2004 FEIS identified four public wells with greatest potential for impact. The Plaza-93 wells no longer exist as a result of the Exit 3 lane realignment. Existing sodium and chloride levels and historic trends for the remaining three public wells (Pennichuck Water Works, Yankee Trader and Boumil Grove Condominiums) are summarized below.

With respect to the Pennichuck Water Works wells located along the west side of Canobie Lake, the most recent sampling data (5/28/08) are provided below. [9] The 250 mg/l secondary drinking water standard for chloride was not exceeded during this sampling.

- EPAID#2542030-003 – Chloride: 200 mg/l, Sodium: 66 mg/l
- EPAID#2542030-004 – Chloride: 170 mg/l, Sodium: 34 mg/l
- EPAID#2542030-006 – Chloride: 88 mg/l, Sodium: 21 mg/l

[9] NHDES OneStop Web Geographic Information System (http://www2.des.state.nh.us/gis/onestop/)

The Yankee Trader well (EPAID#2548040) is not used for potable water. As noted by EPA in comments on the DSEIS, historical data from NHDES indicates that chloride levels were above the 250 mg/l secondary standard on two occasions:

- 9/2/97 – Chloride: 360 mg/l, Sodium: 123.2 mg/l
- 7/13/99 – Chloride: 110 mg/l, Sodium: 14.9 mg/l
- 6/4/02 – Chloride: 307 mg/l, Sodium: 106 mg/l

As noted by EPA in comments on the DSEIS, the most recent sampling data available for Boumil Grove Condominium wells in Londonderry (EPAID#1392050) also shows elevated chloride levels:

- 08/04 – Chloride: 239 mg/l, Sodium: 87.2 mg/l

Shallow Groundwater Monitoring Well Tests

At the request of EPA, the NHDOT tested the shallow monitoring wells used to determine groundwater levels for proposed stormwater treatment structures for specific conductivity in fall 2006. Of the 42 wells measured, 6 exceeded an equivalent chronic chloride standard. The exceedances were derived from specific conductance and there was only one round of unverified conductivity sampling. It is generally accepted that there is a correlation between specific conductance and chloride concentrations, although no direct chloride sampling occurred during this effort.[10] The wells that exceeded the equivalent chronic chloride standard were located directly adjacent to the highway and seem to be associated with high load areas, such as infield areas of ramps. One sampling location of note is located down gradient to a long-term uncovered municipal salt pile.

Volunteer Lake Assessment Program (VLAP)

The 2004 FEIS reported VLAP data for Canobie Lake and Cobbetts Pond through 2002. Updated information taking into account VLAP data through 2008 is summarized below.

In Canobie Lake, chlorophyll-a levels and lake transparency have remained relatively constant since 2002. There is no apparent change in total phosphorus concentrations in Canobie Lake since 2002. Although there has been variation from year to year, the epilimnion (upper layer) phosphorus concentration in 2008 (7.2 µg/l) was nearly identical to 2002 concentration (7.0 µg/l). Hypolimnion (lower layer) phosphorus concentrations appear to have decreased since 2002, from 19 µg/l to 13 µg/l in 2008.

In Cobbetts Pond, chlorophyll-a levels have varied considerably from year to year since 2002. High levels of chlorophyll-a were recorded in 2004 and 2005, but in 2006 declined to the 2002 levels. Lake transparency was lower than 2002 levels in 2003, 2004, and 2005, but substantially higher than 2002 levels in 2006, in contrast to the long term trend. Phosphorus concentrations

[10] Other factors, such as iron, can also affect specific conductance levels in groundwater.

have decreased in the hypolimnion at both sampling locations on Cobbetts Pond. Phosphorus concentrations have increased slightly in the epilimnion at station 2 (southern section), but remained approximately the same at station 1 (northern section).

- Epilimnion Station 1: 11.5 µg/l in 2002 to 12 µg/l in 2008
- Hypolimnion Station 1: 40 µg/l in 2002 to 15 µg/l in 2008
- Epilimnion Station 2: 7 µg/l in 2002 to 13 µg/l in 2008
- Hypolimnion Station 2: 31 µg/l in 2002 to 26 µg/l in 2006

Since the 2004 FEIS, NHDES has classified Cobbetts Pond as eutrophic based on the available water quality monitoring data. Phosphorus sources contributing to the eutrophication of Cobbetts Pond include increased impervious surface cover, lawn fertilizers, malfunctioning septic systems, and the construction of sandy beaches (June 28, 2007 letter from NHDES to Derek Monson, Cobbetts Pond Improvement Association).

Cobbetts Pond Watershed Restoration Plan

Since the 2004 FEIS, Cobbetts Pond has been placed on the 303(d) list due to nutrient loadings. According to the *New Hampshire 2010 Section 305(b) and 303(d) Surface Water Quality Report* (NHDES, 2010) it is listed as impaired for aquatic life support by phosphorus, dissolved oxygen and chlorophyll-A. NHDES and the Cobbetts Pond Improvement Association, with the assistance of a federal grant, are funding the development of a watershed restoration plan for the Cobbetts Pond watershed. The plan will include the identification of pollutant loading sources and necessary reductions in loadings needed to achieve the water quality goals of the plan. The development of the watershed restoration plan will include the following tasks:

- comprehensive review of historic lake data;
- six months of lake and tributary water quality monitoring (scheduled for spring-fall 2009);
- hydrologic and pollutant load modeling;
- development of a prioritized list of potential stormwater improvements in the Cobbetts Pond watershed;
- engineering, permitting and construction of several high priority watershed restoration sites; and
- collaboration with watershed stakeholders through a series of public forums and educational workshops.

10.4.2 Floodplains

The waterbodies with floodplains and floodways delineated have not changed since the 2004 FEIS. However, the exact boundaries of the floodplains and floodways have been corrected based on detailed topographic information for the project corridor. The corrected floodplain boundary does not change the flood elevations reported on the DFIRM, which are generally the same of the previous paper FIRM flood elevations. The corrected floodplain mapping reduces the size of the floodplain in areas affected by 2005 Selected Alternative, as described in Section 10.5.2, below.

10.4.3 Wetland Resources

The 2006 wetland verification and delineation resulted in an increase in the area of wetlands in comparison to the 2004 FEIS wetland boundaries.

10.4.4 Wildlife Resources

The response from NHNHB did not identify any new known occurrences of rare, threatened or endangered species since the 2004 FEIS within the impact area of the 2005 Selected Alternative. The database search noted that Golden Brook may contain the brook floater (*Alasmidonta varicose*), a state-listed mussel. Golden Brook itself is outside the project limits, although two tributaries to Golden Brook originate in the project area.

10.5 Impacts

10.5.1 Water Resources

Since the DSEIS was published, NHDOT has advanced design and analyzed the phosphorus loadings to Cobbetts Pond and Canobie Lake to account for the revised stormwater treatment design using the Schuler Simple Method. The 2005 Selected Alternative is expected to reduce total phosphorus loadings to Cobbetts Pond and Canobie Lake by 32.1 and 11.7 pounds per year, respectively.

The water quality commitments from the 2004 FEIS and ROD remain valid. Any changes in pollutant loadings as a result of the changes in the proposed stormwater treatment practices described in Section 10.3.1 are being done in cooperation with and with concurrence from NHDES. NHDOT will continue to coordinate with NHDES with respect to stormwater management and to ensure that the conditions of the Section 401 Water Quality Certification are met.

The number of roadway lanes proposed as part of the 2005 Selected Alternative (four in each direction) has not changed; therefore the 2004 FEIS analysis and conclusions regarding deicing salt loadings have not changed. For chloride loadings related to deicing salt applications, NHDOT has been implementing the management practices outlined in the Record of Decision and MOA (See Section 10.6.1).

10.5.2 Floodplains

Table 10-1 presents the updated 100-year floodplain impact analysis results using the 2004 FEIS floodplain mapping (1998 FIRM), 2005 DFIRM, and the corrected floodplain mapping. At 19.8 acre-feet, the floodplain impact calculated using the corrected floodplain boundaries is substantially less than the impacts calculated using the uncorrected DFIRM (49.7 acre-feet). The total floodplain impact using the uncorrected DFIRM data (50.0 acre-feet) is similar to the estimated impact using the 2004 FEIS data. As discussed previously (Section 10.3.2), the corrected floodplain impact calculation is the most accurate estimate of floodplain boundaries available, accounting for site specific topography.

In addition to reductions in 100-year floodplain impacts, updated design information indicates a reduction in floodway impacts for the 2005 Selected Alternative. Through avoidance and minimization measures in final design, floodway impacts reported in the 2004 FEIS have been eliminated for the Spicket River, Tributary to Wheeler Pond, and Cohas Brook/Long Pond Brook. The two remaining floodway impacts estimated for the 2005 Selected Alternative are at Beaver Brook (1.9 acre-feet) and Wheeler Pond (0.01 acre-feet). These floodway impacts are less than the floodway impacts predicted for these waterbodies in the 2004 FEIS (2.4 acre-feet for Beaver Brook and 0.05 acre-feet for Wheeler Pond).

Table 10-1
Updated 100-Year Floodplain Impacts

		Floodplain Data Source		
Resource	**Municipality**	**2004 FEIS (1998 FIRM) (acre-feet)**	**2005 Uncorrected DFIRM (acre-feet)**	**Corrected Floodplain (acre-feet)**
Spicket River	Salem	2.4	0	0
Harris Brook Tributary	Salem	6.2	16.8	3.1
Porcupine Brook	Salem	12.5	4.2	0.7
Policy Brook -1	Salem	15.0	1.5	4.2
Policy Brook- 2	Salem	0.5	0.3	1.0
Golden Brook	Windham	1.5	15.6	2.2
Beaver Brook	Derry	4.7	4.7	4.4
Wheeler Pond	Londonderry	1.6	1.6	1.0
Tributary to Wheeler Pond	Londonderry	2.5	2.5	2.2
Cohas/Long Pond Brooks	Manchester	2.8	2.8	1.0
Total		49.7	50.0	19.8

10.5.3 Wetland Resources

For the first eleven construction contracts, the total final design wetland impacts of the 2005 Selected Alternative are about 42.64 acres versus 33.48 acres estimated in the 2004 FEIS and Section 404 permit application. This represents an increase of about 9.17 acres of impacts (approximately 27 percent) for this portion of the project. The majority of the increase is due to a revised delineation of wetlands along the corridor (5.53 acres), with the remainder due to design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping. For this portion of the project the acreage of impacts has increased since the 2004 FEIS. However, the type of impacts and the conclusions of the wetlands impact analysis have not changed. The wetland impacts occur on the edges of the corridor wetland systems and represent only a small percentage of the total wetland acreage within the system and, while representing an incremental loss of wetland area, will not eliminate the functions and values performed by the remaining wetland.

Changes in wetland impacts for the remaining portion of the project contracts are in the process of being calculated, pending analysis once final design has been completed.

10.5.4 Wildlife Resources

Similar to wetland impacts, wildlife habitat impacts are expected to have increased slightly with final design as compared to the 2004 FEIS. Potential increases in total impacts may have occurred as a result of changes in stormwater treatment requirements which increased the size of some BMPs, among other design changes. As noted in the 2004 FEIS, the 2005 Selected Alternative primarily affects the edges of habitat areas adjacent to the existing I-93.

As noted in Section 10.4.3, the New Hampshire Natural Heritage Bureau response memo noted that the state-listed brook floater may occur in Golden Brook. Golden Brook is outside the project limits and is not impacted by the project, however two tributaries of Golden Brook originate in the corridor. The stormwater treatment practices associated with the 2005 Selected Alternative would attenuate the stormwater pollutant loadings, including sediment, to these waterbodies (See Section 10.5.1). Therefore the 2005 Selected Alternative would not have any effect on populations of the brook floater located farther (at least two miles) downstream in Golden Brook itself.

10.6 Mitigation

10.6.1 Water Resources

NHDES guidance addressing the requirements of the Water Quality Certificate (see Section 10.3.1) has substantially increased the number of stormwater treatment structures included in the project. The adoption of this guidance has essentially doubled the number of these structures from the total number detailed in the 2004 FEIS. The guidance also added a requirement to treat nutrients (nitrogen and phosphorous) contained in stormwater. Innovative detention basins, such as gravel wetlands, have been incorporated into the design of I-93 to strive to achieve the goals of the guidance. In cooperation with NHDES, NHDOT is implementing the water resources

commitments made in the Record of Decision, Water Quality Certification, and NHDOT/NHDES MOA. With respect to chlorides, some of the mitigation commitments NHDOT have made are summarized below:

- Provided $560,000 in funding for and participation in four TMDL studies. As part of this effort, a Salt Reduction Workgroup has been established to advise NHDES on the TMDL study and NHDES's Implementation Plan, and to advise and assist with the implementation of required salt load reductions. The workgroup includes representatives from the following organizations: NHDES; NHDOT; EPA; FHWA; the selectmen's office of each town with area in a TMDL watershed; the public works department of each town with area in a TMDL watershed; the University of New Hampshire Technology Transfer (T2) Center; private winter road and parking lot maintenance companies; motorist associations; the State Police; the Southern New Hampshire Regional Planning Commission; the Nashua Regional Planning Commission; and the Rockingham Planning Commission. Representatives from pertinent watershed organizations and state-wide environmental organizations were invited to join the workgroup in 2008. A professional facilitator retained by the Steering Committee and funded by NHDOT leads the Salt Reduction Workgroup meetings. The Salt Reduction Workgroup has published two reports: *Results of the Workgroup Interviews for the I-93 Salt Reduction Workgroup* (Jeffrey H. Taylor & Associates and Center for the Environment, Plymouth State University, 2007) and *Potential Solutions for Reducing Road Salt Use in New Hampshire* (Jeffrey H. Taylor & Associates and Center for the Environment, Plymouth State University, 2008)
- Dedicated $2.5 million to I-93 corridor municipalities to fund salt reduction.
- Committed $700,000 to fund regional salt reduction, including plow driver training (state, local and private), public education and salt use tracking.
- NHDOT has purchased equipment to improve the efficiency of deicing salt applications, including two ground oriented pre-wetting spreaders, four brine trucks, two Road Weather Information System (RWIS) stations and established a Maintenance Decision Support System (MDSS), which is a plow and salting forecasting software system.

10.6.2 Floodplains

As a result of the substantially reduced floodplain impacts ensuing from corrected floodplain mapping and design changes since the 2004 FEIS, NHDOT and FHWA are eliminating the proposed valley storage mitigation areas. Many of these previously identified valley storage areas consist of undeveloped and naturally vegetated areas. Creation of flood storage at these locations would result in wildlife habitat impacts from the extensive tree removal and earthwork required. The impacts associated with constructing the valley storage areas, which were deemed be acceptable in the 2004 FEIS, are no longer prudent due to the substantial reduction in floodplain impacts and consistent with FHWA's mitigation regulations which require that the "proposed mitigation represents a reasonable public expenditure after considering the impacts of the action and the benefits of the proposed mitigation measures" (23 CFR 771.105(d)). During the December 17, 2008 natural resource agency meeting, agreement was obtained from ACOE,

NHDES and the other resource agencies to eliminate these valley storage areas from the mitigation package.

Another change in floodplains mitigation involves the Salem Waste Water Treatment Plant Site (Salem WWTP), which was proposed as a wetland mitigation site and compensatory flood storage area in the 2004 FEIS. NHDOT has determined that the extent of soil and groundwater contamination on the Salem WWTP site is greater than was known at the time of the 2004 FEIS. Due to the uncertainties associated with the site clean up, remediation costs for the 32 acre Salem WWTP could range from $3.5 million up to $16.5 million. Portions of the proposed 7.0-acre floodplain creation area have been determined to be located in an area with some of the greatest groundwater contamination located within the mitigation site. Shifting the proposed floodplain mitigation to avoid the most contaminated area would require impacting an area of undeveloped wooded wetland and upland. Concerns have also been expressed by the NHDES' Waste Management and Water Divisions that the potential would still exist that the existing groundwater contamination could be exposed by any excavation and could potentially migrate through the created area from changes in groundwater flows or by seeping into surface waters. During the December 17, 2008 natural resource agency meeting, agreement was obtained from ACOE, NHDES and the other resource agencies to eliminate the Salem WWTP site from the mitigation package.[11]

The Haigh Avenue site in Salem has been selected for the creation of flood storage to replace the Salem WWTP site. Haigh Avenue is a residential street located on the east side of I-93 just north of the of New Hampshire/Massachusetts border (See Figure 10-1). The residences on Haigh Avenue have experienced severe flooding in the past from Policy Brook and the Spicket River. The Haigh Avenue residents are willing to relocate and requested that the Town of Salem apply for a residential buyout grant from FEMA. The Haigh Avenue site could provide up to 27.7 acre-feet of flood storage, greater than the 22.1 acre-feet of storage than would have been provided at the Salem WWTP site. The Haigh Avenue site is also adjacent to the Policy Brook floodplain that will be impacted by the 2005 Selected Alternative. Additional benefits associated with the Haigh Avenue site would include the conversion of previously developed areas and the removal of impervious surfaces, including driveways, road surfaces, and rooftops. The use of the Haigh Avenue site would also eliminate the need for 1,500 feet of noise barrier and associated fill, and provides a location for the potential enhancement and restoration of Policy Brook.

In fall 2009, FEMA funding was approved for the residential buyout of nine properties on approximately 5.4 acres of Haigh Avenue (referred to as the Haigh Avenue Phase I Site). NHDOT will provide the Town of Salem with matching funds for the FEMA grant in accordance with an agreement executed on March 17, 2010. The Town of Salem is pursuing a second FEMA grant for an additional 14 properties on seven acres on Haigh Avenue (Phase II). A FEMA announcement on successful applications is expected in November 2011.

A second potential replacement site for the Salem WWTP site is the Cluff Crossing site, located south of Rockingham Park Boulevard in Salem (See Figure 10-1). The Cluff Crossing site is

[11] Meeting summary available at:
http://www.nh.gov/dot/org/projectdevelopment/environment/units/projectdevelopment/nracrmeetings.htm

presently the location of a 27 acre mitigation site (Site ID #30) with 21 acres in preserved in its natural state and 6 acres accommodating Town of Salem recreational fields. Preliminary estimates indicate that approximately 12.5 acre-feet of flood storage could be created on these 6 acres adjacent to Policy Brook.

Additional investigations of the suitability of the Haigh Avenue and Cluff Crossing sites for floodplain mitigation will be conducted as necessary. Proposed changes to the project floodplain mitigation commitments have been and will continue to be coordinated with the resource agencies.

10.6.3 Wetland Resources

NHDOT has been and will continue to coordinate with the ACOE, NHDES and other natural resource agencies regarding the increase in the total acreage of wetland impacts. As is typical for projects of this scope, the regulatory agencies understand that wetland impacts will change as the project progresses and have therefore made provisions for updating permits to reflect the actual impacts. As discussed in Section 10.6.2, NHDOT is evaluating replacing the Salem WWTP mitigation site with a new mitigation site in Salem.

The current status of the project wetland mitigation sites is included in DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report. A total of 956 acres of wetland and upland preservation plus 24 acres of wetland creation is proposed.

10.6.4 Wildlife Resources

NHDOT will coordinate with the resource agencies regarding the potential increase in the total acreage of wildlife habitat impacts. Given the extent of the wildlife habitat being provided by the project wetland and upland land preservation sites, no increase in mitigation is warranted. No new threatened or endangered species impacts were identified; therefore no new mitigation is necessary.

NHDOT has examined the feasibility of a dry-land passage ("shelf") being incorporated into the major stream crossings of I-93 at Cohas Brook, Beaver Brook, Porcupine Brook, and Policy Brook. Additionally, other culvert crossings for smaller perennial streams were evaluated to determine if improvements to the culvert conditions would enhance passage of fish and wildlife. For culverts that would need replacement, consideration would be given to over-sizing these new structures, as appropriate, to better facilitate wildlife crossing. For detailed information on the recommended stream crossing improvements, see DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report. Coordination on wildlife crossing issues is ongoing with NHF&G, USFWS, ACOE and NHDES.

10.7 Conclusions

10.7.1 Water Resources

Any changes in pollutant loadings as a result of the changes in the design of the proposed stormwater treatment practices are being done in cooperation with and with concurrence from NHDES. NHDOT will continue to coordinate with NHDES with respect to stormwater management and to ensure that the conditions of the Section 401 Water Quality Certification are met. The number of roadway lanes proposed as part of the 2005 Selected Alternative (four in each direction) has not changed; therefore the 2004 FEIS analysis and conclusions regarding deicing salt loadings have not changed. With the exception of the design changes in the stormwater treatment practices (doubling the number of detention basins), water resources commitments in the Record of Decision, Water Quality Certification, and NHDOT/NHDES MOA remain valid.

10.7.2 Floodplains

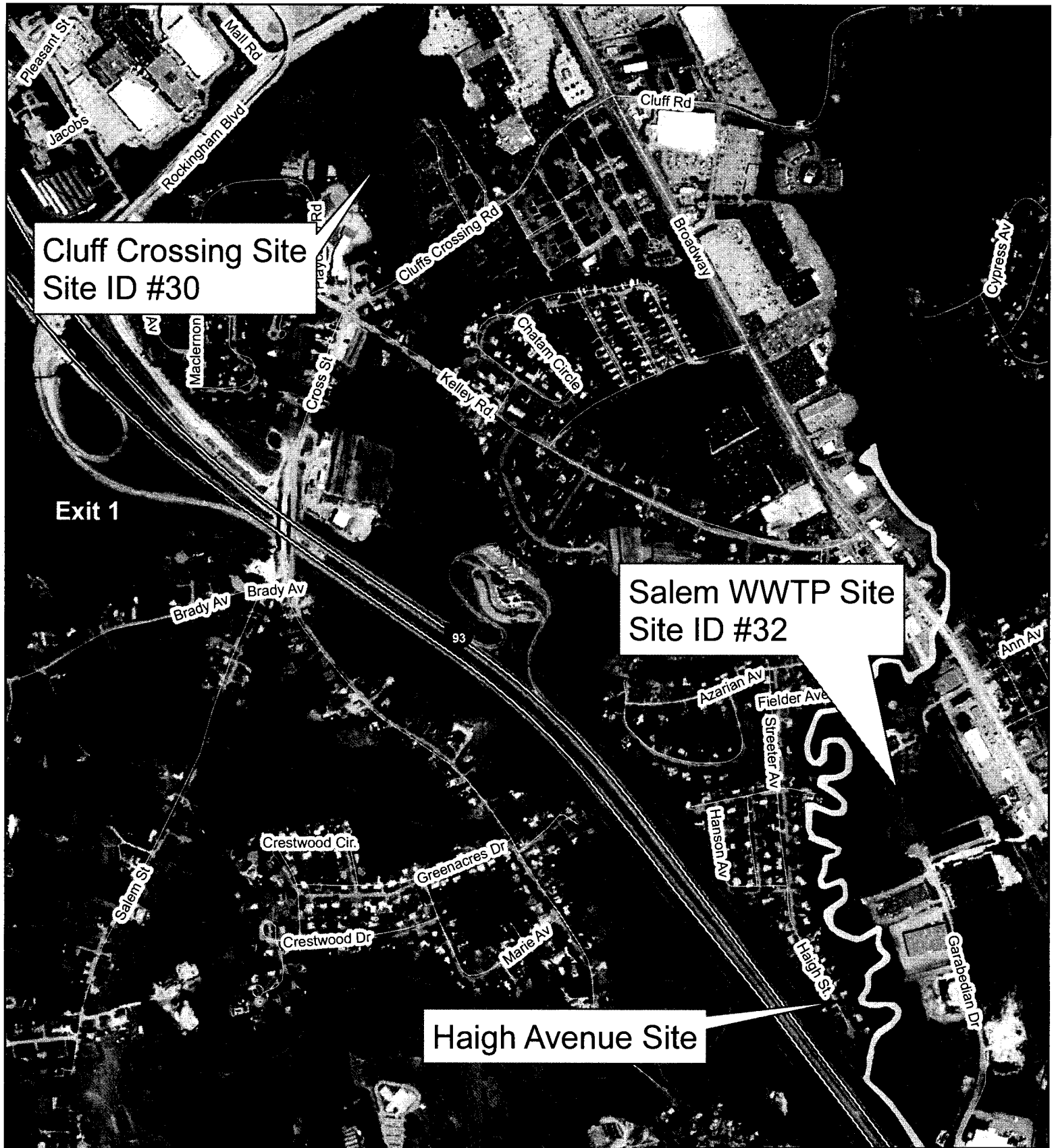
Since the 2004 FEIS, 100-year floodplain impacts have been substantially reduced from 49.7 acre-feet to 19.8 acre-feet as a result of design modifications and updated floodplain mapping, which includes floodway impacts having been reduced from 6 acre-feet to 2 acre-feet. The reductions in estimated floodplain and floodway impacts indicate that reductions in the floodplain mitigation commitments would be appropriate. The valley storage areas proposed in the 2004 FEIS have been removed from the floodplains mitigation package with concurrence from the Natural Resource Agencies. In addition, the Salem Waste Water Treatment Plant site proposed in the 2004 FEIS has been removed from the mitigation package due to the need for extensive hazardous materials remediation. To replace the mitigation planned for the Salem Waste Water Treatment Plant site, NHDOT is planning compensatory mitigation at Haigh Avenue in Salem. A second potential compensatory flood storage area has been identified at Cluff Crossing in Salem. Proposed changes to the mitigation commitments have been and will continue to be coordinated with the resource agencies.

10.7.3 Wetland Resources

The total wetland impacts for the first eleven construction contracts of the 2005 Selected Alternative have increased by about nine acres relative to that estimated in the 2004 FEIS and Section 404 permit application. The majority of the increase is due to a revised delineation of wetlands along the corridor (5.53 acres), with the remainder due to design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping. However, the type of impacts (generally edge impacts) and 2004 FEIS conclusions regarding the wetland impacts has not changed—the impacts are a small proportion of the total area of the affected wetland systems and the functions and values of the remaining wetland area will not be eliminated. Changes in wetland impacts for the remaining portion of the project contracts are in the process of being calculated, pending analysis once final design has been completed. NHDOT has been and will continue to coordinate with resource agencies regarding the increase in the total acreage of wetland impacts.

10.7.4 Wildlife Resources

Although the total acreage of wildlife habitat impacted by the 2005 Selected Alternative may increase slightly as result of final design, the 2004 FEIS conclusions regarding wildlife habitat impacts have not changed. The 2005 Selected Alternative primarily affects the edges of habitat areas adjacent to the existing I-93; it does not cause habitat fragmentation. The update evaluation did not identify any new known occurrences of threatened or endangered species. The mitigation measures identified in the Record of Decision remain valid. Continued coordination on wildlife crossing issues has been ongoing with the natural resource agencies.



Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 10-1

Potential Floodplain Mitigation Sites in Salem

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

11.0 CULTURAL RESOURCES

11.1 Introduction

Cultural resources include archaeological resources and historic architectural resources. Historical properties and archaeological resources that are listed in or are eligible for listing in the National Register of Historic Places are afforded protection by Section 106 of the National Historic Preservation Act (NHPA) and Section 4(f) of the Department of Transportation Act of 1966.

Section 106 of the NHPA requires federal agencies to take into account the effects of their activities and programs on any historic district, site, building, structure, or object that is included, or eligible for inclusion, in the National Register of Historic Places. The resources and the effects on those resources are evaluated by the State Historic Preservation Officer (SHPO) and the federal agencies having jurisdiction, in this case the Federal Highway Administration (FHWA), the lead agency. In New Hampshire, the SHPO is the Director of the New Hampshire Division of Historical Resources (NHDHR). Prior to the approval of the undertaking, the agency must afford the Advisory Council on Historic Preservation (ACHP), established under Title II of the NHPA, a reasonable opportunity to comment on the undertaking.

The procedures followed in the Section 106 review are referred to as the "Section 106 process" and are set forth in regulations issued by the ACHP (36 CFR 800). The NHDHR is charged under RSA 227-C:9, Directive for Cooperation in the Protection of Historic Resources, with coordination of the identification and evaluation of cultural resources in the State of New Hampshire, which includes the review of historical resources under Section 106 and under RSA 227-C:.9 for projects that affect state properties. The NHDHR, in cooperation with the NHDOT and FHWA, has established a method of identification and evaluation to meet the requirements of this historic preservation review. The purposes of this process are to (1) locate and identify historical, architectural, archaeological, and historical archaeological resources within the project's impact area; (2) apply the criteria for evaluation of significance to a resource to determine possible eligibility to the National Register of Historic Places (National Register), if not already eligible or listed; (3) assess the probable effects of a project on resources listed on or eligible for the National Register; and (4) develop appropriate mitigation methods to lessen the project's impact on affected historic properties.

The NHDHR prepared "Procedures for Identifying Cultural Resources That May Be Affected by State or Federal Transportation Projects in New Hampshire" in November 1992. These procedures were partially updated in 2003. This document offers specific guidance for cultural resource survey efforts undertaken as a component of transportation improvement projects for architectural properties. The NHDOT prepared guidelines for archaeological assessments of the project in 2004.

11.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

11.2.1 Archaeological Resources

Beginning in 1989, numerous archaeological studies of the I-93 corridor have been conducted to identify archaeologically sensitive areas and sites. Based on the results of these studies, the 2004 FEIS concluded that the 2005 Selected Alternative would affect 23 sensitive archaeological sites where additional study was study recommended (e.g. Phase II investigations). The Phase II investigations would determine whether which of the 23 sites are eligible for the National Register of Historic Places. If there are sites that are found to be eligible for the National Register that cannot practicably be avoided through design changes, Phase III data recovery would be conducted in accordance with established standards.

11.2.2 Historic Architectural Resources

The area of potential effect surveyed for historic resources for the 2004 FEIS was 500 feet on either side of the existing northbound and southbound lanes, with a minimum width of 1,000 feet. At interchanges the area extended to each side of the existing I-93 right-of-way approximately 2,000 feet along the connecting roadways. Properties near the new park-and-rides at Exits 2, 3 and 5 were also surveyed. Six districts and nine individual properties were determined eligible for the National Register of Historic Places. Through the Section 106 process, the project's effect upon them was determined, and mitigation was proposed. The Section 106 process determined that the 2005 Selected Alternative would have an adverse effect on five historic properties eligible for the National Register (Robert Armstrong House, George Armstrong House, Robert J. Prowse Memorial Bridge, Gearty House, and the stone walls associated with the Searles Castle). The Section 106 process concluded with a Memorandum of Agreement (MOA) between SHPO, NHDOT, and FHWA that specified mitigation measures for the impacted historic properties (See Appendix G of Vol 3 of the 2004 FEIS).

11.3 Methodology

The reevaluation of cultural resources summarizes changes in the project impacts and mitigation commitments since the 2004 FEIS. These changes have been and continue to be coordinated with the NHSHPO, NHDHR, FHWA and NHDOT. Since the 2004 FEIS, meetings were held on the following dates to discuss various cultural resource issues and to provide updates on the status of mitigation commitments:

> 1/13/2005, 4/13/2006, 5/4/2006, 10/5/2006, 11/2/2006, 5/3/2007, 5/10/2007, 7/12/2007, 8/9/2007, 12/6/2007, 1/10/2008, 2/7/2008, 3/13/2008, 4/3/2008, 5/8/2008, 11/13/2008, and 2/12/2009.

An updated Effects Memo incorporating the changes in the impacts of the 2005 Selected Alternative since the 2004 FEIS was signed by NHDOT, FHWA and NHSHPO on July 16, 2009 (See DSEIS Appendix I: Historic Resources Effects Memo Update).

11.4 Existing Conditions

Changes in existing conditions since the 2004 FEIS include further archaeological studies, a clarification of the boundary of the Armenian Settlement Historic District Area (Area SAL – D1) and the identification of a contributing building within the district, and the discovery of two stone culverts potentially eligible for the National Register within the APE along the Manchester and Lawrence Railroad Corridor (M & L Corridor). These changes are discussed in further detail below as part of the updated evaluation of the effects of the 2005 Selected Alternative on historic and archaeological resources.

11.5 Impacts and Mitigation

11.5.1 Archaeological Resources

Supplemental Phase 1B investigations were completed on all archaeological areas identified in the 2004 FEIS. Based on the results of these analyses, the NHDHR and FHWA determined that Phase II investigations would need to be completed at 20 sites. Based on the results of the Phase II testing, Phase III data recovery was recommended at the Hunnewell (John Dinsmore) Farmstead (27Rk7) in Windham, the Corthell Farmstead (27Rk370) in Londonderry; and the Native American site at the Dickey Plain Site Extension (27Hb216) in Manchester.

The Supplemental Phase II investigation completed in 2008 at the Hunnewell Farmstead revealed that no significant resources are located within the areas that would be impacted by the proposed project. Construction fencing is to be installed at the limits of the construction impact area and along the perimeter of the site prior to construction in the vicinity of the site to prevent any encroachment onto the site. Further historical document research is on-going as part of the final Phase II documentation of the site.

It is anticipated that avoidance of the Dickey Plain site is feasible, and that a Phase III investigation would no longer be required. The site boundaries will be fenced prior to construction. The Phase III investigations of the Corthell Farmstead would occur once the final design construction impact limits have been further refined.

11.5.2 Historic Architectural Resources

Armenian Historic Settlement District

Expansion of the Armenian Settlement Historic District boundaries in April 2006 resulted in an additional property being designated as a contributing resource to the Historic District. The building, located at 2 Brady Avenue in Salem, had been acquired for transportation purposes prior to its designation as a contributing element to the Historic District. Acquisition of the Brady Avenue property (NHDOT Parcel ID S38) was disclosed in the 2002 DEIS and 2004 FEIS. Coordination with NHDHR and FHWA determined that this newly-designated resource would be considered a "post-review discovery" in accordance with 36 CFR 800.13(b). Mitigation for this impact will include documentation of this property following the NH Historic Property Documentation Form, which approximately follows HABS (Historic American

Building Survey) guidelines. Further mitigation for the impacts to the District would entail placing a State Historic Marker across from the Armenian Mt. Ararat Congregational Church on Brady Ave. This marker would describe the historic contribution of the District to the Town of Salem. Additionally, the Armenian Settlement Historic District Area will be more fully defined.

George Armstrong House and Robert Armstrong House

Design modifications in the vicinity of Exit 3 in Windham greatly reduced the proposed impacts to the George Armstrong (2004 FEIS Site ID WND0085) and Robert Armstrong properties (WND0086) located on Range Road. The change in design avoids the two dwellings making their purchase unnecessary. As part of the settlement agreement with the property owner, the NHDOT has stabilized the Robert Armstrong House. Protective easements for the rehabilitation of this house to the Secretary of the Interior Standards have been signed by the owner. Additionally, all but the barn/workshop addition to the George Armstrong House will remain standing. As noted in the MOA, both dwellings will be documented in the NH Historic Property Documentation Form format, which essentially follows the HABS guidelines.

Searles Castle Historic District

The Searles Castle Historic District (WND-D1) wall remnant, located north of NH 111 within the Exit 3 interchange median of I-93, in Windham was documented as a Continuation Sheet to the existing Individual Inventory form for the District as noted in the MOA.

Robert J. Prowse Memorial Bridge

The Robert J. Prowse Memorial Bridge (LON0116) impacts and mitigation have not changed. The bridge is being documented in the NH Historic Property Documentation Form format, which essentially follows the HAER (Historic American Engineering Standards) guidelines. Added to this study is the structural comparison of the Prowse Bridge with three other bridges along I-93. Additional mitigation follows those measures outlined in the MOA.

Manchester and Lawrence Railroad Corridor Stone Culverts

Final design modifications in the Exit 5 interchange area in Londonderry revealed that impacts would occur along the Manchester and Lawrence Railroad Corridor (M & L Corridor). The proposed construction involves two stone culverts. The first culvert is a brick-top stone box located under the corridor west of the proposed Exit 5 southbound off-ramp. Construction is adjacent to, but leaves the culvert in place. The second stone culvert is located under the corridor east of the proposed intersection of Auburn Road and Independence Drive. It will be replaced due to the relocation of Independence Drive onto the M & L Corridor. Based on a review pursuant to 36 CFR 800.4 of the historical and architectural significance of identified resources, NHDHR and FHWA assumed that both stone box culverts were eligible for the National Register of Historic Places. Applying the criteria of effect at 800.5, it was determined that the project would have no adverse effect on the brick-top culvert and an adverse effect on the Independence Drive culvert, resulting in a Section 4(f) impact (see Chapter 15: Draft Section 4(f) Evaluation).

NHDOT will complete a district area form for the other cultural resources along the M & L Corridor in New Hampshire (from the State line to Manchester) to determine the eligibility of the line. At the site of the brick-top culvert, the NHDOT will relocate an underground telephone cable using directional boring rather than trenching, which would affect the culvert. It will protect the brick-top stone box culvert and its immediately associated railroad corridor with orange construction fencing. Heavy machinery will not cross this culvert, and the corridor will be restored over the culvert following construction. Mitigation for the Independence Drive culvert will entail documentation on a NH Historic Property Documentation Form, which follows HAER (Historic American Engineering Record) Standards (See DSEIS Appendix I: Historic Resources Effects Memo Update).

11.6 Conclusions

The cultural resources reevaluation indicates that there have been substantial changes in the impacts of the 2005 Selected Alternative since the 2004 FEIS, including the avoidance of impacts to certain resources and the discovery of additional National Register-eligible resources in the corridor. Changes in the project impacts and mitigation commitments have been and will continue to be coordinated with NHSHPO, NHDHR and FHWA.

12.0 INDIRECT EFFECTS

12.1 Introduction

Indirect effects are defined by the Council on Environmental Quality (CEQ) as "effects which are caused by the action 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 pattern of land use, population density or growth rate, and related effects on air and water or other natural systems, including ecosystems" (40 CFR 1508.8(b)). For transportation projects, induced growth is attributed to changes in accessibility caused by the project that influences the location and/or magnitude of future development (Transportation Research Board, 2002). Typically, induced growth is quantified as the incremental change in future development with the project in comparison to the future without the project (e.g. the No Build Alternative). In general, the widening of existing roadway is less likely to cause induced growth than the construction of a new roadway or interchange (Transportation Research Board, 2002). This is because with an existing road access to an area already has been established and the widening represents merely a marginal and incremental change in access.

This chapter provides a summary of the detailed information in DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report. Since the DSEIS, the indirect effects analysis has been updated with information on developable land by town from recently completed build-out analyses (See Table 12-1).

12.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

12.2.1 Indirect Land Use Impacts

The 2004 FEIS study area for indirect (or secondary) land use effects included the five municipalities where the proposed improvements to I-93 would occur, and 24 other municipalities in the region surrounding the project. The study area boundaries were first recommended by the Executive Oversight Committee of representatives of federal and state agencies and regional planning commissions, and later subject to further consideration by the members of the Delphi Panel (described below and in Section 1.1.2). Two panelists also included population and employment allocations for the towns of Boscawen, Canterbury, and Loudon, located north of the study area. The analysis year for the indirect effects evaluation was the year 2020.

For the 2004 FEIS, a 16 member Delphi Panel was assembled and included individuals familiar with the corridor and the study area who were knowledgeable in the area of real estate, planning, environmental policy, etc. The Delphi Panel was tasked with projecting the potential change in population and employment in the 29-community study area based on their best professional judgment. The panelists were directed to explain the rationale for their estimates in memos that were anonymously presented to the other panelists. After reviewing the work of their peers, the panelists had the opportunity to revise their population and employment estimates. Detailed

information about the Panel's work is included in the "I-93 Manchester to Salem Delphi Panel Analysis Final Report, December 28, 2001 (revised January 22, 2002)" and is summarized in Section 4.12 of the 2004 FEIS.

After two rounds of estimates for both the No Build and Build scenarios, the panelists could not reach consensus. Therefore, the results of the Delphi Technique process were summarized through the calculation of the Panelist's Blended Average Allocation (PBAA)—the average of the median and the mean. The blended average method gives some weight to very high and low outlying values, but gives less weight to these values than using a mean. The PBAA is a convenient measure to consider the opinions of the Panel, but it is important to note that it does not represent a group consensus. The individual panelists' findings represent "informed opinions" which cross a broad spectrum ranging from large additional increases in growth if the highway is widened to no additional increase in growth associated with the widening.

The PBAA population and employment allocations were then used by NHDOT and FHWA as the basis for estimating potential land conversion impacts based on information on average household size, employment density, and average lot sizes. Where available, the land conversion estimates were compared to developable land inventories contained in build-out analyses or master plans.

PBAA presented in the 2004 FEIS estimated that the project may add nearly 41,000 people and almost 22,000 jobs over the No Build Alternative, a five percent difference. The 2004 FEIS concluded that this additional growth could result in the conversion of approximately 19,400 acres of land for residential development, and 500 to 900 acres for commercial and industrial development between 2000 and 2020. In general, estimates based on the PBAA indicated that the largest absolute growth in population and employment would occur in the cities and large towns in the study area (e.g. Londonderry, Manchester, and Derry), while the largest percent increases in growth would occur in the more rural municipalities away from the corridor (e.g. Auburn, Candia, and Atkinson).

12.2.2 Indirect Water Resources Impacts

Surface Water

The 2004 FEIS stated that the potential effects of secondary development on water quality are difficult to assess because so much depends on when, where, and in which watersheds the secondary development will occur. The 2004 FEIS noted that the proposed stormwater treatment practices associated with the 2005 Selected Alternatives could reduce pollutant loadings below existing levels and that this would provide a buffer against possible future increases in pollutant contributions from other sources including secondary development.

The 2004 FEIS qualitatively evaluated the potential for increases in chloride concentrations in streams associated with additional septic systems, water softening treatment, and road salt applications. The 2004 FEIS concluded that given the more stringent state and local regulations adopted in the last decade or two associated with storm water management, septic system design and natural resource protection (i.e., wetland delineation, buffer setbacks, etc.) and with the use

of Best Management Practices (BMPs), present and future development would be expected to produce smaller incremental changes in water quality than previous development.

Groundwater

The 2004 FEIS stated that any potential impacts on water quality in stratified-drift aquifers caused by additional growth associated with the project are likely to be minimal relative to that associated with the existing development and the future development that will have occurred by the time the project is completed. The 2004 FEIS described the areas of intense existing development over transmissive stratified-drift aquifer areas and concluded that the potential effects of the existing development and related pollutant sources are likely to far outweigh any potential effects associated with the secondary development caused by the proposed project.

With respect to water quantity, the 2004 FEIS noted that both the Manchester and Salem water supplies rely on surface water, not groundwater. The Town of Salem is investigating the use of groundwater as an additional water source because demand is approaching supply limits. The 2004 FEIS concluded that the potential secondary growth associated with widening I-93 may help to perpetuate the need for this additional water supply source, but is not likely to adversely affect the quality or recharge aspects associated with this bedrock aquifer since the area under consideration is already protected as part of the Salem Town Forest.

Floodplains

The 2004 FEIS stated that the estimates of land conversion due to both residential and business growth do not provide a meaningful way to estimate future impacts on floodplains. Floodplains are localized on the landscape because they primarily lie along flowing waters. In addition, construction in floodplains is currently regulated at the community level per Federal Emergency Management Agency (FEMA) rules. The 2004 FEIS assumed that there would be minimal involvement of floodplains with any future growth and that any impacts would be required to be appropriately mitigated. Involvement of floodplains with any future growth would also be regulated by existing federal, state and local laws and ordinances.

12.2.3 Indirect Wetland Resources Impacts

The 2004 FEIS evaluated potential indirect effects on wetlands using two methodologies. First, for communities where developable land estimates were available, these estimates were used to determine whether there was sufficient space to accommodate future growth, with the assumption that the developable land indentified in planning documents had already taken into account protection of sensitive resources. Developable land information was available for all of the Massachusetts towns, but for only six of the New Hampshire towns. For the Massachusetts communities, it was concluded that growth would occur as "infill" within already developed or appropriately zoned areas, and hence important natural resources would be protected. Five of the New Hampshire towns had sufficient developable land to grow without affecting sensitive resources. Based on this, the 2004 FEIS concluded that approximately 7,000 acres or 35 percent of the total 20,100 acres of additional development could occur with little or no impact on wetlands.

For the remaining approximately 13,100 acres of land that is potentially vulnerable, a worst-case scenario was calculated for possible indirect wetland impacts. The estimates were based on literature regarding the proportion of the landscape typically covered by wetlands. The impact estimates ranged from 1,310 acres to 2,253 acres. However, the 2004 FEIS noted that these estimates ignore the regulatory protection afforded wetlands under state statutes, town ordinances, and the Clean Water Act. The 2004 FEIS noted that approved permits between 1997 and 2002 authorized about 550 acres of wetland impacts in New Hampshire. Offsetting this loss was the creation of approximately 160 wetland acres and the preservation of another 3,600 acres of wetland and upland. The 2004 FEIS concluded that there would be some wetland loss with or without the project as a result of future development, but this loss would be partially offset by compensatory mitigation requirements.

12.2.4 Indirect Wildlife Resources Impacts

The 2004 FEIS analyzed the potential for indirect wildlife habitat impacts using the same methodology described in Section 12.2.3 for wetlands. The 2004 FEIS concluded that up to 11,000 to 12,000 acres of upland habitat could possibly be affected, in addition to the 1,300 to 2,300 acres of wetland habitat. The 2004 FEIS noted the high level of uncertainty associated with these estimates and that they are strongly influenced by locally controlled land use regulations and policies. With respect to habitat fragmentation, the 2004 FEIS stated that without site-specific information as to where induced development will take place, it is not possible to provide any substantive elaboration on the extent or significance of habitat fragmentation.

12.2.5 Indirect Air Quality Impacts

The 2004 FEIS stated that the impacts associated with potential secondary growth for air quality, such as industrial sources, and future residential and commercial growth cannot be reasonably estimated because of the uncertainty of the size, type, and location of such future development. The 2004 FEIS also noted that expected land use, traffic growth, and transportation projects are typically considered in future emission estimates for the New Hampshire State Implementation Plan and conformity determinations.

12.2.6 Indirect Noise Impacts

The 2004 FEIS stated that noise impacts associated with induced growth cannot be reasonably estimated because the mix of commercial/industrial development as well as its exact location cannot be reasonably estimated.

12.2.7 Record of Decision Commitments/Mitigation

The Record of Decision committed $3.5 million for a Community Technical Assistance Program (CTAP) to help communities in the area influenced by this section of I-93 better deal with and manage growth-related issues. CTAP was envisioned in the 2004 FEIS as a joint effort of state,

local and non-governmental organizations to help communities better manage growth and advance conservation efforts.

The New Hampshire Department of Transportation (NHDOT) has also committed to provide funding of up to $3 million to the NHDES Drinking Water Supply Land Grant Program to be used to purchase property rights to aid in the protection of water quality around Massabesic Lake, which is used to supply drinking water to Manchester, and parts of Derry and Londonderry.

The funding commitments to CTAP and the NHDES Drinking Water Supply Land Grant Program will help enhance the protection of surface water, groundwater, floodplains, wetlands and wildlife habitat from development pressures.

12.3 Methodology

12.3.1 Scenario 1

For Scenario 1, indirect effects related to traffic, air quality and noise were evaluated by incorporating the No Build and Build Delphi PBAA population and employment estimates into the updated New Hampshire Statewide model for the year 2020. Since the Delphi PBAA estimates were made for the 29-community Delphi study area, population and employment levels outside of this study area (e.g. the rest of New Hampshire and portions of Massachusetts, Maine and Vermont) were not changed from the updated model default values for 2020. Section 12.3.2 provides more information on the model update process; also see the New Hampshire Statewide Model documentation, located in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

The land conversion analysis based on the Delphi PBAA was updated for Scenario 1. The land conversion analysis is based on the amount of growth over a certain time period. In order to make the Scenario 1 land conversion estimates comparable to the Scenario 2 estimates, the analysis was revised to cover the period from 2005 to 2020 (instead of 2000 to 2020 as in the 2004 FEIS). The total 2020 population and employment from the Delphi PBAA was assumed. The land conversion analysis was conducted based on the amount of growth between 2005 existing conditions and the 2020 future conditions (a fifteen year period). This approach is reasonable because the focus of the analysis is primarily on potential future growth impacts, not past impacts (e.g. 2000 to 2005).

For some towns, including Londonderry, Salem and Windham, the Delphi PBAA 2020 No Build and Build employment levels are lower than the DSEIS 2005 base year employment levels (see Table 12-3). This may be due to different employment estimate sources and projection methodologies. These towns were assumed to have zero employment related land conversion between 2005 and 2020 under Scenario 1. An example of this approach using the Town of Londonderry is provided below.

Scenario 1 Londonderry Example

In order to determine land conversion impacts under the Build and No Build conditions, the first step is to determine the amount of population and employment growth between 2005 and 2020.

The 2005 OEP population of Londonderry was subtracted from the Scenario 1 2020 No Build population to determine the population growth between 2005 and 2020. The amount of population growth was then used to estimate the residential land conversion for the 2005 to 2020 period.
33,069 (2020 No Build population) - 24,673 (2005 population)- = 8,396 (2005 to 2020 population growth)

The 2005 employment in Londonderry was subtracted from the Scenario 1 2020 No Build employment to determine employment growth between 2005 and 2020. However, since the No Build employment for Londonderry is less than the 2005 employment, the decrease was treated as no change in employment-related land conversion because previously developed land is likely to remain covered by buildings and pavement, not suddenly become undeveloped because of an employment decrease.
11,700 (2020 No Build employment) - 13,506 (2005 employment)- = -1,806 (2005 to 2020 employment change)

The Londonderry example illustrates that the Delphi PBAA employment estimates are substantially different from the more recent estimates prepared for Scenario 2 (employment in Londonderry is expected to increase slightly between 2005 (13,506) and the 2020 No Build condition (13,855) under Scenario 2- see Table 12-9).

The Scenario 1 land conversion analysis was also updated based on changes in the minimum lot size for residences in certain towns, the area of developable land available based on recent build-out analyses, and changes in the proportion of the different types of housing (e.g. single-family, multi-family etc.) in each town.

12.3.2 Scenario 2

As explained in Section 1.3.1, for Scenario 2, a gravity model analysis was conducted using travel time information from the New Hampshire Statewide model and updated population and employment forecasts. Gravity models are used often in transportation and travel modeling. They are based on the observation that the overall attractiveness of an area to potential residents is a function of the capacity of an area for development (vacant developable land in valued and affordable locations) and accessibility to employment and activity centers, among other things. The model produces quantified results that can serve as the basis for assessing land use change.

Accessibility refers to "the number of opportunities available within a certain distance or travel time."[1] As movement becomes less costly, either in terms of time or money, between any two places, accessibility increases. The propensity for interaction between any two places increases as the cost of movement between them decreases. Accessibility can also be understood as the attractiveness of a place of origin (how easy it is to get *from* there from all other destinations) and as a destination (how easy is it is to get *to* there to all other destinations). Consequently, the structure and capacity of the transportation network affect the level of accessibility in a given area. The accessibility of places can have an impact on land value, and hence the use to which land is put. Holding all other factors constant, the gravity model formulation assumes that areas where accessibility increases as a result of a transportation project will be relatively more attractive for development than if the project had not been built.

It is important to understand that within a gravity model analysis, regional population and employment totals do not change as a result of the transportation project—only the location of growth changes. This use of "control totals" is in contrast to the Delphi Panel methodology which did not use control totals. The use of control totals is consistent with professional practice in projecting future demographic conditions. For the SEIS Scenario 2 analysis, this means that the population and employment control totals for the New Hampshire Statewide Model region are the same between the No Build and Build, but the locations of growth are redistributed based on the accessibility analysis. This assumption is supported by the literature regarding the effects of transportation improvements on development. Several recent studies have contained comprehensive reviews of the literature on transportation improvements and regional development.[2] Each of these literature reviews has concluded that in an age where most metropolitan locations are connected by the interstate highway network and other major roadways, roadway improvements, such as a widening, generally do not bring new growth to a region, but instead, influence where growth and development occurs on a local level.

Recent reviews of the literature conclude that:

> Beltways and urban highways more generally do not increase the overall rate of growth [in a region] but may influence where growth occurs and at what densities.[3]

> ...highway projects affect the geographic location of economic activity by advantaging some places while causing firms and persons to shift their location choices away from other places.[4]

---

[1] Susan Hanson, *The Geography of Urban Transportation,* The Guilford Press, New York, 1995, p. 4.

[2] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development,* The Brookings Institution Center on Urban and Metropolitan Policy, 2000; *NCHRP Report 423A, Land Use Impacts of Transportation: A Guidebook,* Transportation Research Board, 1999; NCHRP Report 456, *Guidebook for Assessing the Social and Economic Effects of Transportation Projects,* Transportation Research Board, 2001; NCHRP Report 403, *Guidance for Estimating the Indirect Effects of Proposed Transportation Projects,* Transportation Research Board, 1998.

[3] Susan Handy, "Smart Growth and the Transportation Land Use Connection: What Does the Research Tell Us?" *International Regional Science Review*, Vol 28 pp 146-167, 2005

Studies have found that the effect of highways on land prices has been diminishing over time since early studies of the first segments of the interstate system in the 1950s. Boarnet and Haughwout note that studies have shown that incremental improvements in areas that already possess highway access have reduced the magnitude of the influence of highways on land development activity:

> As more highways are built, and the metropolitan highway network matures, the incremental effect on accessibility from new or improved highways decreases, thus accounting for a smaller change in land prices due to any access premium.
>
> New evidence suggests that metropolitan highway projects still influence land use in the way that theory predicts. The important difference between the new evidence and earlier studies is that the geographic scale of the land use effect appears to be somewhat smaller. A new highway or improvement might importantly reduce travel times in the immediate vicinity of a project, even if the resulting changes in metropolitan-wide transportation accessibility are small. Hence the land use effects of modern highway projects likely operate over a very fine geographic scale, rather close to the project. [5]

For roadway widening projects in particular, the relevant literature suggests that regional total population and employment levels will not change as a result of the project. Indirect land use effects are likely to be focused on shifts in the distribution of future growth, concentrated in areas near the project. These conclusions support the overall framework for the Scenario 2 indirect effects analysis through the use of control totals and a gravity model analysis. It is important to note that transportation is one component in land use decision making, but is not usually the most important component. Other factors include market demand, site suitability, capital availability, economic feasibility, and the regulatory environment.[6] Detailed information on the New Hampshire Statewide Model and the gravity model analysis methodology is provided in DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report.

Overview of the New Hampshire Statewide Model

NHDOT maintains a statewide transportation model in order to systematically plan for future transportation needs. The model is called the "New Hampshire Statewide Travel Model System" or NHSTMS. The purpose of the NHSTMS is to estimate future travel patterns and their effects on transportation infrastructure associated with changes in population and employment in the State. The NHSTMS was developed in 1997, and underwent a substantial updates between 2005 and 2007. Figure 12-1 shows the NHSTMS Traffic Analysis Zones (TAZs) in relation to state

[4] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development,* The Brookings Institution Center on Urban and Metropolitan Policy, 2000.
[5] Marlon G. Boarnet and Andrew F. Haughwout, *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development,* The Brookings Institution Center on Urban and Metropolitan Policy, 2000
[6] Urban Land Institute. Influence of Transportation Infrastructure on Land Use. 2004. http://www.fhwa.dot.gov/planning/tranlanduse.pdf

and county boundaries. There are a total of 499 internal TAZs and 29 external TAZs. The external TAZs are used to represent trips with origins or destinations outside the model area. The model area covers all of New Hampshire, and portions of Massachusetts, Maine, and Vermont.

The model update process included the use of recent baseline and future year population and employment forecasts. The data sources utilized in these updates included 2000 U.S. Census data, 2005 New Hampshire Office of Energy and Planning (OEP) population projections for New Hampshire, the Massachusetts Statewide Travel Demand Forecasting Model, Maine Office of State Planning population projections for York County, New Hampshire Economic and Labor Market Information Bureau employment forecasts, and employment growth rates from the U.S. Department of Commerce, Bureau of Economic Analysis. During the 2005 updates, extensive coordination was conducted with the regional planning commissions in the model area to adjust the employment forecasts based on local knowledge of upcoming developments and conditions. The update process also included changes to the highway and transit networks, and tourist trip purpose modeling, see the New Hampshire Statewide Model Documentation, located in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report, for detailed information.

New Hampshire Population and Employment Control Totals

OEP produces official population forecasts. After extensive discussions with OEP, OEP and NHDOT determined that the OEP's forecasts represent the Build Condition for the SEIS Scenario 2 analysis. In making population projections, OEP assumed that infrastructure, including sufficient highway capacity would exist. OEP planners indicated that population and employment growth surrounding the I-93 corridor would be lower than forecasted due to congestion if the project was not constructed. Therefore, the accessibility analysis was conducted to determine population and employment allocations for the No Build Alternative. The difference in the location of growth between the No Build and Build conditions is the indirect effect of the project. Summaries of the meetings with OEP that led to the decision to use the forecasts as the Build Condition and documentation of OEP's concurrence with this approach are provided in FSEIS Appendix C: Scenario 2 Indirect Effects Analysis Coordination.

OEP's most recent population forecast (October 2007) provides municipal-level population forecasts in five year increments from 2005 to 2030. The OEP municipal forecasts were allocated to TAZs in the New Hampshire portion of the New Hampshire Statewide Model. The methodology used to allocate municipal population forecasts to TAZs is explained in DSEIS Appendix A of the New Hampshire Statewide Model Documentation. The approximate population control total for the entire statewide model (which includes New Hampshire, and portions of Massachusetts, Maine and Vermont) is 6,184,400 for 2020, and 6,478,200 for 2030. The 2030 population represents an increase of about 746,900 persons or 13.0 percent from the 2005 population of the model region.

OEP does not produce municipal-level employment forecasts. The New Hampshire Economic and Labor Market Information Bureau (ELMI) produces statewide and county-level employment forecasts. The most recent county-level forecast covers the years 2004 to 2014. There are no official State forecasts for employment beyond 2014. Future TAZ-level employment in the New Hampshire portion of the statewide model was adjusted based on the most recent OEP

population forecasts, anticipating that employment and population would maintain the same proportion to each other as they do in the forecasts prepared for the New Hampshire Statewide Model 2005-2007 base year updates, which included coordination and adjustments based on input from the RPCs. The employment control total for the entire statewide model region (which includes New Hampshire, and portions of Massachusetts, Maine and Vermont) is approximately 3,453,200 for 2020 and 3,648,700 for 2030. The 2030 employment forecast represents an increase of about 493,800 jobs or 15.7 percent from the 2005 employment of the model region.

Accessibility Index and No Build Population and Employment Allocations

The New Hampshire Statewide Model was used to calculate the relative accessibility of each TAZ to jobs in all other TAZs in the model using the No Build and Build transportation networks. Chapter 3: Alternatives, Section 3.2.1 provides a listing of other reasonably foreseeable transportation projects included in the No Build transportation network. The difference in the transportation network between the No Build and Build Alternatives is that the Build Alternative network includes the additional capacity associated with widening I-93 to four lanes in each direction. Based on these accessibility indexes, the model was used to reallocate the Build (OEP) population and employment for the No Build Alternative. TAZs that would be relatively less accessible without the project would be relatively less attractive to future development under the No Build Alternative. The increment between the No Build and Build population and employment allocations is the indirect effect of the project for Scenario 2. Detailed information regarding the calculation of the accessibility index is provided in the New Hampshire Statewide Model Documentation (Traffic Written Reevaluation/Technical Report DSEIS Appendix A-2).

Land Conversion Analysis

The land use plans of the study area communities were reviewed for information relevant to the land conversion analysis. Since the 2004 FEIS, Auburn and Candia have changed the minimum lot size allowable for new single-family homes. In Auburn the minimum lot size has decreased from 2.5 acres to 2.0 acres, while in Candia the minimum lot size has increased from 2.5 acres to 3.0 acres.

The area of developable land available has been updated or added to the analysis based on build-out analyses, including those conducted as part of CTAP. Table 12-1 summarizes the source of the developable land estimates used in the indirect effects analysis for the FSEIS.

Table 12-1
Developable Land Estimates

	Developable Land Area (acres, unless otherwise noted)	Source
Allenstown	4,420	CTAP Build-out Analysis (Draft)
Atkinson	-	-
Auburn	5,853	2007 Master Plan
Bedford	9,219 acres residential 695 acres non-residential	CTAP Build-out Analysis (Draft)
Bow	5,998 acres residential 270 acres non-residential	CTAP Build-out Analysis
Candia	1,376 residential dwelling units 250,000 sf commercial	2006 Build-out Analysis
Chester	11,120 acres residential 167 acres non-residential	CTAP Build-out Analysis (Draft)
Concord	12,183	CTAP Build-out Analysis (Draft)
Danville	-	-
Deerfield	21,424	2008 Updated Master Plan
Derry	8,791 acres residential 698 acres non-residential	CTAP Build-out Analysis
Dracut, MA	4,988	2004 FEIS
Dunbarton	10,328	CTAP Build-out Analysis (Draft)
Goffstown	14,226 acres residential 343 acres non-residential	CTAP Build-out Report
Hampstead	-	-
Hooksett	-	-
Lawrence, MA	211	2004 FEIS
Londonderry	6,350	2006 build-out analysis
Manchester	-	-
Methuen, MA	1,023	2007 Master Plan
North Andover/ Andover, MA	7,931	2004 FEIS
Pelham	2,376	NRPC 2005 Region-Wide Build-out Impact Analysis
Pembroke	10,156	CTAP Build-out Analysis (Draft)
Raymond	3,857 residential dwelling units	CTAP Build-out Analysis (Draft)
Salem	2,630	2001 Master Plan
Sandown	900 single family homes	2006 Master Plan
Tewksbury, MA	1,712	2004 FEIS
Windham	-	-

Another input in the land conversion analysis is the proportion of the different types of housing (e.g. single-family, multi-family etc.) in each town. Since the publication of the 2004 FEIS, OEP has updated this housing type information. This information can be found in the 2006 report entitled *Current Estimates and Trends in New Hampshire's Housing Supply*, which uses 2000 Census data to establish a baseline condition and then adds the number of newly constructed housing units based on coordination with municipal officials regarding the issuance of residential building permits.

Indirect Land Use Effects of I-93 Exit 4A

The towns of Derry and Londonderry, NH have proposed the construction of I-93 Exit 4A, a new interchange between the existing Exit 4 and Exit 5. This project is separate from the NHDOT I-93 Improvements project. A Draft EIS for the I-93 Exit 4A Interchange Study Derry-Londonderry project was published in July 2007. The purpose of the project includes "providing improved Interstate access for commercial and industrially-zoned lands near NH Route 28 in both Derry and Londonderry, thus allowing for the planned and orderly development of such lands to further locally-defined economic development goals and tax base diversification."(Exit 4A DEIS, Page 1-3). The possible construction of I-93 Exit 4A and the associated connector roadway to Folsom Road in Derry, near its intersection with North High Street, would provide access to land for commercial/industrial development on the east side of I-93.

The Exit 4A project was not included in the 2005 New Hampshire Statewide Model update or accounted for in the updated baseline population and employment estimates prepared in coordination with the Regional Planning Commissions during the model update process. However, as a reasonably foreseeable transportation project, Exit 4A is included in both the No Build condition and Build condition traffic modeling for the SEIS. It should be noted that the New Hampshire Statewide Model does not explicitly account for the localized industrial and commercial development that could occur as a result of the construction of Exit 4A.

Through coordination with FHWA, the I-93 SEIS project team decided to update the 2030 analysis year model for the SEIS Scenario 2 (No Build and Build) to account for the potential indirect land use effects of Exit 4A. The year 2030 was used for the analysis based on the reasonable assumption that there would be a time lag between the construction of the Exit 4A project and potential changes in land use. While the Exit 4A project may be completed by 2020, any land use effects of the new interchange would be more likely to occur by 2030.[7] The methodology developed for assessing the indirect land use effects of I-93 Exit 4A is consistent with the overall SEIS Scenario 2 analysis framework because it maintains the county-level No Build and Build condition employment totals. The methodology allows for the additional employment growth estimated for the Exit 4A area to be shifted from other areas in Rockingham County. The process for estimating indirect land use effects of the Exit 4A project in the 2030 analysis year involved the following steps:

1. Define study area boundaries where indirect land use effects would be the most likely based on the availability of appropriately zoned land in the vicinity of Exit 4A.
2. Estimate the total possible employment growth in the study area assuming all of the available land was developed at a density similar to existing industrial employment centers in Londonderry and Derry.
3. Estimate the portion of the total possible employment growth that could occur during the ten year period between 2020 and 2030.
4. Adjust the county-level distribution of employment to account for the expected increase at Exit 4A, while maintaining the SEIS Scenario 2 county-level employment totals. The

[7] See Traffic Written Reevaluation/Technical Report Appendix A-3: Memorandum dated March 4, 2009 from Jamie Sikora, Environmental Programs Manager, Re: *Consideration of Exit 4A in the NH I-93 SEIS*

SEIS Scenario 2 Build condition employment totals are based on New Hampshire Economic and Labor Market Information Bureau (ELMI) forecasts.

For additional information on the methodology and results of the Exit 4A indirect land use effects assessment, refer to the memo entitled *Revised Employment Estimates to Account for the Potential Indirect Land Use Effects of I-93 Exit 4A* (Indirect Effects Written Reevaluation/Technical Report, DSEIS Appendix G-1).

12.4 Impacts

This section is organized as follows:

12.4.1 Indirect Land Use Impacts
12.4.2 Indirect Water Resource Impacts
12.4.3 Indirect Wetland Resource Impacts
12.4.4 Indirect Wildlife Resource Impacts
12.4.5 Indirect Cultural Resource Impacts
12.4.6 Indirect Traffic Impacts
12.4.7 Indirect Air Quality Impacts
12.4.8 Indirect Noise Impacts

Section 12.4.1 contains three major subsections, Scenario 1, Scenario 2 and a comparison between Scenario 1 and Scenario 2.

12.4.1 Indirect Land Use Impacts

Scenario 1

Study Area Development Trends
Table 12-2 provides 2020 Delphi PBAA population information for the 29 communities in the 2004 FEIS study area. The total study area population is 40,629 higher under the Build Alternative than under the No Build Alternative in 2020. The 2020 No Build Alternative population of the study area is 743,044, so the incremental increase in population under the Build Alternative is 5.5 percent. The following municipalities could experience a ten percent or greater No Build condition to Build condition population increase in 2020: Atkinson, Auburn, Bow, Candia, Chester, Dunbarton, Hampstead, Hooksett, Londonderry and Pelham. Seventeen communities could experience a No Build condition to Build condition population difference of over 1,000 persons each, with the largest absolute increase occurring in Londonderry (4,181).

Table 12-3 provides 2020 Delphi PBAA employment information for the 29 communities in the 2004 FEIS study area. The total study area employment is 21,527 higher under the Build Alternative than the No Build Alternative in 2020. The 2020 No Build Alternative employment in the study area is 397,325, so the incremental increase in employment under the Build Alternative is 5.4 percent. The following municipalities could experience a ten percent or greater No Build condition to Build condition employment increase in 2020: Allenstown, Atkinson, Auburn, Bow, Candia, Chester, Deerfield, Dunbarton, Hooksett, Pelham, Sandown and

Windham. Seven communities could experience a No Build condition to Build condition employment difference of over 1,000 jobs each, with the largest absolute increase occurring in Manchester (5,701).

Table 12-2
Scenario 1, 2020
Study Area Population, Build Compared to No Build

	2005 Population	2020 No Build Population	2020 Build Population	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	5,032	5,971	6,472	501	8.39%
Atkinson	6,562	8,573	9,757	1,184	13.81%
Auburn	5,177	7,133	8,865	1,732	24.28%
Bedford	20,738	24,906	27,186	2,280	9.15%
Bow	7,805	9,264	10,237	973	10.50%
Candia	4,110	5,408	6,425	1,017	18.81%
Chester	4,617	5,623	6,369	746	13.27%
Concord	42,221	48,253	50,997	2,744	5.69%
Danville	4,492	5,584	6,085	501	8.97%
Deerfield	4,272	5,543	5,989	446	8.05%
Derry	34,655	44,706	47,672	2,966	6.63%
Dracut, MA	28,971	34,018	34,676	658	1.93%
Dunbarton	2,521	2,765	3,061	296	10.71%
Goffstown	17,804	21,394	23,328	1,934	9.04%
Hampstead	8,642	12,520	13,970	1,450	11.58%
Hooksett	13,240	15,794	17,455	1,661	10.52%
Lawrence, MA	70,919	80,501	81,429	928	1.15%
Londonderry	24,673	33,069	37,250	4,181	12.64%
Manchester	109,966	117,672	121,438	3,766	3.20%
Methuen, MA	44,361	50,917	52,304	1,387	2.72%
North Andover/ Andover, MA	59,875	68,841	70,472	1,631	2.37%
Pelham	12,485	16,973	18,911	1,938	11.42%
Pembroke	7,352	8,866	9,570	704	7.94%
Raymond	10,639	13,723	14,600	877	6.39%
Salem	29,941	37,774	39,587	1,813	4.80%
Sandown	5,851	7,814	8,174	360	4.61%
Tewksbury, MA	29,120	34,392	35,100	708	2.06%
Windham	12,565	15,047	16,294	1,247	8.29%
TOTAL	628,606	743,044	783,673	40,629	5.47%

Table 12-3
Scenario 1, 2020
Study Area Employment, Build Compared to No Build

	2005 Employment	2020 No Build Employment	2020 Build Employment	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	783	610	711	101	16.56%
Atkinson	971	673	875	202	30.01%
Auburn	1,320	825	1,047	222	26.91%
Bedford	13,768	19,932	21,300	1,368	6.86%
Bow	3,089	4,339	5,003	664	15.30%
Candia	728	449	601	152	33.85%
Chester	473	323	400	77	23.84%
Concord	40,546	59,609	61,052	1,443	2.42%
Danville	207	319	340	21	6.58%
Deerfield	502	321	383	62	19.31%
Derry	8,165	9,009	9,876	867	9.62%
Dracut, MA	5,122	9,268	9,651	383	4.13%
Dunbarton	242	214	284	70	32.71%
Goffstown	3,682	4,523	4,913	390	8.62%
Hampstead	2,196	1,870	2,041	171	9.14%
Hooksett	7,999	8,555	9,497	942	11.01%
Lawrence, MA	22,165	38,332	39,583	1,251	3.26%
Londonderry	13,506	11,700	12,583	883	7.55%
Manchester	66,387	82,182	87,883	5,701	6.94%
Methuen, MA	15,775	41,691	43,355	1,664	3.99%
North Andover/ Andover, MA	45,482	59,109	61,349	2,240	3.79%
Pelham	2,091	2,800	3,165	365	13.04%
Pembroke	1,935	2,941	3,095	154	5.24%
Raymond	3,029	3,313	3,464	151	4.56%
Salem	20,919	17,864	19,008	1,144	6.40%
Sandown	242	209	251	42	20.10%
Tewksbury, MA	15,322	14,359	14,696	337	2.35%
Windham	2,974	1,986	2,446	460	23.16%
TOTAL	**299,620**	**397,325**	**418,852**	**21,527**	**5.42%**

Table 12-4 provides the updated estimates of land conversion by town using the Scenario 1 population and employment allocations for 2020. The results show that between 2005 and 2020, residential growth potentially attributed to the 2005 Selected Alternative is expected to convert 19,289 acres of land in the study area, while employment growth could convert 393 to 692 acres, depending on density. The incremental effect of the Build Alternative is in addition to the 46,720 acres of residential development and 2,369 to 4,169 acres of commercial/industrial development between 2005 and 2020 under the No Build Alternative.

Of the communities with developable land estimates available from build-out analyses, the following appear to have the potential for growth pressure to exceed the developable land area in 2020 under current zoning: Pelham in New Hampshire and Lawrence, Methuen and Tewksbury in Massachusetts. In these municipalities, efforts to reuse existing facilities or increases in density could be necessary to accommodate the expected levels of growth. However, it is important to understand that the land conversion analysis results are an estimate of the potential magnitude of indirect effects. The population and employment allocations for the No Build and Build Alternatives under both Scenarios were not constrained by developable land estimates or land use regulations. Actual growth will be subject to land use regulations and availability of developable land, which could decrease impacts in these communities.

For Pelham, the Scenario 1 land conversion methodology appears to overestimate land conversion in comparison to the more detailed build-out analysis conducted for Pelham by the Nashua Regional Planning Commission (NRPC) in 2005. The NRPC analysis estimated that Pelham would have a population of 24,185 at build-out, substantially greater than the 2020 No Build population used in Scenario 1 (16,973). The NRPC analysis estimated that employment in Pelham would be 4,457 at build-out, substantially greater than the 2020 No Build employment used in Scenario 1 (approximately 2,800). The NRPC analysis takes into account additional factors such as Pelham's Elderly Housing Overlay district which allows up to 40 units per acre with 30 percent of land set aside as open space, among several other differences in land conversion methodologies. Based on NRPC's build-out analysis, Pelham should be able to accommodate the level of growth anticipated by 2020 under Scenario 1.

Methuen potentially reaches build-out in 2020, with the Build condition adding 589 acres of residential development and 37 to 67 acres employment development over the No Build.

Lawrence potentially reaches build-out in 2020, with the Build condition adding 59 acres of residential development and 28 to 50 acres of employment development over the No Build.

Tewksbury potentially reaches build-out in 2020, with the Build condition adding 247 acres of residential development over the No Build.

Unlike the 2004 FEIS land conversion analysis, the SEIS Scenario 1 analysis does not predict growth to exceed the developable land area in Bedford. This occurs because the 2005 to 2020 population growth under the updated Scenario 1 analysis (4,168) is less than the 2000 to 2020 population growth estimate used in the 2004 FEIS (6,906).

Table 12-4
Scenario 1, 2005 to 2020
Study Area Land Conversion, Build Compared to No Build

	Total Town Area (acres)	Developable Land Area (acres)	No Build 2005 to 2020			Build 2020		
			Residential Land Conversion (Acres)	Employment Land Conversion Low Density	Employment Land Conversion High Density	Additional Residential Land Conversion	Additional Employment Land Conversion Low Density	Additional Employment Land Conversion High Density
Allenstown	13,167	4,420	472	0	0	252	0	0
Atkinson	7,258	-	1,286	0	0	757	0	0
Auburn	18,438	5,853	1,441	0	0	1,276	0	0
Bedford	21,156	9,219 acres residential 695 acres non-residential	2,871	249	137	1,570	55	30
Bow	18,269	5,998 acres residential 270 acres non-residential	1,521	50	28	1,015	27	15
Candia	19,557	1,376 residential dwelling units 250,000 sf commercial	1,412	0	0	1,106	0	0
Chester	16,718	11,120 acres res. 167 acres non-residential	788	0	0	585	0	0
Concord	43,000	12,183	801	769	424	364	58	32
Danville	7,569	-	684	5	3	314	1	1
Deerfield	33,348	21,424	1,318	0	0	462	0	0
Derry	23,226	8,791 acres residential 698 acres non-residential	3,334	34	19	984	35	19
Dracut, MA	13,699	4,988	1,864	166	91	243	15	8
Dunbarton	20,046	10,328	481	0	0	583	2	1
Goffstown	24,065	14,226 acres residential 343 acres non-residential	1,142	34	19	615	16	9
Hampstead	9,014	-	1,445	0	0	540	0	0
Hooksett	23,761	-	2,230	22	12	1,451	38	21
Lawrence, MA	4,753	211	612	650	359	59	50	28
Londonderry	26,958	6,350	2,566	0	0	1,278	0	0
Manchester	22,355	-	1,256	637	351	614	230	127
Methuen, MA	14,722	1,023	2,784	1,046	577	589	67	37
North Andover/Andover, MA	38,289	7,931	4,121	427	303	750	70	50
Pelham	17,151	2,376	3,714	28	16	1,604	15	8
Pembroke	14,597	10,156	1,081	41	22	503	6	3
Raymond	18,943	3,857 residential dwelling units	1,038	11	6	295	6	3
Salem	16,569	2,630	1,710	0	0	396	0	0
Sandown	9,232	900 single family homes	1,953	0	0	358	0	0
Tewksbury, MA	13,526	1,712	1,840	0	0	247	0	0
Windham	17,772	-	955	0	0	480	0	0
TOTAL	**527,158**	**N/A [1]**	**46,720**	**4,169**	**2,369**	**19,289**	**692**	**393**

1. Total not applicable because developable land data was not available for all towns listed in the column.

Scenario 2

There are two parts to the Scenario 2 analysis, an evaluation of intraregional development shifts within the entire statewide model region and a more detailed evaluation of potential land use impacts at the town level within the 29 community study area.

Intraregional Development Shifts
Table 12-5 summarizes the gravity model population analysis for New Hampshire counties, and the Massachusetts, Maine, and Vermont portions of the statewide model. It is anticipated that changes in accessibility as result of the Build Alternative would produce a proportional change in the county shares of population and employment. The Build Alternative allocation for 2030 results in approximately 11,100 more people in New Hampshire than the No Build allocation, a 0.71 percent increase. Hillsborough, Rockingham, and Merrimack counties would account for the majority of the population allocation difference for New Hampshire. While the relative accessibility of southern New Hampshire would increase slightly as a result of the Build Alternative, the relative accessibility of the Massachusetts portion of the model region would decrease, resulting in approximately 12,900 fewer residents than under the No Build Alternative, a -0.27 percent decrease. Note that consistent with literature review findings, there is no change in the total population of the entire model region as a result of the 2005 Selected Alternative. In other words, unlike Scenario 1, the gravity model used in Scenario 2 accounts for the movement of jobs and people within the model region.

Table 12-6 summarizes the gravity model employment analysis for the New Hampshire counties, and the Massachusetts, Maine, and Vermont portions of the statewide model. The Build Alternative allocation results in approximately 6,300 more jobs in New Hampshire than the No Build allocation, a 0.78 percent increase. As with the population analysis, Hillsborough, Rockingham, and Merrimack counties would account for the majority of the employment allocation difference for New Hampshire. Massachusetts would have approximately 7,000 fewer jobs with the Build Alternative than under the No Build Alternative, a -0.26 percent decrease. Note that consistent with the literature review findings, there is no change in the total number of jobs in the entire model region as a result of the 2005 Selected Alternative.

Table 12-5
Scenario 2, 2030
Statewide Model Estimated Change in Population Based on Accessibility Change, Build Compared to No Build

	2005 Population	2030 No Build Population	2030 Build Population	No Build –Build Population Difference	No Build- Build Percent Difference
Belknap NH	60,600	74,000	74,500	500	0.68%
Carroll NH	47,000	61,700	61,800	100	0.16%
Cheshire NH	77,300	90,000	89,800	-200	-0.22%
Coos NH	34,400	36,100	36,100	0	0.00%
Grafton NH	86,900	100,100	100,600	500	0.50%
Hillsborough NH	402,800	470,100	474,000	3,900	0.83%
Merrimack NH	146,400	179,800	181,900	2,100	1.17%
Rockingham NH	296,700	347,500	351,700	4,200	1.21%
Strafford NH	121,000	143,100	142,900	-200	-0.14%
Sullivan NH	42,100	51,800	52,000	200	0.39%
New Hampshire Total	1,315,200	1,554,100	1,565,200	11,100	0.71%
Massachusetts Portion Total [1]	4,279,100	4,706,600	4,693,700	-12,900	-0.27%
Maine Portion Total [2]	42,500	67,600	68,000	400	0.59%
Vermont Portion Total [3]	94,600	149,900	151,300	1,400	0.93%
Grand Total	**5,731,300**	**6,478,200**	**6,478,200**	**0**	**0.00%**

Notes: Population rounded to nearest hundred.
1. Includes Essex, Middlesex, Suffolk, and Norfolk counties, and part of Worcester County.
2. Includes part of York County
3. Includes parts of Windham, Windsor, Orange, Caledonia, and Essex counties.

Table 12-6
Scenario 2, 2030
Statewide Model Estimated Change in Employment Based on Accessibility Change, Build Compared to No Build

	2005 Employment	2030 No Build	2030 Build	No Build –Build Employment Difference	No Build –Build Percent Difference
Belknap NH	28,400	36,500	36,800	300	0.82%
Carroll NH	23,000	30,400	30,400	0	0.00%
Cheshire NH	36,300	43,400	43,300	-100	-0.23%
Coos NH	15,100	16,800	16,800	0	0.00%
Grafton NH	56,400	68,200	68,600	400	0.59%
Hillsborough NH	216,200	252,700	255,300	2,600	1.03%
Merrimack NH	81,400	103,200	104,400	1,200	1.16%
Rockingham NH	143,700	181,600	183,600	2,000	1.10%
Strafford NH	46,500	58,800	58,700	-100	-0.17%
Sullivan NH	14,200	17,800	17,900	100	0.56%
New Hampshire Total	661,300	809,400	815,700	6,300	0.78%
Massachusetts Portion Total	2,428,000	2,735,000	2,728,000	-7,000	-0.26%
Maine Portion Total	17,300	27,500	27,600	100	0.36%
Vermont Portion Total	48,400	76,800	77,400	600	0.78%
Grand Total	**3,154,900**	**3,648,700**	**3,648,700**	**0**	**0.00%**

Notes: Employment rounded to nearest hundred.
1. Includes Essex, Middlesex, Suffolk, and Norfolk counties, and part of Worcester County.
2. Includes part of York County
3. Includes parts of Windham, Windsor, Orange, Caledonia, and Essex counties.

Study Area Development Trends

Figure 12-2 shows the percent change in population between the 2030 No Build and Build Alternatives at a local level surrounding the I-93 corridor. The map shows that the accessibility effect of the widening is greatest in the towns closest to I-93, leading to Build populations 2 to 5 percent higher than the No Build population in municipalities such as Hooksett, Manchester, Auburn, Londonderry, Derry, and Windham. Figure 12-3 illustrates a similar pattern and magnitude of change for 2030 employment surrounding the I-93 corridor. The results show that the 29 community study area considered in the 2004 FEIS is sufficiently broad for evaluating indirect land use effects for Scenario 2 because it encompasses the areas that would experience the greatest accessibility improvement as a result of the project. The 29 community study area is subset of the larger model region, which includes all of New Hampshire and portions of Massachusetts, Maine and Vermont. The remainder of this section provides detailed population and employment allocations for the study area, and residential and employment land conversion estimates.

Tables 12-7 and 12-8 provide population information for the 2020 and 2030 Scenario 2 analysis years for the 29 communities in the study area. The total study area population is approximately 5,200 higher under the Build Alternative than the No Build Alternative in 2020, growing to a total difference of approximately 9,700 by 2030. The 2030 No Build Alternative population of the study area is 733,930, so the incremental increase in population under the Build Alternative in 2030 is 1.3 percent. The following municipalities could experience a two percent or greater No Build condition to Build condition population increase in 2030: Auburn, Chester, Derry, Hooksett, Londonderry and Windham. Derry, Londonderry and Manchester could experience a No Build condition to Build condition population difference of over 1,000 persons each. For all of the study area municipalities, the additional population growth expected as a result of the 2005 Selected Alternative is small in comparison to the magnitude of growth expected between 2005 and the 2030 No Build condition. For example, the total population of the study area is expected to grow from 628,606 in 2005 to 733,930 in 2030 under the No Build condition, an increase of 105,324. The additional population growth in the study area under Scenario 2 as a result of the 2005 Selected Alternative is approximately 9,700.

Table 12-7
Scenario 2, 2020
Study Area Population, Build Compared to No Build

	2005 Population	2020 No Build Population	2020 Build Population	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	5,032	5,634	5,690	56	0.99%
Atkinson	6,562	7,307	7,327	20	0.27%
Auburn	5,177	5,680	5,789	109	1.92%
Bedford	20,738	23,730	23,946	216	0.91%
Bow	7,805	9,731	9,835	104	1.07%
Candia	4,110	4,516	4,568	52	1.15%
Chester	4,617	5,116	5,217	101	1.97%
Concord	42,221	47,626	47,860	234	0.49%
Danville	4,492	5,057	5,058	1	0.02%
Deerfield	4,272	4,744	4,778	34	0.72%
Derry	34,655	37,960	38,978	1,018	2.68%
Dracut, MA	28,971	36,347	36,319	-28	-0.08%
Dunbarton	2,521	2,881	2,899	18	0.62%
Goffstown	17,804	20,104	20,256	152	0.76%
Hampstead	8,642	9,770	9,808	38	0.39%
Hooksett	13,240	16,159	16,360	201	1.24%
Lawrence, MA	70,919	72,302	72,507	205	0.28%
Londonderry	24,673	27,683	28,436	753	2.72%
Manchester	109,966	116,515	117,620	1,105	0.95%
Methuen, MA	44,361	46,510	46,694	184	0.40%
North Andover/ Andover, MA	59,875	70,171	70,469	298	0.42%
Pelham	12,485	16,822	16,533	-289	-1.72%
Pembroke	7,352	8,332	8,417	85	1.02%
Raymond	10,639	11,843	11,836	-7	-0.06%
Salem	29,941	32,484	32,774	290	0.89%
Sandown	5,851	6,573	6,606	33	0.50%
Tewksbury, MA	29,120	31,785	31,786	1	0.00%
Windham	12,565	13,892	14,095	203	1.46%
TOTAL	**628,606**	**697,274**	**702,461**	**5,187**	**0.74%**

Table 12-8
Scenario 2, 2030
Study Area Population, Build Compared to No Build

	2005 Population	2030 No Build Population	2030 Build Population	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	5,032	5,976	6,071	95	1.59%
Atkinson	6,562	7,707	7,789	82	1.06%
Auburn	5,177	5,999	6,166	167	2.78%
Bedford	20,738	24,978	25,400	422	1.69%
Bow	7,805	10,838	11,032	194	1.79%
Candia	4,110	4,755	4,837	82	1.72%
Chester	4,617	5,449	5,594	145	2.66%
Concord	42,221	50,527	51,021	494	0.98%
Danville	4,492	5,383	5,416	33	0.61%
Deerfield	4,272	5,035	5,095	60	1.19%
Derry	34,655	39,086	40,428	1,342	3.43%
Dracut, MA	28,971	40,196	40,361	165	0.41%
Dunbarton	2,521	3,102	3,140	38	1.23%
Goffstown	17,804	21,474	21,805	331	1.54%
Hampstead	8,642	10,440	10,546	106	1.02%
Hooksett	13,240	17,725	18,099	374	2.11%
Lawrence, MA	70,919	72,364	72,740	376	0.52%
Londonderry	24,673	29,456	30,579	1,123	3.81%
Manchester	109,966	119,764	121,705	1,941	1.62%
Methuen, MA	44,361	47,776	48,164	388	0.81%
North Andover/ Andover, MA	59,875	75,991	76,680	689	0.91%
Pelham	12,485	19,612	19,460	-152	-0.78%
Pembroke	7,352	8,926	9,070	144	1.61%
Raymond	10,639	12,509	12,559	50	0.40%
Salem	29,941	33,926	34,440	514	1.52%
Sandown	5,851	7,007	7,091	84	1.20%
Tewksbury, MA	29,120	33,201	33,280	79	0.24%
Windham	12,565	14,728	15,069	341	2.32%
TOTAL	**628,606**	**733,930**	**743,637**	**9,707**	**1.32%**

Tables 12-9 and 12-10 provide employment information for the 2020 and 2030 Scenario 2 analysis years for the 29 communities in the study area. The total study area employment is 3,298 higher under the Build Alternative than the No Build Alternative in 2020, growing to a total difference of 6,124 by 2030. The 2030 No Build Alternative employment in the study area is 410,509, so the incremental increase in employment under the Build Alternative in 2030 is 1.5 percent. The following municipalities could experience a two percent or greater No Build condition to Build condition employment increase in 2030: Auburn, Chester, Derry, Londonderry and Windham. Manchester, Concord and Londonderry could experience the largest absolute No Build condition to Build condition difference in employment. For all of the study area municipalities, the additional employment growth expected as a result of the 2005 Selected Alternative is small in comparison to the magnitude of growth expected between 2005

and the 2030 No Build condition. For example, the total employment of the study area is expected to grow from 299,620 in 2005 to 410,509 in 2030 under the No Build condition, an increase of 110,889. The additional job growth under Scenario 2 in the study area in 2030 as a result of the 2005 Selected Alternative is 6,124.

Table 12-9
Scenario 2, 2020
Study Area Employment, Build Compared to No Build

	2005 Employment	2020 No Build Employment	2020 Build Employment	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	783	1,624	1,641	17	1.05%
Atkinson	971	992	996	4	0.40%
Auburn	1,320	1,189	1,213	24	2.02%
Bedford	13,768	15,819	15,991	172	1.09%
Bow	3,089	6,870	6,929	59	0.86%
Candia	728	758	768	10	1.32%
Chester	473	450	459	9	2.00%
Concord	40,546	55,681	55,990	309	0.55%
Danville	207	173	173	0	0.00%
Deerfield	502	605	610	5	0.83%
Derry	8,165	10,460	10,825	365	3.49%
Dracut, MA	5,122	5,519	5,507	-12	-0.22%
Dunbarton	242	410	412	2	0.49%
Goffstown	3,682	4,959	4,998	39	0.79%
Hampstead	2,196	2,976	2,988	12	0.40%
Hooksett	7,999	8,521	8,614	93	1.09%
Lawrence, MA	22,165	25,953	26,067	114	0.44%
Londonderry	13,506	13,855	14,268	413	2.98%
Manchester	66,387	82,547	83,487	940	1.14%
Methuen, MA	15,775	17,271	17,383	112	0.65%
North Andover/ Andover, MA	45,482	63,274	63,526	252	0.40%
Pelham	2,091	2,207	2,159	-48	-2.17%
Pembroke	1,935	2,746	2,775	29	1.06%
Raymond	3,029	3,968	3,970	2	0.05%
Salem	20,919	28,882	29,203	321	1.11%
Sandown	242	176	177	1	0.57%
Tewksbury, MA	15,322	19,219	19,224	5	0.03%
Windham	2,974	2,876	2,925	49	1.70%
TOTAL	**299,620**	**379,980**	**383,278**	**3,298**	**0.87%**

Table 12-10
Scenario 2, 2030
Study Area Employment, Build Compared to No Build

	2005 Employment	2030 No Build Employment	2030 Build Employment	No Build-Build Difference	No Build-Build Percent Difference
Allenstown	783	1,760	1,790	30	1.70%
Atkinson	971	1,063	1,076	13	1.22%
Auburn	1,320	1,271	1,308	37	2.91%
Bedford	13,768	16,906	17,220	314	1.86%
Bow	3,089	7,359	7,465	106	1.44%
Candia	728	815	831	16	1.96%
Chester	473	481	494	13	2.70%
Concord	40,546	60,380	61,035	655	1.08%
Danville	207	185	186	1	0.54%
Deerfield	502	650	657	7	1.08%
Derry	8,165	11,481	11,976	495	4.31%
Dracut, MA	5,122	5,942	5,951	9	0.15%
Dunbarton	242	442	447	5	1.13%
Goffstown	3,682	5,337	5,421	84	1.57%
Hampstead	2,196	3,183	3,216	33	1.04%
Hooksett	7,999	9,105	9,273	168	1.85%
Lawrence, MA	22,165	27,108	27,329	221	0.82%
Londonderry	13,506	16,134	16,733	599	3.71%
Manchester	66,387	89,658	91,439	1,781	1.99%
Methuen, MA	15,775	18,908	19,141	233	1.23%
North Andover/ Andover, MA	45,482	68,313	68,878	565	0.83%
Pelham	2,091	2,212	2,174	-38	-1.72%
Pembroke	1,935	2,970	3,019	49	1.65%
Raymond	3,029	4,259	4,281	22	0.52%
Salem	20,919	31,099	31,672	573	1.84%
Sandown	242	189	191	2	1.06%
Tewksbury, MA	15,322	20,228	20,280	52	0.26%
Windham	2,974	3,071	3,150	79	2.57%
TOTAL	**299,620**	**410,509**	**416,633**	**6,124**	**1.49%**

Tables 12-11 and 12-12 provide estimates of land conversion by town using the Scenario 2 population and employment allocations for 2020 and 2030. The results show that between 2005 and 2030 residential growth potentially attributed to the 2005 Selected Alternative is expected to convert 3,633 acres of land in the study area, while employment growth could convert 136 to 240 acres, depending on density. The incremental effect of the Build Alternative is small in comparison to the over 50,000 additional acres of development expected between 2005 and 2030 under the No Build Alternative.

Of the communities with developable land estimates available from build-out analyses, only Pelham NH, Methuen, MA, and Lawrence, MA appear to have the potential for growth pressure

to exceed the developable land area in 2020 under current zoning. For 2030, Methuen, Lawrence, North Andover/Andover, Pelham and Tewksbury appear to have the potential for growth to exceed the developable land area. In these municipalities, efforts to reuse existing facilities or increases in density could be necessary to accommodate the expected levels of growth. However, it is important to understand that the land conversion analysis results are an estimate of the potential magnitude of indirect effects. The population and employment allocations for the No Build and Build Alternatives under both Scenarios were not constrained by developable land estimates or land use regulations. Actual growth will be subject to land use regulations and availability of developable land, which could decrease impacts in these communities.

For Pelham, the Scenario 2 land conversion methodology appears to overestimate land conversion in comparison to the more detailed build-out analysis conducted for Pelham by the Nashua Regional Planning Commission (NRPC) in 2005. The NRPC analysis estimated that Pelham would have a population of 24,185 at build-out, substantially greater than the 2030 No Build population used in the Scenario 2 analysis (19,612). The NRPC analysis estimated that employment in Pelham would be 4,457 at build-out, substantially greater than the 2030 No Build employment used in the Scenario 2 analysis (2,212). The NRPC analysis takes into account additional factors such as Pelham's Elderly Housing Overlay district which allows up to 40 units per acre with 30 percent of land set aside as open space, among several other differences in land conversion methodologies. Based on NRPC's build-out analysis, Pelham should be able to accommodate the level of growth anticipated by 2030 under Scenario 2.

Methuen potentially reaches build-out in 2020, with the Build condition adding 79 acres of residential development and 3 to 5 acres employment development over the No Build. The potential indirect effects of the 2005 Selected Alternative are very small in comparison to the 2020 No Build land conversion estimates of 912 acres of residential development and 33 to 60 acres of employment development.

Lawrence potentially reaches build-out in 2020, with the Build condition adding 13 acres of residential development and 3 to 5 acres of employment development over the No Build. The potential indirect effects of the 2005 Selected Alternative are small in comparison to the 2020 No Build land conversion estimates of 88 acres of residential development and 84 to152 acres of employment development.

With respect to Andover/North Andover, the area appears to reach build-out in the 2030 No Build with 7,407 acres of residential development plus 508 to 716 acres of employment land conversion. The potential indirect effects of the 2005 Selected Alternative are very small in comparison to the No Build growth estimates—317 acres of residential development plus 13 to 18 acres of employment land conversion. Andover and North Andover are addressed as one unit in the update analysis because they comprise a single TAZ in the New Hampshire Statewide Model.

Table 12-11
Scenario 2, 2005 to 2020
Study Area Land Conversion, Build Compared to No Build

	Total Town Area (acres)	Developable Land Area (acres)	No Build 2005 to 2020			Build 2020		
			Residential Land Conversion (Acres)	Employment Land Conversion Low Density	Employment Land Conversion High Density	Additional Residential Land Conversion	Additional Employment Land Conversion Low Density	Additional Employment Land Conversion High Density
Allenstown	13,167	4,420	303	32	20	28	1	0
Atkinson	7,258	-	476	1	0	13	0	1
Auburn	18,438	5,853	371	0	0	80	0	0
Bedford	21,156	9,219 acres residential 695 acres non-res.	2,061	83	46	148	7	3
Bow	18,269	5,998 acres residential 270 acres non-res.	2,008	152	85	109	3	1
Candia	19,557	1,376 residential units 250,000 sf commercial	442	1	1	56	1	0
Chester	16,718	11,120 acres res. 167 acres non-residential	391	0	0	79	0	0
Concord	43,000	12,183	718	610	337	31	13	7
Danville	7,569	-	354	0	0	0	0	0
Deerfield	33,348	21,424	489	4	3	36	0	0
Derry	23,226	8,791 acres res. 698 acres non-residential	1,096	93	51	338	14	9
Dracut, MA	13,699	4,988	2,725	16	9	0	0	0
Dunbarton	20,046	10,328	709	7	4	35	0	0
Goffstown	24,065	14,226 acres residential 343 acres non-res.	731	51	29	49	2	0
Hampstead	9,014	-	420	31	17	14	1	0
Hooksett	23,761	-	2,549	21	12	176	4	2
Lawrence, MA	4,753	211	88	152	84	13	5	3
Londonderry	26,958	6,350	920	14	8	230	17	9
Manchester	22,355	-	1,067	651	359	180	38	21
Methuen, MA	14,722	1,023	912	60	33	79	5	3
North Andover/ Andover, MA	38,289	7,931	4,732	558	396	137	8	6
Pelham	17,151	2,376	3,589	5	3	0	0	0
Pembroke	14,597	10,156	700	33	18	60	1	1
Raymond	18,943	3,857 residential dwelling units	405	38	21	0	0	0
Salem	16,569	2,630	555	321	177	64	13	7
Sandown	9,232	900 single family homes	718	0	0	33	0	0
Tewksbury, MA	13,526	1,712	930	157	87	0	0	0
Windham	17,772	-	511	0	0	78	0	0
TOTAL	**527,158**	**N/A [1]**	**30,972**	**3,092**	**1,798**	**1,814**	**128**	**71**

1. Total not applicable because developable land data was not available for all towns listed in the column.

Table 12-12
Scenario 2, 2005 to 2030
Study Area Land Conversion, Build Compared to No Build

	Total Town Area (acres)	Developable Land Area (acres)	No Build 2005 to 2030			Build 2030		
			Residential Land Conversion (Acres)	Employment Land Conversion Low Density	Employment Land Conversion High Density	Additional Residential Land Conversion	Additional Employment Land Conversion Low Density	Additional Employment Land Conversion High Density
Allenstown	13,167	4,420	475	37	23	48	1	1
Atkinson	7,258	-	732	4	2	52	1	0
Auburn	18,438	5,853	606	0	0	123	0	0
Bedford	21,156	9,219 acres residential 695 acres non-res.	2,920	127	70	291	13	7
Bow	18,269	5,998 acres residential 270 acres non-res.	3,162	172	96	202	4	2
Candia	19,557	1,376 residential units 250,000 sf commercial	701	4	2	89	1	0
Chester	16,718	11,120 acres res. 167 acres non-residential	652	0	0	114	1	0
Concord	43,000	12,183	1,103	800	441	66	26	15
Danville	7,569	-	558	0	0	21	0	0
Deerfield	33,348	21,424	791	6	4	62	0	0
Derry	23,226	8,791 acres res. 698 acres non-residential	1,470	134	74	445	20	11
Dracut, MA	13,699	4,988	4,147	33	18	61	0	0
Dunbarton	20,046	10,328	1,144	9	5	75	0	0
Goffstown	24,065	14,226 acres residential 343 acres non-res.	1,167	66	37	105	3	2
Hampstead	9,014	-	670	40	22	39	1	1
Hooksett	23,761	-	3,917	45	25	327	7	4
Lawrence, MA	4,753	211	92	199	110	24	9	5
Londonderry	26,958	6,350	1,462	106	58	343	24	13
Manchester	22,355	-	1,596	938	517	316	72	40
Methuen, MA	14,722	1,023	1,450	126	70	165	9	5
North Andover/ Andover, MA	38,289	7,931	7,407	716	508	317	18	13
Pelham	17,151	2,376	5,899	5	3	0	-2	-1
Pembroke	14,597	10,156	1,124	42	23	103	2	1
Raymond	18,943	3,857 residential dwelling units	630	50	27	17	1	0
Salem	16,569	2,630	870	410	226	112	23	13
Sandown	9,232	900 single family homes	1,150	0	0	84	0	0
Tewksbury, MA	13,526	1,712	1,424	198	109	28	2	1
Windham	17,772	-	832	4	2	131	3	2
TOTAL	**527,158**	**N/A [1]**	**48,151**	**4,268**	**2,472**	**3,633**	**240**	**135**

1. Total not applicable because developable land data was not available for all towns listed in the column.

Tewksbury potentially reaches build-out in 2030, with the Build condition adding 35 acres of residential development and 1 to 2 acres employment development over the No Build. The potential indirect effects of the 2005 Selected Alternative are very small in comparison to the No Build land conversion estimates of 1,424 acres of residential development and 109 to 198 acres of employment development.

Unlike the 2004 FEIS land conversion analysis, the SEIS Scenario 2 analysis does not predict growth to exceed the developable land area in Bedford because of lower population and employment estimates under the No Build and Build conditions.

Comparison Between Scenario 1 and Scenario 2

Table 12-13 compares 2020 population levels between Scenario 1 and Scenario 2. For the No Build condition, the Scenario 2 population of the study area is 45,770 or 6.2 percent less than the Scenario 1 population. This is due in large part to new population forecasts used in Scenario 2 predicting slower growth than the forecasts available at the time the Delphi PBAA was prepared. The difference between Scenario 1 and Scenario 2 grows to 81,212 or 10.4 percent under the Build condition as a result of the lower growth forecasts and different indirect effects assessment methodologies (e.g. the use of gravity model with control totals for Scenario 2). The difference between Scenario 1 and Scenario 2 varies by town, with the Scenario 2 population being larger than Scenario 1 population in only a few cases (e.g. Dracut, MA). Note that for the study area as whole, the Scenario 2 Build condition population (702,461), is less than the Scenario 1 No Build condition population (743,044).

Table 12-13
2020 Study Area Population, Scenario 1 Compared to Scenario 2

	2020 No Build Population				2020 Build Population			
	Scenario 1	Scenario 2	Difference	Percent Difference	Scenario 1	Scenario 2	Difference	Percent Difference
Allenstown	5,971	5,634	-337	-5.64%	6,472	5,690	-782	-12.08%
Atkinson	8,573	7,307	-1,266	-14.77%	9,757	7,327	-2,430	-24.91%
Auburn	7,133	5,680	-1,453	-20.37%	8,865	5,789	-3,076	-34.70%
Bedford	24,906	23,730	-1,176	-4.72%	27,186	23,946	-3,240	-11.92%
Bow	9,264	9,731	467	5.04%	10,237	9,835	-402	-3.93%
Candia	5,408	4,516	-892	-16.49%	6,425	4,568	-1,857	-28.90%
Chester	5,623	5,116	-507	-9.02%	6,369	5,217	-1,152	-18.09%
Concord	48,253	47,626	-627	-1.30%	50,997	47,860	-3,137	-6.15%
Danville	5,584	5,057	-527	-9.44%	6,085	5,058	-1,027	-16.88%
Deerfield	5,543	4,744	-799	-14.41%	5,989	4,778	-1,211	-20.22%
Derry	44,706	37,960	-6,746	-15.09%	47,672	38,978	-8,694	-18.24%
Dracut, MA	34,018	36,347	2,329	6.85%	34,676	36,319	1,643	4.74%
Dunbarton	2,765	2,881	116	4.20%	3,061	2,899	-162	-5.29%
Goffstown	21,394	20,104	-1,290	-6.03%	23,328	20,256	-3,072	-13.17%
Hampstead	12,520	9,770	-2,750	-21.96%	13,970	9,808	-4,162	-29.79%
Hooksett	15,794	16,159	365	2.31%	17,455	16,360	-1,095	-6.27%
Lawrence, MA	80,501	72,302	-8,199	-10.18%	81,429	72,507	-8,922	-10.96%
Londonderry	33,069	27,683	-5,386	-16.29%	37,250	28,436	-8,814	-23.66%
Manchester	117,672	116,515	-1,157	-0.98%	121,438	117,620	-3,818	-3.14%
Methuen, MA	50,917	46,510	-4,407	-8.66%	52,304	46,694	-5,610	-10.73%
North Andover/ Andover, MA	68,841	70,171	1,330	1.93%	70,472	70,469	-3	0.00%
Pelham	16,973	16,822	-151	-0.89%	18,911	16,533	-2,378	-12.57%
Pembroke	8,866	8,332	-534	-6.02%	9,570	8,417	-1,153	-12.05%
Raymond	13,723	11,843	-1,880	-13.70%	14,600	11,836	-2,764	-18.93%
Salem	37,774	32,484	-5,290	-14.00%	39,587	32,774	-6,813	-17.21%
Sandown	7,814	6,573	-1,241	-15.88%	8,174	6,606	-1,568	-19.18%
Tewksbury, MA	34,392	31,785	-2,607	-7.58%	35,100	31,786	-3,314	-9.44%
Windham	15,047	13,892	-1,155	-7.68%	16,294	14,095	-2,199	-13.50%
TOTAL	**743,044**	**697,274**	**-45,770**	**-6.16%**	**783,673**	**702,461**	**-81,212**	**-10.36%**

Table 12-14 compares 2020 employment between Scenario 1 and Scenario 2. The results show substantial variation by town, highlighting the difference in the data sources and projection methodologies. Scenario 2 employment levels are larger than Scenario 1 for a majority of the study area towns, but are smaller than Scenario 1 for some of the towns with large employment (e.g. Methuen and Lawrence). In total, study area employment under Scenario 2 is 17,345 or 4.4 percent less than Scenario 1 under the No Build condition and 35,574 or 8.5 percent less than Scenario 1 under the Build condition. The employment level differences between Scenario 1 and Scenario 2 are due to different data sources, forecasting methodologies, and different indirect effects assessment methodologies (e.g. the use of gravity model with control totals for Scenario 2). Note that for the study area as whole, the Scenario 2 Build condition employment (383,278), is less than the Scenario 1 No Build condition employment (397,325).

Table 12-14
2020 Study Area Employment, Scenario 1 Compared to Scenario 2

	2020 No Build Employment				2020 Build Employment			
	Scenario 1	Scenario 2	Difference	Percent Difference	Scenario 1	Scenario 2	Difference	Percent Difference
Allenstown	610	1,624	1,014	166.23%	711	1,641	930	130.80%
Atkinson	673	992	319	47.40%	875	996	121	13.83%
Auburn	825	1,189	364	44.12%	1,047	1,213	166	15.85%
Bedford	19,932	15,819	-4,113	-20.64%	21,300	15,991	-5,309	-24.92%
Bow	4,339	6,870	2,531	58.33%	5,003	6,929	1,926	38.50%
Candia	449	758	309	68.82%	601	768	167	27.79%
Chester	323	450	127	39.32%	400	459	59	14.75%
Concord	59,609	55,681	-3,928	-6.59%	61,052	55,990	-5,062	-8.29%
Danville	319	173	-146	-45.77%	340	173	-167	-49.12%
Deerfield	321	605	284	88.47%	383	610	227	59.27%
Derry	9,009	10,460	1,451	16.11%	9,876	10,825	949	9.61%
Dracut, MA	9,268	5,519	-3,749	-40.45%	9,651	5,507	-4,144	-42.94%
Dunbarton	214	410	196	91.59%	284	412	128	45.07%
Goffstown	4,523	4,959	436	9.64%	4,913	4,998	85	1.73%
Hampstead	1,870	2,976	1,106	59.14%	2,041	2,988	947	46.40%
Hooksett	8,555	8,521	-34	-0.40%	9,497	8,614	-883	-9.30%
Lawrence, MA	38,332	25,953	-12,379	-32.29%	39,583	26,067	-13,516	-34.15%
Londonderry	11,700	13,855	2,155	18.42%	12,583	14,268	1,685	13.39%
Manchester	82,182	82,547	365	0.44%	87,883	83,487	-4,396	-5.00%
Methuen, MA	41,691	17,271	-24,420	-58.57%	43,355	17,383	-25,972	-59.91%
North Andover/ Andover, MA	59,109	63,274	4,165	7.05%	61,349	63,526	2,177	3.55%
Pelham	2,800	2,207	-593	-21.18%	3,165	2,159	-1,006	-31.79%
Pembroke	2,941	2,746	-195	-6.63%	3,095	2,775	-320	-10.34%
Raymond	3,313	3,968	655	19.77%	3,464	3,970	506	14.61%
Salem	17,864	28,882	11,018	61.68%	19,008	29,203	10,195	53.64%
Sandown	209	176	-33	-15.79%	251	177	-74	-29.48%
Tewksbury, MA	14,359	19,219	4,860	33.85%	14,696	19,224	4,528	30.81%
Windham	1,986	2,876	890	44.81%	2,446	2,925	479	19.58%
TOTAL	**397,325**	**379,980**	**-17,345**	**-4.37%**	**418,852**	**383,278**	**-35,574**	**-8.49%**

Table 12-15 compares residential land conversion between Scenario 1 and Scenario 2 from 2005 to 2020. No Build condition residential land conversion in the study area under Scenario 2 is 15,748 acres or 33.7 percent less than under Scenario 1. Build condition residential land conversion under Scenario 2 is 33,233 acres or 50.3 percent less than under Scenario 1.

Build condition employment land conversion under Scenario 2 is between 893 and 1,641 acres less than Scenario 1, depending on density (a detailed table comparing Scenario 1 and Scenario 2 employment land conversion is provided in DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report).

Table 12-15
2005 to 2020 Residential Land Conversion, Scenario 1 Compared to Scenario 2

	2005 to 2020 No Build Residential Land Conversion				2005 to 2020 Build Residential Land Conversion			
	Scenario 1	Scenario 2	Difference	Percent Difference	Scenario 1	Scenario 2	Difference	Percent Difference
Allenstown	472	303	-170	-35.89%	724	331	-393	-54.31%
Atkinson	1,286	476	-810	-62.95%	2,043	489	-1,554	-76.06%
Auburn	1,441	371	-1,071	-74.28%	2,718	451	-2,267	-83.41%
Bedford	2,871	2,061	-810	-28.21%	4,441	2,209	-2,232	-50.25%
Bow	1,521	2,008	487	32.01%	2,536	2,117	-419	-16.53%
Candia	1,412	442	-970	-68.72%	2,518	498	-2,019	-80.22%
Chester	788	391	-397	-50.40%	1,373	470	-903	-65.75%
Concord	801	718	-83	-10.39%	1,165	749	-417	-35.75%
Danville	684	354	-330	-48.26%	997	354	-643	-64.47%
Deerfield	1,318	489	-828	-62.86%	1,780	525	-1,256	-70.53%
Derry	3,334	1,096	-2,238	-67.12%	4,318	1,434	-2,884	-66.79%
Dracut, MA	1,864	2,725	860	46.15%	2,108	2,715	607	28.80%
Dunbarton	481	709	228	47.54%	1,063	744	-319	-30.00%
Goffstown	1,142	731	-410	-35.93%	1,757	780	-977	-55.61%
Hampstead	1,445	420	-1,024	-70.91%	1,985	434	-1,550	-78.12%
Hooksett	2,230	2,549	319	14.29%	3,681	2,725	-956	-25.98%
Lawrence, MA	612	88	-524	-85.57%	671	101	-570	-84.89%
Londonderry	2,566	920	-1,646	-64.15%	3,844	1,150	-2,694	-70.08%
Manchester	1,256	1,067	-189	-15.01%	1,869	1,247	-622	-33.28%
Methuen, MA	2,784	912	-1,871	-67.22%	3,373	991	-2,382	-70.63%
North Andover/Andover, MA	4,121	4,732	611	14.83%	4,871	4,869	-1	-0.03%
Pelham	3,714	3,589	-125	-3.36%	5,318	3,350	-1,968	-37.01%
Pembroke	1,081	700	-381	-35.27%	1,583	760	-823	-51.98%
Raymond	1,038	405	-633	-60.96%	1,334	403	-931	-69.78%
Salem	1,710	555	-1,155	-67.53%	2,106	619	-1,488	-70.63%
Sandown	1,953	718	-1,235	-63.22%	2,312	751	-1,560	-67.50%
Tewksbury, MA	1,840	930	-910	-49.45%	2,087	930	-1,157	-55.42%
Windham	955	511	-444	-46.54%	1,435	589	-846	-58.97%
TOTAL	**46,720**	**30,972**	**-15,748**	**-33.71%**	**66,009**	**32,786**	**-33,223**	**-50.33%**

12.4.2 Indirect Water Resource Impacts

Under Scenario 1, up to 19,981 acres (19,289 acres residential plus 692 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2020. Under Scenario 2, up to 3,873 acres (3,633 acres residential plus 240 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2030. The potential indirect effects on water resources associated with future development in the study area under Scenario 2 would be substantially smaller than under Scenario 1 or than those estimated in the 2004 FEIS. Only a portion of the land conversion would represent impervious surface cover. This additional development would increase stormwater runoff; however more stringent regulatory requirements and BMPs now in place are expected to reduce the incremental impact of future development on water resources in comparison to past development (e.g. Env-Wq 1500 Alteration of Terrain, among other regulations). The conclusion of the 2004 FEIS regarding indirect effects on water resources remain valid: the potential indirect land use changes associated with the 2005 Selected Alternative are unlikely to result in substantial changes in non-point source pollutant loadings.

12.4.3 Indirect Wetland Resource Impacts

For Scenario 2, the analysis results indicate indirect land development impacts substantially smaller than those estimated for Scenario 1 or in the 2004 FEIS. Therefore, potential effects on wetland resources associated with future development in the study area under Scenario 2 would be substantially smaller than in the 2004 FEIS (e.g. smaller area of land conversion and potential wetland conversion). The conclusions of the 2004 FEIS regarding indirect effects on wetland resources remain valid. In particular, while some incremental impacts are expected, these impacts will be at least partially offset by compensatory mitigation requirements.

12.4.4 Indirect Wildlife Resource Impacts

For Scenario 2, the analysis results indicate indirect land development impacts substantially smaller than those estimated for Scenario 1 or in the 2004 FEIS. Therefore, potential effects on wildlife resources associated with future development in the study area under Scenario 2 would be substantially smaller than in the 2004 FEIS (e.g. smaller area of land conversion and potential habitat conversion). The conclusions of the 2004 FEIS regarding indirect effects on wildlife resources remain valid.

12.4.5 Indirect Cultural Resource Impacts

Specific indirect effects on cultural resources resulting from land use change cannot be reasonably estimated because of the uncertainty associated with the size, type, and location of such future development in relation to cultural resources. For example, increases in development activity under the Build Alternative may include sites of archaeological importance that could be affected by increases in land consumption and development activity in those locations. However, the specific location of the potential future development and as yet undiscovered archaeological resources are not known. Any incremental effect would be small in comparison to development pressures and land disturbance anticipated under the No Build Alternative. Due

to a smaller area of land consumption, the potential indirect effects on cultural resources would be expected to be smaller under Scenario 2 than under Scenario 1.

12.4.6 Indirect Traffic Impacts

The results of the updated traffic analyses conducted for the SEIS are summarized in Chapter 4: Traffic. The traffic analyses fully incorporate the indirect land use effects of the 2005 Selected Alternative by using the Scenario 1 and Scenario 2 Build and No Build population and employment estimates as inputs in the New Hampshire Statewide Model. Chapter 4: Traffic also summarizes the methods and results of the 2004 FEIS traffic analyses, 2005 existing conditions, changes in Build and No Build traffic conditions, and mitigation. Detailed traffic analysis information is provided in DSEIS Appendix A: Traffic Written Reevaluation/Technical Report.

12.4.7 Indirect Air Quality Impacts

In response to the court order, the Scenario 1 and Scenario 2 traffic analyses have been conducted to explicitly account for the indirect land use effects of the 2005 Selected Alternative. The traffic analysis results are used as inputs to the air quality analyses; therefore the microscale and regional air quality analysis results summarized in Chapter 5: Air Quality reflect the indirect land use effects of the 2005 Selected Alternative on mobile source emissions.

Chapter 5: Air Quality does not evaluate stationary source emissions. The specific form and location of future industrial, residential and commercial growth cannot be reasonably estimated because of the uncertainty of the size, type, and location of such future development. For example, while future employment estimates are available, it is not possible to determine the specific types of businesses involved at the level of detail needed to estimate emissions. Even within general employment categories (e.g. industrial), there is a substantial amount of variation in emissions depending on the specific processes involved. The conclusions of the 2004 FEIS with respect to stationary source emissions have not changed.

12.4.8 Indirect Noise Impacts

In response to the court order, the Scenario 1 and Scenario 2 traffic analyses have been conducted to explicitly account for the indirect land use effects of the 2005 Selected Alternative. The traffic analysis results are used as inputs to the noise analyses; therefore the screening analysis results described in the Chapter 6: Noise reflect the indirect land use effects of the 2005 Selected Alternative on mobile source noise. New stationary noise sources associated with development will be regulated under local noise ordinances. The conclusions of the 2004 FEIS with respect to stationary source noise have not changed.

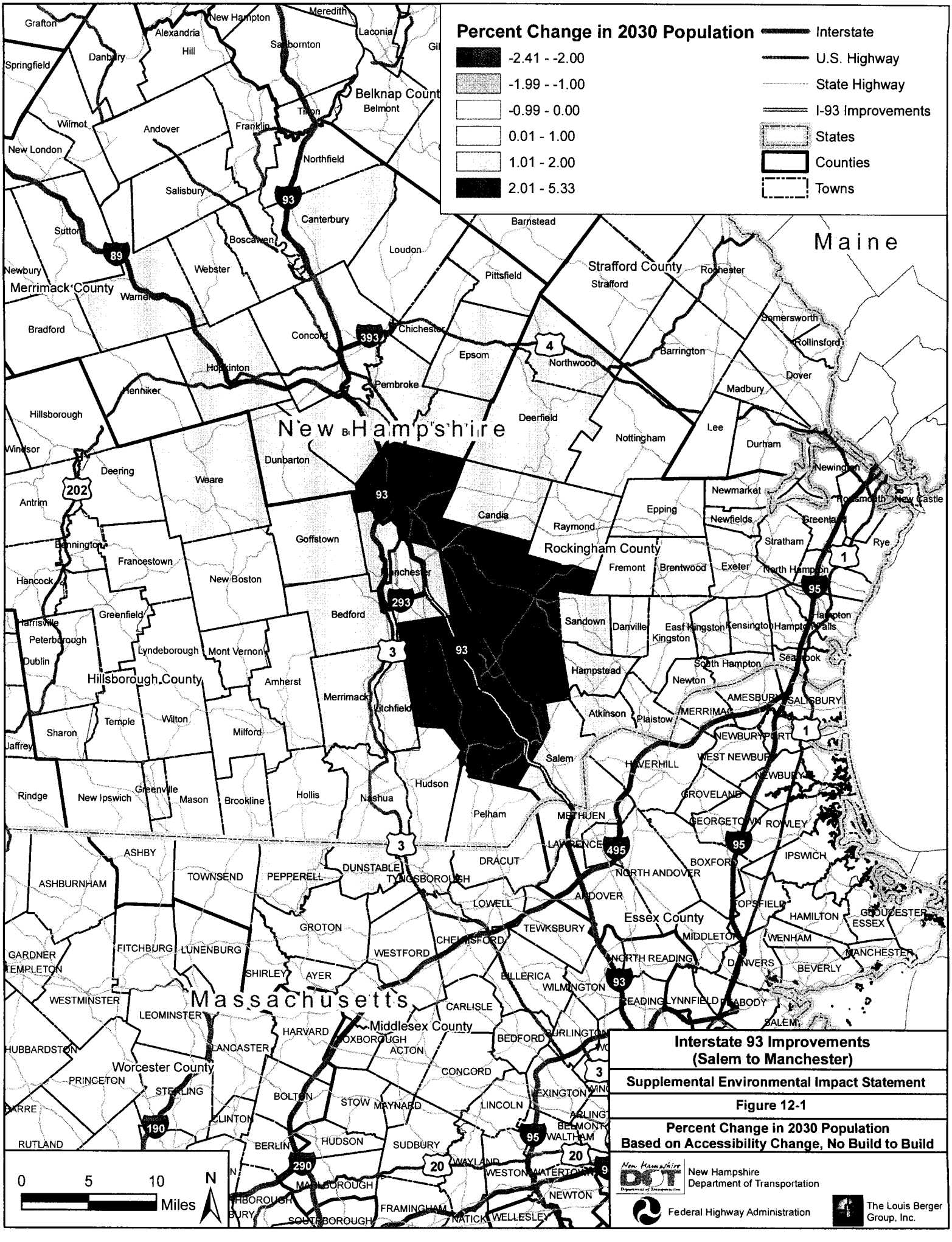
12.5 Mitigation

The Record of Decision commitments from the 2004 FEIS remain valid. Detailed information on CTAP is provided in DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report. The types of activities being funded by CTAP include:

- Local Government Training
- Conservation Commission Institute
- Local Open Space Planning
- Economic Strategic Planning Inventories
- Enhanced GIS-Based Information
- Community Planning Assessments
- GIS Buildout Analysis
- Natural Services Network and Open Space Protection Research
- Regional Grant Writing Assistance
- Assistance in Support of Agricultural Resources
- Inclusionary Zoning Implementation

12.6 Conclusions

Under Scenario 2, the 2005 Selected Alternative will enhance accessibility near I-93, incrementally shifting population and employment from other areas of the model region to the study area communities. However, the Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of future growth will be determined to a large extent by local land use regulations.



Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

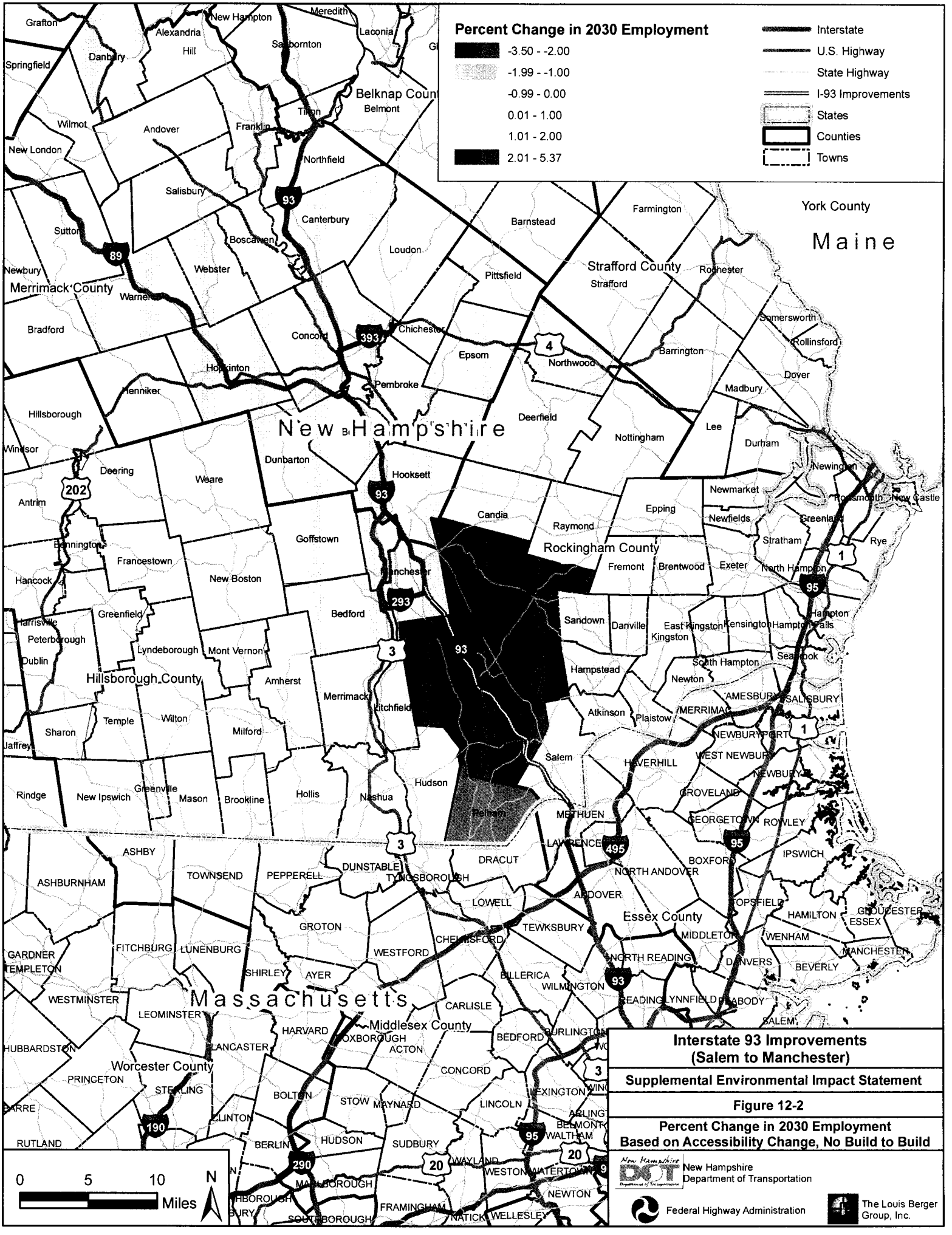
Figure 12-1

Percent Change in 2030 Population Based on Accessibility Change, No Build to Build

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.



Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 12-2

Percent Change in 2030 Employment Based on Accessibility Change, No Build to Build

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

13.0 CUMULATIVE IMPACTS

13.1 Introduction

Cumulative impacts are "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 regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7). According to the Federal Highway Administration's (FHWA) *Interim Guidance: Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process*, cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a proposed project.

This chapter provides a summary of the detailed information in DSEIS Appendix H: Cumulative Impacts Written Reevaluation/Technical Report.

13.2 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The current state of important resources was discussed in the Affected Environment section of the 2004 FEIS. As appropriate, a synopsis of past events that led to the current condition was included. The 2004 FEIS identified transportation projects and other developments of regional importance for consideration in the cumulative impact analysis.

The 2004 FEIS addressed cumulative impacts through the Delphi Panel process. When developing population and employment estimates, the Delphi Panel, which was comprised of realtors, academia, regional planners, local officials, public interest groups, et al., considered the effects of other present and future actions within the study area as evidenced by their estimated increase in population and employment growth under the No Build condition. In preparation for their analysis, the Delphi Panel members were provided with a briefing book containing information related to the study area and local population, housing and employment trends, as well as income data, traffic data, roadway construction activities, maps illustrating development opportunities and constraints, and planning land use regulations. Supplemental information requested by the Panel was provided, including a map of the cities and towns within the commuteshed for the project, population and employment information for communities beyond the basic study area, revised tables from the briefing book, travel times between selected origins and destinations for current and future No Build and Build conditions and sewer and water service availability within the study area.

In addition to the consideration of cumulative impacts through the Delphi Process, the current state of important resources was discussed in the Affected Environment section of the 2004 FEIS. As appropriate, a synopsis of past events that led to the current condition of the resource was included. The 2004 FEIS also identified transportation projects and other developments of regional importance for consideration in the cumulative impact assessment. The 2004 FEIS

cumulative impact assessment concluded that in totality, the other reasonably foreseeable projects in the area combined with the widening of I-93 from Salem to Manchester represent major improvements in infrastructure with long-term effects on the southeastern region of the State of New Hampshire. The 2004 FEIS cumulative impact analysis identified the following potential ramifications of these infrastructure improvements:

- A greatly improved transportation system for the southern tier of NH, facilitating the movement of people, goods, and services with positive implications for employment and the State's overall economy.
- A stronger transportation relationship, both by road (including bus service) and airport, to the Boston, MA regional economy with its resulting economic strength and stability from increased diversity, resulting in a greater range of type of employment choices and a larger percentage of higher paying (technical and managerial) employment opportunities, but making quality education increasingly more important.
- Renewed growth and development pressures from regional sources with which local municipal planning and regulation mechanisms must deal, with assistance from state and regional planning organizations.
- Pressure for increased development density from infill development and redevelopment, particularly along the I-93 corridor, and greatest near its access points.
- Increased pressure for conversion to commercial and industrial land uses, particularly along the I-93 corridor, and greatest near its access points.
- A greater potential for additional separation of land uses within the corridor and the outlying towns, to the extent that Smart Growth principles are not embraced.
- Potential future water shortages relating to larger demand, limits to production and the protection of water resources.
- Potential loss of natural resources, such as open space and farmlands, from development.
- Potential need for additional public facilities to serve a larger residential and business population.
- Increasing property values from higher densities with which to fund additional public facilities, but also potentially increasing the burden on those with fixed incomes.
- The potential loss of those elements that define today's landscape creating a town's perceived small-town rural character, including for example: rural separations between towns, a small building scale, stone walls and narrow rural roads.

13.2.1 Record of Decision Commitments/Mitigation

The Record of Decision committed $3.5 million for a Community Technical Assistance Program (CTAP) to help communities in the area influenced by this section of I-93 better deal with and manage growth-related issues. CTAP was envisioned in the 2004 FEIS as a joint effort of state, local and non-governmental organizations to help communities better manage growth and advance conservation efforts.

The New Hampshire Department of Transportation (NHDOT) has also committed to provide funding of up to $3 million to the New Hampshire Department of Environmental Services (NHDES) Drinking Water Supply Land Grant Program to be used to purchase property rights to

aid in the protection of water quality around Massabesic Lake, which is used to supply drinking water to Manchester, and parts of Derry and Londonderry.

13.3 Methodology

As described in greater detail below, the updated cumulative impact analysis methodology for Scenario 1 and Scenario 2 involved setting study area boundaries, identifying resource conditions and trends, analyzing impacts of other reasonably foreseeable future actions, summarizing the incremental effect of the Build Alternative, and describing potential cumulative impacts.

13.3.1 Study Area Boundaries

The 29 community Delphi Panel study area was used as the study area for the cumulative impact analysis because it encompasses the majority of the indirect land use effects of the project and key natural resource boundaries, including watersheds and unfragmented habitat areas.

13.3.2 Analysis Year

Scenario 2 includes a 2020 analysis year in order to match the analysis year used by the Delphi PBAA and also a 2030 analysis year in order to match the analysis year of the updated New Hampshire Statewide Model (i.e., a 20-year horizon typically used in transportation planning). The SEIS cumulative impact analysis used a 2030 analysis year because the purpose of the analysis was to identify the long-term and additive effects of multiple actions over time. A 2030 analysis year is also close to the 2026 analysis year used in the most recently adopted long-range transportation plans in the region at the time of the preparation of the DSEIS.

13.3.3 Resources for Analysis

Cumulative impact assessment guidance documents for transportation projects recommend that cumulative impact analysis focus on those resources that could be substantially affected by the project in combination with other past, present, and reasonably foreseeable future actions, and resources currently in poor or declining health or at risk even if project effects are relatively small.[1] Most guidance documents indicate that it is acceptable to exclude from the cumulative impact analysis resources that are not expected to experience any direct or indirect effects as a result of the project.

The following resources were identified for inclusion in the cumulative impact analysis based on consideration of the status of each resource, the potential direct and indirect effects of the 2005 Selected Alternative and areas of concern identified through previous project public involvement activities and comments:

[1] See for example: Washington State Department of Transportation, 2008. *Guidance on Preparing Cumulative Impact Analyses*; and Texas Department of Transportation, 2006. *Guidance on Preparing Indirect and Cumulative Impact Analyses*.

- Water resources
- Wetlands
- Wildlife Habitat
- Farmlands
- Cultural Resources

In addition, the assessments presented in Chapter 4: Traffic and Chapter 5: Air Quality constitute complete cumulative impact analyses of those resources. The SEIS traffic analyses have been conducted to explicitly account for the indirect land use effects of the 2005 Selected Alternative, in combination with the expected levels of population and employment growth expected in the future No Build condition. The traffic analysis methodology also accounts for the effects of other reasonably foreseeable transportation projects on traffic patterns. The traffic analysis results are used as inputs to the air quality analyses; therefore the microscale and regional air quality analysis results described in Chapter 5: Air Quality are the cumulative mobile source emissions results from the 2005 Selected Alternative and actions by others.

The noise analysis similarly meets the NEPA requirements for cumulative impact analysis through the use of traffic input data reflecting No Build and Build population and employment levels. The noise analysis includes secondary roadway network receptors, as well as consideration of traffic noise impacts along the I-93 mainline.

13.3.4 Resource Condition and Trends

For each of the resources selected for analysis, information on health, status and trends was gathered from published reports and data available from the U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), New Hampshire Department of Environmental Services (NHDES), New Hampshire Fish and Game Department (NHF&GD), and the U.S. Department of Agriculture (USDA) among others. This inventory meets the NEPA requirement to consider the impacts of past and present actions on resources as part of the cumulative impact analysis.

13.3.5 Impacts of Other Reasonably Foreseeable Future Actions

Cumulative impact analysis includes consideration of the impacts of the other reasonably foreseeable transportation projects and land development attributable to population and employment growth. Other projects and developments need to be included in the analysis if they are "reasonably foreseeable."

Chapter 3: Alternatives, Section 3.2.1 outlines the other transportation projects included as part of the No Build transportation network.

The cumulative impact analysis considers reasonably foreseeable public and private developments by using population and employment forecasts for the No Build and Build conditions. The Build condition forecasts reflect the indirect effect of the 2005 Selected Alternative. The data sources and methodology used in developing population and employment forecasts for the SEIS are described in Chapter 12: Indirect Effects and DSEIS Appendix G:

Indirect Effects Written Reevaluation/Technical Report. Chapter 12: Indirect Effects also provides the results of land conversion estimates by town, based on the population and employment forecasts. As discussed in Chapter 12, the land conversion estimates for Scenario 2 2030 conditions take into account the potential indirect land conversion impacts of development associated with I-93 Exit 4A.

13.3.6 Cumulative Impacts

The cumulative impact assessment for each resource draws conclusions about the aggregate or total impact on each resource as a result of all the actions included in the No Build scenario, plus the direct and indirect impacts of the proposed project. These conclusions regarding cumulative impacts take into account the status of each resource (the result of past and present actions), and countervailing trends, such as restoration programs and environmental regulations that could lead to overall improvements in the status of a resource, even though it is being impacted by development.

13.4 Impacts

13.4.1 Water Resources

Resource Condition and Trends

Figure 13-1 shows the major watersheds (HUC 8) and waterbodies in the study area. The majority of the study area is located within the Merrimack River basin. The Merrimack River forms in New Hampshire from the confluence of the Pemigewasset and the Winnipesaukee Rivers and flows through Massachusetts, where it empties into the Atlantic Ocean in Newburyport.

During the early to mid 20th century, rivers in New England were polluted by untreated municipal and industrial sewage released directly into surface waters. Pulp, paper and other mills were a major water pollution sources. Water quality in the study area has improved dramatically in the past 50 years as a result of economic changes, the Clean Water Act and other programs which have required the treatment of wastewater, eliminated phosphate in detergents, and reduced use of phosphorus fertilizer by farmers. For example, mean annual total phosphorus concentrations in Merrimack River have decreased 38 percent from 0.13 mg/l (1967-1984 average) to 0.08 mg/l (1985-2000 average) (USGS, 2003). Nitrate concentrations in the Merrimack River, while substantially higher than in the early 1900's, have also decreased in the last 20 years.

Current challenges in water quality protection are primarily focused on non-point sources, including runoff from urban development. A key indicator of potential water quality impacts from development is the area of impervious surface cover within a watershed. USGS's *1999-2001 National Water-Quality Assessment for the New England Coastal Basins* concluded that "Degradation of stream ecosystems appears to occur early in the process of watershed urbanization. For example, populations of macroinvertebrate species such as mayflies, stoneflies, and caddisflies, which are sensitive to urban contaminants and habitat disturbance, are

reduced where as little as 3 percent of the land cover in the watershed is urban and population density is less than 300 people per square mile. Stream ecosystems are fully degraded where urban areas cover about 20 percent of the watershed and population densities are about 3,000 people per square mile."

Figure 13-2 shows the general distribution of impervious surfaces within the study area. In urbanized areas, typically at lower elevations, streams are impacted to some extent by existing development. Impervious surfaces are sparse and development related stormwater impacts lower in the more rural, higher elevation portions of the study area.

Chloride is an emerging pollutant of concern in New England. In the Merrimack River the mean-annual chloride concentration increased 760 percent from 2.9 mg/L (1900-17 average) to 24.9 mg/L (1976-95 average) (USGS, 2003). This increase is attributed to deicing salt applications to roadways, parking lots and other impervious surfaces. However, chloride concentrations in the Merrimack River are still well below the chronic standard of 230 mg/l. Some smaller watersheds with a greater proportion of impervious surfaces have the potential for concentrations to exceed the standard. Refer to the water quality section of Chapter 10: Natural Resources for information on the chloride Total Maximum Daily Load (TMDL) studies conducted for four waterbodies in the I-93 corridor. The TMDL implementation plans are being developed for the impaired waterbodies to prescribe load reductions to existing chloride sources necessary to meet the 230 mg/l chronic standard.

New Hampshire Department of Environmental Services (NHDES) oversees regulatory programs and other initiatives designed to protect and restore the quality of the surface and groundwater resources in New Hampshire. These programs include stormwater discharge permits, shoreland protection standards, alteration of terrain permits, drinking water source protection, surface water quality assessment and TMDL programs, among others. Massachusetts Department of Environmental Protection carries out a similar role in water resource protection in Massachusetts.

Impacts from Other Actions

Under the No Build Alternative, impacts to water quality from nutrient loading, sediment, and chloride are possible due to other projects, and residential and commercial growth, and the corresponding increases in impervious surface cover and stormwater runoff. Under Scenario 1, up to 50,889 acres (46,720 acres of residential development plus 4,169 acres of employment-related development) of land could be developed between 2005 and 2020 under the No Build condition. Under Scenario 2, up to 52,419 acres (48,151 acres of residential development plus 4,268 acres of employment-related development) of land are expected to be developed between 2005 and 2030 under the No Build condition. A portion of this development would be impervious surfaces. Impacts will be moderated to a large extent by federal and state regulations designed to protect and improve existing water quality.

Direct Impacts of the 2005 Selected Alternative

The water quality commitments from the 2004 FEIS and ROD remain valid. Any changes in pollutant loadings as a result of the changes in the proposed stormwater treatment practices described in Section 10.3.1 are being done in cooperation with and with concurrence from NHDES. NHDOT will continue to coordinate with NHDES with respect to stormwater management and to ensure that the conditions of the Section 401 Water Quality Certification are met.

As discussed in Chapter 10, updates to the stormwater treatment design for the 2005 Selected Alternative result in a net decrease in phosphorus loadings to Cobbetts Pond and Canobie Lake (instead of the increase predicted in the 2004 FEIS).

For chloride loadings related to deicing salt applications, NHDOT has been implementing the management practices outlined in the Record of Decision and MOA (See Section 10.6.1). By meeting the Record of Decision commitments and Section 401 Water Quality Certification requirements, the 2005 Selected Alternative will not increase chloride loadings over existing conditions. Incremental implementation of the project (three-lanes in each direction) is possible in the interim, depending on the timing of the implementation of the TMDLs for the chloride-impaired waterbodies in the corridor (See Section 3.2.2).

Indirect Effects of the 2005 Selected Alternative

Under Scenario 1, up to 19,981 acres (19,289 acres residential plus 692 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2020. Under Scenario 2, up to 3,873 acres (3,633 acres residential plus 240 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2030. The potential indirect effects on water resources associated with future development in the study area under Scenario 2 would be substantially smaller than under Scenario 1 or than those estimated in the 2004 FEIS. Only a portion of the land conversion would represent impervious surface cover. This additional development would increase stormwater runoff; however more stringent regulatory requirements and BMPs now in place are expected to reduce the incremental impact of future development on water resources in comparison to past development (e.g. Env-Wq 1500 Alteration of Terrain, among other regulations). The conclusion of the 2004 FEIS regarding indirect effects on water resources remain valid: the potential indirect land use changes associated with the 2005 Selected Alternative are unlikely to result in substantial changes in non-point source pollutant loadings.

Potential for Cumulative Impacts

Accounting for No Build impacts, plus the indirect effects of the 2005 Selected Alternative, a total of 70,870 acres of development could occur in the study area between 2005 and 2020 under Scenario 1. Under the Scenario 2 Build condition, a total of 56,255 acres of development could occur in the study area between 2005 and 2030. The potential impacts of increased development are expected to be moderated by regulatory requirements, including stormwater treatment

practices. Localized increases in pollutant loadings could occur in some small waterbodies in areas that experience high growth. Except for the impaired waterbodies in the I-93 corridor being addressed through the TMDL process, chloride concentrations may increase from present levels in other waterbodies throughout the regional study area as an additive effect of the continued application of deicing salts to roads and parking lots, among other sources. Small streams have the greatest potential to be affected by cumulative increases in chloride concentrations. Larger streams and rivers are unlikely to approach or exceed the 230 mg/l standard. The goal of the TMDL implementation plans is to protect and restore water quality by controlling chloride loadings to the impaired waterbodies in the I-93 corridor.

The impact of the 2005 Selected Alternative on water resources is negligible in comparison to the impacts of current and reasonably foreseeable future actions in the study area under the No Build condition.

13.4.2 Wetlands

Resource Condition and Trends

There are methodological issues with comparing historical wetland acreage between various studies in order to form a comprehensive timeline of past resource conditions. One Economic Research Service/USDA study that attempted to adjust for these differences estimated that there were approximately 599,400 acres of wetlands in New Hampshire in 1780, and 132,800 acres or 22 percent of these were converted to other uses between 1780 and 1954. During this time period most wetland conversion was for agriculture, and was encouraged by federal policy. From 1954 to 1982 the acreage of wetlands in New Hampshire is estimated to have increased by approximately 23,100 acres to 489,700 acres. This increase was likely the result of the abandonment of less productive agricultural land. Between 1982 and 1992 the area of wetlands in New Hampshire is estimated to have decreased by approximately 13,600 acres or 2.7 percent. These wetland impacts were primarily associated with urban development. Wetland losses in the past 10 years have been greatly slowed in comparison to past impacts by regulatory protections, including Section 404 of the Clean Water Act and the New Hampshire Wetland Rules. For example, between 1997 and 2002, NHDES granted permits for 550 acres of wetland impacts. The permit conditions for these impacts also required the creation of 160 wetland acres, and the preservation of another 3,600 acres of upland and wetland. Counting creation and preservation, this is a 6.8 to 1 mitigation ratio.

Figure 13-3 shows the extent of wetlands mapped by the USFWS National Wetlands Inventory (NWI) in the study area. The NWI inventory estimates that 59,540 acres of wetlands in the study area, covering 11.3 percent of the total area. The NWI methodology is a conservative estimate of wetland acreage. For example, there are 290,000 acres of NWI wetlands and 576,000 acres of hydric soils in New Hampshire. The actual acreage of wetlands is probably somewhere in between the numbers, representing 5 to 10% of the state's land area (USFWS, 2007).

Impacts from Other Actions

Although wetlands are expected to be largely avoided by future development, some unavoidable loss of wetlands will occur under the No Build condition. However, these impacts will not be substantial and will be required to provide compensatory mitigation in accordance with federal and state regulations.

Direct Impacts of the 2005 Selected Alternative

As discussed in Chapter 10, total wetland impacts for the first eleven construction contracts of the 2005 Selected Alternative have increased by about nine acres relative to that estimated in the 2004 FEIS and Section 404 permit application. The majority of the increase is due to a revised delineation of wetlands along the corridor (5.53 acres), with the remainder due to design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping. The impacts remain a small proportion of the total area of the affected wetland systems and the functions and values of the remaining wetland area will not be eliminated. The extensive compensatory mitigation plan includes 980 acres of land preservation (including 24 acres of wetland creation).

Indirect Effects of the 2005 Selected Alternative

The potential additional development in the study area under the 2005 Selected Alternative in Scenario 1 or Scenario 2 would incrementally increase wetland impacts, but it is not possible to quantify this impact due to extensive regulatory protections afforded this resource. Most mapped wetlands would be avoided in project planning and permitting. Any effect would be small in comparison to the land development expected in the study area under the No Build condition. In addition, any additional impacts would be subject to compensatory mitigation to offset impacts.

Potential for Cumulative Impacts

The combined effect of past, present, other actions, direct and indirect is expected to result in some wetland loses would be expected to occur, particularly of unmapped small, isolated wetlands, as an inevitable consequence of growth with or without the project. However, these losses would be partially offset in the study area due to restoration programs and mitigation requirements, which are typically required for approval of wetland impact permits. Despite additional incremental impacts, the overall health of wetlands in the study area will not be substantially impacted. Wetlands will continue to make up a large proportion of land cover in the study area.

The impact of the 2005 Selected Alternative on wetlands is negligible in comparison to the impacts of current and reasonably foreseeable future actions in the study area.

13.4.3 Wildlife Habitat

Resource Condition and Trends

During the 1700's and 1800's a majority of the forested land in New Hampshire was cleared for agriculture. In addition to habitat loss, many fish and wildlife species were extirpated by overhunting and fishing. The condition of forests and many other types of wildlife habitat have greatly improved since the early 1900's, as a result of declines in the area devoted agriculture and the formation of wildlife and conservation agencies, regulatory protections and restoration programs for threatened and endangered species. Current issues facing wildlife habitat quantity and quality include increased low-density development in suburban and rural areas that results in habitat fragmentation. In 1983, the reforestation that followed farming and logging of the 19th and 20th centuries reached its peak, with 87 percent of the state's lands forested. However, by 1997, the state's forest cover dropped three percent, to 84 percent as the result of the conversion of forest land for development (NHF&GD, 2005).

The New Hampshire Fish and Game Department (NHF&GD) has developed statewide and regional ranking and identified the highest condition habitat relative to all polygons of a given habitat type in the state. The rankings are generally based on landscape biological diversity, landscape integrity, minimum human influence, and the presence of documented rare wildlife or significant ecological features. The goal of the rankings is to provide regional planners and conservation professionals a tool in identifying the most critical wildlife habitat locations. Figure 13-4 shows the important wildlife habitat in the New Hampshire portion of the study area. Concentrations of high ranked habitat are located west of I-93 in Windham, and in the northern portion of the study area in towns such as Auburn, Candia, Hooksett, Allenstown and Deerfield. Table 13-1 shows that there are over 80,000 acres of land designated "highest ranked habitat in New Hampshire by condition" in the study area, of which about 22,000 acres or 27 percent is publicly owned or conserved. Lower ranked habitat types have a smaller proportion of land publicly owned or conserved. The distribution of conserved lands is not equal across the study area, with much more of the habitats in the northern portion of the study area conserved than in the southern portion. Over 9,000 acres of the conserved highest ranked habitat by condition is located in Bear Brook State Park in Allenstown, Deerfield, Candia and Hooksett.

Table 13-1
Important Wildlife Habitat in New Hampshire Portion of Study Area

	Total Acres	Acres Conserved or Publicly Owned	Percent Conserved or Publicly Owned
Highest Ranked Habitat in NH (by condition)	80,595	21,763	27%
Highest Ranked Habitat in Biological Region	38,734	6,842	18%
Supporting Landscapes	103,146	12,928	13%
Total	222,475	41,533	19%

Sources: New Hampshire Fish and Game Department. Highest Ranked Wildlife Habitat by Ecological Condition. February 2007.
GRANIT Conservation/Public Lands Layer. February 2008.

Figure 13-4 also shows the priority habitats for rare species established by the Massachusetts Natural Heritage & Endangered Species Program (NHESP) based on the occurrence of state listed rare species. Priority habitat polygons are the filing trigger for project proponents, municipalities, and all others for determining whether or not a proposed project or activity must be reviewed by the NHESP for compliance with the Massachusetts Endangered Species Act. There are 14,808 acres of priority habitat designated in the Massachusetts portion of the study area, of which 3,550 acres or 24 percent have conservation protection.

Impacts from Other Actions

Under Scenario 1, up to 50,889 acres (46,720 acres of residential development plus 4,169 acres of employment-related development) of land could be developed between 2005 and 2020 under the No Build condition. Under Scenario 2, up to 52,419 acres (48,151 acres of residential development plus 4,268 acres of employment-related development) of land are expected to be developed between 2005 and 2030 under the No Build condition. A portion of this development would be expected to affect wildlife habitat. The health of wildlife habitat as a resource is expected to be degraded in some areas as a result of future population and employment growth. However, within southern New Hampshire and northern Massachusetts, many of the most important habitat areas are not in the immediate path of future development activity. In some instances these habitat areas have been protected by zoning ordinances limiting development, in other instances development activity can be expected to be limited due to low accessibility, steep slopes, high elevations, floodplains, or private or public efforts to conserve the property. Land development may cause some habitat fragmentation, especially if this growth occurs in an uncoordinated fashion and is not focused on existing village and city centers.

Direct Impacts of the 2005 Selected Alternative

The 2004 FEIS estimated that approximately 156 aces of wildlife habitat would be impacted by the 2005 Selected Alternative. This total may increase slightly as a result of final design refinements, including an increase in the number of stormwater treatment areas. However, as noted in the 2004 FEIS, the 2005 Selected Alternative primarily affects the edges of habitat areas

adjacent to the existing I-93; it does not cause habitat fragmentation. The project's extensive wetland and upland preservation plan will compensate for these impacts.

Indirect Effects of the 2005 Selected Alternative

Under Scenario 1, up to 19,981 acres (19,289 acres residential plus 692 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2020. Under Scenario 2, up to 3,873 acres (3,633 acres residential plus 240 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2030. A portion of which would be expected to have some impact on wildlife habitat. The extent of these impacts will be strongly influenced by locally controlled land use regulations and policies. Without site-specific information as to where induced development will take place, it is not possible to provide any substantive elaboration on the extent or significance of habitat fragmentation.

Potential for Cumulative Impacts

The combined effect of past, present, other actions, and direct and indirect effects of the 2005 Selected Alternative are expected to result in encroachment on existing habitat areas, diminishing the quantity and/or quality of this resource. Impacts are expected to be moderated by the countervailing effect of planning efforts that focuses growth in existing settled areas, substantive protections under environmental protection laws and the trend of increased land conservation. Despite additional incremental impacts, the overall health of wildlife habitat in the study area will not be substantially impacted. Forested lands will continue to make up a large proportion of land cover in the study area, and many species will continue to recover as a result of improved management and protection.

The impact of the 2005 Selected Alternative on wildlife habitat is negligible in comparison to the impacts of current and reasonably foreseeable future actions in the study area.

13.4.4 Farmlands

Resource Condition and Trends

Although farming is still a major industry and farmland a key land use, the increasing population and value of land in southern New Hampshire and northern Massachusetts has resulted in the conversion of farmland to other uses over the past 50 years. For example, between 1959 and 1987, farm lands in New Hampshire declined by almost 700,000 acres or 62 percent (USDA, Census of Agriculture). Factors affecting agricultural land include a combination of development pressures and economic trends affecting the viability of farming. Table 13-2 summarizes 1987 to 2002 trends in farm land acreage from the Census of Agriculture for the New Hampshire and Massachusetts counties that intersect the study area boundaries. Rockingham County, NH and Middlesex County, MA experienced the largest absolute and percent loss of farmland between 1987 and 2002, at over 5,000 acres and 14% each. Hillsborough County, NH lost 3,000 acres or 7 percent, while Essex County, MA lost 3,100 acres or 10 percent. Contrary to the trend in the other counties, Merrimack County, NH

experienced a nearly 20,000 acre or 32.5 percent increase in farm land between 1987 and 2002. With the exception of Rockingham County, the other four counties experienced an increase in land in farms between 1997 and 2002.

Table 13-2
Land in Farms, 1987- 2002

	1987 (acres)	1992 (acres)	1997 (acres)	2002 (acres)	Absolute change 1987 to 2002 (acres)	Percent change
Hillsborough County, NH	43,131	39,844	37,572	40,104	-3,027	-7.0%
Merrimack County, NH	59,734	46,610	63,417	79,169	19,435	32.5%
Rockingham County, NH	36,862	34,292	35,465	31,656	-5,206	-14.1%
Essex County, MA	30,940	25,470	25,547	27,856	-3,084	-10.0%
Middlesex County, MA	38,709	31,583	30,718	33,160	-5,549	-14.3%

Source: USDA Census of Agriculture

Figure 13-5 provides an overview of the distribution of agricultural land uses in the study area based on 2001 satellite imagery.

There is no active state program implementing farmland conservation in New Hampshire, farmland conservation efforts are being primarily implemented at a local level and by private organizations. However, New Hampshire's Current Use Taxation Program does provide important incentives for farmland conservation by charging a tax rate consistent with the current agricultural use of the property, rather than the "highest and best use" which is usually development. In 2006, the New Hampshire Farm Viability Task Force issued a report which included State policy recommendations to preserve agricultural lands. The Massachusetts Department of Agricultural Resources operates an Agricultural Preservation Restriction Program which pays farmers the difference between the fair market value and the agricultural value of their property in exchange for a deed restriction that prohibits non-agricultural development. Massachusetts also has a Farm Viability Enhancement Program that has resulted in 29,011 acres placed in protective covenants.

Impacts from Other Actions

Under Scenario 1, up to 50,889 acres (46,720 acres of residential development plus 4,169 acres of employment-related development) of land could be developed between 2005 and 2020 under the No Build condition. Under Scenario 2, up to 52,419 acres (48,151 acres of residential development plus 4,268 acres of employment-related development) of land are expected to be developed between 2005 and 2030 under the No Build condition. A portion of this development would be expected to affect farmland. Although there is opportunity for avoidance, continued diminishment of the area or quality of this resource can be expected under the No Build Alternative since there are few substantive protections limiting development in agricultural areas. For example, many rural/agricultural zoning districts allow large lot residential development.

Farmland is often an attractive location for development, particularly in valley areas without steep slopes, and adjacent to existing villages and roadways. Countervailing effects moderating development impacts may include an increase in the number of small farmers selling directly to consumers, and improved planning for agricultural resource protection.

Direct Impacts of the 2005 Selected Alternative

The 2005 Selected Alternative would impact 9.4 acres of important farmland soils and 1.0 acre of active farmland.

Indirect Effects of the 2005 Selected Alternative

Under Scenario 1, up to 19,981 acres (19,289 acres residential plus 692 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2020. Under Scenario 2, up to 3,873 acres (3,633 acres residential plus 240 acres employment-related) of additional development over the No Build could occur in the study area between 2005 and 2030. A portion of this development would be expected to have some impact on farmlands. It is difficult to predict specific impacts due to uncertainty about the specific location of new development.

Potential for Cumulative Impacts

The total area of farmland in the study area is expected to decrease slightly as a result of the combined effect of past, present, other actions, and the direct and indirect impacts of the 2005 Selected Alternative. The economics of farming (e.g., market value for farm goods has not kept pace with inflation) coupled with the rising value of land will continue to provide incentives for farmers to sell agricultural land for more intensive uses. Losses of farmland will be moderated by the countervailing effect of local protections.

The incremental contribution of the 2005 Selected Alternative to the loss of agricultural land is negligible in comparison to the impacts of current and reasonably foreseeable future actions in the study area.

13.4.5 Cultural Resources

Resource Condition and Trends

Cultural resources include archaeological resources and historic architectural resources. Past development has had an adverse impact on some historic resources in southern New Hampshire. Historic resources have been destroyed directly, because of deteriorating conditions, development pressures or both. Numerous regulatory protections and programs at various levels of government have been designed to encourage the preservation of historic resources.

Impacts from Other Actions

Historic properties and districts can be protected from alteration through local designations and design review. Archaeological resources are difficult to identify with out substantial investigation and are more difficult to protect through local development regulations. Continued population growth in southern New Hampshire may place some development pressure on unprotected historic properties and districts and may result in the loss of archaeological resources such as Native American sites.

Direct Impacts of the 2005 Selected Alternative

The 2005 Selected Alternative would have an "adverse effect" under Section 106 of the National Historic Preservation Act on the following historic resources:

- 2 Brady Ave in Salem, a component of the Armenian Settlement Historic District Area
- George Armstrong House and Robert Armstrong House
- Robert J. Prowse Memorial Bridge
- A stone culvert on the Manchester and Lawrence Railroad Corridor

Mitigation for these impacts has been and will continue to be coordinated with the New Hampshire State Historic Preservation Officer and the New Hampshire Division of Historic Resources, see Chapter 11: Cultural Resources.

Indirect Effects of the 2005 Selected Alternative

Specific indirect effects on cultural resources resulting from land use change cannot be reasonably estimated because of the uncertainty associated with the size, type, and location of such future development in relation to cultural resources. For example, increases in development activity under the Build Alternative may include sites of archaeological importance that could be affected by increases in land consumption and development activity in those locations. However, the specific location of the potential future development and as yet undiscovered archaeological resources are not known. Any effect would be small in comparison to development pressures and land disturbance anticipated under the No Build Alternative. Due to a smaller area of land consumption, the potential indirect effects on cultural resources would be expected to be smaller under Scenario 2 than under Scenario 1.

Potential for Cumulative Impacts

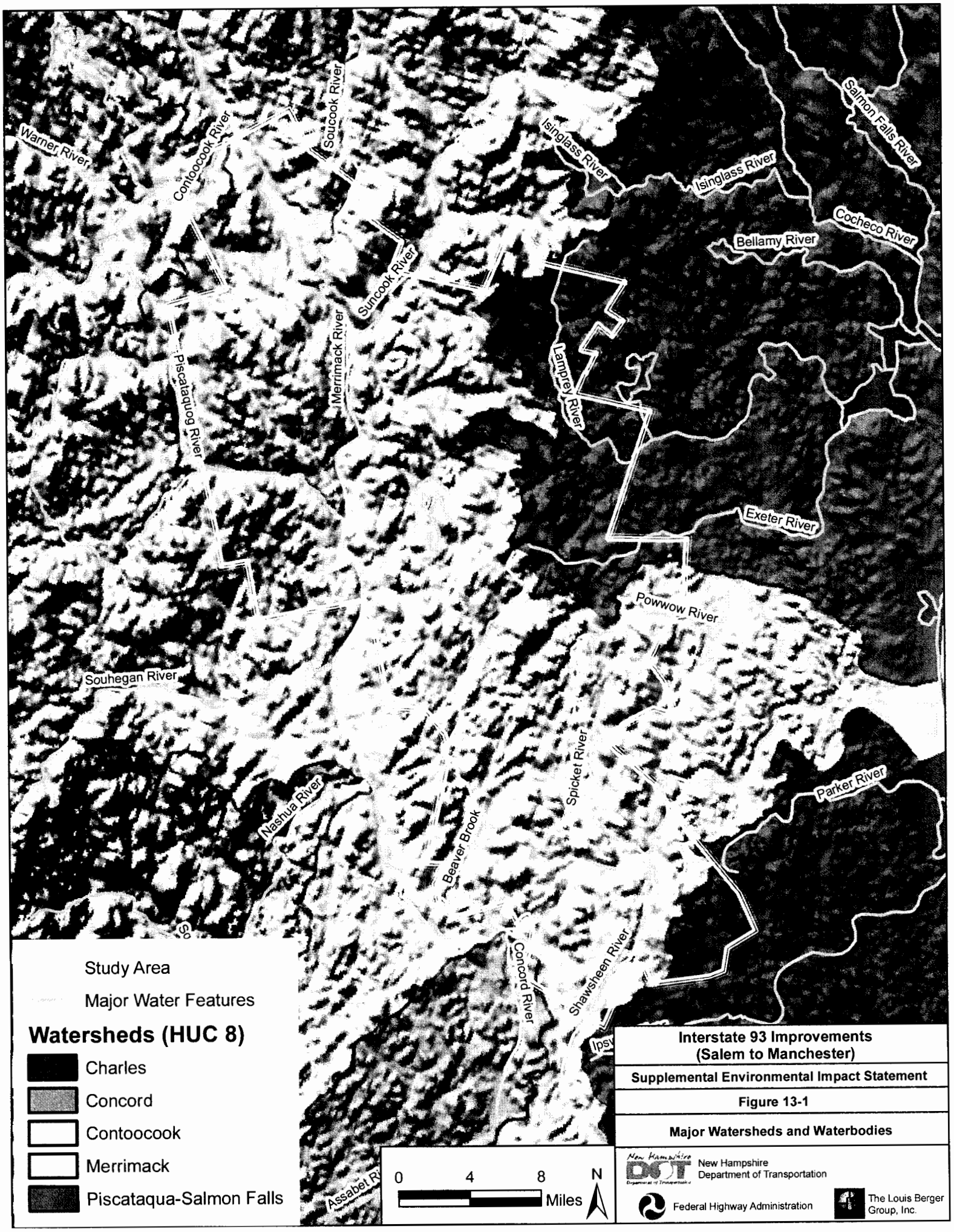
The combined effect of past, present, other actions, and the direct and indirect effects of the 2005 Selected Alternative would result in the loss of some historic and archeological resources. This impact would be moderated by the countervailing effect of regulatory protections and preservation programs designed to maintain these resources (e.g. preservation easements, preservation tax incentives, local historic districts, and local building codes and review standards for historic structures).

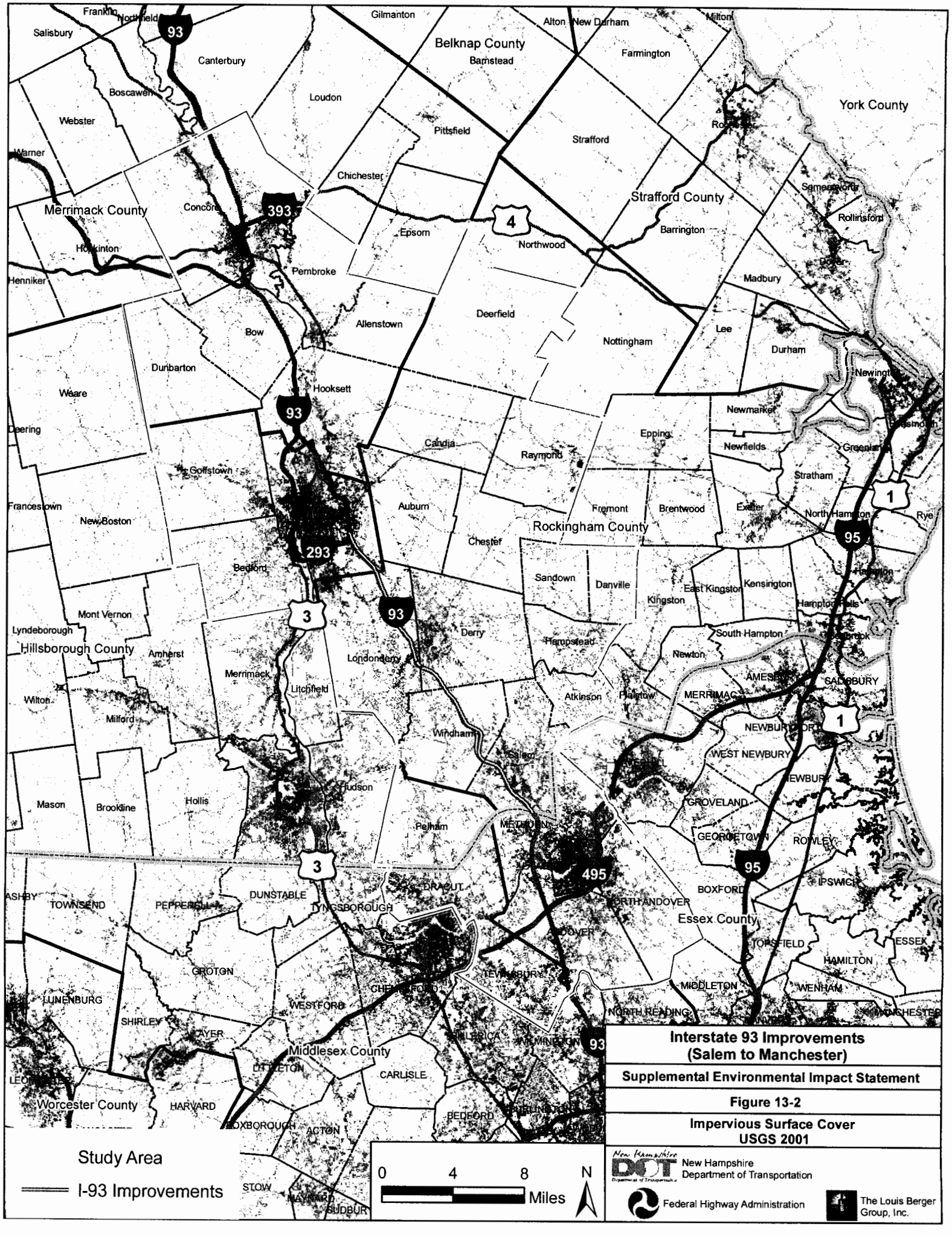
13.5 Mitigation

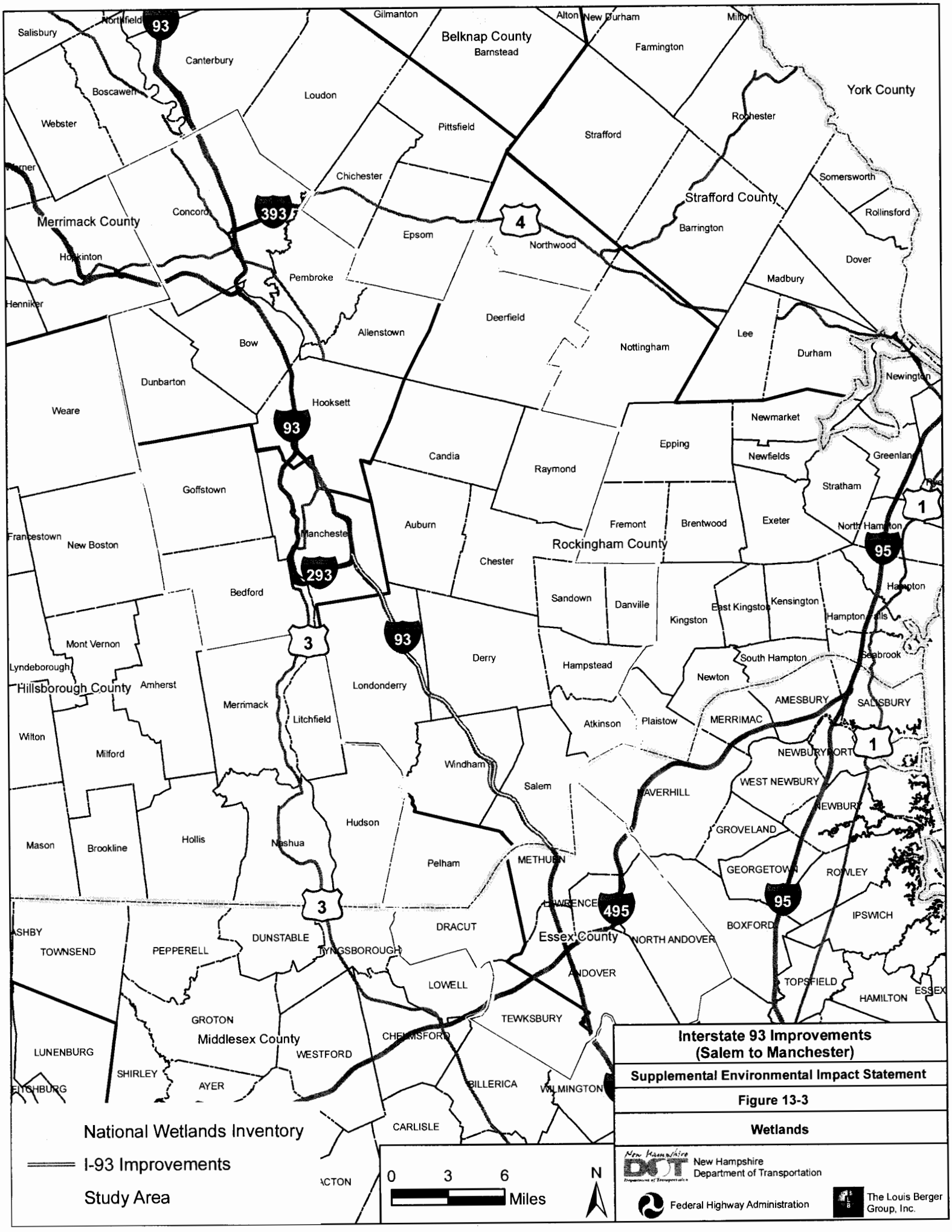
Refer to DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report for a detailed description of the status of the Community Technical Assistance Program (CTAP), and DSEIS Appendix F: Natural Resources Written Reevaluation/Technical Report for a description of the status of wetland and wildlife habitat mitigation commitments. These commitments as made in the 2004 FEIS and ROD will contribute to natural resource protection and enhancement, and help the study area communities minimize the potential cumulative impacts of future growth.

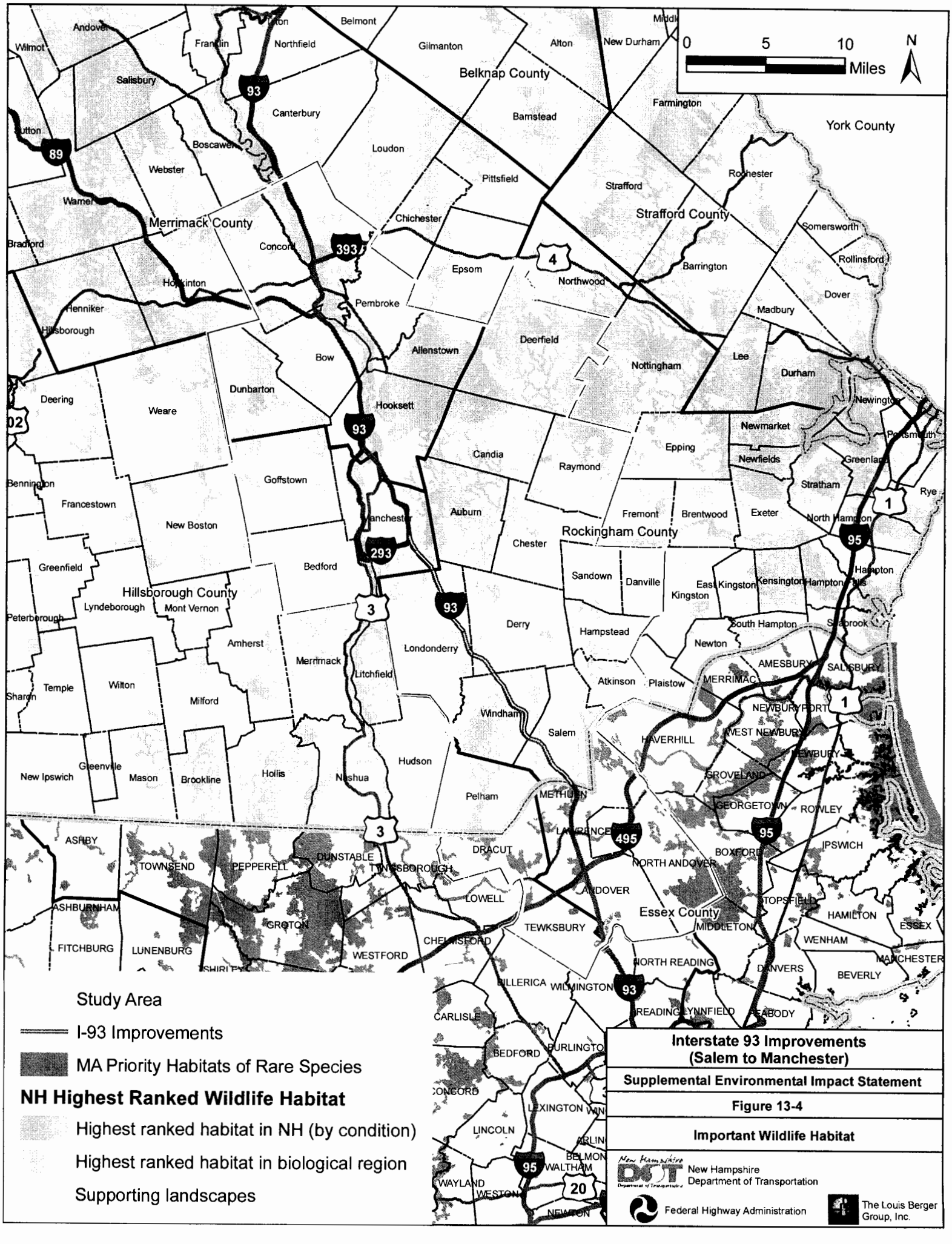
13.6 Conclusions

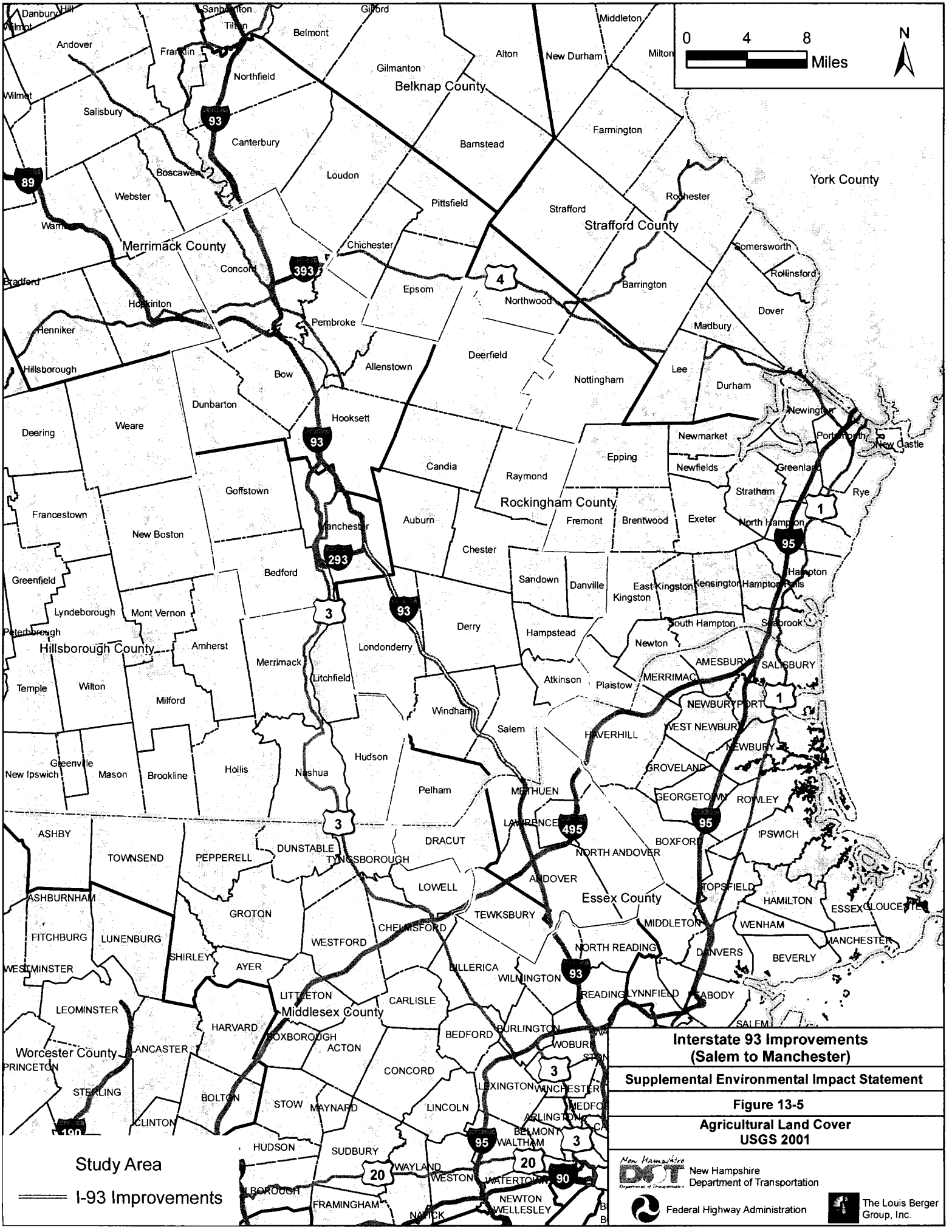
The updated cumulative impact analysis indicates that growth and development are expected to result in some cumulative impacts to water resources, wetlands, wildlife habitat, farmlands and cultural resources under Scenario 1 or Scenario 2. Substantial differences in the extent of potential impacts exist based on the degree of regulatory protection afforded different types of resources (e.g. wetlands vs. farmlands). For all of the resources, the direct and indirect effects of the 2005 Selected Alternative are negligible in comparison to magnitude of change expected under the No Build condition as a result of actions by others. Development impacts on environmentally sensitive features will be minimized in many cases by the presence of conserved lands, floodplain and open space zoning. Potential impacts can be further reduced through local adherence to existing zoning, and changes in planning regulations to further discourage most development in rural areas and to encourage the development that does occur in these areas to be clustered to reduce the total amount of land consumed. Focusing growth into existing cities and village centers will further reduce conflicts with the remaining natural areas in southern New Hampshire and northern Massachusetts. The CTAP program will help the study area communities to adapt to future growth pressures consistent with local goals.


Warner River
Contoocook River
Soucook River
Isinglass River
Salmon Falls River
Isinglass River
Cocheco River
Bellamy River
Suncook River
Merrimack River
Piscataquog River
Lamprey River
Exeter River
Powwow River
Souhegan River
Spicket River
Parker River
Nashua River
Beaver Brook
Concord River
Shawsheen River
Assabet Ri
Study Area
Major Water Features
Watersheds (HUC 8)
Charles
Concord
Contoocook
Merrimack
Piscataqua-Salmon Falls
0
4
8
Miles
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 13-1
Major Watersheds and Waterbodies
New Hampshire
Department of Transportation
Federal Highway Administration
The Louis Berger
Group, Inc.


Belknap County
Merrimack County
Strafford County
York County
Rockingham County
Hillsborough County
Middlesex County
Worcester County
Essex County
Study Area
I-93 Improvements
0 4 8 Miles N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 13-2
Impervious Surface Cover
USGS 2001
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.


Salisbury
Northfield
93
Canterbury
Boscawen
Webster
Warner
Merrimack County
Concord
393
Hopkinton
Henniker
Pembroke
Chichester
Pittsfield
Loudon
Gilmanton
Belknap County
Barnstead
Alton
New Durham
Milton
Farmington
Strafford
Rochester
York County
Somersworth
Strafford County
Rollinsford
Barrington
Dover
Madbury
4
Northwood
Epsom
Deerfield
Allenstown
Bow
Dunbarton
Weare
Hooksett
93
Nottingham
Lee
Durham
Newington
Newmarket
Epping
Newfields
Greenland
Stratham
Candia
Raymond
Goffstown
Auburn
Fremont
Brentwood
Exeter
North Hampton
1
95
Francestown
New Boston
Manchester
293
Chester
Rockingham County
Bedford
Sandown
Danville
Kingston
East Kingston
Kensington
Hampton
Hampton Falls
Seabrook
Mont Vernon
3
93
Derry
Hampstead
South Hampton
Newton
Lyndeborough
Hillsborough County
Amherst
Merrimack
Londonderry
Litchfield
Atkinson
Plaistow
AMESBURY
SALISBURY
MERRIMAC
Wilton
Milford
Windham
Salem
NEWBURYPORT
1
WEST NEWBURY
HAVERHILL
NEWBURY
Mason
Brookline
Hollis
Nashua
Hudson
Pelham
METHUEN
GROVELAND
GEORGETOWN
ROWLEY
3
95
495
LAWRENCE
IPSWICH
ASHBY
TOWNSEND
PEPPERELL
DUNSTABLE
TYNGSBOROUGH
DRACUT
Essex County
NORTH ANDOVER
BOXFORD
ANDOVER
TOPSFIELD
HAMILTON
ESSEX
LOWELL
GROTON
Middlesex County
TEWKSBURY
LUNENBURG
SHIRLEY
AYER
WESTFORD
CHELMSFORD
BILLERICA
WILMINGTON
FITCHBURG
CARLISLE
ACTON
National Wetlands Inventory
I-93 Improvements
Study Area
0
3
6
Miles
N
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 13-3
Wetlands
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.


0 5 10 Miles
N
Belknap County
Merrimack County
Strafford County
York County
Rockingham County
Hillsborough County
Essex County
Study Area
I-93 Improvements
MA Priority Habitats of Rare Species
NH Highest Ranked Wildlife Habitat
Highest ranked habitat in NH (by condition)
Highest ranked habitat in biological region
Supporting landscapes
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 13-4
Important Wildlife Habitat
New Hampshire Department of Transportation
Federal Highway Administration
The Louis Berger Group, Inc.


0 4 8
Miles
N
Belknap County
Merrimack County
Strafford County
York County
Rockingham County
Hillsborough County
Essex County
Middlesex County
Worcester County
Study Area
I-93 Improvements
Interstate 93 Improvements
(Salem to Manchester)
Supplemental Environmental Impact Statement
Figure 13-5
Agricultural Land Cover
USGS 2001
New Hampshire
Department of Transportation
Federal Highway Administration
The Louis Berger
Group, Inc.

14.0 REEVALUTIONS OF OTHER TOPICS

14.1 Introduction

This chapter provides reevaluations of the following topics from the 2004 FEIS:

- Visual Impacts (Section 14.2);
- Energy Impacts (Section 14.3);
- Construction Impacts (Section 14.4);
- Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity (Section 14.5); and
- Irreversible and Irretrievable Resource Commitments (Section 14.6).

The Court Order did not require any additional analysis of the topics addressed in this chapter. As discussed in Chapter 1: Introduction, the primary purpose of the reevaluation process is to determine whether any changes in the project; changes in the existing physical or regulatory environment, including project design, concept and scope; or changes in the affected environment, impact analysis and proposed mitigation measures would result in the need to update technical information from the 2004 FEIS.

14.2 Visual Impacts

14.2.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The 2004 FEIS stated that the 2005 Selected Alternative would increase the visual scale of the roadway due to the widening and result in the removal of some roadside vegetation. Where this vegetation is part of a forested buffer between the highway and adjacent development, this would have an adverse effect upon the quality of views from residential areas. The 2004 FEIS identified specific residential areas that would experience visual impacts from the 2005 Selected Alternative, including on Trolley Lane north of NH 38 in Salem and neighborhoods on NH 111A/Lower Locust Road and Squire Armor Road in Windham.

The Record of Decision made the following commitments with respect to the mitigation of visual impacts:

- Landscape planting and natural revegetation of the cut and fill slopes, and as appropriate, at the park-and-ride facilities.
- Structural design considerations for drainage structures, bridges, etc. to enhance their visual appearance.
- Highway lighting at interchanges and park-and-ride facilities, will be designed with "cut offs" or similar features to limit unwanted light where appropriate.
- Since areas that are visually impacted are also often impacted by noise, sound walls will serve a dual purpose by mitigating for both noise and visual impacts. In general, landscaping amenities will be constructed in conjunction with the sound walls, where practicable.

- Privacy fencing in four locations (at NH 111A in Windham, Fordway Extension in Derry, Charleston Avenue in Londonderry and Rockingham Road in Londonderry) will also help shield adjacent residential properties from the visual impacts of the highway.
- Additional privacy fence locations or landscape screening to minimize the visual impact of the highway and mitigate for the loss of existing vegetative screening will be considered and evaluated as part of the discussions with affected property owners during final design.

14.2.2 Changes in Regulations/Guidelines

There have been no changes in the regulations and guidance pertaining to the analysis of visual impacts since the 2004 FEIS.

14.2.3 Changes in Existing Conditions

The overall visual character of the I-93 corridor has not substantially changed since the 2004 FEIS. As discussed in Chapter 8: Land Use, additional residential development has occurred in some areas adjacent to the I-93 corridor since the 2004 FEIS, including on Squire Armour Road (W5) and Locust Road (W3) in Windham (see Figure 8-2).

14.2.4 Changes in Future No Build and Build Conditions

The additional residential development that has occurred in some neighborhoods since the 2004 FEIS incrementally increases the number of residences potentially affected by visual impacts from the loss of vegetative screening under the 2005 Selected Alternative. However, the locations of areas where visual impacts would occur and the general description of the nature of the visual impacts have not substantially changed since the 2004 FEIS.

14.2.5 Mitigation

The mitigation measures described in the 2004 FEIS and Record of Decision remain valid (See Section 14.2.1). NHDOT has continued to consider additional locations for privacy fences as part of the final design process to provide visual screening for residential areas near I-93.

14.2.6 Conclusion

While additional residences have been constructed in the corridor, the 2004 FEIS conclusions regarding visual impacts have not changed and the Record of Decision mitigation commitments remain valid. No additional analysis is warranted.

14.3 Energy Impacts

14.3.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The 2004 FEIS discussion of energy impacts stated that the 2005 Selected Alternative would consume energy during the construction of the project that would not be required under the No

Build Alternative. The additional lanes provided by the 2005 Selected Alternative would require additional expenditures of energy as compared to today for maintenance activities, such as plowing, sanding, mowing, bridge and drainage system maintenance, and roadway surface repairs. The No Build Alternative would require energy consumption for the continued maintenance of infrastructure currently in poor condition.

With respect to operational energy consumption, the 2004 FEIS concluded that since the project would improve the efficiency of the flow of traffic through the corridor, future vehicular energy requirements under the 2005 Selected Alternative would be lower than under the No Build Alternative.

The 2004 FEIS and Record of Decision did not make any mitigation commitments related to energy consumption.

14.3.2 Changes in Regulations/Guidelines

There have been no changes in the regulations and guidance pertaining to the analysis of energy impacts since the 2004 FEIS. For a review of Federal and State policy actions related to greenhouse gas emissions (which are proportional and closely related to energy consumption), refer to Section 5.1.3 in Chapter 5: Air Quality. None of the current greenhouse gas policies require energy or greenhouse gas analysis of proposed transportation projects.

14.3.3 Changes in Existing Conditions

Since the 2004 FEIS, traffic volumes and congestion have continued to increase on I-93, resulting in increased vehicular energy consumption.

14.3.4 Changes in Future No Build and Build Conditions

The various population and employment scenarios evaluated in this SEIS have slightly different traffic operations performance, but all result in reduced congestion on I-93 under the 2005 Selected Alternative in comparison to the No Build Alternative. While traffic volumes on I-93 itself and feeder roads would generally increase as a result of the 2005 Selected Alternative, traffic volumes on parallel roads would generally decrease. The overall efficiency of the transportation system would be improved and energy consumption reduced in comparison to the No Build Alternative, consistent with the conclusion of the 2004 FEIS.

14.3.5 Mitigation

No adverse energy impacts have been identified as a result of the 2005 Selected Alternative, therefore no mitigation measures are proposed.

14.3.6 Conclusion

The 2004 FEIS conclusions regarding energy impacts have not changed and no mitigation is proposed. No additional analysis is warranted.

14.4 Construction Impacts

14.4.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The 2004 FEIS identified construction impacts related to air quality, soil erosion, wildlife, noise, traffic, and visual resources.

Air Quality

Air pollutants emitted from diesel and gasoline powered construction equipment would include oxides of nitrogen, carbon monoxide, hydrocarbons, and particulate matter. Emissions from construction equipment may result in elevated ambient concentrations within the immediate vicinity of construction operations for short periods of time, but were not expected to have a substantial impact.

Particulate matter (dust) would be emitted as a result of grubbing, grading, excavating, hauling, and blasting operations. Dust emitted during most construction activities would be controlled by wetting unpaved areas in the construction zone, covering loads on all open trucks, and seeding all unvegetated areas as soon as practicable.

Soil Erosion

Activities associated with construction would likely require blasting of bedrock material in some areas and extensive grading. The grading would include the stripping of existing vegetation, followed by major excavation and filling. This construction would result in nearly complete reworking and/or removal of surficial and subsoils along the sides of highway. Exposure of previously vegetated soils could lead to erosion if not properly controlled.

To mitigate potential sedimentation impacts during construction, the Record of Decision commitments included the development and implementation of a detailed drainage and erosion control program. Construction schedules would require that areas stripped of vegetation be limited in size and either surfaced or vegetated as quickly as possible after initial exposure to minimize erosion and restore wildlife habitat. Temporary erosion check-dams would be installed during the construction period in appropriate locations. The Record of Decision also stated that the detailed guidance contained in NHDOT's *Standard Specifications for Road and Bridge Construction*, Section 699, Temporary Project Water Pollution Control (Soil Erosion) would be followed.

Wildlife

The 2004 FEIS stated that construction of the 2005 Selected Alternative would unavoidably destroy habitat important to wildlife and thus may kill some animals and displace others. Some fossorial animals and breeding animals and their young would most likely to be lost during construction. More mobile animals would move to other habitats. The Record of Decision contained a commitment requiring construction contractor personnel to be trained to recognize the hognose snake and be informed of its protected status through a cooperative effort of

NHDOT and NHF&GD. Procedures for reporting occurrences of the snake would be established to ensure proper response and reporting of the snake, if encountered during construction.

Human presence and associated construction noise at new location areas may repel some species of wildlife from the edge of the right-of-way. Animals tend to habituate to constant noise (Busnel 1978), but loud, sudden sounds would be commonplace during construction. The loud noises associated with construction could mask territorial vocalizations of bird species near the construction, interfering at least temporarily with breeding. Amphibians, which breed more commonly at dusk or night, are less likely to be indirectly affected by the noise.

Noise

The 2004 FEIS concluded that construction activities would result in substantial, but temporary, noise impacts to sensitive receptors at various locations along the project's length. Noise levels in the vicinity of construction activities would vary widely depending on the type and number of pieces of construction equipment active at any one time. It was expected that noise levels exceeding 67 decibels could occur up to 500 feet away from construction activities. Construction noise would, in some areas, be occurring near residences presently experiencing lower noise levels. Proposed sound walls would be constructed prior to reconstructing and widening the highway where possible.

The Record of Decision stated that construction would generally be accomplished during daylight hours to minimize noise impacts, although some night-time construction should be expected given the traffic volumes during daylight hours and the need to maintain traffic at these times.

Traffic

Construction would create increased truck traffic on secondary roads. Access to I-93 would be maintained, although unavoidable delays would occur. Temporary delays would be experienced getting on and off I-93 and along the mainline as bridges are worked on, traffic is shifted temporarily from one side to the other, equipment is moved around, and materials delivered. NHDOT has developed a comprehensive Transportation Management Plan in coordination with local and state emergency response personnel to facilitate the movement of traffic through the construction zones with minimal delays.

The Record of Decision commitments required the development and implementation of a detailed Traffic Control Plan (including incident management procedures) to reduce traffic-related, short-term impacts and minimize construction zone delays. The plan would include the requirement to maintain two lanes of traffic in both directions along the mainline for normal construction activities and during high volume traffic periods. Businesses and their customers may experience some inconvenience due primarily to construction activities along their frontage on secondary highways in interchange areas. Construction activities would be coordinated with property owners to assure that reasonable access to properties is maintained. Temporary signing and other issues related to temporary relocation of access points, caused by construction activities, would be appropriately addressed on an individual basis.

Visual Resources

Some short-term visual impacts would also occur during construction as land clearing and earth-moving occurs. Additionally, some views would be disrupted by the presence of temporary construction or access roads.

14.4.2 Changes in Regulations/Guidelines

Regulatory changes since the 2004 FEIS pertaining to construction impacts include new Alteration of Terrain regulations (Env-Wq 1500) effective January 1, 2009. The regulations address measures for controlling soil erosion and managing stormwater runoff in order to protect surface water, drinking water supplies and groundwater.

14.4.3 Changes in Future No Build and Build Conditions

The general type and extent of construction impacts identified by the 2004 FEIS have not substantially changed.

14.4.4 Mitigation

The mitigation measures described in the 2004 FEIS and Record of Decision remain valid (See Section 14.4.1). NHDOT has been and will continue to implement the construction mitigation measures as part of the project.

NHDOT is coordinating efforts with NHDES and will include provisions within construction contract documents to meet the intent of the new Alteration of Terrain Regulations.

The construction mitigation measures being implemented as part of the project include monitoring of residential drinking water wells in the vicinity of blasting activities in coordination with NHDES. As part of this proactive approach, NHDOT is conducting drinking water baseline monitoring to measure background and pre-blasting groundwater and surface water conditions. The monitoring program includes development of a conceptual hydrogeologic model of the project area to establish the locations of new monitoring wells. NHDOT is also implementing BMPs for the handling, use, and detonation of explosive materials; and a groundwater post-blasting monitoring program to detect potential impacts prior to reaching drinking water resources. If any exceedences of water quality standards occur, NHDOT will take appropriate corrective measures in coordination with NHDES.

Exceedances of the groundwater quality standards for nitrate, nitrite and benzene were recorded at monitoring wells at Exit 3. The exceedances are potentially the result of site related rock blasting activities. As discussed in a letter dated February 26, 2010, NHDES has approved monitored natural attenuation as the appropriate response for this contamination. NHDOT will continue to provide potable water to impacted properties (as required), continue groundwater monitoring and develop a Remedial Action Plan Report and Groundwater Management Program Application to address the groundwater contamination at Exit 3.

14.4.5 Conclusion

The 2004 FEIS conclusions regarding construction impacts have not changed and the Record of Decision mitigation commitments remain valid. Additional commitments have been made with respect to groundwater monitoring in conjunction with blasting. No additional analysis is warranted.

14.5 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

14.5.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The full text of the 2004 FEIS Section 4.16, "Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity" is provided below.

Current congestion along the I-93 corridor impedes travel through the corridor, both north and south, as well as traffic accessing or traveling through the various interchanges. Transportation improvements, like the proposed one, are based upon a comprehensive planning process by the NHDOT. This planning considers the need for present and future transportation needs within the context of present and anticipated future land-use development. Local short-term impacts and use of resources by the project are thus determined to be consistent with the maintenance and enhancement of long-term productivity for the State as a whole before a highway project is approved.

The types of impacts for all the Build Alternatives in the project corridor would be similar. Most short-term impacts will be associated with construction: noise, temporary impacts to air quality, disturbance of soils, potential sedimentation (temporarily reducing water quality and affecting aquatic communities), potential traffic delays, and temporary visual impacts. Erosion and sedimentation will be minimized during construction through the use of Best Management Practices (BMPs) to avoid impacts to aquatic communities. Other impacts would cease after construction. In comparison, short-term benefits of construction will include additional employment and an additional source of revenue to the local service industry. Increased local spending during construction would also benefit the economy of the communities in the corridor.

Socio-economic impacts will include some loss of residences, businesses, and agricultural land; possible changes in the value of residences affected by the highway widening and other modifications to the infrastructure; and some loss of tax revenue due to right-of-way (ROW) acquisitions necessary for the widening, the realignment of some cross roads, and for interchange modifications. Some of the necessary ROW acquisition may impact land planned for future development, both residential and commercial. These economic impacts will be compensated for in the long term, however, by improved access within the region. Loss of residences and businesses will impact communities, but the impacts can be absorbed because there are adequate residential and commercial properties for sale or lease in the project corridor to accommodate those displaced. The fiscal impacts to the towns and the economic impacts caused by direct

displacements and the loss of property for transportation needs may in the near term be difficult, but over time the redevelopment potential would appear to exceed the immediate losses in terms of value.

With regards to long-term impacts on natural resources, the loss of some forest and natural land will incrementally reduce the rural ambience and appeal of the area. The permanent loss of wildlife habitat will also result in some reduction in the animal populations currently living within the project corridor. However, this latter effect will be offset by the habitats created in the wetland mitigation areas as well as by the permanent protection of habitats in areas purchased for preservation purposes. The potential loss of historic structures is less easily mitigated and typically represents more permanent losses in terms of from the cultural environment.

14.5.2 Changes in Regulations/Guidelines

There have been no changes in the regulations and guidance pertaining to the analysis of short-term uses vs. long-term productivity since the 2004 FEIS.

14.5.3 Changes in Future No Build and Build Conditions

The general discussion of tradeoffs between short-term uses and long-term productivity provided in the 2004 FEIS remains valid (See Section 14.5.1).

14.5.4 Conclusion

The 2004 FEIS conclusions regarding short-term uses and long-term productivity have not changed. No additional analysis is warranted.

14.6 Irreversible and Irretrievable Resource Commitments

14.6.1 Summary of 2004 FEIS Analysis and Record of Decision Commitments

The full text of the 2004 FEIS Section 4.17, "Irreversible and Irretrievable Resource Commitment" is provided below.

Implementation of the project will involve a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises in the future for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material will be expended. Additionally, large amounts of labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources. Any construction will

also require a substantial one-time expenditure of both State and Federal funds which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, region, and State will benefit by the improved quality services which are anticipated to outweigh the commitment of these resources.

14.6.2 Changes in Regulations/Guidelines

There have been no changes in the regulations and guidance pertaining to the analysis of irreversible and irretrievable resource commitments since the 2004 FEIS.

14.6.3 Changes in Future No Build and Build Conditions

The general discussion of irreversible and irretrievable resource commitments provided in the 2004 FEIS remains valid (See Section 14.6.1).

14.6.4 Conclusion

The 2004 FEIS conclusions regarding irreversible and irretrievable resource commitments have not changed. No additional analysis is warranted.

15.0 FINAL SECTION 4(f) EVALUATION

15.1 Introduction

Under Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303(c), and Section 18(a) of the Federal-Aid Highway Act of 1968, 23 U.S.C. 138 (as amended by the Federal-Aid Highway Act of 1983) the Secretary of Transportation shall not approve any program or project which "requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as so determined by federal, state, or local officials having jurisdiction thereof, or any land from a historic site of national, state or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use."

The 2004 Final Section 4(f) Evaluation, which may be found in Chapter 5 of the 2004 FEIS, described impacts to the following Section 4(f) resources: the Kinzler House property (SAL0204), Robert Armstrong House (WND0086), George Armstrong House (WND0085), Robert J. Prowse Memorial Bridge (LON0116), Reed Paige Clark Homestead (LON0114) and the Gearty House property (LON0105). Refer to section 3.10.5.3 of the 2004 FEIS for a full description of these resources and to sections 5.5 and 5.6 for a description of avoidance alternatives and measures to minimize harm. The 2004 Final Section 4(f) Evaluation concluded that there are no feasible and prudent alternatives to the use of land from these Section 4(f) properties, and that the proposed action includes all planning to minimize harm resulting from such use.

The Section 4(f) Evaluation in the 2004 FEIS did not identify impacts to a property located at 2 Brady Avenue in Salem, NH, as this property was designated in April 2006 as a contributing resource to the Armenian Settlement Historic District resulting from the expansion of the Historic District boundaries. Coordination with NH Division of Historical Resources (NHDHR) and FHWA determined that this newly-designated resource would be considered a "post-review discovery" in accordance with 36 CFR 800.13(b) but was not subject to consideration under Section 4(f) due to the Late Designation of this historic resource as outlined under 23 CFR 774.13(c). Here, the Brady Avenue property was acquired for transportation purposes prior its designation as a contributing element to the Historic District. Moreover, adequate efforts were made to identify all properties protected by Section 4(f) prior to acquisition. Therefore, the Brady Avenue property is not subject to consideration under Section 4(f). See Section 11.5.2 for further discussion of the resource.

Additionally, the Section 4(f) Evaluation in the 2004 FEIS Section 5 did not identify impacts to a stone box culvert (identified in the 1963 B & M Railroad Right-of-Way and Track Map as # 19.23 – Figure 15-1) located on the Manchester & Lawrence Railroad Corridor (M & L Corridor) east of the proposed intersection of Auburn Road and Independence Drive in Londonderry, NH (Figure 15-2). During the engineering of the final design, unanticipated impacts to the stone box culvert were found to be necessary, therefore this Final Section 4(f) Evaluation has been included in this FSEIS. This evaluation also outlines the coordination that has occurred and the measures proposed to mitigate the unavoidable impacts to this resource.

Based on a review pursuant to 36 CFR 800.4 of the historical and architectural significance of identified resources, it was agreed by the NH State Historic Preservation Officer (NHSHPO), FHWA and NHDOT on May 8, 2008 that a brick-top stone box culvert located west of I-93 under the Manchester and Lawrence Railroad corridor is individually eligible for the National Register of Historic Places. It was subsequently agreed on November 13, 2008, that the stone box culvert under the same line but east of Auburn Road and abutting Independence Drive would be treated as if it is individually eligible for the National Register. Applying the criteria of effect at 36 CFR 800.5, it was determined that the project results in a no adverse effect on the brick-top culvert located west of I-93. However, because of the impacts of the design, the project will have an adverse effect on the Independence Drive stone box culvert. At this culvert, an 18" pipe will be placed within the existing stone box culvert, flowable fill will occupy the voids, and a new headwall will be placed at the end of the pipe since it will be extended to the south of the existing headwall. It may be necessary to remove the lintels to insert the pipe. The existing stone box culvert will then be buried under the relocated Independence Drive.

This culvert is to be impacted as part of the construction associated with the approved ±19.8 mile widening project of I-93 from Salem to Manchester in New Hampshire. The widening project will improve transportation efficiency and reduce safety problems along this principal north-south arterial Interstate highway within the State of New Hampshire. Information on the project is documented in this FSEIS.

Due to population growth, development, and recreational opportunities in New Hampshire, the travel demands for I-93 between Salem and Manchester have exceeded the capacity of this existing four-lane facility for a number of years. During weekday peak hours, motorists traveling along the I-93 corridor currently experience traffic congestion and substantial delay. The congestion not only results in increased travel times, but also contributes to safety problems, as the limited spacing between vehicles does not afford the motorists sufficient movement to deal with frequent and abrupt lane change maneuvers and sudden stops. Decreases in the level of service are evident in reduced traveling speeds, increased density of traffic flow, as well as in the traffic backups at some interchanges during commuting hours.

Population and traffic projections for the next twenty years support the conclusion that the existing facility will be increasingly less able to function at the levels of service and safety for which it was originally designed. Without substantial improvements, or dramatically reduced demand, traffic operations along this section of I-93 are expected to continue to deteriorate under future conditions as traffic volumes increase.

The M & L Corridor was constructed from 1847 to 1849 and connected two rapidly growing manufacturing centers, the Cities of Manchester, NH and Lawrence, MA. Presently in New Hampshire, the M & L Corridor consists of approximately 20 miles of the abandoned rail corridor. The State of NH purchased a majority of the corridor (approximately 15 miles) over several years in 1988, 2003 and 2005. The section through Derry, NH, was purchased by the Town of Derry in the early 1980's for use as a pedestrian/bicycle trail. Several smaller, scattered sections are in private ownership, such as the portion through the Manchester-Boston Regional Airport in Manchester. Presently the NH Division of Resource and Economic Development (NH DRED) has oversight on the state-owned portions of the corridor. These portions are included in a cooperative agreement of

the Towns with NH DRED that allows public use of the corridor for recreational purposes.

15.2 Proposed Action

The I-93 widening project involves a combination of transportation infrastructure improvements and strategies for the 19.8-mile corridor. The project includes widening I-93 from the existing limited access two-lane highway in each direction to a limited access four-lane highway in each direction. Several design modifications and infrastructure improvements for the five interchanges and local roads within the project corridor will occur. Further details of the 2005 Selected Alternative are documented in Section 3.2.2 of this FSEIS.

At the Exit 5 interchange, NH 28 will be widened and reconstructed on-line from Symmes Drive to Liberty Drive including the reconstruction of the approaches to Liberty Drive, Auburn Road, Perkins Road, Vista Ridge and Symmes Drive, as well as the reconstruction of portions of Auburn Road, and Independence Drive. The existing diamond interchange will be reconstructed and brought up to current NHDOT standards.

The proposed action at Exit 5 involves modifications to a stone box culvert located along the M & L Corridor that has been determined eligible for listing in the National Register of Historic Places. This culvert is located east of Auburn Road and south of Independence Drive. The existing 2.5 foot wide by 3 foot high stone box culvert currently conveys flows from an unnamed intermittent stream northerly under the M & L Corridor to a drainage manhole (Figure 15-3). The existing culvert is connected to the manhole via a 36 inch diameter concrete pipe. A 24 inch concrete pipe under Independence Drive connects the manhole to a wetland located north of Independence Drive. This wetland drains to the west and is associated with a tributary to Little Cohas Brook.

A ±550 foot portion of Independence Drive is to be shifted southerly onto the M & L Corridor to align opposite the existing Verani Way intersection with Auburn Road (Figure 15-4). As adequate cover cannot be placed over the stone culvert to provide a suitable road bed that would meet Town of Londonderry roadway standards, the proposed improvements will place a new 18 inch concrete pipe within and along the bottom of the existing stone box culvert, and will fill in the resulting voids around the new pipe with flowable fill. The new pipe will extend approximately 7 feet beyond the existing stone box culvert, requiring construction of a new headwall at the pipe's southern inlet. The new pipe will connect to the existing drainage manhole at the north end of the stone culvert. The relocated Independence Drive will be constructed over the new pipe and the stone culvert remnants. Relocation of an existing underground AT&T fiber-optic communications line, which runs in a 20 foot easement along the south side of the M & L Corridor, will be required due to the placement of the new pipe and construction of the new headwall. This relocation is anticipated to require shifting the AT&T conduit northerly and the lowering it at least 18 inches so that is situated under the new 18 inch concrete pipe. Approximately 20 feet of a split steel sleeve will be installed to provide protection to the conduit. This relocation effort will not require any splicing or new facilities along the line; other than the 20 feet of steel sleeving.

15.3 Description of Historic Section 4(f) Resources

The proposed project has been reviewed by the NH SHPO and FHWA pursuant to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) procedures for the "Protection of Historic and Cultural Properties" (36 CFR 800). Following the completion of this review it was determined that the stone box culvert located on the M & L Corridor is potentially eligible for listing in the National Register of Historic Places under Criterion C (See DSEIS Appendix I: Historic Resources Effects Memo Update).

The approximately 35 foot long stone box culvert is a 2.5 foot wide by 3 foot high structure composed of dry-lain ashlar granite blocks. Approximately half of the top of the culvert consists of lintels composed of angled iron beams, with the remainder lintels composed of granite. The differences in the lintel types is the result of past lengthening of the culvert that accommodated a widened M & L Corridor. The culvert conveys an intermittent stream northerly under the M & L Corridor. When Independence Drive was constructed, the northern outlet was modified to flow directly into a concrete catch basin, which directs the stream under Independence Drive through a 24 inch concrete pipe. This concrete pipe outlets to a wetland area that drains to the west to a tributary of Little Cohas Brook.

15.4 Impacts to Section 4(f) Properties

The proposed reconstruction of the Exit 5 interchange includes the southerly relocation of the Independence Drive intersection with Auburn Road and will align Independence Drive directly opposite Verani Way. This requires shifting to the south approximately 550 feet of Independence Drive onto the M & L rail corridor and impacts the existing 2.5-foot wide M & L Corridor stone box culvert #19.23 (Figure 15-4). The existing stone box culvert will be impacted by the placement of a new 18 inch concrete pipe along the bottom and within the culvert. Flowable fill is proposed to be used to fill in the voids around the new pipe within the culvert. The top of the stone culvert, which consists of iron and granite lintels, may be required to be removed to facilitate the placement of the new concrete pipe within the existing culvert.

A headwall for the new pipe will be constructed approximately 7 feet to the south of the stone culvert's existing inlet, requiring the removal of the existing headwall. The 36 inch concrete pipe connection to the drainage manhole on the northerly end of the stone culvert will be removed and replaced, requiring additional impacts to the northern portion of the culvert. The stone culvert remnants will be backfilled with flowable fill and will remain under the relocated Independence Drive. Due to these impacts to the stone culvert the NH SHPO and FHWA have determined that the proposed action will have a Section 106 Adverse Effect on the resource.

15.5 Alternatives Which Avoid Section 4(f) Property Impacts

The following alternatives, which would avoid and/or minimize impacts to the Section 4(f) property, have been reviewed during the final design process and were not recommended because of engineering or financial constraints, environmental impacts, property impacts, and/or failure of the alternatives to adequately address the area's transportation needs and/or safety problems. No feasible or prudent alternatives exist that would meet the purpose and need of the project.

15.5.1 No Build Alternative

The No-Build alternative, which does not reconstruct the Exit 5 Interchange, is not considered prudent since it would do nothing to correct the structural and functional deficiencies associated with the existing I-93 Exit 5 Interchange. The poor operational conditions would remain, as would the dangerous, inconvenient, and highly undesirable queuing of the southbound off-ramp extending into the mainline during peak commuting hours. If nothing is done, the red-listed bridges within the Exit 5 interchange will continue to deteriorate. With the further deterioration of the bridge, the heavy traffic volumes on I-93 would continue to compromise the safety of the traveling public. This alternative ignores the purpose and need for the project and does not address the safety deficiencies of the roadway. Over time, this alternative would lead to increased safety hazards, risk of injury and possibly loss of life. This would not be prudent given the importance of this major north-south Interstate Highway. For these reasons this alternative is not considered prudent or feasible.

An alternative, which retains the existing Auburn Road intersections with Independence Drive, would perpetuate an existing safety concern associated with the conflicts occurring due to the offset of this intersection with the nearby Verani Way intersection with Auburn Road, which is located only ±20 foot to the south (Figure 15-2). Additionally, as Verani Way is located only 150 feet from the NH 28 intersection with Auburn Road, this safety concern would increase due to the projected increases in traffic volumes and the new Exit 5 interchange configuration. As such, this alternative is not considered prudent.

15.5.2 Retention of Existing Culvert

Relocation of Independence Drive with the retention of the existing culvert would result in the relocated road having inadequate cover (about one foot) over the existing culvert. This would result in an unacceptable design that does not meet Town of Londonderry roadway standards and would create concerns with the life of the roadway, such as the formation of frost heaves on the relocated Independence Drive, and would lead to long-term maintenance concerns.

Providing adequate cover over the existing culvert would require raising the proposed roadbed on Verani Way, Independence Drive, Auburn Road, and most likely extending to the NH 28 intersection with Auburn Road. This would result in greater right-of-way impacts to the adjacent properties located along Auburn Road, and possibly require acquisition of commercial properties. For these reasons, this alternative is not considered prudent or feasible.

15.5.3 New Pipe East of Existing Culvert

For an alternative that would construct a new 18 inch pipe easterly of the existing stone box culvert, the existing stone box would need to be filled in and the intermittent stream would need to be directed to the new pipe, requiring additional wetland impacts. Constraints are also introduced due to the presence of the existing buried AT&T fiber-optic telephone cable located along the south side of the M & L Corridor. Directing drainage to a new pipe east of the stone culvert would necessitate impacting the AT&T conduit over a greater distance increasing the cost of the project and adding

delays to the construction schedule. Due to insufficient slack in the existing conduit, to relocate the cable without incurring an impact to the historic box culvert would not be possible with a simple lowering or shifting of the cable. The AT&T fiber optic line relocation would require a 200 foot long directional drill, the installation of two manholes and the replacement of wire between splice points; estimated at 10,000 feet. The cost for replacement of the AT&T conduit is estimated at approximately $120,000. Additionally, there is the potential for additional conflicts of the new pipe with existing water and sewer lines that are located along Independence Drive resulting in greater engineering and constructions costs. For these reasons, this alternative is not considered prudent or feasible.

15.5.4 Realignment of Verani Way

Shifting Verani Way to the north to align opposite the existing Independence Drive would entail greater impacts to wetland areas and additional right-of-way impacts to adjacent properties most likely requiring the acquisition of a commercial building (Figure 15-2). This realignment of Verani Drive would also be problematic if the M & L Corridor were to be reactivated for railroad use, as driveway accesses to two commercial properties located south of Verani Way would need to cross the rail alignment. For these reasons, this alternative is not considered prudent or feasible.

15.5.5 Stone Culvert Relocation

Due to its unique construction the relocation of the culvert is problematic without compromising its integrity. Furthermore the presence of the fiber-optic telephone cable along the M & L Corridor precludes its relocation in the same general area. Relocating elsewhere along the corridor is not feasible or prudent.

15.6 Measures to Minimize Harm/Mitigation

Minimization has been incorporated in the design with the placement of an 18 inch pipe along the bottom of the existing stone box culvert. This will provide for the remnants of the stone culvert to be retained by being buried under the relocated Independence Drive.

It was determined at the February 12, 2009, Cultural Resource Agency Coordination Meeting that the following mitigation measures are to be included as part of the project:

- Documentation of the features that make stone culvert eligible for the National Register of Historic Places will occur through the completion of a NH Historic Property Documentation Form. This form will include large format photographs, a sketch plan of the elevation of the culvert, a design plan, a narrative description, and statements of historical background, context, and significance.
- If, during construction, the removal of the lintels is required to accommodate the installation of the new pipe and excavation reaches the top or sides of the culvert so they are exposed, the NHDOT will monitor the excavation to ascertain whether there is any evidence of historic quarry marks on any of these exposed stone blocks faces. These quarry marks will be documented as they become accessible to view, and;

- Completion of an area form to document the remaining structures located along the M & L Corridor from Manchester, NH to the Massachusetts state line in Salem, NH.

15.7 Coordination

Coordination meetings among the NHSHPO (NHDHR), FHWA, and NHDOT were held on November 13, 2008 and February 12, 2009 to discuss alternatives and measures to minimize harm to the stone box culvert. The measures, which were considered reasonable were evaluated and incorporated into the design of this project. An Effect memo was prepared and agreed to by the NHSHPO and FHWA, with concurrence by NHDOT, which addresses unavoidable impacts to this historic property (See DSEIS Appendix I: Historic Resources Effects Memo Update).

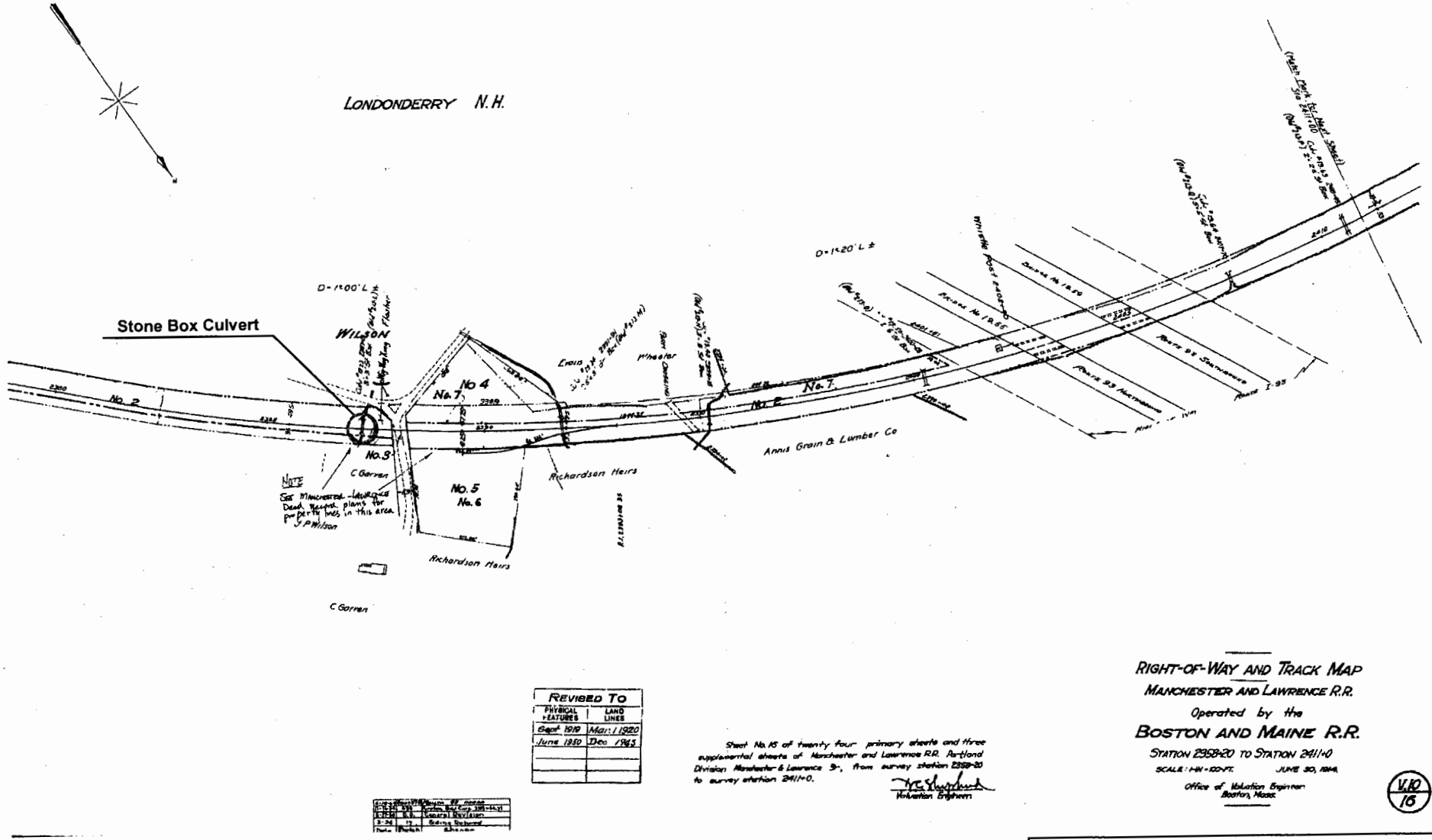
Letters requesting input on the impacts to the stone box culvert were sent to various local organization and/or officials along the M & L Corridor as noted below:

Agency/Organization	Contact	Letter Sent	Reply Received
NH DRED – Division of Parks and Rec.	Jennifer Codispoti	03/04/2009	
Manchester Historic Association		03/04/2009	
Manchester Heritage Commission		03/04/2009	
Londonderry Historic District Commission	Arthur Rugg	03/04/2009	
Londonderry Historical Society	Ginny Dahlfred	03/04/2009	
Town Of Derry Historical Commission	Richard Holmes	03/04/2009	
Derry Historical Society		03/04/2009	
Windham Historic District Commission	Carol Pynn	03/04/2009	03/06/09
Windham Historical Society		03/04/2009	
Salem Historic District Commission	Jeffrey Barraclough	03/04/2009	
Salem Historical Society		03/04/2009	

The DSEIS/Draft Section 4(f) Evaluation was circulated to the U.S. Department of Interior, the Advisory Council on Historic Preservation, and the New Hampshire Division of Historic Resources for review and comment. As documented in FSEIS Appendix A: Comment Response Document, comments were received from the U.S. Department of Interior indicating concurrence with the finding that there are no feasible and prudent alternatives to the 2005 Selected Alternative.

15.8 Summary Statement

Based upon the above considerations, there are no feasible and prudent alternatives to the use of land from Section 4(f) properties, and the proposed action includes all planning to minimize harm to these properties resulting from such use.



REVISED TO	
PHYSICAL FEATURES	LAND LINES
Sept. 1919	Mar. 1920
June 1950	Dec. 1963

Sheet No. 15 of twenty four primary sheets and three supplemental sheets of Manchester and Lawrence R.R. Portland Division Manchester & Lawrence Sys., from survey station 2358+20 to survey station 241+40.

Valuation Engineer

RIGHT-OF-WAY AND TRACK MAP
MANCHESTER AND LAWRENCE R.R.
Operated by the
BOSTON AND MAINE R.R.
STATION 2358+20 TO STATION 241+40
SCALE: 1 IN. = 100 FT. JUNE 30, 1919.
Office of Valuation Engineer
Boston, Mass.

V.10
16

Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

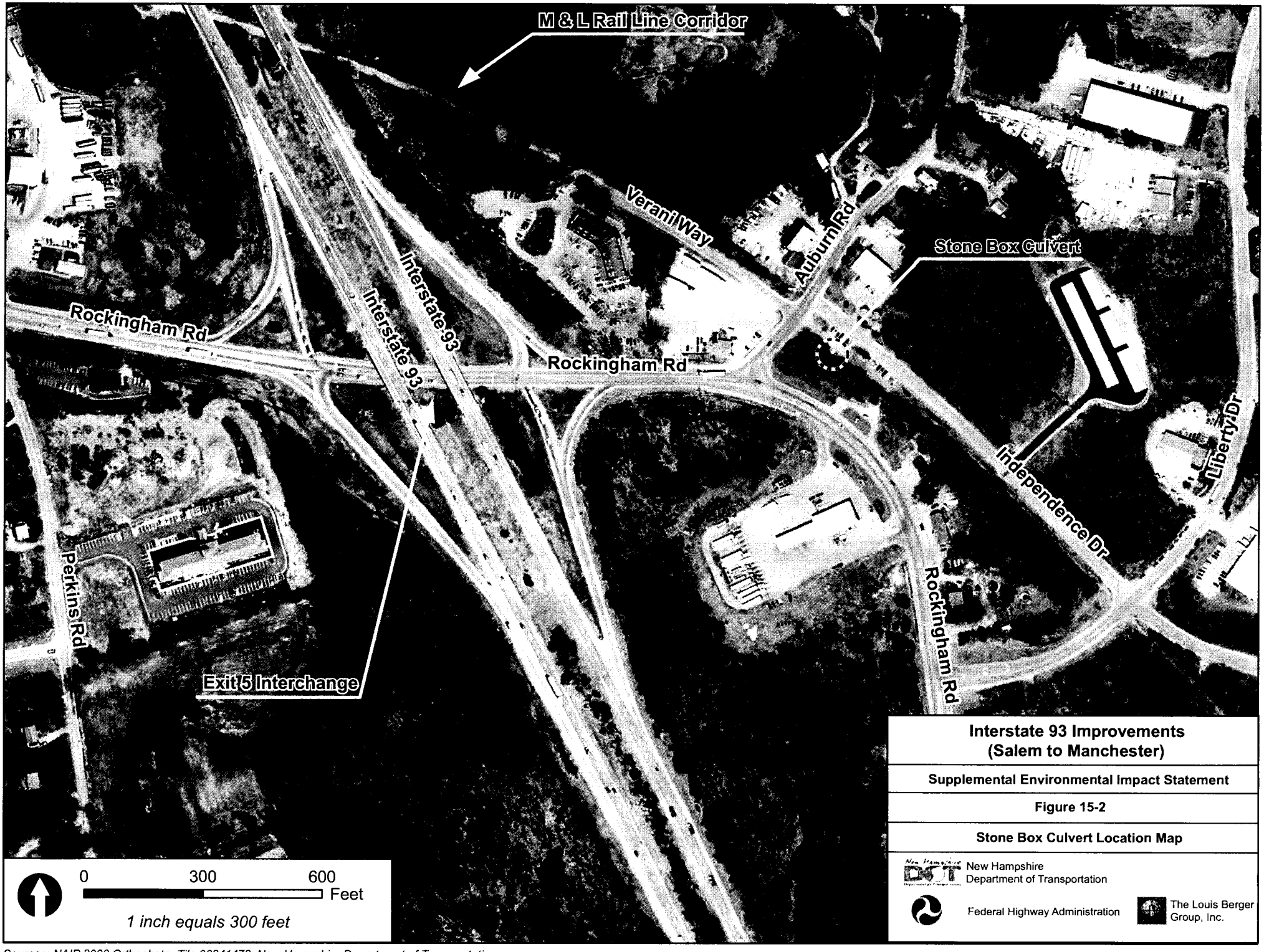
Figure 15-1

M&L Right-of-Way Map

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.



Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 15-2

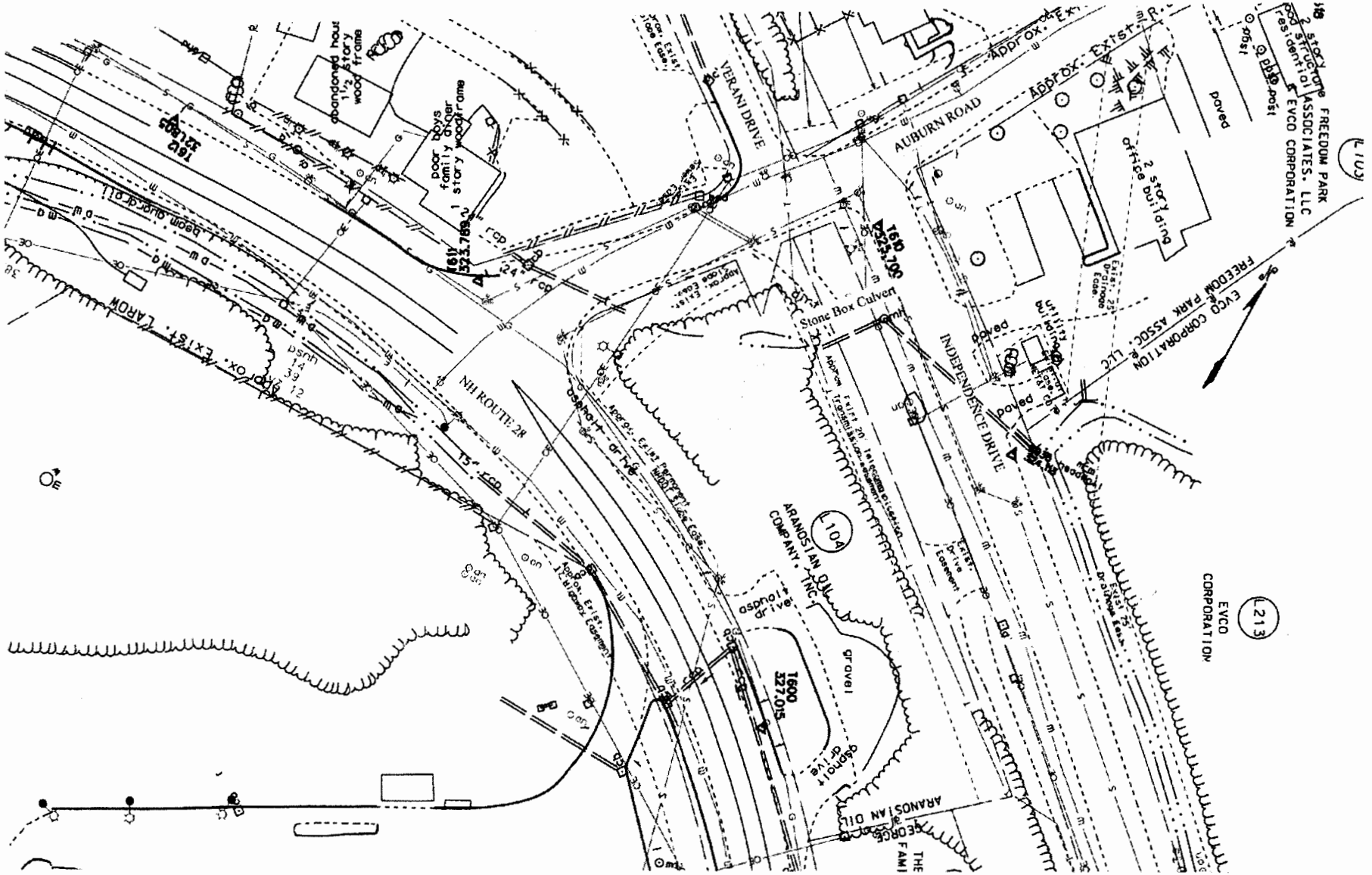
Stone Box Culvert Location Map

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

Sources: NAIP 2008 Orthophoto, Tile 06241472; New Hampshire Department of Transportation.



Interstate 93 Improvements (Salem to Manchester)

Supplemental Environmental Impact Statement

Figure 15-3

Existing Conditions

New Hampshire Department of Transportation

Federal Highway Administration

The Louis Berger Group, Inc.

16.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

16.1 Public Involvement

The Notice of Intent for the I-93 Improvements Supplemental Environmental Impact Statement (SEIS) was published in the Federal Register on March 12, 2008 (Volume 73, Number 49, pages 13272-13273). In accordance with 23 CFR 771.130(d) and 40 CFR 1502.9(c)(4), scoping was not reinitiated for the SEIS. The scope of the SEIS was determined based on the specific issues identified in the court order and the reevaluation of the 2004 FEIS.

During the preparation of the Draft SEIS (DSEIS), public information meetings were held on March 18 and 19, 2008 in Londonderry and Salem, respectively. The purpose of the meetings was to inform the public of the current status of the project, explain the SEIS process and analysis scenarios, and present preliminary traffic analysis results. In total, approximately 33 people attended the meetings. Information on the DSEIS, including the presentation shown at the meetings, was made available on the project website (www.rebuildingi93.com/).

Upon completion of the DSEIS, FHWA provided copies of the document to the EPA Office of Federal Activities and issued a notice of availability (NOA) in the Federal Register, consistent with NEPA. The NOA provided notice of the public comment period that began on August 17, 2009 and ended on October 1, 2009.[1] In response to requests for comment period extension, the comment period was extended to October 9, 2009, for a total duration of 53-days. The DSEIS was distributed to federal agencies, state agencies, regional agencies, municipalities in the Delphi study area and other individuals and organizations that have expressed an interest in the project during previous public involvement activities or by commenting on the 2004 FEIS (See Chapter 17: Draft SEIS Distribution List). The DSEIS was also made available for public review at local libraries and through the project website. There were a total of 111 written comments received during the comment period, either by mail, email or submitted through the project website.

A public hearing was held on September 22nd, 2009, from 7:00 PM to 9:00 PM at the Derry Municipal Center. The public hearing was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS. The public hearing included a presentation on the results of the DSEIS and an opportunity for public comment. A total of twelve individuals provided verbal comments at the public hearing.

Copies of all the written comments received and the public hearing transcript are provided in FSEIS Appendix A: Comment Response Document. This appendix also documents NHDOT's and FHWA's responses to substantive comments.

[1] The DSEIS was filed with the EPA Office of Federal Activities in time to appear in the August 14, 2009 edition of the Federal Register. However, the NOA was published August 17, 2009 and listed the comment period end date as September 28, 2009. An amended NOA listing the comment period end date as October 1, 2009 was published in the Federal Register on August 21, 2009.

16.2 Agency Coordination

The New Hampshire Department of Transportation has continued to conduct extensive coordination with federal and state resource agencies since the release of the 2004 FEIS. This coordination has addressed issues such as the design of the project stormwater treatment practices, and the status of project mitigation commitments. Coordination has also occurred with the Nashua Regional Planning Commission, Southern New Hampshire Planning Commission, and the Rockingham Planning Commission regarding the regional emissions sensitivity analysis (See Chapter 5: Air Quality). Agencies that received a copy of the 2002 DEIS, 2004 FEIS, the DSEIS or commented on the DSEIS will be provided a copy of the FSEIS for review (See Chapter 17: Final SEIS Distribution List).

17.0 FINAL SEIS DISTRIBUTION LIST

The following distribution list of agencies, elected officials, municipalities, private organizations, businesses and individuals was developed based on the 2004 FEIS distribution list and expanded to include individuals that attended the SEIS public information meetings, the DSEIS public hearing, as well as the individuals and organizations that commented on the DSEIS. In addition, the names and addresses of the agencies and individuals that received a copy of the 2004 FEIS were researched and updated as appropriate.

17.1 Federal Agencies

Michael Bartlett, Field Office Supervisor
U.S. Fish & Wildlife Service
70 Commerical Street, Suite 300
Concord, NH 03301-5087

George Cleek IV, State Conservationist
Natural Resources Conservation Service
Federal Building
2 Madbury Road
Durham, NH 03824

Mary Currier, District Conservationist
Rockingham County Conservation District
Natural Resources Conservation Service
110 North Road
Brentwood, NH 03833-6614

Krista Olson, District Conservationist
Hillsborough County Conservation District
Natural Resources Conservation Service
Chappell Professional Center
468 Route 13 South
Milford, NH 03055

Richard Roach, Regulatory Office
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Willie R. Taylor, Director
Office of Environmental Policy and Compliance
US Department of Interior
Main Interior Building, 2462
1849 C Street, NW
Washington, DC 20240

Timothy Timmermann
Office of Environmental Review
U.S. Environmental Protection Agency-Region I
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Director
Federal Aviation Administration
New England Region
12 New England Executive Park
Burlington, MA 01803-5299

Regional Director
Federal Emergency Management Agency,
Region I
99 High Street, 6th Floor
Boston, MA 02110

Environmental Evaluation Branch
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Office of Policy
Federal Railroad Administration
1200 New Jersey Avenue SE
Mail Stop 15
Washington, DC 20590

Regional Administrator
Federal Transit Administration,
Transportation Systems Center
Kendall Square
55 Broadway, Suite 920
Cambridge, MA 02142-1093

Regional Director
National Marine Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

National Oceanic and Atmospheric Administration
1401 Constitution Avenue, NW
Room 6217
Washington, DC 20230

Environmental Analysis Branch
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Office of the Secretary
U.S. Department of Agriculture
1400 Independence Avenue, SW, Room 200 A
Washington, DC 20250

Office of NEPA Policy and Compliance(GC-20)
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585-0103

Regional Director, Region I
U.S. Department of Housing and Urban Development
Thomas P. O'Neill, Jr. Federal Building
10 Causeway Street, 3rd Floor
Boston, MA 02222-1092

NEPA Compliance Division-EIS Filing Section
U.S. Environmental Protection Agency
Office of Federal Activities
Ariel Rios Building (South Oval Lobby),
Mail Code 2252-A
1200 Pennsylvania Avenue, NW
Washington, DC 20460

New Hampshire/Vermont Water Science Center
U.S. Geological Survey
331 Commerce Way
Pembroke, NH 03275

17.2 State Agencies

Collis Adams, Administrator
New Hampshire Department of Environmental Services
Wetlands Bureau
29 Hazen Drive
Concord, NH 03302-0095

George Bald, Commissioner
New Hampshire Department of Resources and Economic Development
172 Pembroke Road
Concord, NH 03302-1856

Tom Burack, Commissioner
New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03302-0095

Jeffrey B. Mullan, Secretary of Transportation
Massachusetts Department of Transportation
10 Park Plaza, Suite 3170
Boston, MA 02116

Steve Couture, Rivers Coordinator
New Hampshire Department of Environmental Services
River Management and Protection Program
29 Hazen Drive
Concord, NH 03302-0095

Paul Currier, Watershed Management Division
New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03302-0095

Timothy W. Drew, Administrator
Public Information and Permitting
New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03302-0095

Lynda Jayes, Technical Service Division
New Hampshire State Library
20 Park Street
Concord, NH 03301

Lorraine Merrill, Commissioner
New Hampshire Department of Agriculture Markets & Food
P.O. Box 2042
Concord, NH 03302-2042

Elizabeth Muzzey
New Hampshire Division of Historical Resources
19 Pillsbury Street, 2nd Floor
Concord, NH 03301-3570

Donna Nelson
Massachusetts Emergency Management Program
400 Worcester Road
Framingham, MA 01701-1317

Glen Normandeau, Executive Director
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301

Christopher M. Pope, Director
New Hampshire Department of Safety
Division of Homeland Security and Emergency Management
33 Hazen Drive
Concord, NH 03301

Robert R. Scott, Director
New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03302-0095

Harry Stewart, Director
New Hampshire Department of Environmental Services
Water Division
29 Hazen Drive
Concord, NH 03302-0095

Frank Tramontozzi, Chief Engineer
Massachusetts Department of Transportation
10 Park Plaza, Suite 3170
Boston, MA 02116

Michael J. Wimsatt, Director
New Hampshire Department of Environmental Services
Waste Management Division
29 Hazen Drive
Concord, NH 03302-0095

Environmental Protection Bureau
New Hampshire Department of Justice
33 Capitol Street
Concord, NH 03301

Transportation and Construction Bureau
New Hampshire Department of Justice
33 Capitol Street
Concord, NH 03301

Director
New Hampshire Department of Resources and Economic Development
Division of Forests and Lands
P.O. Box 1856
Concord, NH 03302-1856

New Hampshire Natural Heritage Bureau
172 Pembroke Road
Concord, NH 03301-1856

Director
New Hampshire Office of Energy and Planning
4 Chenell Drive
Concord, NH 03301-8501

17.3 Federal and State Elected Officials

Alfred Baldasaro, Representative
New Hampshire House of Representatives
41 Hall Road
Londonderry, NH 03053-2306

Raymond S. Burton, Executive Councilor
New Hampshire Executive Council
338 River Road
Bath, NH 03749

Betsi DeVries, Alderman and State Senator
New Hampshire State Senate
4 Orchard Way
Manchester, NH 03109

Anthony DiFruscia, Representative
New Hampshire House of Representatives
Rockingham- District 04
107 North Main Street
Concord, NH 03301

Michael Downing, State Senator, District 22
New Hampshire State Senate
107 N. Main Street
Statehouse Room 124
Concord, NH 03301

Frank Emiro, Representative
New Hampshire State Representative
Rockingham- District 03
P.O. Box 285
Londonderry, NH 03053-0285

Theodore L. Gatsas, State Senator, District 16
New Hampshire State Senate
Legislative Office Building, Room 102
Concord, NH 03301

John Gleason, Representative
New Hampshire State Representative
45 English Range Road
Derry, NH 03038-5323

Judd Gregg, U.S. Senator
41 Hooksett Road
Manchester, NH 03104

David Hess, Representative
New Hampshire State Representative
Merrimack- District 09
107 North Main Street
Concord, NH 03301

Paul Hodes, U.S. Representative
18 North Main Street, Suite 400
Concord, NH 03301

Beverly A. Hollingworth, Executive Councilor
New Hampshire Executive Council
209 Winnacunnet Road
Hampton, NH 03842

Robert J Letourneau, State Senator
New Hampshire State Senate
Legislative Office Building, Room 101-A
33 North State Street
Concord, NH 03301

John Lynch, Governor
Office of the Governor
State House
25 Capitol Street
Concord, NH 03301

Deborah B. Pignatelli, Executive Councilor
New Hampshire Executive Council
22 Appletree Green
Nashua, NH 03062

James B. Rausch, Representative
Rockingham County District 5
65 Gulf Road
Derry, NH 03038-5933

Jeanne Shaheen, U.S. Senator
1589 Elm Street, Suite 3
Manchester, NH 03101

John D. Shea, Executive Councilor
New Hampshire Executive Council
8 McIntire Road
Nelson, NH 03457

Carol Shea-Porter, U.S. Representative
33 Lowell Street
Manchester, NH 03101

Raymond J. Wieczorek, Executive Councilor
New Hampshire Executive Council
1060 Ray Street
Manchester, NH 03104

17.4 Regional Agencies and Municipalities

Jim Arruda, Secretary
Town of Derry Conservation Commission
Derry Municipal Center
14 Manning Street
Derry, NH 03038

Allison Baker, Director
Kelley Library
234 Main Street
Salem, NH 03079

Arthur E. Barnes, Chairman
Town of Salem
Board of Selectman
33 Geremonty Drive
Salem, NH 03079

Jim Bouley, Mayor
City of Concord
41 Green Street
Concord, NH 03301

Jim Bowen, Chairman
Town of Amherst
Amherst Conservation Commission
2 Main Street
Amherst, NH 03031

Kevin J. Breen, Chief of Department
Town of Salem
Salem Fire Department
152 Main Street
Salem, NH 03079

Bruce R. Breton, Vice-Chairman
Board of Selectmen
Town of Windham
4 North Lowell Road
P.O. Box 120
Windham, NH 03087-0120

Michael Brown, Chair
Town of Londonderry
268 B Mammoth Road
Londonderry, NH 03053-3416

Matt Caron
Southern New Hampshire Planning Commission
438 Dubuque Street
Manchester, NH 03102-3546

David Caron, Town Manager
Town of Londonderry
268 B Mammoth Road
Londonderry, NH 03053

Cynthia Copeland, Executive Director
Strafford Regional Planning Commission
2 Ridge Street, Suite 4
Dover, NH 03820-2505

Kerrie Diers, Executive Director
Nashua Regional Planning Commission
9 Executive Park Drive, Suite 201
Merrimack, NH 03054

Dennis A. DiZoglio, Executive Director
Merrimack Valley Planning Commission
160 Main Street
Haverhill, MA 01830

Andre Garron, Director
Town of Londonderry
Londonderry Department of Community Development
268 B Mammoth Road
Londonderry, NH 03053

Joseph Giarrusso, Office of Conservation
Town of Methuen
Quinn Building
90 Hampshire Street
Methuen, MA 01844

Wesley A. Golomb, Chairman
Town of Deerfield
Deerfield Conservation Commission
8 Raymond Road
Deerfield, NH 03037-0159

Frank Guinta, Mayor
City of Manchester
One City Hall Plaza
Manchester, NH 03101

Carl Heidenblad, Director
Nesmith Library
8 Fellows Road
Windham, NH 03087

Deborah Lievens, Chair
Town of Londonderry Conservation Commission
268 B Mammoth Road
Londonderry, NH 03053

Cheryl Lynch, Director
Derry Public Library
64 E. Broadway
Derry, NH 03038

William M. Manzi, III, Mayor
City of Methuen
41 Pleasant Street
Searles Building, Room 306
Methuen, MA 01844

Rick Metts, Chair
Derry Town Council
Derry Municipal Center
14 Manning Street
Derry, NH 03038

Donna Morris, Executive Director
Greater Salem Chamber of Commerce
24 North Broadway
Salem, NH 03079

Kelleigh Murphy Alderman-Ward 12
City of Manchester
One City Hall Plaza
Manchester, NH 03101

Charles Myette, Chairman
Town of Chester
Chester Conservation Committee
84 Chester Street
Chester, NH 03036

Daniel O'Neil, Alderman At-large
City of Manchester
One City Hall Plaza
Manchester, NH 03101

Barbara Ostertag-Holtkamp, Director
Leach Library
276 Mammoth Road
Londonderry, NH 03053

David Preece
Southern New Hampshire Planning Commission
438 Dubuque Street
Manchester, NH 03102-3546

Carl Quiram
Town of Goffstown
Department of Public Works
404 Elm Street
Goffstown, NH 03045

G. Wesley Robertson, Chairman
Mount Vernon Conservation Commission
Town Hall
1 South Main Street
Mont Vernon, NH 03057

William Scott, Community Development Director
Town of Salem
33 Geremonty Drive
Salem, NH 03079

Cliff Sinnott, Executive Director
Rockingham Planning Commission
156 Water Street
Exeter, NH 03833

Jonathan Sistare, Town Manager
Town of Salem
Salem Town Hall
33 Geremonty Drive
Salem, NH 03079

Richard Snyder, Chairman
Town of Chester
Chester Planning Board
84 Chester Street
Chester, NH 03036

Gary Stenhouse, Town Administrator
Town of Derry
Derry Municipal Center
14 Manning Street
Derry, NH 03038

David Sullivan, Town Administrator
Town of Windham
P.O. Box 120
Windham, NH 03087

Mike Tardiff, Interim Executive Director
Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301

Denise Van Zanten, Director
Manchester City Library
405 Main Street
Manchester, NH 03103

Lowell VonRuden, Chairman
Town of Goffstown
Goffstown Planning Board
16 Main Street
Goffstown, NH 03045

Kathy Wagner, Vice Chair
Town of Londonderry
Londonderry Town Council
268 B Mammoth Road
Londonderry, NH 03053

Sally Wilkins, Chairman
Town of Amherst
Amherst Planning Board
2 Main Street
Amherst, NH 03031

Beverly A. Woods, Executive Director
Northern Middlesex Council of Governments
40 Church Street, Suite 200
Lowell, MA 01852

Director
City of Concord
Concord Community Development Department
41 Green Street
Concord, NH 03301

Concord Planning Board
City of Concord
41 Green Street
Concord, NH 03301

Mayor
City of Lawrence
200 Common Street
Lawrence, MA 01840

Director
City of Manchester
Department of Planning & Community Development
One City Hall Plaza
Manchester, NH 03101

Director
City of Manchester
Department of Public Works
227 Maple Street
Manchester, NH 03103

Conservation Commission
City of Manchester
One City Hall Plaza
Manchester, NH 03101

City of Manchester Board of Aldermen
One City Hall Plaza
Manchester, NH 03101

Board of Selectmen
Town of Allenstown
16 School Street
Allenstown, NH 03275

Board of Selectmen
Town of Andover
Town Offices
36 Bartlet Street
Andover, MA 01810

Board of Selectmen
Town of Atkinson
21 Academy Avenue
Atkinson, NH 03811

Board of Selectmen
Town of Auburn
P.O. Box 309
Auburn, NH 03032

Bedford Town Council
Town of Bedford
24 North Amherst Road
Bedford, NH 03110

Board of Selectmen
Town of Bow
10 Grandview Road
Bow, NH 03304

Board of Selectmen
Town of Candia
Candia Town Hall
74 High Street
Candia, NH 03034

Board of Selectmen
Town of Chester
84 Chester Street
Chester, NH 03036

Board of Selectmen
Town of Danville
P.O. Box 11
Danville, NH 03819

Deerfield Open Space Committee
Town of Deerfield
8 Raymond Road
Deerfield, NH 03037-0159

Board of Selectmen
Town of Deerfield
8 Raymond Road
Deerfield, NH 03037-0159

Planning Board
Town of Derry
Derry Municipal Center
14 Manning Street
Derry, NH 03038

Board of Selectmen
Town of Dracut
62 Arlington Street
Dracut, MA 01826

Board of Selectmen
Town of Dunbarton
1011 School Street
Dunbarton, NH 03046

Board of Selectmen
Town of Goffstown
16 Main Street
Goffstown, NH 03045

Board of Selectmen
Town of Hampstead
11 Main Street
Hampstead, NH 03841

Hooksett Conservation Commission
Town of Hooksett
35 Main Street
Hooksett, NH 03106

Hooksett Town Council
Town of Hooksett
35 Main Street
Hooksett, NH 03106

Heritage/Historic District Commission
Town of Londonderry
268 B Mammoth Road
Londonderry, NH 03053

Planning Board
Town of Londonderry
268 B Mammoth Road
Londonderry, NH 03053

Board of Selectmen
Town of North Andover
120 Main Street
North Andover, MA 01845

Board of Selectmen
Town of Pelham
6 Village Green
Pelham, NH 03076

Pembroke Board of Selectmen
Town of Pembroke
311 Pembroke Street
Pembroke, NH 03275

Board of Selectmen
Town of Raymond
4 Epping Street
Raymond, NH 03077

Board of Selectmen
Town of Salem
Salem Town Hall
33 Geremonty Drive
Salem, NH 03079

Conservation Commission
Town of Salem
Salem Town Hall
33 Geremonty Drive
Salem, NH 03079

Historic District Commission
Town of Salem
310 Main Street
Salem, NH 03079

Planning Board
Town of Salem
Salem Town Hall
33 Geremonty Drive
Salem, NH 03079

Board of Selectmen
Town of Sandown
320 Main Street
Sandown, NH 03873

Board of Selectmen
Town of Tewksbury
1009 Main Street
Tewksbury, MA 01276

Conservation Commission
Town of Windham
P.O. Box 120
Windham, NH 03087

Board of Selectmen
Town of Windham
P.O. Box 120
Windham, NH 03087

Planning Board
Town of Windham
P.O. Box 120
Windham, NH 03087

Historic District/Heritage Commission
Town of Windham
P.O. Box 120
Windham, NH 03087

17.5 Private Organizations, Businesses and Individuals

Gary Abbott
Executive Vice President
The Associated General Contractors of New Hampshire, Inc.
48 Grandview Road
Bow, NH 03304

Paul Alessi
17 Wynridge Road
Windham, NH 03087

David Anderson
Repower America
111 Porpoise Way
Portsmouth, NH 03801

Richard Areand
5 Cardinal Drive
Bow, NH 03304

Laura Aronson
38 Boyd Road
Londonderry, NH 03053

John Bachner
3 Richardson Dr
Derry, NH 03038

Charles Bazdanes
Hanscom AFB
11 Eglin Street, Bldg 1618
Bedford, MA 01731-2120

John M. Beltogen
242 Laurence Road
Salem, NH 03079

Harry W. Blunt
President
Concord Coach Lines
7 Langdon Street
Concord, NH 03301

Kathy Bove
3 Tinkham Ln
Londonderry, NH 03053

Eleanor Briggs
86 King's Highway
Hancock, NH 03449

Richard Brownell
12 Craven Terrace
Derry, NH 03038

Bob Bryant
8 Clinton Street
Salem, NH 03079

Elizabeth Burns
2 Eastwood Road
Windham, NH 03087

Paul Calzadea
35 Bartley Hill Road
Londonderry, NH 03053

Frantz Cantive
22 Trolley Car Lane
Londonderry, NH 03053

Thomas Cardon
2 Cunningham Drive
Derry, NH 03038

William Carter
61 Lake Street
Salem, NH 03079

Reed Page Clark
79 Stonehenge Road
Londonderry, NH 03053-2411

Gerry Coffey
10 Forest View Drive
Hollis, NH 03049

Mark Connors
5 Cabot Drive
Derry, NH 03038

Catherine Corkery
40 North Main Street
Concord, NH 03301

Tracy Cosgriff
26D Twist Hill Road
Dunbarton, NH 03046

Kathy Cote
37 Bluff Street
Salem, NH 03079

Arthur Cunningham
New Hampshire Sierra Club
P.O. Box 511
Hopkinton, NH 03229

Alan Daigneault
17 Gordon Mountain Road
Windham, NH 03087

Sally D'Angelo
50 Sharon Rd
Windham, NH 03087

Paul DeBye
PO Box 232
Nashua, NH 03063

Roger Deiker
2 Wall Street
Manchester, NH 03101

Alice Desauza
64 Old Farm Road
Bedford, NH 03110

Director
New Hampshire Public Interest Research Group
30 S. Main Street, Suite 301-A
Concord, NH 03301

Joseph Doherty
9 Trafalgar Square, Suite 720
Nashua, NH 03063

Richard Dooley
7 Heron Cove Rd
Windham, NH 03087

Tim Driscoll
38 Sagharbor Dr
Auburn, NH 03032

Andrew P. Duncan
16 Kimball Street
Concord, NH 03301-2868

William Dunlap
141 Amherst Street
Amherst, NH 03031-3017

Derek R. Durbin
Environmental Policy Director
New Hampshire Lakes Association
84 Silk Farm Road
Concord, NH 03301

Laura El-Azem
22 Summer Drive
Londonderry, NH 03053

Paul and Jean Eno
28 Bay Shore Drive
Greenland, NH 03840

Sharon Enright
72 Chase Rd
Londonderry, NH 03053

Executive Director
Manchester Neighborhood Housing Services, Inc.
20 Merrimack Street
Manchester, NH 03101-2206

Dr. Elliot Fair
25 Lake Shore Road
Salem, NH 03079

Bob Frey
10 Simpson Road
Windham, NH 03087

Joe Friedman
9 Red Roof Lane
Salem, NH 03079

William Ganley
176 North Policy Street
Salem, NH 03079

Donald E. Gartrell
Counsel to Abutting Landowners
Gallagher, Callahan & Gartrell
214 N. Main Street
Concord, NH 03302-1415

Ken Gesualdo
48 Buckingham Drive
Londonderry, NH 03053

Stephen A. Gorski
16 Cifre Lane
Plaistow, NH 03865

Jim Greene
42 East Derry Road
Derry, NH 03038

Peter Griffin
85 West Shore Road
Windham, NH 03087

Martin L. Gross
15 Rumford Street
Concord, NH 03301-3906

Leon Guay
12 Kingsbury St
Derry, NH 03038

Stephen Gudek
20 Martin Avenue
Salem, NH 03079

April Guilmet
Londonderry Times
2 Litchfield Road
Londonderry, NH 03053

Matthew Habinowski
15 Alexander Ave
Salem, NH 03079

Cindy Hall
99 Rockingham Park Boulevard
Salem, NH 03079

Tom Harden
2 Cunningham Drive
Derry, NH 03038

Chalmers Hardenbergh
162 Main Street
Yarmouth , ME 04096

Meredith Hatfield
Program Director
NH Charitable Foundation
37 Pleasant Street
Concord, NH 03301

Travis Heinstrom
360 Amherst Street
Nashua, NH 03063

Deb Hewitt
11 Grove Street
Londonderry, NH 03053

Thomas Irwin
Senior Attorney
Conservation Law Foundation
27 North Main Street
Concord, NH 03303

Diana Jacobs
83 King's Highway
Hancock, NH 03449

Chip Johnson
12 Clearview Dr
Bow, NH 03304

Robert A. Joubert
9 Sycamore Road
Methuen, MA 01844-7143

Kenyon F. Karl
17 Ephraim Page Road
Wentworth, NH 03282-3224

Richard Katzenberg
P.O. Box 266
Amherst, NH 03031

Jay Koelb
14 Flag Ct
Auburn, NH 03032

Bill Koury
4 Plummer Drive
Londonderry, NH 03053

Kathy LaFreniere
Londonderry Access Community TV Center
281 Mammoth Road
Londonderry, NH 03053

Sandra Lane
12 Windsor Boulevard
Londonderry, NH 03053

Peter Langlois
32R Derryfield Road
Derry, NH 03038

Gary LeSuer
41L Tigertail Circle
Derry, NH 03038

David Lewis
13 Millville Street
Salem, NH 03079

Paul Lomanno
10 Cortland St
Londonderry, NH 03053

Wayne MacLeay
164 South Road
Londonderry, NH 03053

Melissa Magnuson
5 Apollo Road Ext
Londonderry, NH 03053

J. Andrew Manning
Crystal Lake Preservation Association
27 Fremont Street
Manchester, NH 03013

Andrew Manuse
3 Hilda Avenue
Derry, NH 03038

Priscilla Mattson
New Hampshire Sierra Club
144 W Webster St, Apt 5B
Manchester, NH 03104-2939

Betsey McKinney
3 Leelynn Circle
Londonderry, NH 03053

Dr. Dennis Meadows
Inst. for Policy & Social Science Research at UNH
105 Main Street, Thompson Hall, Room 301
Durham, NH 03824

Wayne Morris
14 Jordan Road
Windham, NH 03087

Clarissa Navarro
11 East Woodbine Drive
Londonderry, NH 03053

Neil Nicholson
136 Fox Hollow Way
Manchester, NH 03104

Steve Norton
10 Perkins Rd
Londonderry, NH 03053

Kate O'Brien
Executive Director
Groundwork Lawrence, Inc.
60 Island Street
Lawrence, MA 01840

Sean O'Keefe
163 Mammoth Road
Londonderry, NH 03053

Paul J. Parisi
29 Sullivan Avenue
Salem, NH 03079

Carl Paulsen
New Hampshire Rivers Council
54 Portsmouth Street
Concord, NH 03301

Rachel and Robert Pitt
35 White Plains Avenue
Londonderry, NH 03053

Ryan Ridley
3 Modean Drive
Derry, NH 03038

Bob Rigby
56 E Nashua Rd
Windham, NH 03087

Simon Rios
5 Dinsmore Street
Nashua, NH 03064

Arthur Rugg
130 Waverly Street
Cambridge, MA 02139

Jeff Rupert
54 Vandora Drive
Manchester, NH 03103

Bill Scanzani
1 Victoria Circle
Pelham, NH 03076

William Schroeder
14 Woodvue Road
Windham, NH 03087

Lois Sciarretta
30 Kendall Pond Road
Derry, NH 03038

Thomas Selinka
5 Sara Beth Ln
Londonderry, NH 03053

Scott Severn
28 Red Deer Drive
Londonderry, NH 03053

Tom Shanley
7 Fairway Road
Londonderry, NH 03053

Jerry Shinn
President
Piscataquog Watershed Association
5A Mill Street
New Boston, NH 03070

William H. Smith, PHD
P.O. Box 585
Center Harbor, NH 03036

Carolyn Snyder
Chapter Vice Chair
The Sierra Club
40 North Main Street, 2nd Floor
Concord, NH 03301

Dave Souter
9 Rolling Ridge Rd
Windham, NH 03087

Mike Speltz
18 Sugarplum Lane
Londonderry, NH 03053-3300

Paul Spiess
9 Robert Road
Amherst, NH 03031

Andy Stahly
6 Fiddlers Ridge Rd
Londonderry, NH 03053

Ed Stapanon
93 Walker Hill Road
Ossipee, NH 03864

Deborah Starin
457 Varney St
Manchester, NH 03102

Mark Starin
457 Varney St
Manchester, NH 03102

Ken Stremsky
187 Poplar Street
Manchester, NH 03104

Christine Tabak
Executive Director
Merrimack River Watershed Council, Inc.
600 Suffolk Street, Fifth Floor
Lowell, MA 01854

JoAnn Thornton
79 Sandown Rd
Danville, NH 03819

Peter Thornton
79 Sandown Road
Danville, NH 03819

Steve Tieland
150 Kendall Pond Rd
Windham, NH 03087

Ralph Valentine
18 Telo Road
Windham, NH 03087

AP Varney
43 Sparhawk Dr
Londonderry, NH 03053

Kathy Wagner
1 Action Blvd
Londonderry, NH 03053

R.S. Waites
1 W Everett St
Derry, NH 03038

Abby Williamson
Fellow, Research Associate
John F. Kennedy School of Government
79 JFK Street, Mailbox 114
Cambridge, MA 02138

Linda Winmill
Winmill Equip Co. Inc
3 International Road
Windham, NH 03087

Sy Wrenn
49 Range Road, Suite 20
Windham, NH 03087

Steve Young
7 Fiddlers Ridge Road
Londonderry, NH 03053

Northern New England
American Automobile Association
P.O. Box 3544
Portland, ME 04104

New Hampshire Chapter
Appalachian Mountain Club
Route 302
Bretton Woods, NH 03575

Canobie Lake Protective Association
41 West Shore Road
Windham, NH 03087

Exeter River Local Advisory Committee
156 Water Street
Exeter, NH 03833

Jordan Institute
11 Stickney Avenue, 2nd Floor
Concord, NH 03301

Northeast Natural Resource Center
National Wildlife Federation
58 State Street
Montpelier, VT 05602

New Hampshire Audubon
84 Silk Farm Road
Concord, NH 03301

Society for the Protection of New Hampshire Forests
54 Portsmouth Street
Concord, NH 03301

Ronald Goldthwaite
3 Scenic Drive
Derry, NH 03038

Chris Bean
165 School St.
Concord, NH 03301

Jameson Paine
7 Dumbarton Oaks
Stratham, NH 03885

Terry Date
46 West Broadway
Derry, NH 03028

Meghan Mackenzie
488 Pembroke St.
Pembroke, NH 03275

Robert Lyford
CLD Engineers
540 Commercial St.
Manchester, NH 03101

Paul Konieczka
CLD Engineers
540 Commercial St.
Manchester, NH 03101

Ryan Jennison
Merrimack River Watershed Council, Inc.
600 Suffolk Street
Lowell, MA 01854

John Michols
11 Nutfield Drive
Londonderry, NH 03053

Ken Gould
2 Wryan Way
Derry, NH 03038

18.0 LIST OF PREPARERS

18.1 New Hampshire Department of Transportation

William Cass, P.E.
Project Director
B.S., Civil Engineering, University of New Hampshire

Peter Stamnas, P.E.
Project Manager
B.S., Civil Engineering, University of New Hampshire

Subramanian N. Sharma, P.E., Traffic Research Engineer
Ph.D., Civil Engineering, University of Massachusetts-Amherst

Marc Laurin, Senior Environmental Manager
B.A., Biology, Potsdam State University of New York

Charles Hood, Administrator, Bureau of Environment
Noise
B.S., Forestry, University of New Hampshire

Mark Hemmerlein, Water Quality Program Manager
Water Resources
B.S., Forestry, University of Vermont.
M.S., Botany, University of Wyoming

18.2 Federal Highway Administration

Jamison Sikora
Environmental Programs Manager
A.S., Architectural and Building Engineering Technology, Vermont Technical College
B.S., Civil Engineering, Norwich University
Responsibility: Document Review

Leigh Levine
Planning and Development Manager
B.A., Philosophy, Miami University
M.P.A., Ohio State University
Responsibility: Document Review

Brigitte Mandel
Engineering and Operations Manager
B.S., Civil Engineering, Virginia Tech
Responsibility: Document Review

Marlys Osterhues
Environmental Protection Specialist
B.A., Environmental Studies, University of California at Santa Barbara
Responsibility: Document Review

Michael Culp
Environmental Protection Specialist
B.S., Civil Engineering, University of Arkansas
M.A., Public Policy, George Mason University
Responsibility: Document Review

Cecilia Ho
Air Quality and Transportation Conformity Team Leader
M.C.P. (Transportation Planning), Georgia Institute of Technology, Atlanta, GA.
Responsibility: Review Air Quality Analysis

Emily Biondi
Air Quality Specialist
B.A., Economics, University of Michigan
M.S., Urban and Regional Planning, Florida State University
Responsibility: Review Air Quality Analysis

Jeff Houk
Air Quality Specialist
B.S., Chemical Engineering, Michigan State University
Responsibility: Review Responses to Comments Concerning Climate Change

Mark Ferroni
Noise Team Leader
M.S., Environmental Studies, Shippensburg University
B.S., Environment Studies, Shippensburg University
Responsibility: Review Noise Analysis

18.3 The Louis Berger Group, Inc.

Lawrence Pesesky, AICP
Consultant Project Manager
M.S., Geography, Rutgers University
B.S., Agricultural Economics, Cornell University

Joseph. Lowry, P.E.
Transportation
B.S. Engineering, Thayer School of Engineering
B.A. Engineering Science, Dartmouth College

Edward Bromage
Transportation Modeling
B.S., Civil Engineering, Worcester Polytechnic Institute

Mike Monteleone, AICP, P.P.
Transportation
M.R.P., City and Regional Planning, University of North Carolina, Chapel Hill
B.A., Geography, State University of New York at Albany

Denise Huang
Transportation
B.S., Electrical Engineering, Polytechnic Institute of Brooklyn

Wendy Aviles
Transportation
M.E., Civil Engineering, The City College of New York,
B.S., Civil Engineering, Pedro Henríquez Ureña National University

George Perng
Air Quality
M.S., Environmental Engineering, Stevens Institute of Technology
B.S., Civil and Environmental Engineering, Cheng Kung University

Lucy Li
Noise
B.A. Geography, Hunter College

Dayna Sherwood
Noise
B.S. Meteorology, Pennsylvania State University

Leo Tidd
Preparation of the SEIS
M.P.A., Environmental Science and Policy, Columbia University
B.S., Environmental Studies, SUNY College of Environmental Science and Forestry

Sam Limthong
Air Quality
B.S. Mechanical Engineering, New York Institute of Technology

Dane Ismart
Transportation Modeling
M.S.C.E./University of Minnesota
B.S.C.E./Georgia Institute of Technology

Thierry Garcy
Preparation of the SEIS
B.S. City University of New York at City College, Chemical Engineering

Jenna Hobocan
Land Use
B.S. Cornell University, Applied Economics and Management

Dara Braitman
Indirect Effects
M.U.P. Hunter College of the City University of New York
B.A. William Smith College, Urban Studies

Stephanie Camay
Socioeconomics and Land Use
M.U.P. Hunter College of the City University of New York
B.A. Miami University, Urban and Regional Planning

Scott Salmon
Hazardous Materials
M.S. Prescott College, Environmental Studies
B.A. Rutgers University, Geography

Gustavo Jimenez
Transportation Modeling
M.A. University of Texas, Civil Engineering
B.S. University of Texas, Civil Engineering

Ray Bode
Natural Resources
M.S. Fish and Wildlife Science, North Carolina State University
B.A. Environmental Studies, Warren Wilson College

19.0 ACRONYMS

AADT	Annual Average Daily Traffic
ACHP	Advisory Council on Historic Preservation
ACOE	U.S. Army Corps of Engineers
ADS	Asbestos Disposal Sites
ADT	Average Daily Traffic
AET	All Electronic Tolling
ASTM	American Society of Testing and Materials
ATF	Advisory Task Force
ATR	Automatic Traffic Recorder
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
CLF	Conservation Law Foundation
CMAQ	Congestion Mitigation and Air Quality Program
CO	carbon monoxide
CO_2	carbon dioxide
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CTAP	Community Technical Assistance Program
CWA	Clean Water Act
DHV	Design Hour Volume

DDHV	Directional Design Hour Volume
DEIS	Draft Environmental Impact Statement
DFIRM	Digital Flood Insurance Rate Map
DSEIS	Draft Supplemental Environmental Impact Statement
EDR	Environmental Data Resources, Inc.
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ELMI	New Hampshire Economic and Labor Market Information Bureau
EPA	U.S. Environmental Protection Agency
ERS	Economic Research Service
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FSEIS	Final Supplemental Environmental Impact Statement
FTA	Federal Transit Administration
GMZ	Groundwater Management Zone
HABS	Historic American Building Survey
HAER	Historic American Engineering Standards
HB	House Bill
HFCs	hydrofluorocarbons
HOV	High Occupancy Vehicles
IM	Incident Management
ISA	Interim Site Assessment
ITS	Intelligent Transportation System

LEDPA	Least Environmentally Damaging Practicable Alternative
LOS	Level of Service
MA	Massachusetts
MA EOT	Massachusetts Executive Office of Transportation
MBTA	Massachusetts Bay Transportation Authority
MDSS	Maintenance Decision Support System
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
MRF	Materials Recovery Facilities
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSATs	Mobile Source Air Toxics
MSW	municipal solid waste
MVMT	million vehicle miles traveled
N_2O	nitrous oxide
NAAQS	Noise Abatement Criteria
NAC	National Cooperative Highway Research Program
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NH	New Hampshire
NH DRED	New Hampshire Division of Resource and Economic Development
NH GRANIT	New Hampshire Geographically Referenced Analysis and Information Transfer System
NHDES	New Hampshire Department of Environmental Services
NHDHR	New Hampshire Division of Historical Resources
NHDOS	New Hampshire Department of Safety
NHDOT	New Hampshire Department of Transportation

NHESP	Massachusetts Natural Heritage & Endangered Species Program
NHF&GD	New Hampshire Fish and Game Department
NHNHB	New Hampshire Natural Heritage Bureau
NHPA	National Historic Preservation Act
NHSHPO	New Hampshire State Historic Preservation Officer
NHSTMS	New Hampshire Statewide Travel Model System
NLEV	National Low Emission Vehicle standards
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxides
NOA	Notice of Availability
NRCS	Natural Resources Conservation Service
NRPC	Nashua Regional Planning Commission
NWI	National Wetlands Inventory
OEP	New Hampshire Office of Energy and Planning
ORT	Open Road Tolling
PBAA	Panelist's Blended Average Allocation
PCBs	Polychlorinated biphenyls
PFCs	perfluorocarbons
PM	particulate matter
POD	Performance Overlay District
PSI	Preliminary Site Investigation
RASCAL	Risk Assessment Survey for Contamination and Appraisal of Land
RFG	reformulated gasoline
ROD	Record of Decision
RPC	Rockingham Planning Commission

RPCs	Regional Planning Commissions
RWIS	Road Weather Information System
SARA	Superfund Amendments and Reauthorization Act
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SNHPC	Southern New Hampshire Planning Commission
TAZ	Traffic Analysis Zone
TCM	Transportation Control Measure
TDM	Transportation Demand Management
TIMP	Traffic Incident Management Plan
TIP	Transportation Improvement Program
TMA	Transportation Management Association
TMCs	Turning Movement Counts
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TNM	Traffic Noise Model
TP	Total Phosphorous
TSC	Technical Steering Committee
TSM	Transportation Systems Management
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
V/C	volume to capacity ratio
VHB	Vanasse Hangen Brustlin, Inc.

VHT	Vehicle Hours Travelled
VLAP	Volunteer Lake Assessment Program
VMT	vehicle miles traveled
VOC	volatile organic compounds
VPD	vehicles per day
WWTP	waste water treatment plant

20.0 REFERENCES

Agreement between the State of New Hampshire and the Town of Salem. *Re: Salem-Manchester, 10418C, I-93 Improvements Project.* March 17, 2010.

American Society for Testing and Materials. 2005. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation E 1527-05.*

Auburn, New Hampshire 2007 Master Plan.

Boarnet, Marlon and Andrew F. Haughwout. 2000. *Do Highways Matter? Evidence and Policy Implications of Highways Influence on Metropolitan Development.* The Brookings Institution Center on Urban and Metropolitan Policy.

Bow, New Hampshire 2004 Master Plan.

Busnel, R.G. 1978. *Effects of Noise on Wildlife.*

California Department of Transportation. 2005. *California Guidance for Preparers of Cumulative Impact Analysis.*

Central New Hampshire Planning Commission. 2010. *CTAP Buildout Analysis Results for - Allenstown, Bow, Concord, Dunbarton, and Pembroke (Draft).*

Chester, New Hampshire 2006 Master Plan.

City of Manchester Planning Board. *Master Plan for the City of Manchester, New Hampshire.* Adopted December 10, 2009.

City of Manchester Planning and Community Development Department, 2006a. *City of Manchester Final - Downtown Parking Study.* Prepared by Lansing Melbourne Group, LLC and Consulting Engineers, Inc.

City of Manchester Planning and Community Development Department, 2006b. *Downtown Strategic Development Plan.* Prepared by Hillier Architecture with Econsult Corporation and Copley Wolff Design Group.

City of Manchester Planning and Community Development Department, 2006c. *Greening the City: A Parks and Recreation Master Plan Update for the City of Manchester, New Hampshire.* Prepared by Peter J. Smith & Company, Inc., Buffalo, NY and Fort Erie, ON.

Cobbetts Pond Watershed Restoration Plan Project. http://projects.geosyntec.com/BW0131/

Council on Environmental Quality. 2005. *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis.*

Driscoll. 1990. *Pollutant Loadings and Impacts from Highway Stormwater Runoff: Volume 1: Design Procedures.*

Economic Research Service and U.S. Department of Agriculture. 1998. *Wetlands and Agriculture: Private Interests and Public Benefits.* Agricultural Economic Report No. 765. By Ralph E. Heimlich, Keith D. Wiebe, Roger Claassen, Dwight Gadsby, and Robert M. House.

Environmental Data Resources, 2008. EDR Data Map Environmental Atlas, I-93 Corridor. May 23, 2008.

Federal Highway Administration. *Dwight D. Eisenhower National System of Interstate and Defense Highways.* Last modified on October 5, 2009.
http://www.fhwa.dot.gov/programadmin/interstate.cfm

Federal Highway Administration. 2006. *Interim Guidance on Air Toxic Analysis in NEPA Documents.*

Federal Highway Administration. 2003. *Interim Guidance: Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process.*

Federal Highway Administration. 1987. *Guidance for Preparing and Processing Environmental and Section 4(f) Documents. T6640.8a*

Federal Highway Administration and New Hampshire Department of Transportation. 2004. *Final Environmental Impact Statement Interstate 93 Improvements Salem to Manchester IM-IR-93-1(174)0, 10418-C*

Federal Register Volume 69 Number 84, Pages 23857-23951. EPA. *Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas with Deferred Effective Dates.* April 30, 2004.

Federal Register Volume 70 Number 148, Pages 44470-44478. EPA. *Identification of Ozone Areas for Which the 1-Hour Standard Has Been Revoked and Technical Correction to Phase 1 Rule.* June 15, 2005.

Federal Register Volume 71 Number 47, Pages 12467-12511. EPA. *PM2.5 and PM10 Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM2.5 and Existing PM10 National Ambient Air Quality Standards.* March 10 2006.

Federal Register Volume 71, Number 200, Pages 61144-61233. EPA. *National Ambient Air Quality Standards for Particulate Matter.* October 17, 2006.

Federal Register Volume 73 Number 60, Pages 16436-16514. EPA. *National Ambient Air Quality Standards for Ozone.* March 27, 2008.

Federal Register Volume 73 Number 145, Page 43751. EPA. *Adequacy Status of the Submitted 2009 VOC and NOX Motor Vehicle Emissions Budgets for Transportation Conformity Purposes; New Hampshire; Boston-Manchester-Portsmouth (SE), New Hampshire, 8-Hour Ozone Area.* July 28, 2008.

Federal Register Volume 74 Number 186. EPA. *Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards.* September 28, 2009.

Gannon, R., Geographic Information System (GIS) Coordinator, Town of Salem. Email communication. May 23, 2008.

Golder Associates, Inc. 2007. *Remedial Action Implementation Report- I-93 Exit 5 Park and Ride, Portion of the Former Spartan Transfer Station, Londonderry, New Hampshire, NHDES #198804014.* October 29, 2007.

Handy, Susan. 2005. *Smart Growth and the Transportation Land Use Connection: What Does the Research Tell Us?* International Regional Science Review, Vol 28 pp 146-167.

Hanson, Susan. 1995. *The Geography of Urban Transportation.*

Hartgen, David. 2003. *Highways and Sprawl in North Carolina.* John Locke Foundation. http://www.johnlocke.org/acrobat/policyReports/highways-report.pdf

Jeffrey H. Taylor & Associates and Center for the Environment, Plymouth State University. 2008. *Potential Solutions for Reducing Road Salt Use in New Hampshire.*

Jeffrey H. Taylor & Associates and Center for the Environment, Plymouth State University. 2007. *Results of the Workgroup Interviews for the I-93 Salt Reduction Workgroup.*

Letter from New Hampshire Department of Transportation, Commissioner George N. Campbell, Jr. to Governor John H. Lynch. March 19, 2010.

Letter from New Hampshire Department of Environmental Services to Derek Monson, Cobbetts Pond Improvement Association. June 28, 2007.

Letter from New Hampshire Department of Environmental Services to New Hampshire Department of Transportation. February 26, 2010.

Letter from Paul Currier, New Hampshire Department of Environmental Services to Charles Hood, New Hampshire Department of Transportation. February 2, 2009.

Letter from Stephen Perkins, U.S. Environmental Protection Agency to Paul Currier, New Hampshire Department of Environmental Services. January 22, 2009.

Letter from U.S. Environmental Protection Agency to New Hampshire Governor Lynch. August 19, 2008.

Malyshkina, Nataliya V. and Fred Mannering. 2008. *Effect of Increases in Speed Limits on Severities of Injuries in Accidents.* Transportation Research Record No. 2083.

Memorandum from Mark Laurin, NHDOT to Peter Stamnas, Keith Cota and Steve Liakos, NHDOT. *Re: Salem-Manchester, 10418C Potential Fish and Wildlife Passages.* May 12, 2008.

Memorandum from April Marchese, U.S. Department of Transportation, Office of Natural and Human Environment. *Re: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents.* September 30, 2009.

Memorandum from New Hampshire Natural Heritage Bureau to Ray Bode, The Louis Berger Group, Inc. *Re: Review by NH Natural Heritage Bureau.* July 21, 2008.

Memorandum from Nancy H. Sutley, Chair, Council on Environmental Quality to Heads of Federal Departments and Agencies. *Re: Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.* February 18, 2010.

Memorandum from Vanasse Hangen Brustlin, Inc to NHDOT. *Re: Interstate 93 Improvements Summary of Floodplain Impacts and Mitigation, IM-IR-93-1(174)0, 10418-C.* August 21, 2008.

Memorandum from Vanasse Hangen Brustlin, Inc to NHDOT. *Re: Interstate 93 Improvements Floodplain Impacts and Mitigation, Southern Design Segment IM-IR-93-1(174)0, 10418-C.* March 6, 2008.

Memorandum from Vanasse Hangen Brustlin, Inc to NHDOT. *Re: Interstate 93 Improvements Potential Floodplain Mitigation Haigh Avenue Site, I-93 Salem, NH. IM-IR-93-1(174)0, 10418-C.* January 16, 2008.

Methuen, Massachusetts 2007 Master Plan.

Moldoff, R., Planning Director, Town of Salem Planning Division. Email communication. May 28, 2008.

Moldoff, R., Planning Director, Town of Salem Planning Division. Telephone communication. May 23, 2008.

Nashua Regional Planning Commission. 2005. *Region-Wide Buildout Impact Analysis.*

New Hampshire Employment Security, Economic & Labor Market Information Bureau, 2005 Average Weekly Wage.

New Hampshire Department of Environmental Services. 2010. *2010 List of Threatened or Impaired Waters That Require a TMDL.*

New Hampshire Department of Environmental Services. 2009. *2009 New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future.*

New Hampshire Department of Environmental Services. 2008. *Volunteer Lake Assessment Program Data for Canobie Lake and Cobbetts Pond.*

New Hampshire Department of Environmental Services. 2008. *Total Maximum Daily Load Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Policy-Porcupine Brook in Salem and Windham, NH.*

New Hampshire Department of Environmental Services. 2008. *Total Maximum Daily Load Study for Waterbodies in the Vicinity of I-93 Corridor from Massachusetts to Manchester, NH: North Tributary to Canobie Lake in Windham, NH.*

New Hampshire Department of Environmental Services. 2008. *Total Maximum Daily Load Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Dinsmore Brook in Windham, NH.*

New Hampshire Department of Environmental Services. 2008. *Total Maximum Daily Load Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Beaver Brook in Derry and Londonderry, NH.*

New Hampshire Department of Environmental Services. 2008. *One Stop Data Retrieval Website, available from* http://www.des.state.nh.us/OneStop.htm. *Accessed on May 29, 2008.*

New Hampshire Department of Environmental Services. 2008. *2009 Motor Vehicle Emissions Budget for the Southeast New Hampshire Moderate 8-hour Ozone Non-Attainment Area.*

New Hampshire Department of Environmental Services. 2007. *Interim Guidance for the Design of Structural Stormwater Best Management Practices Needed to Achieve Results of Pollutant Loading Analyses.*

New Hampshire Department of Environmental Services, Watershed Management Bureau. October 2009. *FY09 TMDL Implementation Monitoring, Data Report and Quality Assurance Audit.*

New Hampshire Department of Environmental Services, Watershed Management Bureau. August 2008. *FY08 TMDL Implementation Monitoring, Data Report and Quality Assurance Audit.*

New Hampshire Department of Environmental Services and New Hampshire Department of Transportation. 2007. *I-93 Expansion BMP Efficiency Trend Monitoring Plan.*

New Hampshire Department of Environmental Services. 2007. *Data Report for the Total Maximum Daily Loads for Chloride for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH.*

New Hampshire Department of Environmental Services. 2006. *Water Quality Certification for Interstate 93 Improvements: Salem to Manchester.*

New Hampshire Department of Environmental Services. 2006. *Total Maximum Daily Load Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Quality Assurance Project Plan.*

New Hampshire Department of Environmental Services. 1995 (November). *Recommendations for Implementing Groundwater Protection Measures when Siting or Improving Roadways.*

New Hampshire Department of Environmental Services and New Hampshire Department of Transportation. 2006. *I-93 Expansion Chloride Surveillance Monitoring Plan.*

New Hampshire Department of Environmental Services and New Hampshire Department of Transportation. 2006. *Memorandum of Agreement between New Hampshire Department of Transportation and New Hampshire Department of Environmental Services relative to the Development and Implementation of Total Maximum Daily Loads for Chloride and Other Activities for Water Quality Protection on Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester.*

New Hampshire Department of Transportation. 2009. *Implementation Plan to Increase the Efficiency and Effectiveness of Road Salt Use To Meet Total Maximum Daily Load For Chloride In Water Bodies Along the I-93 Corridor From Salem to Manchester, NH: Beaver Brook, Dinsmore Brook, North Tributary to Canobie Lake and Porcupine-Policy Brook.*

New Hampshire Department of Transportation. 2008. *New Hampshire Statewide Model Documentation.*

New Hampshire Department of Transportation. 2008. *Summary of Crash Data, I-93 Salem to Manchester, 2000 to 2007.*

New Hampshire Department of Transportation. 2008. *Summary of Transportation Conformity Determinations in New Hampshire: 2009-2035.*

New Hampshire Department of Transportation. 2008. *I-93 Transit Investment Study Draft Preliminary Definition and Evaluation of Alternatives Report*

New Hampshire Department of Transportation. 2007. *FY2007-2010 Conformity Determinations for Transportation Improvement Programs, Transportation Plans, and Regional Emissions Analysis of Transportation Projects in New Hampshire's Nonattainment Areas.*

New Hampshire Department of Transportation. 2003. *Salem to Concord Bikeway Feasibility Study.*

New Hampshire Department of Transportation. 2002. *Fiscal Year 2003-2005 Conformity Determination for Transportation Improvement Programs, Transportation Plans, and Regional Emission Analysis of Transportation Projects.*

New Hampshire Department of Transportation and Massachusetts Executive Office of Transportation. 2008. *I-93 Transit Investment Study Draft Preliminary Definition and Evaluation of Alternatives Report.*

New Hampshire Department of Transportation Community Technical Assistance Program. 2008. *A Guide for Community Driven Regional Land Use and Transportation Planning.*

New Hampshire Department of Transportation Community Technical Assistance Program. 2007. *CTAP Mid-Year Status Report of Year One Programs.*

New Hampshire Department of Transportation Community Technical Assistance Program. 2007. *Vision to Action CTAP Community Meeting May 31, 2007.*

New Hampshire Fish & Game Department. 2005. *New Hampshire Wildlife Action Plan*

New Hampshire Office of Energy and Planning. 2007. *Current Estimates and Trends in New Hampshire's Housing Supply Update: 2006.*

New Hampshire Office of Energy and Planning. 2008. Zoning Ordinance and Land Use Regulations. March 11, 2008.

New Hampshire Office of Energy and Planning. *2008 Population Estimates of New Hampshire Cities and Towns*. June 2009.

Oregon Department of Transportation and Washington State Department of Transportation.2008. *Interstate 5 Columbia River Crossing Project, Draft Environmental Impact Statement and Draft Section 4(f) Evaluation.*

Parsons Brinkerhoff. 2002. *I-93 Manchester to Salem Expert Panel Analysis Final Report. December 28, 2001 (revised January 22, 2002).*

PB Americas, Inc. 2008. *Draft: Ridership Estimates for Capital Corridor Passenger Rail Service- Boston, MA to Manchester, NH.*

Rockingham Planning Commission. Telephone communication on March 31, 2010.

Rizzo Associates, Inc. and Alta Planning and Design. 2003. *Salem to Concord Bikeway Feasibility Study.*

Salem, New Hampshire 2001 Master Plan.

Sanborn, A., Administrator of NHDOT's Bureau of Planning. In-person meeting. June 24, 2008.

Sandown, New Hampshire 2006 Master Plan.

Sioras, G., Director, Derry Community Development Department. In-person meeting. June 23, 2008.

Sioras, G., Director, Derry Community Development Department. Telephone communication. May 22, 2008 and May 29, 2008.

Southern New Hampshire Planning Commission. 2009. *NH 102 Access Management Plan.*

Southern New Hampshire Planning Commission (SNHPC), 2007a. *Land Use Update 2006. November 2007.*

Southern New Hampshire Planning Commission. 2010. *Town of Bedford, CTAP Buildout Report (Draft).*

Southern New Hampshire Planning Commission. 2006. *Town of Candia, CTAP Buildout Analysis Scenario 1.*

Southern New Hampshire Planning Commission. 2008. *Town of Chester, CTAP Buildout Report.*

Southern New Hampshire Planning Commission. 2009. *Town of Derry, CTAP Buildout Report.*

Southern New Hampshire Planning Commission.2009. *Town of Goffstown, CTAP Buildout Report.*

Southern New Hampshire Planning Commission.2009. *Town of Raymond, CTAP Buildout Report.*

The Louis Berger Group, Inc. 2008. *Wildlife and Fish Passage Inspection Report Salem to Manchester, IM-IR-93-1(174)0, 10418-C.*

The Smart Associates, Environmental Consultants, Inc. 2008. *Chloride Surveillance Monitoring I-93 Widening from Massachusetts to Manchester, NH. Northern Section Annual Report, Year 1.*

The Smart Associates, Inc. 2007. *Wildlife/Fish Corridor Enhancements: I-93 Improvements Project Windham to Manchester, New Hampshire.*

Texas Department of Transportation. 2006. *Guidance on Preparing Indirect and Cumulative Impact Analyses.*

Thompson, T., Town Planner, Londonderry Planning & Economic Development Department. Email communication. May 28, 2008.

Town of Derry GIS, 2005. Derry Zoning Map. Prepared by Public Works Engineering, Assessing, Planning, Fire and Police Departments. December 2, 2005.

Town of Derry Community Development Department, 2007. Zoning Ordinance. July 5, 2007.

Town of Derry Planning Board, 2008. *New Hampshire Land Development Control Regulations.* January 16, 2008.

Town of Derry, Town of Londonderry and Federal Highway Administration. 2007. *I-93 Exit 4A Interchange Study, Derry-Londonderry, Draft Environmental Impact Statement.*

Town of Londonderry Community Development Department, 2008. Zoning Ordinance. January 2008.

Town of Londonderry Map Tools, 2007. Tax Map Index and Zoning Districts Parcel Atlas. April 2007.

Town of Londonderry Planning Board, 2008. Subdivision Regulations. April 9, 2008.

Town of Londonderry Planning Board, 2004. *Town Of Londonderry Master Plan.* Prepared by BeHan Planning Associates, LLC. November 10, 2004.

Town of Londonderry Planning Board, Community Development Department. 2009. *Northwest Small Area Plan.*

Town of Salem GIS, 2008a. Salem Route 93 Abutters Land Use Map. April 2008.

The Town of Salem GIS, 2008b. Salem Route 93 Abutters Lot Development Date. April 2008.

The Town of Salem GIS, 2008c. Town of Salem Zoning Map. April 2008.

Town of Salem Planning Division, 2007. Zoning Regulations, Chapter 309. June 2007.

Town Planner, City of Manchester Planning and Community Development Department. In-person meeting. June 24, 2008.

Transportation Research Board. 2002. *NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects.*

Transportation Research Board. 2001. *NCHRP Report 456: Guidebook for Assessing the Social and Economic Effects of Transportation Projects.*

Transportation Research Board. 1999. *NCHRP Report 423A: Land Use Impacts of Transportation: A Guidebook.*

Transportation Research Board. 1998. *NCHRP Report 403: Guidance for Estimating the Indirect Effects of Proposed Transportation Projects.*

Transportation Research Board. 1978. *NCHRP Report 187: Quick-Response Urban Travel Estimation Techniques and Transferable Parameters.*

Turner, A., Planning Director, Windham Planning and Development. In-person meeting. June 23, 2008.

Turner, A., Planning Director, Windham Planning and Development. Email communication. May 19, 2008.

Urban Land Institute. 2004. *Influence of Transportation Infrastructure on Land Use.* http://www.fhwa.dot.gov/planning/tranlanduse.pdf

U.S. Army Corps of Engineers New England District. 2007. *Addendum to New England District Compensatory Mitigation Guidance: Compensation for Impacted Aquatic Resource Functions.*

U.S. Army Corps of Engineers New England District. 2007. *Clean Water Act Section 404 Permit 199201232/NAE-2004-2003.*

U.S. Army Corps of Engineers New England District. 2007. *Mitigation Plan Checklist.*

U.S. Army Corps of Engineers. 1999. *Highway Methodology Workbook Supplement.*

U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1.*

U.S. Army Corps of Engineers New England District. *Mitigation Plan Checklist Guidance.*

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. 2008. *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States.*

1990 United States Census.

2000 United States Census.

U.S. Department of Transportation Center for Climate Change and Environmental Forecasting. 2008. http://climate.dot.gov/

U.S. Environmental Protection Agency. 1992. *Guidelines for Modeling Carbon Monoxide from Roadway Intersections.*

U.S. Environmental Protection Agency. *User's Guide for the CAL3HQC dispersion model Version 2.0: A Modeling Methodology for Calculating Pollutant Concentrations near Roadway Intersections.*

U.S. Fish and Wildlife Service. 2007. *New Hampshire Wetlands and Waters: Results of the National Wetlands Inventory.* By Ralph W. Tiner.

U.S. Geological Survey. 2004. *1999-2001 National Water-Quality Assessment for the New England Coastal Basins. Circular 1226.* By Keith W. Robinson, Sarah M. Flanagan, Joseph D. Ayotte, Kimberly W. Campo, Ann Chalmers, James F. Coles, and Thomas F. Cuffney

U.S. Geological Survey. 2003. *Water-Quality Trends in New England Rivers During the 20th Century. Water-Resources Investigations Report 03-4012.* By Keith W. Robinson, Jean P. Campbell, and Norbert A. Jaworski.

Vanasse Hangen Brustlin, Inc. 2008. *I-93 Improvement Project: Chloride Surveillance Monitoring. Southern Section Annual Report, Year 1.*

Washington State Department of Transportation. 2008. *Guidance on Preparing Cumulative Impact Analyses.*

Windham Planning Board and Windham Department of Planning and Development. 2005. *Windham Master Plan, Goals, Objectives, and Strategies Implementation Plan. Volume II of II. Prepared by Taintor & Associates, Inc. in association with Appledore Engineering Howard/Stein-Hudson Associates.*

21.0 INDEX

Page

Advisory Task Force ES-5, 1-2, 19-1
Agency Coordination ES-5, 1-2, 1-3, 3-5, 3-8, 15-6, 16-1, 16-2
Agricultural Lands (Farmlands)..... ES-11, ES-13, 5-22, 8-2, 8-11, 13-2, 13-4, 13-8, 13-12 to 13-14, 13-16, 14-7
Air quality ..... ES-6 to ES-10, ES-13, ES-14, 1-1, 1-5, 1-7, 1-8, 1-10, 1-13, 3-12, 4-9, 4-10, 4-11, 5-1 to 5-25, 12-4, 12-34, 13-4, 14-4,18-2
Alternatives Screening ..... 3-8 to 3-9, 3-15, 3-16
Ambient Air Quality 5-1, 5-6, 5-24
Aquatic life 10-1, 10-5, 10-20
Archaeological resource ..... 11-1 to 11-3, 12-33, 13-14, 13-15
Business Displacements ..... 7-1 to 7-5, 8-1 to 8-11, 14-7
Carbon Monoxide ES-9, ES-10, 5-1, 5-6, 5-7, 5-10, 5-12, 5-13, 5-15, 5-17, 5-19, 14-4, 19-1
Clean Air Act ..... ES-9, 5-1, 5-3 to 5-6, 5-8, 5-23 to 5-25
Climate Change 5-4, 5-5, 5-11, 5-22, 18-2
Community Technical Assistance Program ES-6, ES-13, 1-3, 5-20, 5-21, 12-4, 12-5, 12-11, 12-34, 13-2, 13-16, 19-1
Congestion ..... ES-1, ES-7, ES-9, 1-1, 1-5, 1-6, 2-1 to 2-2, 2-4, 3-4, 3-5, 3-10, 3-12, 3-14, 3-15, 3-16, 4-2, 4-4, 4-5, 4-8, 4-9, 4-15 to 4-17, 4-20, 4-23, 4-24, 4-25, 4-29, 4-30, 4-33 to 4-34, 5-10, 5-20, 5-21, 5-24 to 5-25, 8-3, 12-9, 14-3, 14-7, 15-2, 19-1
Contaminated Properties ..... ES-11, 9-1, 9-3 to 9-5
Crashes..... 2-1, 2-4
Criteria Pollutants ..... 5-1 to 5-3, 5-9, 5-11
Cultural Resources ..... ES-12, ES-13, 8-10, 11-1 to 11-5, 12-33 to 12-34, 13-4, 13-14 to 13-16
Cumulative Impacts ..... ES-6, ES-13, 1-5, 13-1 to 13-16
Delphi Panel .... ES-7, ES-13, 1-1, 1-3 to 1-12, 3-12, 4-6, 4-9, 4-13, 4-30, 5-2, 5-12 to 5-14, 12-1, 12-7, 13-1, 13-3
Endangered Species ES-12, 10-3, 10-7, 10-11, 10-13, 10-21, 10-26, 10-28, 13-10, 13-11, 19-4
Energy ..... ES-14, 5-4, 5-5, 5-20 to 5-22, 6-1, 8-1, 10-3, 14-2 to 14-3
Essential Fish Habitat 10-5, 19-2
Executive Order 11990 10-7
Farmland Protection Policy Act 8-2, 8-11
Floodplains .... ES-6, ES-11 to ES-12, 1-3, 10-2, 10-6, 10-9, 10-13, 10-21, 10-22, 10-24 to 10-26, 10-27, 12-3, 12-5, 13-11
Greenhouse Gas Emissions ..... 5-4, 5-5, 5-9, 5-11, 5-20 to 5-22, 14-3
Groundwater ..... 9-1, 9-3 to 9-7, 10-2, 10-3, 10-6, 10-16, 10-19, 10-25, 12-3, 12-5, 13-6, 14-6, 14-7, 19-2
Hazardous Materials ..... ES-11, ES-12, 9-1 to 9-7, 10-27, 18-4
Historic Architecture ..... 11-1 to 11-5, 13-14
Housing ..... ES-10, ES-13, 7-1 to 7-5, 12-6, 12-11, 12-16, 12-26
Indirect Effects ..... ES-7, ES-13, 1-3, 1-5, 1-10, 1-12, 3-12, 4-12, 4-13, 7-2, 7-5, 12-1 to 12-35, 13-3, 13-4, 13-7, 13-9, 13-12, 13-14, 13-15, 13-16
Induced Growth ..... 1-3 to 1-4, 1-10 , 5-2, 5-8, 5-14, 12-1, 12-4

Land Use..... ES-10 to ES-11, 1-3, 1-8 to 1-12, 3-13, 4-12 to 4-13, 5-5, 5-6, 5-20, 6-1 to 6-7, ... 8-1 to 8-11, 12-1 to 12-16, 13-1 to 13-4, 13-7, 13-12, 13-15, 14-7, 18-3, 18-4
Level of Service ..... ES-1, 2-1 to 2-3, 3-10, 3-12, 4-2, 4-6, 4-17, 4-30, 15-2, 19-3
Mass Transit ES-3, 3-5, 4-5
Mitigation..... ES-5 to ES-6, ES-7, ES-12, ES-14,1-2 to 1-7, 1-14, 3-4, 3-8, 3-14, 4-4, 4-5, 5-6, ... 5-25, 6-3 to 6-13, 7-1 to 7-5, 8-11, 9-3 to 9-7, 10-6 to 10-12, 10-23 to 10-28, ... 11-1 to 11-5, 12-4, 12-33, 12-34, 13-2 to 13-16, 14-1 to 14-9, 15-6, 16-2, 19-1
Mobile Source Air Toxics ES-10, 5-1, 5-3, 5-9, 5-14, 5-18, 19-3
National Ambient Air Quality Standards ES-9, 5-1, 5-6, 5-24
National Historic Preservation Act 11-1, 13-15, 15-4, 19-4
New Hampshire Statewide Model ..... ES-7, ES-13, 1-8, 1-10, 1-12, 3-12 to 3-13, 4-7, 4-9, 4-10, ... 4-12 to 4-13, 4-15, 4-16, 4-23, 4-28, 4-34, 5-7, 5-9, 7-2, ... 12-5 to 12-12, 12-26, 12-34, 13-3
Noise ..... ES-8, ES-10, ES-13, ES-14, 1-10, 1-13, 4-10, 6-1 to 6-13, 8-10, 10-7, 10-25, 12-4, ... 12-5, 12-34, 13-4, 14-1, 14-4 to 14-7, 18-1, 18-2
Noise Abatement Criteria ES-10, 6-2, 6-3
Particulate Matter 5-1, 5-3, 5-9, 5-23, 14-4, 19-4
Population ..... ES-1, ES-6, ES-7, ES-10, ES-13, 1-1 to 1-12, 2-1, 3-12 to 3-17, 4-6 to 4-7, ... 4-9 to 4-11, 4-12 to 4-13, 4-29 to 4-30, 5-2 to 5-3, 5-7, 5-8, 5-10, 5-13, 5-17, ... 5-25, 6-8, 7-1 to 7-5, 12-1 to 12-33, 12-1 to 12-30, 12-35, 13-1 to 13-2, 14-3, 15-2
Preparers ..... 18-1 to 18-4
Productivity (short-term, long-term) ES-14, 14-1, 14-7, 14-8
Project History ES-4, 1-1
Public Involvement 1-5, 1-6, 13-3, 16-1
Purpose and Need ES-5, 1-2, 2-1, 3-1, 3-9, 3-11, 3-12, 3-16, 15-4, 15-5
Property Acquisitions ..... ES-10, ES-11, 7-1 to 7-5, 8-1, 8-11, 9-2, 9-3, 9-4 to 9-7
Rail Service ..... 3-5, 3-10, 3-11, 3-16 to 3-17, 4-6, 5-22
RASCAL 9-3, 9-4, 9-7, 19-4
References ..... 20-1 to 20-11
Regional Emission Analysis ..... ES-9 to ES-10, 5-1, 5-2 to 5-3, 5-6, 5-8, 5-10, ... 5-13 to 5-14, 5-17 to 5-18, 5-25, 16-2
Resource Commitment ..... ES-14, 14-1 to 14-9
Ride-sharing 3-11, 4-4, 4-5
Safety ..... ES-1, ES-5, ES-11, 1-2, 2-1, 2-3, 3-4, 3-8, 3-9, 3-16, 4-2, ... 4-5, 4-7, 5-24, 6-4, 8-3, 9-3, 9-7, 15-2, 15-4, 15-5
Scoping ES-6, 1-5, 1-8, 3-8, 16-1
Section 4(f) ..... 11-1, 11-4, 15-1 to 15-7
Section 404..... ES-12, 3-12, 10-3, 10-10 to 10-11, 10-23, 10-27, 13-8, 13-9
Stormwater runoff 10-1, 10-4, 12-33, 13-6, 13-7, 14-6
Surface water .... 10-1 to 10-2, 10-4 to 10-5, 10-8 to 10-9, 10-25, 12-2 to 12-5, 13-5 to 13-6, 14-6
Tolling Sensitivity Analysis..... ES-8, 1-12 to 1-13, 4-10 to 4-11, 4-30 to 4-33, 4-34, 5-10, ... 5-19 to 5-20,5-25, 6-7, 6-12 to 6-13
Traffic modeling ..... ES-7, 1-8, 3-13 to -14, 4-13, 4-32, 12-12
Transportation Demand Management ES-5, 1-2, 3-9, 3-10, 3-11, 3-15, 19-5
Transportation System Management 3-9
Vehicle Miles Traveled 2-4, 4-16, 4-23, 4-28, 5-4, 5-5, 5-9, 5-20, 5-21, 5-22, 19-6

Vernal Pools 10-7
Volatile Organic Compounds ES-10, 5-1, 5-3, 5-20, 5-25, 9-6, 19-6
Water Quality..... ES-3 to ES-4, ES-6, ES-11, 1-3, 3-6, 10-1 to 10-27, 12-2 to 12-3,
.....12-5, 13-5 to 13-8, 14-6, 14.7, 18-1
Wetlands ..... ES-11, ES-12, ES-13,10-2 to 10-3, 10-6 to 10-7, 10-9 to 10-11,
.....10-12 to 10-13, 10-21, 10-23, 10-27, 12-3 to 12-4, 12-5, 13-8 to 13-9, 13-16
Wildlife Habitat .....ES-12, ES-13, 10-3, 10-7 to 10-8, 10-11 to 10-12, 10-23, 10-24,
..... 10-26, 10-28, 12-4 to 12-5, 13-10 to 13-12, 13-16, 14-4, 14-8
Visual Resources ES-14, 14-6
Zoning..... ES-10, ES-13, 5-20, 8-1 to 8-11, 12-16, 12-26, 12-35, 13-11, 13-13, 13-16

APPENDIX A

COMMENT RESPONSE DOCUMENT

Federal Agencies

Page	Name
1	U.S. Department of the Interior
3	U.S. Environmental Protection Agency

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

TAKE PRIDE IN AMERICA

9043.1
PEP/NRM

NOV 2 2009

ER 09/837

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
U.S. Department of Transportation
19 Chenell Drive, Suite One
Concord, New Hampshire 03301

Dear Mr. Sikora:

This responds to a Request for the Department of the Interior's (Department) review and comment on the Supplemental Draft Environmental Impact Statement and Section 4(f) Evaluation for **I-93 Improvements, Salem to Manchester, Hillsborough and Rockingham Counties, New Hampshire.**

Supplemental Draft Section 4(f) Comments

The Department reviewed the supplemental documents for the subject project and noted the comprehensive considerations and sensitivity that would be given to preserving cultural resources through close and continuous consultation with the State Historic Preservation Officer (SHPO). For this project, the Effect Memo: Update (July 16, 2009) seems to effectively amend the Stipulations of the Memorandum of Agreement (MOA) of February 5, 2004. It is apparent that diligent consultation with the SHPO and other responsible parties resulted in special project planning and design features intended to preserve cultural resource values for the betterment of the human environment. (See "Executive Summary" section L; "Cultural Resources" section 11.6; and "Draft Section 4(f) Evaluation" section 15.7). 1

The Department maintains the position stated in our December 6, 2002, comment letter and agrees that there are no prudent and feasible alternatives to this project. It appears that the proposed minimization measures (see "Measures to Minimize Harm" section 15.6) approach the terms, agreements, and expectations of the Effect Memo. However, there appears to be no mention of the expansion of the Armenian Settlement (historic) District or installation of a marker recognizing this settlement community. Also not indicated are details on pipe installation and specifics pertaining to the treatment of the Independence Drive Stone Culvert. 2

The Department suggests confirmation with the SHPO on the details of these supplemental measures to minimize harm so that the Final Supplemental EIS and

Section 4(f) Evaluation can present the supplemental measures with the SHPO's full acceptance and the Department's agreement. 2

We appreciate this opportunity to provide these comments.

Sincerely,

Willie R. Taylor
Director, Office of Environmental
Policy and Compliance

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

OFFICE OF THE
REGIONAL ADMINISTRATOR

October 9, 2009

Ms. Kathleen O. Laffey
New Hampshire Division Administrator
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301

RE: EPA Comments on the Draft Supplemental Environmental Impact Statement and Reevaluation/Section 4(f) Evaluation for the Interstate 93 Improvements Hillsborough and Rockingham Counties, New Hampshire (CEQ# 20090278)

Dear Ms. Laffey:

The Environmental Protection Agency-New England Region (EPA) has reviewed the New Hampshire Department of Transportation's (NHDOT)/Federal Highway Administration (FHWA) Draft Supplemental Environmental Impact Statement (DSEIS) and Reevaluation/Section 4(f) Evaluation for the Interstate 93 (I-93) Improvements Hillsborough and Rockingham Counties, New Hampshire. We submit the following comments on the DSEIS in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The DSEIS describes the proposed widening of I-93 from two lanes in each direction to four lanes over a 19.8-mile segment from the Massachusetts/New Hampshire boundary to the I-93/I-293 interchange in Manchester, New Hampshire. The project also includes park-and-ride facilities, bus service, and ride-sharing between the project area and Massachusetts. EPA's comments on the 2002 I-93 DEIS expressed environmental objections to significant impacts to the aquatic environment which we suggested should be addressed through additional analyses, mitigation, and other commitments in the FEIS. Specifically, EPA recommended that risks to surface and ground waters from road salt and air quality impacts be addressed in greater detail, that mitigation plans should also be enhanced, and more information provided regarding commuter bus and high occupancy vehicle services in the project plans. Our comments on the 2004 FEIS noted continuing environmental concerns about impacts to wetlands, water quality, and air quality as well as indirect and cumulative impacts.

The DSEIS was prepared in response to a U.S. District Court decision in August, 2007 that required NHDOT/FHWA to prepare a SEIS "...that specifically considers how the Delphi Panel population forecasts affect Defendants' analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect

effects of the additional population predicted by those forecasts on secondary road traffic and air quality issues." The DSEIS was also prepared as a reevaluation under NEPA to address changes in the project from "design refinements, changes in existing conditions, changes in the relevant environmental regulations or laws, changes in mitigation measures or other environmental commitments and changes in analysis methods and potential impacts based on the Court order." The reevaluation also serves as a means to determine whether additional issues beyond the court order warrant further consideration in the SDEIS given the time that passed since the publication of the FEIS in 2004. We support FHWA's and NHDOT's decision to combine the reevaluation with the SEIS required by the court order.

Based on our review of the DSEIS we have identified comments and concerns that we believe should be addressed in the FEIS related to alternatives, wetlands, water resources, greenhouse gas emissions, air quality, indirect effects and general project coordination. Based on our review of the DSEIS/Reevaluation we have rated the DSEIS "EC-2—Environmental Concerns-Insufficient Information" in accordance with EPA's national rating system, a description of which is attached to this letter. Please contact Timothy Timmermann (617-918-1025) of EPA's Office of Environmental Review with any comments or questions about this letter.

Sincerely,

Ira W. Leighton
Acting Regional Administrator

Attachment

cc: Colonel Philip T. Feir, Commander, New England District, Corps of Engineers

Summary of Rating Definitions and Follow-up Action

Environmental Impact of the Action

LO–Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC–Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3–Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

EPA Comments on the Draft Supplemental Environmental Impact Statement and Reevaluation/Section 4(f) Evaluation for the Interstate 93 Improvements Hillsborough and Rockingham Counties, New Hampshire (CEQ# 20090278)

Alternatives

We believe the traffic analysis for the reevaluation should have compared the ability of both three and four lane widening alternatives to meet the project purpose and should compare how well the three and four lane alternatives provide the needed highway capacity. The DSEIS contains new population projections that have been revised downward since the 2004 FEIS. A new look at how the three lane alternative performs is reasonable given these projections. 1

New information provided in the DSEIS calls into question the Army Corps of Engineers' (ACOE) December 2003 determination that a four lane alternative is the Least Environmentally Damaging Practicable Alternative (LEDPA) for this project. Reduced population growth, lower travel demand, water quality issues, and newly identified wetlands impacts all point to the need to reaffirm that a four lane alternative, rather than a three lane alternative, is in fact the LEDPA. 2

We also note that a three lane alternative would result in a significant reduction in the need for road salt use in watersheds that now have impaired water bodies due to chloride concentrations that exceed New Hampshire water quality standards. The June 2005 Record of Decision (ROD) for this project recognizes the importance of reducing salt usage/chloride loadings (section 1.3) so as not to cause or contribute to water quality violations. The May 2006 Section 401 Water Quality Certification for this project is conditioned (E-10) on the activity not contributing additional chloride loads, beyond those based on existing road salt management practices, to chloride-impaired surface waters. The three lane alternative would help meet this condition. It has also been shown (Implementation Plan to Increase the Efficiency and Effectiveness of Road Salt Use to Meet Total Maximum Daily Load for Chloride in Water Bodies Along the I-93 Corridor from Salem to Manchester, NH DOT, September 2009) that the TMDL allocation of salt for use on state roads, including the proposed highway, will be very difficult to achieve without significant reductions in the allowable allocations for other users, including municipalities, in the affected watersheds. The reduced salt usage from a three lane alternative would help in solving this problem as well. 3

Wetlands

The DSEIS documents that direct wetland impacts will be 11 percent greater than what was predicted in the FEIS in 2004, now 85 acres instead of 77. According to the DSEIS, this 8 acre increase is due primarily to more detailed wetland mapping and to final design analysis. The DSEIS states that because only parts of the final design details are complete for the highway expansion the additional 8 acre impact represents a more refined number, but not a final tabulation of total direct wetland impact. 4

Because of this substantial increase in wetland impacts EPA will recommend that the Corps of Engineers amend the 404 permit and require mitigation for these additional

impacts. We encourage the use of In-Lieu-Fee (ILF) as the best and most timely way to mitigate for these impacts. As we stated in our comments on the DEIS and FEIS, the bulk of the mitigation sites that NHDOT selected in 2004 are small, near development, and isolated from other protected lands and most are therefore not sustainable in the long-term. We have a great deal of confidence that the ILF program will find sustainable mitigation sites. In addition, we note that in the new federal Mitigation Rule, it recommends the use of the ILF program over permittee-responsible mitigation. Further, if the additional 8 acre impact becomes a 10 acre impact in the end, an additional payment would be an easy adjustment. 4

The DSEIS also reports that by more detailed analysis and modeling, the proposed floodplain impacts have decreased from 49.7 acre-feet to 19.8 acre-feet. Because of this decrease the DSEIS (page 10-22) states that NHDOT and FHWA plan to eliminate much of the proposed flood storage mitigation proposed originally in the FEIS. It also states that most of these sites are undeveloped wooded parcels, and creating flood storage would result in wildlife impacts from the extensive tree removal and earthwork. Many of these sites are also small parcels located near heavily developed areas including the highway. We support NHDOT's efforts to remove these flood storage sites from the mitigation plan as appropriate (where flood storage is no longer needed). 5

However, the DSEIS (page 10-24) states that the mitigation plan will create 24 acres of wetlands and these numbers are also listed in Appendix F. These numbers do not appear to be accurate. We are aware of 12 acres of wetland creation (South Road and Pelham Road), but the remainder of the areas listed as wetland creation appear to be flood storage areas, and as explained above, many of which we agree should be removed. Even for those sites that remain, most are wooded, somewhat isolated sites. Cutting all the trees down and making a large detention area may provide functional flood storage, but the clearing will reduce other functions and the creation of flood storage should not be credited simultaneously as wetland creation/restoration. Therefore, we recommend that the wetland creation numbers be updated in Appendix F and wetland creation (a suite of functions) should be separated from flood storage creation (benefiting one function at the expense of others) in the DSEIS's discussion of the mitigation package. 6

Water Resources

EPA has identified information gaps related to aquatic life, drinking water supplies, and groundwater assessment in the DSEIS that should be addressed in the FEIS, as follows:

Page 10-5, Deicing Salt, North Tributary to Canobie Lake and Dinsmore Brook
A revised mass-balance chloride analysis for both of these streams should be done based on the new configuration for Exit 3, which will incorporate significant changes in lane and ramp design. Wherever possible, the mass-balance model should incorporate past and existing field water-quality analyses for chloride for verification. For example, will future loadings from the new interchange and other salt sources always be less than the TMDL target limit for the Dinsmore Brook watershed of 126 tons/year, or will exceptions occur? 7

Page 10-5, Aquatic Life

For the sake of completeness, the FEIS should present the results of the September 2003 NHDES/EPA study of macroinvertebrate and fish benthic analyses in Porcupine and Policy Brooks, which designated a "Non-Support" status for aquatic life in both streams. Because of these results and numerous water-quality exceedances, these streams were included in NH's 303(d) list for chloride impairment. Similar studies should also be performed for the Tributary to Harris Brook, Dinsmore Brook, the Tributary to Wheeler Pond, Beaver Brook, Cohas Brook, and Little Cohas Brook in the reaches immediately downstream of I-93 crossings to evaluate base-line conditions of aquatic life prior to construction. 8

Page 10-6, Groundwater and Drinking Water

The DSEIS mentions three public water supplies: Yankee Trader TNC in Windham (EPAID#2548040), PEU W&E Wellfield CWS in Windham (EPAID#2542030) and Boumil Grove Condominiums CWS in Londonderry (EPAID#1392050) as among water supplies potentially receiving the greatest impact from sodium and chloride from I-93. (For example, the Boumil Grove bedrock well is only 100 feet from I-93S). The Plaza 93 wells no longer exist due to Exit 3 lane realignment. However, the DSEIS presents no up-to-date data for these inorganic contaminants in these drinking water sources. The FEIS should provide the existing NaCl concentrations and describe what the historical trends show. 9

For example, the NHDES drinking water program reports (personal communication, 9/11/09) chloride/sodium data for Yankee Trader on three dates from seven to twelve years ago, showing chloride levels above the 250 mg/l secondary standard on two occasions:

9/2/97 – Cl (360 mg/l); Na (123.2 mg/l)
7/13/99 – Cl (110 mg /l); Na (14.9 mg/l)
6/4/02 – Cl (307 mg /l); Na (106 mg/l)

Boumil Grove was apparently last sampled in August 2004 with Cl = 239 mg/l and Na at 87.2 mg/l, indicating elevated concentrations. To better evaluate present conditions, much more recent sample information is needed for this and the other drinking water supplies.

The DSEIS claims that modeling shows no chloride impacts to groundwater along the I-93 right of way, but does not present any onsite data to verify this assertion. Although numerous monitoring wells were installed along the ROW by NHDOT in 2006 as part of stormwater treatment site evaluations, no monitoring data from such wells are given to support claims of no impact. At a minimum, if no data are available, these wells should be sampled in the near future by NHDOT for Na and Cl and results sent to reviewing agencies. One monitoring well sampled by EPA in June 2004 along the I-93 ROW near Exit 2 had a chloride concentration of 318 mg/l, which exceeded the 250 mg/l secondary drinking water standard. 10

Pages 10-14 through 10-18, 10.4 Existing Conditions

This section of the DSEIS provides detail about TMDL development for the four impaired watersheds, in addition to chloride surveillance monitoring in other streams. However, existing conditions after mid-2007 to the present are not described. EPA recommends that more up-to-date monitoring results be presented in the FEIS. For example, the FEIS should provide information on what violations, if any, occurred during the winters of 2007-2008 and 2008-2009 in these watersheds; what the NHDOT deicing chemical loadings in tons per lane-mile were for I-93 during the last two winters; what the loadings were for state roads adjacent to I-93 that NHDOT treats; how these amounts compare with the estimated average (10-year) annual use in tons/year for Beaver Brook (949 tons/yr), Dinsmore Brook (139 tons/yr), and Policy Brook (676 tons/yr); how they compare with target reductions specified in the TMDLs. 11

Page 10-22, Mitigation, Water Resources

The DSEIS states that $2.5 million has been dedicated to fund salt reduction activities in I-93 municipalities. We recommend that the FEIS provide more specific details regarding such projects funded to date, including how many grants have been awarded, and for what purpose, how long such funds will be available to towns, and what the grant conditions are for applicants. 12

Phosphorus Loadings, p. 5-6 (Section 2.2.1) in Appendix F

Cobbetts Pond is on the 2008 NH 303(d) list for dissolved oxygen saturation, a condition caused largely by nutrient loadings. The FEIS should indicate this impairment and address whether the project would contribute to this impairment. The DSEIS cites modeling results indicating that the Selected Alternative would increase phosphorus concentrations in Canobie Lake by 0.7 to1.5 µg/l and in Cobbetts Pond by 0.6 to 1.6 µg/l. This represents a 5 to 15% increase above current phosphorus concentrations presented in the DSEIS, a significant increase. Recent data on BMP efficiencies (including data collected by the UNH Stormwater Center) indicates that detention basins (both wet and dry) do not typically achieve the 40% phosphorus removal assumed for some of the model runs cited above, so the actual increases in phosphorus concentrations are likely to be closer to the high ends of the ranges (which assumed only 20% BMP efficiency). These increases would not only contribute to the dissolved oxygen impairment in Cobbetts Pond, and likely exacerbate the "potentially not attaining" status of Canobie Lake with respect to dissolved oxygen saturation, but they would also cause both lakes to exceed the 12 µg/l total phosphorus criterion identified for mesotrophic lakes in the NHDES proposed Comprehensive Assessment and Listing Methodology, dated September 3, 2009. One way to address these concerns would be to revise the stormwater management approach (incorporating BMPs with higher phosphorus removal efficiencies) to ensure that applicable portions of the project do not contribute to the impairment of Cobbetts Pond and the potential impairment of Canobie lake. If the new stormwater planning work referenced in Appendix F, Section 2.4.2 addresses these concerns, this plan should be included in the FEIS, along with updated nutrient loading calculations. 13

Changes in Analytical Methods, p. 31 (Section 4.4.2) in Appendix F

This section references new wetlands impacts (in comparison to those reported in the 2004 FEIS) resulting in part from the increased size of some stormwater BMPs. The FEIS should explain whether the placement of these BMPs complies with the "Restrictions on Placing Stormwater Treatment Structures in Wetlands" section of the May 2007 NHDES *Interim Guidance for the Structural Design of Stormwater Best Management Practices Needed to Achieve Results of Pollutant Loading Analyses*, as referenced in Appendix F, Section 2.4.2, p. 12. 14

Indirect Effects

Basis for Build estimates

We are concerned about the validity of assuming that the routine population forecasts developed by the NH Office of Energy and Planning (OEP) represent the Build condition. The DSEIS indicates that OEP planners assumed that infrastructure, including sufficient highway capacity, would exist, but no further information is provided. The FEIS should discuss how doubling the size of one of the largest highways in the state was factored into the OEP forecasts, whether and how the forecasts accounted for induced growth, and if so, how much, and on what basis. The method by which OEP developed the Build forecasts, the assumptions they used, and how they estimated induced growth needs to be more fully explained to support the assertion. We recognize that population growth has slowed since the 2004 FEIS was produced, and that the Delphi panel's numbers may overestimate growth in 2020 and 2030, but we believe that it is very likely that using OEP's forecasts as the Build forecasts underestimates population growth, and therefore also the difference between Build and No Build and resulting indirect effects. 15

Intraregional development shifts

We concur that growth induced by a transportation improvement is likely to represent growth that is redistributed within a geographic region if the region is defined appropriately. All too often, however, the geographic region is defined as a small area in the immediate vicinity of the transportation improvement. As we understand it, Scenario 2 is based on the assumption that growth could be redistributed anywhere within the state of New Hampshire as well as portions of Massachusetts, Vermont, and Maine. We believe this is a sufficiently large area within which to look at the potential for induced growth. 16

I-93 Transit Investment Study

We are disappointed that implementation of the recommendations of the I-93 Transit Investment Study was not included in the analysis because it was not considered reasonably foreseeable. We believe this conclusion is premature, since the draft final report for the study was only recently distributed for comment. The Transit Investment Study calls for interim investment in Bus-on-Shoulder service, starting in the next few years in the southern portion of the bi-state corridor, with eventual rail service on the Manchester & Lawrence line. This service would relieve congestion on I-93 and provide transportation choices for New Hampshire and Massachusetts residents. We recommend that the updated information on the status of the recommendations from that study be incorporated into the analysis. 17

Delphi Panel

We firmly believe that the use of the Delphi panel in the 2004 FEIS produced credible forecasts of population and employment based on information available at that time. The 2009 DSEIS/Reevaluation states that the Delphi panel was less than successful because "the panelists could not reach consensus." What really happened was that there was little investment of effort in trying to bring the panelists to consensus since that wasn't considered necessary. As stated in NCHRP Report 8-36, *The Use of Expert Panels in Analyzing Transportation and Land Use Alternatives*,

> *[i]t is important to note that a lack of consensus from the panel does not signify a "failure" of the panel, but rather may accurately reflect a situation in which only a wide range of possible impacts can be foreseen; perhaps too many variables remain unknown or the panelists have defensible but different views.*

18

Indeed, as indicated in the I-93 Manchester to Salem Expert Panel Analysis Final Report prepared for NH DOT, when discussing the Blended Average Allocation:

> *[t]he panel preferred to say that they have "informed opinions" which cross a broad spectrum. The idea of having a single number to summarize their works something of an artificial device in order to provide another measure by which to consider the findings and to assess the implication relative to secondary impacts.*

Second, we believe the Delphi analysis should not be faulted for using information that was available at the time (2001). The panelists used the most recent information available on population and job growth and could not have known that growth would slow, exacerbated by the recent economic crisis. We also note that had a gravity model been developed at the time, it too would have been based on higher growth rates.

19

Third, we disagree that it would have been sensible to set an artificial cap on the total amount of population or employment growth the panelists could allocate. By not setting a cap, the panelists were free to consider whether people or employers from *outside* the 29-town study area might choose to relocate *into* the area because of the transportation improvements. In other words, the 29-town area was the region that was expected to experience induced growth, but it was not assumed to comprise the entire 'sending area' from which induced growth might originate. In fact, as described above, Scenario 2 similarly did not assume that all the induced growth originated within the 29-town area; instead, growth could be redistributed *from* anywhere in the entire state of New Hampshire as well as parts of Maine, Massachusetts, and Vermont *into* the 29-town area.

20

We agree, however, that transportation is just one component in determining where people choose to live and where employers choose to locate, and that transportation may not even be the most important component. Indeed, that is precisely why we believe the Delphi approach has significant advantages over the simple gravity model used to construct Scenario 2. The panelists considered other important factors in their forecasts,

21

such as market demand, environmental constraints, economic feasibility, and the regulatory environment. Such factors would be too complicated to include in a model, but these and other factors did underlay the thought processes used by the Delphi panel, and are therefore included in Scenario 1. We believe a Delphi approach is more likely to accurately predict the future than a one-dimensional approach based solely on the accessibility of transportation infrastructure, if both are operating with the same information. That is not the case here, of course, since the Delphi panel used information available in 2001. 21

Cumulative Impacts

It is not clear whether the cumulative impacts analysis specifically includes all aspects of the proposed I-93 Tri-Town Interchange (formerly Lowell Junction) project, or whether only the widening to four lanes is included. Activities in Massachusetts have progressed since publication of the study by Merrimack Valley Planning Commission. An EIS process for the I-93 Tri-Town Interchange project was launched earlier this year by Mass Highway, the Executive Office of Housing and Economic Development, and FHWA. The proposed I-93 Tri-Town Interchange project should be explicitly addressed in the FEIS since it is so closely linked geographically to this project. 22

Greenhouse Gas Emissions

Section 5.3.7 of the DSEIS states that, "It is not useful or informative at this point to consider greenhouse gas (GHG) emissions as part of the I-93 DSEIS." The DSEIS goes on to characterize climate change as a global issue and "climate change does not easily lend itself to an analysis at a local level." We believe the decision by FHWA and NHDOT not to do a GHG analysis for this project in the reevaluation is problematic. Had there been a scoping process and coordination with EPA, we would have asked for the analysis to be done and worked with the lead agencies to identify the appropriate methods for the analysis. For the past several years, during scoping for a wide range of projects, EPA has routinely commented on the need to characterize the potential for the project to result in GHG emissions (and to compare those emissions to the No Action scenario) and to discuss potential mitigation strategies related to those emissions. The DSEIS correctly states that there is no national GHG standard but the statement that "nothing in the National Environmental Policy Act (NEPA) law explicitly requires an analysis of greenhouse gases at the project level..." misses the mark. We recognize that the characterization of GHG emissions as part of the NEPA process is a developing area, but also that it is an important one for large transportation projects that could result in increased VMT given that transportation sector emissions in the U.S. are second only to electricity power generation as a percentage of GHG emissions, as noted on the U.S. Department of Transportation Transportation and Climate Change Clearinghouse website (http://climate.dot.gov/about/index.html). This website provides a helpful discussion on GHG emissions related to transportation and includes links to tools that can be used to characterize project emissions. In addition, the State of New Hampshire established a Climate Change Policy Task Force which enacted a Climate Action Plan in March 2009. That plan includes a state goal of reducing GHG emissions by 80% by 2050, and one of the major strategies in the plan for achieving that goal is the reduction in VMT. 23

Therefore, we believe it is wholly appropriate and relevant for the FEIS to characterize GHG emissions from the project and to explain those emissions in the context of NH climate policies and to discuss whether and how the highway widening (and other components of the project) will be consistent with those policies. We are willing to work with NHDOT/FHWA to help develop appropriate approaches to the GHG analysis. 23

Air Quality

Section 5.2.3 of the SDEIS (page 5-6) notes that "NHDOT will require the contractors involved with the reconstruction of I-93, to include air pollution control devices on heavy diesel construction equipment in accordance with applicable state and federal laws at the time of construction. The merits and practicality of more stringent or voluntary specification measures will be considered through the final design process and in consultation with the contracting community and NHDES." We support this action and request that NHDOT and FHWA commit in the FEIS and Record of Decision to formalize this requirement through contract specifications requiring construction vehicles and equipment to include retrofit control equipment (oxidation catalysts or particulate filters installed on the exhaust of the diesel engine). The Northeast Diesel Collaborative has prepared model construction specifications which NHDOT could use as it develops contract specifications. The model construction specifications can be found on the Northeast Diesel Collaborative web site at http://northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf. Massachusetts and Connecticut are already using contract specifications to require construction equipment to be retrofitted with control devices and use clean fuels in order to reduce diesel emissions. 24

Project Coordination

From a process standpoint we note that even though scoping was not technically required for the preparation of the DSEIS/Reevaluation, we believe that a scoping process and coordination with EPA and other agencies would have been advisable in this instance given the increase in wetland impacts, changes to wetland/water quality mitigation, the need for a greenhouse gas emission analysis in the EIS, and relevant questions regarding the alternatives analysis based on downgraded growth projections for the region since publication of the FEIS. 25

RESPONSES TO COMMENTS FROM FEDERAL AGENCIES

Response to Comments Made by
Willie R. Taylor, Director, Office of Environmental Policy and Compliance
United States Department of the Interior
Office of the Secretary, Washington, DC
Letter dated November 2, 2009

1. The Department of Interior's acknowledgement of NHDOT's and FHWA's consultation with the State Historic Preservation Officer regarding the effects of the proposed project on cultural resources is noted.

2. The Department of Interior's agreement that there are no feasible and prudent alternatives to the proposed project is noted.

The clarification of the boundary of the Armenian Settlement Historic District Area (Area SAL – D1) and the identification of a contributing building (2 Brady Avenue in Salem) within the district was disclosed in the DSEIS and Draft Section 4(f) Evaluation (See Section 11.5.2 and Section 15.1). The impacted building within the expanded historic district boundary is not subject to Section 4(f) because of the Late Designation of this resource as outlined under 23 CFR 774.13(c). The mitigation commitments for the Armenian Settlement Historic District Area were described in Section 11.5.2 of the DSEIS, including:

- Documentation of the impacted building at 2 Brady Avenue using the NH Historic Documentation Form, which approximately follows HABS (Historic American Building Survey) guidelines.

- Placing a State Historic Marker across from the Armenian Mt. Ararat Congregational Church on Brady Ave. This marker would describe the historic contribution of the District to the Town of Salem.

- The boundaries of the Armenian Settlement Historic District Area will be more fully defined.

The impacts to the Independence Drive stone culvert were fully described in the Draft Section 4(f) Evaluation (See Section 15.4). The mitigation measures for the Independence Drive stone culvert (described in Section 15.6) have been agreed upon with the SHPO, as documented in the July 16, 2009 Historic Resources Effects Memo Update (Appendix I of the DSEIS).

Response to Comments Made by
Ira W. Leighton, Acting Regional Administrator
United States Environmental Protection Agency
Region 1, Boston, MA
Letter dated October 9, 2009

1. The comment recommends that the three-lane alternative should be analyzed in the SEIS based on population projections that have been revised downward since the 2004 FEIS. Analysis of the three-lane alternative in the SEIS is not warranted because of the limited scope of the SEIS resulting from the Court Order. In addition, the population and employment projections used in the SEIS Scenario 2 traffic modeling are actually higher than those used in the 2004 FEIS traffic modeling. Each of these points supporting the decision not to analyze the three-lane alternative in the SEIS is discussed in detail below.

   As a result of the Court Order, the scope of the SEIS is limited and does not include analysis of alternatives other than the 2005 Selected Alternative. The Court Order directed NHDOT and FHWA to prepare a focused SEIS: "....that specifically considers how the Delphi Panel's population forecasts affect Defendant's analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the population predicted by those forecasts on secondary road traffic and air quality issues." The Court Order did not require additional analysis of the three-lane alternative. The limited scope of this SEIS was disclosed in the Notice of Intent published in the Federal Register on March 12, 2008.

   The Scenario 2 2020 population and employment projections used in the traffic modeling for the SEIS are slightly higher than the population and employment projections used in the traffic modeling for the 2004 FEIS. As a result, the three-lane alternative would perform similar to or worse than it did in the 2004 FEIS analysis under Scenario 2 in 2020. This conclusion is supported by the discussion of the expected Level of Service for the three-lane alternative provided in FSEIS Appendix B. Therefore, additional detailed analysis of the three-lane alternative in the SEIS is not warranted.

   The 2020 population and employment levels used in the 2004 FEIS traffic modeling were based on OEP projections from the mid-1990's. These projections were developed using the results of the 1990 Census. Subsequent to the release of the 2000 Census results, growth projections were revised upward. The 2005 Traffic Sensitivity Analysis (TSA) reported that the population projections used in the 2004 FEIS traffic model for the 23 communities in the New Hampshire portion of the Delphi study area was 11 percent lower than the latest available OEP projection at that time (See DSEIS Appendix A-1). Since the release of the TSA, OEP has lowered their growth projections, but they still remain slightly higher than the projections used in the traffic modeling for the 2004 FEIS. For example, the 2020 population for the 23 communities under the Scenario 2 No Build condition is 3.9 percent higher than the population used in the 2004 FEIS modeling. The 2020 employment for the 23 communities under the Scenario 2 No Build condition is 7 percent higher than the population used in the 2004 FEIS modeling. A detailed table comparing the population levels used in the 2004 FEIS traffic modeling with the Scenario 2 2020 and 2030 No Build is provided below. The relative difference between the 2004 FEIS population levels and the Scenario 2 population levels would be slightly larger if the comparison was made to the Scenario 2 Build condition instead of the No Build condition.

Comparison of Population Projections Used in Transportation Modeling
2004 FEIS vs. Scenario 2 2020 and 2030 No Build

	2004 FEIS 2020 Population	Scenario 2 2020 No Build Population	Difference	Percent Difference	2030 No Build Population	Difference	Percent Difference
Allenstown	5,731	5,634	-97	-1.7%	5,976	245	4.1%
Atkinson	6,639	7,307	668	9.1%	7,707	1,068	13.9%
Auburn	6,308	5,680	-628	-11.1%	5,999	-309	-5.2%
Bedford	28,250	23,730	-4,520	-19.0%	24,978	-3,272	-13.1%
Bow	7,974	9,731	1,757	18.1%	10,838	2,864	26.4%
Candia	4,594	4,516	-78	-1.7%	4,755	161	3.4%
Chester	3,753	5,116	1,363	26.6%	5,449	1,696	31.1%
Concord	41,813	47,626	5,813	12.2%	50,527	8,714	17.2%
Danville	5,484	5,057	-427	-8.4%	5,383	-101	-1.9%
Deerfield	5,537	4,744	-793	-16.7%	5,035	-502	-10.0%
Derry	49,547	37,960	-11,587	-30.5%	39,086	-10,461	-26.8%
Dunbarton	2,980	2,881	-99	-3.4%	3,102	122	3.9%
Goffstown	18,480	20,104	1,624	8.1%	21,474	2,994	13.9%
Hampstead	13,565	9,770	-3,795	-38.8%	10,440	-3,125	-29.9%
Hooksett	10,694	16,159	5,465	33.8%	17,725	7,031	39.7%
Londonderry	31,699	27,683	-4,016	-14.5%	29,456	-2,243	-7.6%
Manchester	94,633	116,515	21,882	18.8%	119,764	25,131	21.0%
Pelham	13,053	16,822	3,769	22.4%	19,612	6,559	33.4%
Pembroke	7,924	8,332	408	4.9%	8,926	1,002	11.2%
Raymond	15,236	11,843	-3,393	-28.6%	12,509	-2,727	-21.8%
Salem	27,879	32,484	4,605	14.2%	33,926	6,047	17.8%
Sandown	8,931	6,573	-2,358	-35.9%	7,007	-1,924	-27.5%
Windham	12,214	13,892	1,678	12.1%	14,728	2,514	17.1%
Total	**422,918**	**440,159**	**17,241**	**3.9%**	**464,402**	**41,484**	**8.9%**

2. NHDOT and FHWA disagree with the assertion that the new information provided in the DSEIS calls into question the 2003 LEDPA decision. The ACOE letter identifying the four-lane alternative as the LEDPA is dated December 30, 2003 and is provided in Appendix A of the 2004 FEIS. Each of the factors cited in the comment are addressed below.

   - *Reduced population growth/lower travel demand.* As discussed in the response to comment #1, above, the population and employment projections used in the SEIS Scenario 2 traffic modeling are actually higher than those used in the 2004 FEIS traffic modeling. As a result, the three-lane alternative would perform similar to or worse than it did in the 2004 FEIS analysis under Scenario 2 in 2020. Therefore, the transportation performance considerations favoring the four-lane alternative over the three-lane alternative remain valid and do not change the basis for the LEDPA decision and Section 404 permit approval.

   - *Water quality issues.* A Section 401 Water Quality Certification has been issued for the 2005 Selected Alternative. NHDOT will comply with all conditions of the

Water Quality Certification. Chloride issues in the I-93 corridor are being addressed through the TMDL process. The presence of chloride impaired waterbodies in the I-93 corridor is not new information. ACOE was aware of the need for the chloride TMDLs at the time of the LEDPA decision and the subsequent approval of the Section 404 permit application for the 2005 Selected Alternative. The additional detailed studies of chloride issues since the 2004 FEIS do not change the basis for the LEDPA decision and Section 404 permit approval.

- *Increased wetland impacts.* The wetland impacts of the 2005 Selected Alternative are estimated to have increased since the 2004 FEIS due to a revised delineation of wetlands along the corridor, design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping (See Chapter 10). If advanced through final design and reanalyzed with updated mapping, the wetland impacts of the three-lane alternative would also be expected to increase for these same reasons. Therefore, the relative comparison of wetland impacts of the three-lane alternative vs. the four-lane alternative in the 2004 FEIS remains valid and does not change the basis for the LEDPA decision and Section 404 permit approval.

3. The comment is correct that the three-lane alternative would require less deicing salt application than the four-lane alternative. The FSEIS acknowledges that incremental implementation of the project (three-lanes in each direction) is possible in the interim to meet the Record of Decision commitments and Water Quality Certification condition E-10 (See Chapter 3). However, the long-term plan remains to implement the four-lane 2005 Selected Alternative, not the three-lane alternative. NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

4. NHDOT has been and will continue to coordinate with EPA, ACOE, NHDES and other natural resource agencies to determine if additional mitigation is appropriate for the increase in wetland impacts. If additional mitigation is necessary, the In-Lieu-Fee program will be considered.

5. EPA's concurrence on the removal of the valley storage areas proposed in the 2004 FEIS from the mitigation package is noted.

6. The tabulation of 24 acres of wetland creation presented in the DSEIS was accurate (See Table 4-1 in DSEIS Appendix F: Natural Resources Technical Report). In addition to the 12 acres of wetland creation from the South Road and Pelham road sites, wetland creation would occur at the following locations:

   - Replacement Site for Salem Wastewater Treatment Plant (Site 32) - seven acres of wetland creation.
   - Baggett Property (Site 38)- two acres of wetland creation.
   - Highway Median (Site 24)- three acres of wetland creation.

   These three sites have the potential to provide both wetland creation and flood storage. These sites have not been removed from the mitigation package. The wetland creation at

these sites will provide a suite of functions and will not reduce other functions to create flood storage areas as suggested by the comment.

7. Updated deicing salt loadings for Dinsmore Brook and Policy Brook (taking into account the design for the Exit 3 interchange) are presented in the NHDOT TMDL implementation plan (Table 4-1). The NHDOT TMDL implementation plan is available on the project website (www.rebuildingi93.com/). The North Tributary to Canobie Lake is located within the Policy Brook watershed and the loadings to the North Tributary were included in the Policy Brook loading calculation.

   The objective of the TMDL implementation process is to ensure that the load reduction targets are met (e.g. total loading of less than 126 tons over a 10-year period for the Dinsmore Brook watershed).

8. The NHDES/EPA fish and macroinvertebrate studies in Policy and Porcupine Brook were considered in the preparation of the FSEIS. These studies were the basis for the listing of Policy Brook on the 2010 New Hampshire 303(d) list for aquatic life support.

   Additional baseline studies of macroinvertebrates and fish are not warranted as part of the SEIS process for the purpose of assessing impacts. The primary issue affecting water quality in the waterbodies listed in the comment is chloride, which is being addressed through the Water Quality Certificate requirements for this project and the TMDL process. Trend monitoring in accordance with Water Quality Certificate conditions is on-going in streams and brooks adjacent to I-93. Further analyses of aquatic life conditions in these waterbodies are not warranted.

9. Chapter 10 of the FSEIS summarizes the latest available chloride and sodium concentration information available from NHDES for the public water supply wells in the vicinity of the I-93 corridor. This existing data provides a reasonable basis for characterizing existing conditions for the SEIS.

   More recent sample information is not needed for the Yankee Trader well because it is not used for potable water.

   The high existing chloride concentration at the Pennichuck Water Works well was attributed to the water softening system since the sodium concentration at this well was relatively low. Deicing salt from I-93 was found to be having a minimal effect on sodium and chloride concentrations in this well. With the "tight –shift" design option, the I-93 roadway in the vicinity of the Pennichuck wells will be relocated further away as part of the 2005 Selected Alternative, and will require only Level 2 protection measures. Therefore, further sampling of this well is not needed for the SEIS.

   The Boumil Grove Condominiums well in Londonderry is located within 500 feet of the proposed roadway area and has experienced considerable variability in sodium and chloride concentrations both seasonally and year to year. Further sampling of this well is not warranted because of the mitigation commitments in the Record of Decision to avoid impacts by evaluating the practicability of Level 3 measures (including impermeable drainage swales and detention basins, and diversion runoff) during final design. In lieu of these measures, the possibility of connecting this condominium to the nearby municipal water system may also be explored.

10. As requested by EPA, the NHDOT tested the shallow monitoring wells used to determine groundwater levels for proposed Stormwater Treatment Structures for specific conductivity in Fall 2006. NHDOT provided the specific conductance data to EPA (Doug Heath) on February 23, 2007. A summary of this data has been added to Chapter 10 of the FSEIS.

    Of the 42 wells measured, 6 exceeded an equivalent chronic chloride standard. The exceedances were derived from specific conductance and there was only one round of unverified conductivity sampling. It is generally accepted that there is a correlation between specific conductance and chloride concentrations, although no direct chloride sampling occurred during this effort. The wells that exceeded the equivalent chronic chloride standard were located directly adjacent to the highway and seem to be associated with high load areas, such as infield areas of ramps. One sampling location of note is located down gradient to a long-term uncovered municipal salt pile.

    The 2004 FEIS I-93 corridor modeling of chlorides was not sensitive to specific locations, and the conclusion of the model would still be appropriate to the overall I-93 corridor.

11. Chapter 10 of the DSEIS provided the latest chloride monitoring data that was available at that time. Since the preparation of the DSEIS, the data reports for FY08 and FY09 TMDL chloride monitoring have been published by NHDES. This additional data has been incorporated into Chapter 10 of the FSEIS.

    Additional information regarding chloride monitoring can be found in the September 2009 NHDOT implementation plan report located on the project website (www.rebuildingi93.com/). The figure shown on page 8 compares the actual salt use history with predicted salt use based on the Winter Severity Index for 1993 through 2009.

12. The funds have been available since June 2007. To date, no town has availed itself of the salt reduction funding. The funds are still available. Information on the grant program objectives and conditions is provided in a document entitled "Chloride Reduction in the I-93 Watersheds- Municipal Program" which is available on the project website (www.rebuildingi93.com/).

    The NHDOT's Bureau of Planning and Community Assistance (BPCA) is educating the municipalities on the federal requirements associated with the municipal management of the TMDL grant program. Meetings are being held with each municipality interested in applying for the grants. Information gathered during these meetings will be used to develop and deliver specific training and guidance to meet their needs. The BPCA will also develop and execute municipal agreements to document each grant provided under the program.

13. Chapter 10 of the FSEIS notes that Cobbetts pond is included on the New Hampshire 303(d) list as a result of nutrient loadings. As discussed further below, the 2005 Selected Alternative would not contribute to this impairment.

    The modeling results cited in the comment showing an increase in phosphorus concentrations as a result of the 2005 Selected Alternative were located in the portion of the DSEIS summarizing the results of the 2004 FEIS (Section 10.2). Since the 2004 FEIS, the design of the stormwater treatment areas has been revised to include wet

extended detention ponds and gravel wetlands, both of which are more efficient at removing phosphorus than the dry extended detention basins proposed in the 2004 FEIS. Since the DSEIS was published, NHDOT has advanced design and analyzed the phosphorus loadings to Cobbetts pond and Canobie Lake to account for the revised stormwater treatment design using the Schuler Simple Method. The 2005 Selected Alternative is expected to reduce Total Phosphorus loadings to Cobbetts Pond and Canobie Lake by 32.1 and 11.7 pounds per year, respectively.

14. Where feasible and consistent with other environmental and design considerations, NHDOT will continue to strive to design the stormwater treatment structures in accordance with the NHDES interim guidance, including the restriction on the placement of BMPs in wetlands cited by the comment.

15. The decision to use the OEP forecasts as the Build Condition for Scenario 2 was made after extensive coordination with OEP. The OEP forecasts do not explicitly account for individual transportation projects (including the widening of I-93) or induced growth. However, OEP indicated that if I-93 was not widened as planned, population forecasts would be revised downward as a result of this constraint on infrastructure capacity. Summaries of the meetings with OEP that led to the decision to use the forecasts as the Build Condition and documentation of OEP's concurrence with this approach are provided in FSEIS Appendix C.

    Information on OEP's methodology for population projections is provided on the OEP website.
    http://www.nh.gov/oep/programs/DataCenter/Population/documents/MunicipalPopulationProjections2010-2030.pdf

16. The comment is correct that the region defined for the analysis of intraregional development shifts under Scenario 2 includes all of New Hampshire and portions of Massachusetts, Vermont and Maine. EPA's concurrence with this approach is acknowledged.

17. The conclusion that the bus-on-shoulder service recommended by the I-93 Transit Investment Study is not reasonably foreseeable was thoroughly explained in Section 4.4.5 of the DSEIS. The final report for the study has not yet been released, although the study recommendations have been presented in draft form. The I-93 Transit Investment Study Ridership Memo (DSEIS Appendix A-4) shows that the bus-on-shoulder service would not substantially affect traffic volumes on I-93.

18. The objective of undertaking a Delphi panel process is to seek a convergence of opinion on a subject. While a lack of consensus is not necessarily a failure of the Delphi process, it is not the ideal outcome. As discussed in Section 1.3.1, the lack of consensus was one of several reasons leading NHDOT and FHWA to conclude that the Delphi Panel process and results are unreliable for predicting future traffic operations.

19. The Delphi process has not been faulted for using the information available at that time. It is simply a fact that current projections and trends have since shown that the Delphi PBAA numbers are/were unrealistically high, regardless of the reasons.

20. The use of upper limits on growth is an accepted approach in making population and employment projections and this approach is used by OEP in making population

projections for New Hampshire. The use of control totals in the Delphi process would not have necessarily limited the consideration of people and employers relocating from outside the Delphi study area to within the study area.

21. The potential advantage of the Delphi process in accounting for factors that are difficult to model is acknowledged. However, a key advantage of the simple gravity model approach in contrast to the Delphi process is transparency in the basis for the induced growth estimates. It is difficult to reveal the individual viewpoints and biases that affect the Delphi panel process. The outcome of the Delphi process is highly dependent on the members of the panel. Basing the induced growth estimates on relative accessibility change is consistent with the relevant literature on the indirect land use effects of transportation projects (See Section 1.3.1).

    As noted by the comment, the Scenario 2 analysis in the SEIS is based on updated information not available at the time of the Delphi process.

22. The Tri-Town interchange project was not incorporated in the traffic modeling, as the primary focus of the traffic analysis is the performance of I-93 in New Hampshire, not in Massachusetts. The New Hampshire Statewide Model has a coarser level of network detail in Massachusetts- the inclusion of the project would not substantially affect the results for the New Hampshire portion of I-93 for the I-93 widening project. This conclusion is further supported by the location of the project over ten miles south of the Stateline and south of another major interchange (I-495). As the potential effect on traffic in the vicinity of the I-93 corridor would be negligible, the potential effects of the Tri-town interchange project on air quality and noise in New Hampshire would be similarly negligible.

    The potential footprint environmental impacts of the Tri-Town interchange project (e.g. wetlands, wildlife habitat etc.) are expected to negligible in comparison to the aggregate impacts of future population and employment growth already accounted for in the SEIS cumulative impact assessment. In addition, many of these impacts will likely be addressed through compensatory mitigation. Therefore, additional analysis of the Tri-Town interchange project as part of the I-93 SEIS cumulative impact analysis is not warranted.

    The Tri-Town interchange project is the subject of a separate, ongoing environmental study (see www.massdot.state.ma.us/tritown).

23. No quantitative analysis of greenhouse gas emissions is required or warranted. As discussed in Section 5.3.7, it is analytically problematic to conduct a project level cumulative effects analysis of greenhouse gas emissions on a global-scale problem.

    The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

    - Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
    - Improve Traffic Flow (TLU 1.D.3)
    - Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
    - Various policies related to improving and expanding bus service

- Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation etc.).

With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

24. NHDOT will consider requiring the inclusion of air pollutant control devices in future construction contracts.

25. Scoping for the SEIS was not required and would not have been reasonable given the limited scope of the document. While not part of a scoping process, coordination with ACOE, NHDES and other resource agencies regarding the increase in wetland impacts has been ongoing. NHDOT has coordinated extensively with NHDES regarding the stormwater treatment design, water quality issues and construction erosion control practices. The current design reduces potential impacts in comparison to the design proposed at the time of the 2004 FEIS. As discussed in the response to comment #23, NHDOT and FHWA disagree with EPA regarding the need for a greenhouse gas analysis. Finally, as discussed in response to comment #1, the population and employment projections used in the SEIS Scenario 2 traffic modeling are actually higher than those used in the 2004 FEIS traffic modeling, not lower as suggested by the comment, see the table below.

Comparison of Population Projections Used in Transportation Modeling
2004 FEIS vs. Scenario 2 2020 and 2030 No Build

	2004 FEIS 2020 Population	Scenario 2 2020 No Build Population	Difference	Percent Difference	2030 No Build Population	Difference	Percent Difference
Allenstown	5,731	5,634	-97	-1.7%	5,976	245	4.1%
Atkinson	6,639	7,307	668	9.1%	7,707	1,068	13.9%
Auburn	6,308	5,680	-628	-11.1%	5,999	-309	-5.2%
Bedford	28,250	23,730	-4,520	-19.0%	24,978	-3,272	-13.1%
Bow	7,974	9,731	1,757	18.1%	10,838	2,864	26.4%
Candia	4,594	4,516	-78	-1.7%	4,755	161	3.4%
Chester	3,753	5,116	1,363	26.6%	5,449	1,696	31.1%
Concord	41,813	47,626	5,813	12.2%	50,527	8,714	17.2%
Danville	5,484	5,057	-427	-8.4%	5,383	-101	-1.9%
Deerfield	5,537	4,744	-793	-16.7%	5,035	-502	-10.0%
Derry	49,547	37,960	-11,587	-30.5%	39,086	-10,461	-26.8%
Dunbarton	2,980	2,881	-99	-3.4%	3,102	122	3.9%
Goffstown	18,480	20,104	1,624	8.1%	21,474	2,994	13.9%
Hampstead	13,565	9,770	-3,795	-38.8%	10,440	-3,125	-29.9%
Hooksett	10,694	16,159	5,465	33.8%	17,725	7,031	39.7%
Londonderry	31,699	27,683	-4,016	-14.5%	29,456	-2,243	-7.6%
Manchester	94,633	116,515	21,882	18.8%	119,764	25,131	21.0%
Pelham	13,053	16,822	3,769	22.4%	19,612	6,559	33.4%
Pembroke	7,924	8,332	408	4.9%	8,926	1,002	11.2%
Raymond	15,236	11,843	-3,393	-28.6%	12,509	-2,727	-21.8%
Salem	27,879	32,484	4,605	14.2%	33,926	6,047	17.8%
Sandown	8,931	6,573	-2,358	-35.9%	7,007	-1,924	-27.5%
Windham	12,214	13,892	1,678	12.1%	14,728	2,514	17.1%
Total	**422,918**	**440,159**	**17,241**	**3.9%**	**464,402**	**41,484**	**8.9%**

State Agencies/State Elected Officials

Page	Name
1	New Hampshire Department of Environmental Services
5	Betsi DeVries, Alderman and State Senator, Senate District 18
7	Frank R. Emiro, Sr., State Representative, Rockingham District 3
8	James B. Rausch, State Representative, Rockingham District 5
9	Bob Letourneau, State Senator, Senate District 19

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

October 9, 2009

Peter Stamnas
Project Manager
NH Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, NH 03302

RE: NHDES RESPONSE – Draft Supplemental Environmental Impact Statement, Salem to Manchester, New Hampshire [IM-IR-93-1(174)0, 10418-C]

Dear Mr. Stamnas:

The New Hampshire Department of Environmental Services (DES) has completed its review of the *Draft Supplemental Environmental Impact Statement* for Interstate 93 improvements from Salem to Manchester, New Hampshire. The DSEIS was reviewed by a number of DES programs in an effort to provide constructive guidance and potential solutions for common issues shared by the New Hampshire Department of Transportation (NHDOT) and DES.

The enclosed response document focuses on both water quality/quantity and air quality issues related to the I-93 improvements.

Thank you for this early opportunity to comment on the DSEIS. DES staff members are available as needed to discuss any aspect of these comments, should you need clarification. DES is pleased to work with your agency on this most important transportation project.

Sincerely,

Timothy W. Drew
Administrator
Public Information and Permitting
Office of the Commissioner

Enc.
Cc: Thomas S. Burack, Commissioner, DES
Harry Stewart, Director, Water Division, DES
Robert Scott, Director, Air Resources Division, DES
Collis Adams, Administrator, Wetlands Bureau, DES
Paul Currier, Administrator, Watershed Bureau, DES
Becky Ohler, Administrator, Climate/Energy Prog. Mgr., DES

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Comments, Suggestions, & Recommendations
Draft Supplemental Environmental Impact Statement (DSEIS)
For
Interstate 93 Improvements - Salem to Manchester
[IM-IR-93-1(174)0, 10418-C]

October 9, 2009

Introduction

The New Hampshire Department of Environmental Services (NHDES) appreciates the opportunity to review and comment on the Draft Supplemental Environmental Impact Statement (DSEIS) for the Interstate 93 Improvements Project from Salem to Manchester, New Hampshire. Topics covered in this consolidated response letter include comments related to the Section 401 water Quality Certificate for the project such as lake phosphorous concentrations, storm water best management practices, reference to the New Hampshire Department of Transportation (NHDOT) total maximum daily load (TMDL) implementation plan, chloride surveillance monitoring, as well as air quality issues related to reductions in greenhouse gases, construction of park and ride facilities, and minimization of emissions from construction activities.

Water Quality

Lake Phosphorus Concentrations (page 10-4)

The DSEIS states that the Selected Alternative will increase phosphorus concentrations in Canobie Lake and Cobbetts Pond by 0.7 and 0.6 ug/L, respectively. Canobie Lake is a Class A waterbody. Per regulation Env-Wq 1703.13, "Class A waters shall contain no phosphorus or nitrogen unless naturally occurring." In addition, Cobbetts Pond was placed on New Hampshire's 303(d) list of impaired waters for dissolved oxygen in 2008 after the 2004 DEIS was written. To address these issues, the stormwater runoff from the roadway should be treated by design and construction of appropriate Best Management Practices so that the Selected Alternative does not increase phosphorus loadings to these two lakes and does not impart additional oxygen demand to Cobbetts Pond. 1

NHDOT TMDL Implementation Plan (page 10-16):

The draft NHDOT TMDL Implementation Plan referenced in the DSEIS describes NHDOT's management changes leading to an anticipated 20% improvement in application efficiency over past practices. The draft Implementation Plan acknowledges that this does not meet the initial sector allocations quantified in the TMDL documents. This means that allocations for other sectors (municipal and private) would need to decrease in order for NHDOT's plan to meet the TMDL requirements. 2

Sector allocations must be resolved by the Salt Reduction Work Group, either by altering the initial sector allocations or by NHDOT implementing further chloride reductions, before NHDES can prepare an implementation plan. At this time, the allocation schedule and implementation plan have not been finalized. 2

Chloride Surveillance Monitoring (page 10-17)

The DSEIS states that "Since sampling began in June 2007, no violations of the chronic or acute chloride standards have been recorded at any of the chloride surveillance sites."

This statement should be replaced with, "The goal of the study is to conduct trend monitoring in non-TMDL watersheds to assess whether chloride levels are increasing in streams in areas outside the immediate vicinity of the I-93 corridor. [Note: this language is quoted from the Quality Assurance Project Plan for the Chloride Surveillance Monitoring Plan]. Due to the limited dataset, no statements can be made regarding trends at this point." 3

Wetlands

Following a review of the I-93 Improvements DSEIS, the DES Wetlands Bureau found that the environmental commitments regarding wetland impacts and mitigation appear to be the same as the original DEIS. The Wetlands Bureau identified no other issues of concern at this time in the DSEIS. 4

Air Quality/Climate Change

Chapter 5: Air Quality and Appendix B: Air Quality – Written Reevaluation/Technical Report

NHDES concurs with the methodology used to determine air quality impacts as described in Appendix B. Carbon monoxide (CO) microscale analysis requirements are satisfactorily addressed as are impacts on ozone precursors, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x). Based on presented data, CO concentrations as measured for both 1-hour and 8-hour concentrations are very similar between the build and no-build scenarios and are well below the federal National Ambient Air Quality Standards (NAAQS). Emissions of VOCs and NO_x increase in relative proportion to increases in employment and population projections and estimates, yet still model compliance with motor vehicle emission budgets used in the federal transportation conformity process. The DSEIS also demonstrates a reduction in selected Mobile Source Air Toxics (MSAT) as a result of the reduced congestion under the Build scenario. The document correctly points out that the project impacts are far less than reductions that will occur under either the Build or No-Build scenarios as the result of federal fuel and motor vehicle emission standards. 5

Chapter 5 of the DSEIS provides an overview of the impact transportation has on climate change, stating in Section 5.1.3, that "*transportation is a significant source of greenhouse gases.*" The document goes on to discuss the State's 2009 Climate Action Plan (CAP), developed pursuant to Executive Order 2007-3. The overarching strategies to reduce the State's climate impact found in the CAP are summarized in this section and include two strategies that relate directly to the transportation sector: *Reduce vehicle emissions through state actions;* and *Reduce vehicle-miles traveled through an integrated multimodal transportation system.* 6

DES is pleased the DSEIS includes a discussion of climate change and recognition of the strategies contained in the CAP. Several actions undertaken as part of this project directly support some of the

Recommended Actions of the Plan. Specifically, the construction of new park and rides at Exits 2, 3, and 5, improvements to the existing park and ride at Exit 4 are recommended under the Transportation and Land Use (TLU) Action TLU 2.B.2.e, *Expand Park-and-Ride Infrastructure.* Construction of new bus terminals at Exits 2, 4, and 5 with expanded commuter service to Boston support the recommendations of TLU 2.B.2.h, *Improve Existing Inter-City Bus Service.* These actions are consistent with the intent and goals of the referenced CAP strategies and NHDOT is to be commended for the significant progress made to date on these projects. 6

While NHDES is not proposing that DOT commit to a specific goal or limit on climate impacts from this project, much of which must come from vehicle and fuel improvements, additional measures could be taken to minimize vehicle emissions during the construction phase. Chapter 5, Section 5.2.3 states *"NHDOT will require that contractors involved with the reconstruction of I-93 include air pollution control devices on heavy diesel construction equipment in accordance with applicable State and Federal laws at the time of construction. The merits and practicality of more stringent or voluntary specification measures will be considered during the final design process and in consultation with the contracting community at large."* NHDES encourages NHDOT to include all available strategies to reduce climate impacts in the implementation of this project, including contractual requirements to eliminate unnecessary idling as well as actions to reduce black carbon emissions, a significant contributor to climate change. Such actions are encouraged by the CAP under TLU 1.C.3, *Install Retrofits to Address Black Carbon Emissions*, and TLU 1.D.3, *Address Vehicle Idling.* 7

The Northeast Diesel Collaborative, of which NHDES is a member, combines the expertise of public and private partners in a coordinated regional initiative to significantly reduce diesel emissions and improve public health in the eight northeastern states. Through this regional effort, model contract specifications have been developed for construction projects that address both the idling reduction and black carbon control recommendations of the CAP. NHDES is available to assist NHDOT with efforts to include additional measures in the construction phase of I-93 that will provide increased protection to citizens living and working in and around the construction area by reducing harmful diesel emissions. Such action would assist the state in meeting its greenhouse gas emission reduction targets outlined in the CAP as well as regional commitments made in the New England Governors/Eastern Canadian Premiers (NEG/ECP) 2001 Climate Action Plan.[1]

[1] New England Governors/Eastern Canadian Premiers Climate Action Plan 2001, http://www.negc.org/documents/NEG-ECP%20CCAP.PDF, resulting from adoption of Resolution 25-9 by NEG/ECP in July 2000.

Jamisson Sikora
Environmental Program Manager
FHWA
19 Chennel Drive
Suite One
Concord, NH 03301
Jamie.Sikora@FHWA.dot.gov

Peter Stamnas
Project Manager
Bereau of Highway Design
7 Hazen Drive
Concord, NH 03302
PSTAMNAS@dot.state.nh.us

FROM: Alderman and State Senator Betsi DeVries
4 Orchard Way
Manchester, NH 03109

Concerning: Response to DSEIS (I-93 Mitigation)

The following is submitted as part of the public comment to the Draft Supplemental Environmental Impact Statement for the widening of I-93 Salem to Manchester.

In July of this year, through an email sent to the various resource agencies, the Crystal Lake Preservation Association (CLPA), through its President, Andrew Manning, responded to and objected to an alternative proposal being considered that deviated from the original plan concerning the Crystal Lake parcels involved in the original EIS mitigation plan. The proposed change consisted of substituting a different parcel owned by the Giovagnoli heirs, along I-293, for the original parcel #44. Rather than an outright taking, Parcel #44 would have a 100 foot easement along Mosquito Brook under the new proposal.

I supported the CLPA objection and endorsed the reasons given by the CLPA at that time.

After further discussion with the CLPA and jointly with the CLPA I would request that the NHDOT and the other decision-making resource agencies consider purchasing both Giovagnoli parcels for I-93 Wetlands Mitigation purposes. That is, both parcel #44 of the original plan and the 52 acre parcel to the north and bordering I-293 and Cohas Brook. 1

Among the reasons given by the CLPA in its July email was the need to retain the wildlife corridor between Crystal Lake and the Great Cohas Swamp. The only stumbling block to this corridor becoming a reality is the change made to the original plan being considered by the resource agencies.

I would only add that I personally witnessed and participated in the tremendous amount of work and vetting in putting the original plan together. To change that now would be an injustice to the people of Manchester.

However, there is no doubt of the important environmental value to the alternative 52 acre Giovagnoli property. I have been engaged in protecting the Cohas River to the west of

South Willow Street in Manchester, and west of the Great Cohas Swamp, with the Manchester-Boston Regional Airport. To the East of the Great Cohas Swamp, the Manchester Water Works land protects the Cohas River at its mouth. The 52 acre Giovagnoli parcel would be a great step forward at protecting the Cohas River within the Great Cohas Swamp. 1

Therefore we propose that both parcels be purchased for the above reasons.

Respectfully submitted,

Betsi DeVries

State of New Hampshire

HOUSE OF REPRESENTATIVES

CONCORD

P. O. Box 285
Londonderry, NH 03053-0285

August 18, 2009

Mr. Jamie Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite 1
Concord, NH 03301

Dear Mr. Sikora:

Thank you for sending me the DVD on Interstate 93 Improvements. I will plan on attending the September 22, 2009 public hearing and will address any concerns at that time.

Sincerely,

Frank R. Emiro, Sr.
State Representative
Rockingham, District 3

FRE:dm

Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009**.

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

My constituents are calling me thinking the process of planning the widening of I-93 was over and only the construction remained. They are outraged that there is yet another reevaluation of the widening.

The feedback I am receiving fully supports the widening of I-93 to four lanes in each direction. The individuals I have spoken to feel the road is extremely unsafe and the dangerous conditions can only be resolved by the widening to four lanes.

I fully support the widening of I-93. It is unsafe and the expansion to four lanes is of critical importance to the safety and wellbeing of my constituents, especially those who commute on a daily basis.

1

Thank You

Representative for Rockingham County District #5

Name (please print) James B. Bausch

Affiliation Representing
Rockingham County #5
Derry, NH

I-93 Improvements Draft Supplemental Environmental Impact Statement and Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009**.

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

1

The widening of I-93 from the state line to Manchester is a state priority and needs to be done as soon as possible. I have included copies of several pieces of legislation that have passed and been signed by several governors over the past several years. However to be brief with my comments here I will highlight the areas of concern ~~both the public and I have with the delay of this project that has been held up for over~~ 20 years.

Safety: This portian of roadway has not been improved since the early 1960's and ~~the crashes along this section of road are both legendary and deadly. We are living on~~ borrowed time with several 40 + pile-ups over the past several years. This road was designed to handle 60k cars a day and we are now experiencing 100k to 120k a day.

Environmental: these issues abound in this corridor I would invite you to sit in the daily ~~traffic and inhale the fumes of thousands of vehicles in the stop and go traffic that exist~~ in this corridor. This is a waste of fuel and cause for concern of the air quality in our towns.

Economic Development: This corridor has been described as the "Corridor of Commerce" and I call call it the "Gateway to New Hampshire". The end of this corridor leads to the Manchester/Boston airport that is the economic engine of our ~~state. Thsi highway is also the gateway to the lakes region and White Mountains~~ considering that the state #2 industry is tourism this highway is the lifeblood of our economy.

Name (please print) **Senator Bob Letourneau**

Affiliation **New Hampshire Senate**

Address **30 South Avenue, Derry, NH 03038**

RESPONSES TO COMMENTS FROM STATE AGENCIES AND STATE ELECTED OFFICIALS

Response to Comments Made by
Timothy W. Drew, Administrator, Public Information and Permitting
New Hampshire Department of Environmental Services
Concord, NH
Letter dated October 9, 2009

1. The modeling results cited in the comment showing an increase in phosphorus concentrations as a result of the 2005 Selected Alternative were located in the portion of the DSEIS summarizing the results of the 2004 FEIS (Section 10.2). Since the 2004 FEIS, the design of the stormwater treatment areas has been revised to include wet extended detention ponds and gravel wetlands, both of which are more efficient at removing phosphorus than the dry extended detention basins proposed in the 2004 FEIS. NHDOT has reanalyzed the phosphorus loadings to Cobbetts pond and Canobie Lake to account for the revised stormwater treatment design using the Schuler Simple Method. The 2005 Selected Alternative is expected to reduce Total Phosphorus loadings to Cobbetts Pond and Canobie Lake by 32.1 and 11.7 pounds per year, respectively.

2. The Salt Reduction Workgroup was created through an MOA between NHDES and NHDOT in April 2006. The Salt Reduction Workgroup as described in Section IV-2 is advisory in nature with no powers to regulate. The approval and enforcement of a TMDL implementation plan is a regulatory requirement of the Clean Water Act. The ultimate decision on individual allocations must occur within NHDES as required by the Clean Water Act and cannot be resolved by the Salt Reduction Workgroup.

3. The chloride surveillance program outside the TMDL watersheds involves eight rounds of sampling per year at the following locations:

   - NH Route 28 Bypass / Cohas Brook
   - Symmes Drive / Little Cohas Brook
   - Parmenter Road / Nesenkeag Brook
   - Island Pond Road / Taylor Brook
   - NH Route 28 / Flatrock Brook
   - Church Road / Golden Brook

   The statement that no violations of the chronic or acute standards have been recorded outside the TMDL watersheds since sampling began in June 2007 is accurate and should not be deleted from the SEIS. It reflects the most up-to-date information available. The disclaimer suggested by NHDES regarding the inability to describe long-term trends due to the limited dataset at this point is also a true statement and has been added to the FSEIS.

4. Comment noted. NHDOT will continue to coordinate with NHDES and the other resource agencies regarding wetland impacts and mitigation.

5. NHDES's concurrence with the air quality analysis methodology is acknowledged.

6. Comment noted. Chapter 5 of the FSEIS provides additional information on the consistency of the project with the New Hampshire Climate Change Action Plan policies.

7. NHDOT will consider requiring the inclusion of air pollutant control devices in future construction contracts.

Response to Comments Made by
Betsi DeVries, Alderman and State Senator
Senate District 18
Letter dated October 7, 2009

1. NHDOT has decided to revert to the original mitigation plan for the Crystal Lake parcels as proposed in the 2004 FEIS. The alternate proposal is no longer under consideration.

Response to Comments Made by
James B. Rausch, State Representative
Rockingham District 5
Comment Form Submitted October 1, 2009

1. Your support for the project is noted.

Response to Comments Made by
Bob Letourneau, State Senator
Senate District 19
Comment Form Submitted October 7, 2009

1. Your support for the project is noted.

Regional Agencies and Municipalities

Page	Name
1	Southern New Hampshire Planning Commission
4	Town of Derry
6	Town of Londonderry
7	Town of Salem
9	Town of Salem Fire Department
10	Town of Windham

SNHPC

Southern New Hampshire Planning Commission

438 Dubuque Street, Manchester, NH 03102-3546, Telephone (603) 669-4664 Fax (603) 669-4350
www.snhpc.org

September 30, 2009

Mr. Peter Stamnas
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, NH 03302

SUBJECT: Interstate 93 Improvements Draft Supplemental Environmental Impact Statement and Reevaluation/Section 4(f) Evaluation

Dear Mr. Stamnas:

Southern New Hampshire Planning Commission (SNHPC) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) and Reevaluation/Section 4(f) Evaluation for the Interstate 93. SNHPC reiterates its support for the I-93 improvements and feels that the project is essential to increase the transportation efficiency within the corridor by reducing congestion and enhancing safety. 1

However, there are some concerns with the SEIS that need to be addressed:

Executive Summary
A summary table listing the issues, areas, their impacts, showing any changes in the impacts between 2004 FEIS and the Draft SEIS due to the additional studies as directed by the Court Order. 2

Purpose and Need of the Project
Exit 4A project has been added to the No Build condition. Have the traffic estimates/projections used in the Exit 4A DEIS been incorporated into the analysis of the I-93 SEIS? 3

Does the accelerated construction schedule of the Manchester Airport Access Road have any affect on the 2020 No-Build for Scenario 1 and Scenario 2? 4

Does the SEIS take into account the reduced bus service from the Manchester Transit center? 5

Potential Future Mass Transit Accommodations
There is no mention of the NH Rail Transit Authority, and its top priority, the New Hampshire Capitol Corridor (NH Mainline-PanAm.) Did the SEIS take into account the ridership numbers for the NH Capitol Corridor? 6

Summary of Alternatives
Under the Four Lane Alternative, was there any consideration that one of the new lanes is dedicated for HOV and Bus only? 7

4.0 Traffic
Indirect Land Use Effects of I-93 Exit 4A
SEIS should have incorporated the buildout analyses of the area surrounding Exit 4A in the towns of Londonderry and Derry. There are significant development proposals that will be occurring in the next several years within the Exit 4A area. The proposed developments need to be accounted in the SEIS. 8

Future No Build Transportation Projects
The NH Capitol Corridor should be mentioned as one of the major transportation projects in the No Build Scenario. 9

I-93 Bi-State Investment Study
The I-93 Bi-State Investment Study was flawed because it failed to consider the NH Capitol Corridor project as the top rail transit project by the New Hampshire Transit Rail Authority. 10

5.0 Air Quality
Greenhouse Gas Analysis
This section was very dismissive and needs to rewritten. Automobile emissions continue to be the number one source for greenhouse gases. There was no mention of the NH Climate Action Plan that was adopted in 2009 and how the I-93 Built Alternative would comply with the recommendations of the Climate Action Plan. 11

8.0 Land Use
There was a CTAP Buildout analysis completed for Derry and it needs to be addressed in the SEIS. This section also did not take into account the Small Area Master Plan that was recently completed for the town of Londonderry, spring 2009, or the draft Master Plan for the City of Manchester. There was a corridor access management plan completed in 2009 for Londonderry and Derry for Route 128 which is also not mentioned in the SEIS. Why is there no mention of the development occurring on I-93 Exit 10 in Hooksett? 12

9.0 Contaminated Properties and Hazardous Materials
There is no mention of the SNHPC's Brownfields Sites Inventory Study for Petroleum contaminated sites that has been occurring for last two years. 13

12.0 Indirect Effects
In the Indirect Land Use Impacts section, there was no discussion or assessment of the changes in land use as designated by the newly adopted master plans for Auburn, Chester, Candia, Deerfield, Hooksett, or Raymond or the CTAP buildout analyses that have been completed for the towns since 2004. Table 12.10 should be revised to reflect these analyses. 14

Please do not hesitate to call if your have any questions or if you require further information.

Sincerely,

SOUTHERN NEW HAMPSHIRE
PLANNING COMMISSION

David J. Preece, AICP
Executive Director/CEO

Town of Derry

"In Derry, we acknowledge that our History Creates Opportunity."

Gary Stenhouse
Town Administrator

PW09-406

September 29, 2009

Mr. Jamison Sikora
Federal Highway Administration
19 Chennell Drive, Suite 1
Concord, New Hampshire 03301

Mr. Peter Stamnas
NH Department of Transportation
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302

RE: Interstate 93 Widening – Draft Supplemental EIS

The Derry Town Council would like to take this opportunity to reiterate its support for the NHDOT plan to widen Interstate 93. Thousands of Derry residents use the highway daily to commute to their jobs in southern New Hampshire or northern Massachusetts. The highway has a history of accidents and time lost due to the related delays. During adverse weather conditions, the highway is especially dangerous to navigate. The proposed 4-lane widening will alleviate congestion and modernize the highway built in the 1960's.

The Town of Derry relies heavily on Interstate 93 for commerce, employment of its residents and tourism. A free flowing Interstate 93 will greatly benefit the Town of Derry. Routes 28 and 102 become quickly inundated as alternate routes when an accident occurs on Interstate 93. Fewer accidents on the Interstate will eliminate severe congestion during diversion of traffic. The Town of Derry will ultimately be more accessible and more attractive to new businesses when the highway is improved.

1

14 Manning Street, Derry, New Hampshire 03038 Tel 603.845.5403 Fax 603.432.6131
Email: garystenhouse@ci.derry.nh.us Website: www.derry-nh.org

Once again, the Derry Town Council offers its support of the I-93 widening project.

Please feel free to contact us or Town Administrator, Gary Stenhouse if we can assist in any way.

Gary Stenhouse
Town Administrator

Derry Town Council:

Richard Metts, Chairperson

Kevin Coyle

Janet Fairbanks

Brian Chirichiello

Brent Carney

Brad Benson

Neil Wetherbee

14 Manning Street, Derry, New Hampshire 03038 Tel 603.845.5403 Fax 603.432.6131
Email: garystenhouse@ci.derry.nh.us Website: www.derry-nh.org

TOWN OF LONDONDERRY

Town Council

268 B Mammoth Road
Londonderry, NH 03053-3416
website: www.londonderrynh.org
Main: 432-1100 Ext. 120 FAX: 432-1128

October 5, 2009

Mr. Peter Stamnas
NHDOT
PO Box 483
Concord, NH 03302

Mr. Jamison Sikora
FHWA
19 Chennell Drive, Suite 1
Concord, NH 03301

RE: I-93 Widening – Draft Supplemental EIS

Gentlemen:

The Town of Londonderry hereby reaffirms its support for the NHDOT plan to widen Interstate 93. Interstate 93 is the major through fare for the State of New Hampshire, which is used daily by thousands of Londonderry residents who work outside of our community. The current condition of I-93 creates a significant safety hazard for the traveling public, as well as an impediment to area economic development.

The Town's elected and appointed officials, along with staff, have developed a number of long-term planning documents and studies to insure the orderly development of our community. All of these studies contemplate NHDOT's completion of the widening project as originally proposed to eight lanes. We see no economic, environmental or safety benefits which support the implementation of the six lane alternative. 1

As a result of current traveling conditions, our safety services expend an inordinate amount of resources responding to the I-93 corridor. We urge you to proceed with all due diligence to implement the eight lane solution to I-93, which will benefit and protect Londonderry residents, visitors to our State and the entire State of New Hampshire.

Respectfully submitted,

Michael Brown, Chair

Kathy Wagner, Vice-Chair

Brian Farmer, Councilor

Paul DiMarco, Councilor

Sean O'Keefe, Councilor

TOWN OF SALEM, NEW HAMPSHIRE

33 GEREMONTY DRIVE, SALEM, NH 03079
603/890-2120 · FAX: 603/890-2220

October 1, 2009

George N. Campbell
Commissioner
New Hampshire Department of Transportation
Room 190, JOM Building
7 Hazen Drive
Concord, NH 03302-0483

Subject: SEIS Letter of Support I-93

Dear Commissioner Campbell:

The Town of Salem appreciates the continued progress that the New Hampshire Department of Transportation exhibits on the I-93 project and supports the development of the four-lane option. In the face of concerns expressed by those who lack the understanding of the severe impacts that the current two lane I-93 configuration places on local communities your agency perseveres. It is clearly obvious that the two lane I-93 cannot handle the traffic volume. Drivers seek the additional lanes by using our local roads to avoid congestion. We would rather those lanes be configured as part of a four lane I-93. 1

Those who purport to speak for communities in their opposition to the highway know little of our strong partnerships with the Department of Transportation to create mitigation options in concert with the I-93 project.

We appreciate the meeting you facilitated for the exit two west end coordination project. Exit two is a clear partnership between NHDOT and Salem. The Town is planning local road improvements to tie into and maximize the positive impacts of the I-93 project. We are working with local private developers to leverage private funds, and federal economic development funding to create traffic improvements in a proactive manner. NHDOT has understood the need to create these linkages and accommodated our staff to finalize coordination. 2

Our planned bicycle and pedestrian project which will divert vehicular traffic to other modes has a foundation in NHDOT planning as far back as 2003. Encouraged by NHDOT support for the project, we have joined the Towns of Windham and Derry to create the Southern New Hampshire Rail Trail Alliance to move forward with applying for funds to connect over ten miles of trails.

We are nearing the completion of planning for a regional bus system to connect local communities and reduce volumes coming into Salem by creating transit options for employees in the region. NHDOT is a strong participant by providing us with the funding opportunity.

Our Public Works Department is grateful for the assistance by NHDOT and NHDES regarding salt mitigation opportunities to create reduction options. These programs are crucial to environmental mitigation and considering the current economy can only be accomplished with outside funding.

The I-93 incident management planning initiated by NHDOT, while meant to address events during the construction, has been a cooperative communication that sets the stage for continued dialogue and solutions regarding safety.

Innovation is the key word for the work of NHDOT's I-93 project management team as they have moved toward facilitating one of the most important flood mitigation projects we face in Salem. We have secured federal funds to purchase and demolish nine homes located at Haigh Avenue area adjacent to I-93 at the confluence of the Spicket River and Policy Brook. Severely impacted by flooding this area poses a mutually beneficial opportunity for the Town and NHDOT. Your agency has seized the opportunity in partnership with the Town and will provide the matching funds for our grant to create a model for mitigation projects. The ability to convert developed land to a natural state and remove residents from a hazardous area can only be construed as the highest form of mitigation. 2

The above partnerships represent just a few opportunities we have sought and achieved with NHDOT. Programs such as the Bridge State Aid have literally saved us from the need to close bridges on major local arterials. Imagine the increased fuel usage and congestion associated with traffic rerouting due to bridge closures.

The concerns we share with our residents and staff are those of congestion, emissions caused by congestion, traffic accidents, traffic using local roads to avoid congestion, and the impacts all these issues have on our economy, services, and quality of life. The four lane option can address those concerns when considered with the continued partnership we hold with NHDOT.

In short, we are growing impatient hosting a failed two lane I-93 which is causing more impacts than we could imagine from a four lane I-93. We understand NHDOT is not the reason for delays. Opposition by those who have not chosen to meet with local communitles is an uninformed narrow approach. Our approach is one of a partner with NHDOT to ensure success that leverages ideas and better outcomes. 3

Thank you, we look forward to continued partnerships for a better community, region, and State.

Sincerely,

Arthur E. Barnes, Chairman
Salem Board of Selectmen

TOWN OF SALEM
FIRE DEPARTMENT HEADQUARTERS
152 MAIN STREET
SALEM, NEW HAMPSHIRE 03079
BUSINESS: (603) 890-2200 FACSIMILE: (603) 893-3789
WWW.TOWNOFSALEMNH.ORG

October 1, 2009

Mr. Peter E. Stamnas, PE
I-93 Project Manager
NH DOT, Highway Design Bureau
PO Box 483
Concord, NH 03302-0483

Dear Mr. Stamnas:

Recently, we learned of the possibility for additional delay in the I-93 expansion project between Salem and Manchester. Salem Fire Department personnel routinely respond to motor vehicle crashes and other emergency incidents along this highway and adjoining network of roads. It has long been recognized that traffic volume within this corridor impacts the local and regional economy, public safety and our quality of life. As you know, the current two-lane configuration is unable to manage traffic requiring additional lane volume. The pre-peak, and post peak traffic speeds and mounting congestion continue to create a combination of factors including minor and major accidents. In turn, our ability to respond to these incidents is severely constrained by gridlock conditions which can be attributed to a constrained two-lane highway. 1

We see the four-lane configuration as the only option that will relieve congestion and enhance our ability to respond and mitigate emergencies along this and other affected routes. On behalf of all emergency service providers, I ask that this project proceed without further delay. We look forward to a continued positive partnership with the Department of Transportation in planning this critical improvement.

Sincerely,

Kevin J. Breen

Chief of Department

TOWN OF WINDHAM, NEW HAMPSHIRE

OFFICE OF THE BOARD OF SELECTMEN/TOWN ADMINISTRATOR

POST OFFICE BOX 120, 4 NORTH LOWELL ROAD, WINDHAM NH 03087-0120

October 7, 2009

Mr. Peter Stamnus, Project Manager
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

Re: ***I-93 Expansion***

Dear Mr. Stamnus:

In response to the recommendation of the I-93 Technical Steering Committee, please consider this letter the Windham Board of Selectmen's official endorsement of the expansion of I-93 to four (4) lanes from the Massachusetts border to Manchester, NH. As part of their discussion, the Board members cited several key items in support of four (4) lanes versus three (3), including: the sheer volume of traffic utilizing the route; reduced idling times; and increased public safety. 1

In closing, we thank you for your consideration in this matter.

Very truly yours,

Bruce R. Breton

Bruce R. Breton
Vice-Chairman, Board of Selectmen

cc: Senator Robert Letourneau
Commissioner George Campbell
File

RESPONSES TO COMMENTS FROM REGIONAL AGENCIES AND MUNICIPALITIES

Response to Comments Made by
David Preece, Executive Director
Southern New Hampshire Planning Commission
Letter dated September 30, 2009

1. SNHPC's support for the project is noted.

2. The text of the Executive Summary provides a concise summary of the results of the SEIS, including the results of additional studies required by the Court Order and changes in impacts and mitigation since the 2004 FEIS. A summary table is not warranted and would not aid the reader in understanding the SEIS. For example, a simple numerical comparison of the 2004 FEIS floodplain impacts with the SEIS floodplain impact estimates would not be meaningful without an explanation of the changes in floodplain mapping since the 2004 FEIS. These types of explanations are better suited to narrative than to a summary table.

3. The traffic projections used in the Exit 4A DEIS were not incorporated into the SEIS. A separate traffic analysis was conducted for the SEIS using the New Hampshire Statewide Model and the population and employment levels developed for Scenario 1 and Scenario 2, see Section 4.4 for further information on the methodology.

4. The Manchester Airport Access Road was included in the No Build condition traffic modeling for 2020 (Scenario 1 and Scenario 2) and 2030 (Scenario 2). The early completion of the construction of this project (2012) does not affect the traffic modeling, as the road is assumed to be in place by 2020.

5. The reduced bus service is not accounted for in the traffic modeling. Incorporating such a minor change in the modeling would not substantially change the results.

   Boston Express increased the number of stops in Manchester in response to the service reductions by Concord Trailways referred to in the comment. NHDOT is working with the City of Manchester to improve the existing terminal facilities for the short term. The construction of a new bus terminal with adequate parking will be necessary to support a more robust bus schedule for Manchester. There are plans to establish East-West bus service between Manchester and Portsmouth in the near future.

6. The Capitol Corridor project was not included in the No Build condition for the I-93 SEIS model runs. Rail service between Manchester and Lowell (along the Capitol Corridor) was evaluated during alternatives screening for the original EIS (the West Rail Corridor). The ridership estimates showed that the project would not alter the need to widen I-93, and would be less effective than the other rail alternatives considered in affecting I-93 traffic conditions. In addition, SNHPC prepared ridership estimates in 2008 for the Capitol Corridor project that showed that 4,620 to 5,280 daily trips would be attracted to the new stations (although 840 of these boardings would be diversions from the existing Lowell station). One of the proposed stations included in the ridership estimates above is located in Massachusetts (Chelmsford- 920 to 1,080 daily boardings). Given the location of the proposed new stations within the F.E. Everett Turnpike/U.S. 3 corridor, the small effect of the project on highway traffic would be primarily focused on the F.E. Everett Turnpike, not I-93.

7. Various combinations of HOV lanes, bus service and widening on I-93 were evaluated during alternatives screening for the original EIS process. After ridership studies, it was concluded that neither bus service nor HOV lanes would be effective alone or in combination with other mode options in satisfying the need for the project. For example, Mode Combination 7 (HOV and Bus, with three general purpose lanes) resulted in LOS F conditions south of Exit 1 and LOS E conditions between Exit 1 and Exit 3 (See Table 2.3-6 in the 2004 FEIS). These results would not substantially change with the updated analysis conducted for the SEIS for Scenario 2 in 2020 and would perform worse with additional traffic growth by 2030.

   While HOV lanes and bus service was rejected as a standalone alternative, NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

8. The approach used for land use modeling for I-93 Exit 4A area in the SEIS was reasonable. Buildout analyses would not be an appropriate basis for estimating land use change by 2030. Buildout analyses simply identify the maximum amount of development that could occur based on zoning and other constraints. A buildout analysis is not a forecast of the amount of development that can be expected to occur by a specific date.

9. See response to comment #6 for discussion of the NH Capitol Corridor project.

10. The consideration of the NH Capitol Corridor project in the I-93 Transit Investment Study is an issue beyond the scope of this SEIS. The rationale for the alternatives selected for study will be provided in the I-93 Transit Investment Study Final Report, which will be made available on the project website- www.nh.gov/dot/programs/i93transit/index.htm

11. NHDOT and FHWA disagree with the comment that Section 5.3.7 of the DSEIS was dismissive or needs to be rewritten.

    Section 5.1.3 of the DSEIS identified role of the transportation sector as a major source of greenhouse gas emissions. The New Hampshire Climate Action Plan was also mentioned in Section 5.1.3. Chapter 5 of the FSEIS provides additional information on the consistency of the project with policies of the New Hampshire Climate Change Action Plan.

12. The Derry buildout analysis report (released in November 2009) was not available at the time of the preparation of the DSEIS. The results of Derry's buildout analysis are incorporated into the developable land estimates for Derry reported in Chapter 12 of the FSEIS (See Table 12-1).

    As no access management plan has been completed for NH 128, the reference to the NH 128 access management plan in the comment was assumed to be referring to the NH 102 Access Management Plan. Summaries of Londonderry's Northwest Small Area Plan

(June, 2009), Manchester's Master Plan (December, 2009) and the NH 102 Access Management Plan have been added to Chapter 8 of the FSEIS (See Section 8.4.1).

The development at I-93 Exit 10 in Hooksett is outside the study area considered in Chapter 8 of the FSEIS, which identifies land use changes in Salem, Windham, Derry, Londonderry and Manchester. The analysis of potential cumulative impacts at a regional scale does not specifically consider the commercial development at Exit 10 referred to in the comment; however it does account for the aggregate impacts of future development through the use land conversion estimates based on population and employment forecasts. It would not be appropriate for the cumulative impact analysis to consider individually each development occurring within the 29-community study area. Attempting to account for individual developments through a "bottom up" approach to forecasting would likely overestimate the amount of development that could reasonably be sustained in the area and therefore overestimate the associated impacts. The "top down" approach used for the SEIS is consistent with standard demographic methods (such as used by OEP) which utilize a control total (cap) where the total population of a state or region is established first and then allocated down to the municipal and sub-municipal level.

13. NHDOT's RASCAL database provides a detailed tracking system for all the potentially contaminated properties identified in the I-93 corridor. The SNHPC's regional Brownfield Sites Inventory Study does not provide the level of detail of the RASCAL database for assessing potentially contaminated properties in the I-93 corridor.

14. The estimates of developable land from Auburn's 2007 Master Plan (5,853 acres) and Chester's 2006 Master Plan (6,353 acres) were incorporated in Table 12-10 in the DSEIS. The latest available buildout analyses, including those conducted as part of CTAP, were reviewed for developable land information to incorporate in the indirect effects analysis (See Table 12-1 in the FSEIS).

Response to Comments Made by
Gary Stenhouse, Town Administrator
Derry Town Council
Letter dated September 29, 2009

1. The Town of Derry's support for the project is noted.

Response to Comments Made by
Michael Brown, Chair
Londonderry Town Council
Letter dated October 5, 2009

1. The Town of Londonderry's support for the project is noted.

Response to Comments Made by
Arthur E. Barnes, Chairman
Town of Salem
Letter dated October 1, 2009

1. The Town of Salem's support for the project is noted. The 2005 Selected Alternative would help address the congestion issues cited in the comment.

2. Comment noted. In fall 2009, FEMA funding was approved for the residential buyout of nine properties on approximately 5.4 acres of Haigh Avenue (referred to as the Haigh Avenue Phase I Site). NHDOT will provide the Town of Salem with matching funds for the FEMA grant in accordance with an agreement executed on March 17, 2010. The Town of Salem is pursuing a second FEMA grant for an additional 14 properties on seven acres on Haigh Avenue (Phase II). A FEMA announcement on successful applications is expected in November 2011.

3. Comment noted.

Response to Comments Made by
Kevin J. Breen, Chief of Department
Salem Fire Department
Letter dated October 1, 2009

1. The Salem Fire Department's support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment, improving conditions for emergency response services utilizing I-93.

Response to Comments Made by
Bruce R. Breton, Vice-Chairman, Board of Selectmen
Windham Board of Selectmen
Letter dated October 7, 2009

1. The Town of Windham's support for the project is noted.

Private Organizations and Individuals

Page	Name
1	Paul Alessi
2	Richard Areand
3	Laura Aronson
4	John Bachner
5	Charles Bazdanes
6	John M Beltogen
7	Kathy Bove
8	Trina Brand
9	Eleanor Briggs
11	Bob Brown
12	Richard Brownell
13	Bob Bryant
14	Elizabeth Burns
15	Elaine C
16	Thomas Cardon
18	Gerry Coffey
19	Concord Coach Lines
20	Mark Connors
22	Conservation Law Foundation
58	Tracy Cosgriff
60	Alan Daigneault
61	Sally D'Angelo
62	Kathleen Davis
63	Michelle DeBye
64	Paul DeBye
65	Roger Deiker
66	Joseph Doherty
67	Richard Dooley
68	Tim Driscoll
69	Laura El-Azem
70	Paul and Jean Eno
72	Sharon Enright
73	Joe Friedman
74	Gallagher, Callahan & Gartrell
75	William Ganley
76	Edward Gawrys
77	Ken Gesualdo
78	Stephen A Gorski
79	Greater Salem Chamber of Commerce
80	Jim Greene
81	Leon Guay

Page	Name
82	Stephen Gudek
83	Andrew Guirquis
84	Matt Habinowski
85	Chalmers Hardenbergh
86	Travis Heinstrom
87	Deb Hewitt
88	Howie Howe
89	Diana Jacobs
90	Jerry Johnson
91	Chip Johnson
92	Richard Katzenberg
94	Jay Koelb
95	Bill Koury
96	Sandra Lane
97	Marc Peter Langlois
98	Ben Lefebvre
99	Gary LeSuer
100	David B Lewis
102	Paul Lomanno
103	Wayne MacLeay
104	Melissa Magnuson
105	Andrew Manuse
108	Clint Miller
109	Jonathan Miner
110	Clarissa Navarro
111	Steve Norton
112	Sean O'Keefe
113	Paul J. Parisi
114	Ryan Ridley
115	Bob Rigby
116	Simon Rios
117	Arthur Rugg
118	Jeff Rupert
120	Bill Scanzani
121	Thomas Selinka
122	Scott Severn
123	Tom Shanley
124	Sierra Club
125	Dave Souter
126	Andy Stahly
127	Ed Stapanon
128	Deborah Starin
129	Mark Starin
130	Ken Stremsky
133	Frederick Telschow

Page	Name
134	JoAnn Thornton
135	Peter Thornton
136	Steve Tieland
137	Sharon Todd-Elliot
138	AP Varney
139	Kathy Wagner
140	R.S. Waites
141	Joe Ward
142	Winmill Equip Co. Inc
143	Sy Wrenn
144	Steve Young
145	The Association of General Contractors of New Hampshire

From: Alessi Paul [mailto:Paul.Alessi@hcahealthcare.com]
Sent: Thursday, October 08, 2009 8:22 AM
To: Peter Stamnas
Subject: 93 Widening

Sir:

I believe that the 93 widening is a good project. The congestion at the Mass-NH border is pretty bad and hopefully this will help and will be an economic boom for southern NH and help with access to the ski and lake regions. 1

Paul Alessi
17 Wynridge Rd
Windham 03087

Dear Mr Silvera,

I support widening Rt 93.
I drove that Road for
many years and it is a
nightmare during the commuting
hours.

1

Sincerely,

Richard Arcand
5 Cardinal Drive
Bow NH 03304

From: Laura Aronson [mailto:laura@mlans.net]
Sent: Friday, October 09, 2009 1:53 PM
To: Peter Stamnas
Subject: Expand Rt. 93 to 4 lanes

Dear Peter,

As a resident of Londonderry I am alarmed about the frequent fatal accidents on this highway and annoyed at the heavy traffic backups during rush hour. 1

Expand it to 4 lanes.

Yours,
Laura Aronson

Home Phone: 603-216-9207
Address: 38 Boyd Rd, Londonderry NH 03053
Email ... **Linkedin Profile**

From: Bachner John [mailto:JBachner@wyeth.com]
Sent: Friday, September 25, 2009 8:42 AM
To: Peter Stamnas; jamie.sikora@fhwa.dot.gov
Subject: I-93 widening

Hi,
This is in response to the article in the Union Leader. I was unaware of any meeting for people to go and express their support for this project. 1

I am in favor of widening I-93 from Salem to Manchester. I currently live in Derry, NH and have traveled that highway every weekday for the past 7 1/2 years. I-93 is too dangerous because of the lack of ability to handle the amount of drivers that it does. The on and off ramps are too short which causes extremely dangerous stops. People have no problem getting on the highway and cutting over into the passing lane while going 30 mph. I've seen people, out of nowhere, have to go from 70 mph to 0 mph in seconds, and even swerve off the road to avoid a collision. 2

I also am in favor of adding train service at some point. This could alleviate a huge amount of traffic and also be more environmentally friendly. 3

Thank You,

John Bachner
Wyeth Biotech
(978) 247-2556

jbachner@wyeth.com

From: Charles.Bazdanes@HANSCOM.AF.MIL
Sent: Friday, September 25, 2009 7:19 AM
To: Jamie.Sikora@dot.gov; pstamnas@dot.state.nh.us
Cc: Charles.Bazdanes@HANSCOM.AF.MIL
Subject: Widening I-93

As someone who commutes from Exit 4 in Londonderry to Hanscom AFB I have used it 5 days a week for the past 4 years. I have had several close calls to accidents and even 1 real accident. I like many other drivers always see accidents and it is unfortunate there are only 2 lanes. Keep up the Good Work trying to expand.... 1

Warm Regards,

Charles Bazdanes
Contract Specialist, ESC/PKE
11 Eglin St., Bldg 1618
Hanscom AFB, MA 01731-2120
DSN: 478-2128
COM: 781-377-2128

1

Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009.**

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

Mr Stamnas

I would think at this time in the road Construction phase the engineering has been done, all the impact studies have been complete and has been approved and some of the four lane bridges have been started and some near completion. It would appear to all observers that it is far too late and far too expensive to change the project from four lanes to three lanes. The future is also being thought of and four lanes should be enough to satisfy the future driving needs for the foreseeable future. 1

Name (please print) John M. Belfiore

Affiliation 242 Lawrence Rd Salem N.H.

From: PamChef1@aol.com [mailto:PamChef1@aol.com]
Sent: Friday, October 09, 2009 1:22 PM
To: Peter Stamnas
Subject: (no subject)

In favor of widening route 93 to 3 or 4 lanes. Constant accidents between my exit four and exit five. Thank you! 1

Kathy Bove

From: Trina Brand [mailto:trinabrand@gmail.com]
Sent: Friday, September 25, 2009 10:37 AM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: I93 widening

As a resident of Derry, frequent utilizer of and neighbor to I93, I would like to see a compromise between the current proposal and the current road.

In my opinion, people utilizing I93 would benefit by widening it to 3 lanes each direction along with some straightening, if possible. The current two lanes would not be as much of a problem if NH were flat. However, it's not. Some of the biggest back-ups come by vehicles slowing for curves and hills. Some of the other big back-ups come on I93N when merging from 3 lanes to 2. Having 3 lanes in each direction would help with these issues. 1

To further alleviate holiday/weekend traffic, could we also consider designing the road such that the right shoulder could be used as a 4th travel lane at certain hours? This seems to work well in MA. A fourth lane is not needed all the time. 2

I would very much like to avoid a permanent fourth lane in each direction if at all possible for several reasons:
1.) Safety. During non-peak times, it seems (in my experiences near Boston) that people drive much faster on the 4 lane areas than the 3 lane areas.
2.) Beauty. The interstate will completely lose the beauty it currently has, some of which it might be able to retain with 3 lanes.
3.) Balance of environmental needs. As much as we can preserve of the current land while reducing the air pollution from traffic jams would be great. 3

As a neighbor to I93 I also wonder: can anything be done to decrease the noise from the interstate? Is there any topcoat that can be used to help with this? ...or any noise barriers installed? 4

Also, as a Derry resident: please realize that the majority of town residents do NOT want an Exit 4A. We voted on this a couple of years ago, and the majority of voters opposed it. With the current close proximity of Exits 4 and 5, adding another exit in-between will just make traffic flow on I93 worse. The people in Derry know how to navigate around the current short high-traffic times. Do not let local politicians mislead you on this one. 5

Sincerely,

Trina Brand
Derry, NH

From: ebphoenix@aol.com [mailto:ebphoenix@aol.com]
Sent: Tuesday, October 06, 2009 6:11 PM
To: Peter Stamnas
Subject: I-93 project

Dear Mr. Stamnas,

I would like to speak for widening of I-93 to three lanes each direction. I believe this will accomplish the necessary goals of widening the existing road by 50% while providing a minimizing of the negative impacts that the proposed eight lane highway would bring. 1

The three lane alternative would:
*Lower the cost to NH taxpayers, cut the funds required for the State of New Hampshire's share of the costs (now costing approximately $160,000,000 or 20% of the project) and thus enable other badly needed projects in the underfunded DOT Highway Plan that have been deemed important for safety and traffic flow concerns to be funded. * 2

*Possibly eliminate the need for a toll booth to be built at the southern most stretch to help NH generate the excessive funds needed for the four-lane build,currently estimated at $ 800 million. * 3

*Cut the salt and chemical usage required to keep the road "Clean and Dry" by 33%, enabling towns and their road agents along the highway to re-gain the ability to clean and winterize their own town roads. Given the fixed amount of chemicals that can be applied to the roads in the water districts along the highway under current regulations and negotiations, any additions to the I-93 quotas by definition reduces that which is available for the nearby towns. Less road means less salt which, in turn, means cleaner streams and safer drinking water. * 4

Provide incentives for a more thoughtful and efficient strategy to move people through the corridor that might emphasize HOV preferences, railroad and bus alternatives, plans to even out traffic flow at the busiest times, provide railroad alternatives for freight, and for the utilization of other "best practices" used successfully across America. 5

*Help New Hampshire to achieve its publically stated goal in the Governor's Climate Change Action Plan of reducing the harmful carbon emissions from traffic by 20% by 2020 and by 80% by 2050. Those important goals will never be reached if the DOT and other State and Federal agencies continue to provide encouragement and incentives to single passenger petroleum based travel. 6

*Help us resolve and correct the violations that currently exist under the Clean Water Act due to excessive chloride use polluting the streams and aquifers along the highway. (By law, this must be corrected.) * 7

Minimize the extensive and costly impacts on many towns near and not-so-*near the I-93 corridor. This highway will drive new growth in the Southern NH tier, increasing the population, eliminating valuable open spaces, forcing the need for locally funded new schools and emergency services and driving locally funded property taxes unnecessarily higher. Safety on secondary roads will also be made worse as cars speed from areas with cheaper land to highways like "101" that will then feed traffic to the new highway. * 8

*An example- Amherst has already exceeded its OEP projected population growth of _2020_, has far more traffic on its feeder roads and more accidents as well, than just a few years ago. We are using 11 modular temporary classrooms at our schools and will eventually need another expensive building and more teachers. Our population in 2000 was 10,769, was projected by the NH Office of Energy and Planning to go to 12000 by 2010 and to 13,000 by 2020. Today it stands at _13,945_. Meanwhile my property taxes are up over 30%. I am confident that the nearby towns of Milford, Wilton, Lyndeborough, Brookline Mt. Vernon and Hollis are or will soon experience the same impacts. * 9

*In conclusion, I believe that a compromise build of a six lane road, providing for _50%_ more traffic flow and enabling a series of limitations to the above stated negative impacts would work to everyone's advantage in both the short and long run. * 10

Sincerely yours, Eleanor Briggs

From: rc_brown@myfairpoint.net [mailto:rc_brown@myfairpoint.net]
Sent: Wednesday, October 07, 2009 2:59 PM
To: Peter Stamnas
Subject: Widen 93

Mr. Stamnas

I am in support of widening Route 93. The present configuration is currently unsafe for the volume of traffic it sees daily. The road needs to be updated and will only cost us more tax dollars in the future if we delay the project due to frivolous objections. 1

Bob Brown
Londonderry

From: rick@brownellinsurance.com
Sent: Thursday, September 24, 2009 7:49 PM
To: PStamnas@dot.state.nh.us
Cc: Jamie.Sikora@dot.gov
Subject: Route 93 widening project

Mr. Stamnas,

I read in the paper tonight that you are not receiving adequate public comment on the project. Here are my comments.

Finding time to attend a public hearing is next to impossible and requires a serious commitment of time and some ingenuity to find out about where and when the hearings are. 1

Using the address given in the Union Leader article led me to the rebuilding I 93 site, but did not provide either in the article or on the site an easy way to contact you. Only by going through the entire public hearing presentation did I find your email.

There was some mention of you sending out requests for comment. To whom?

I believe the CLF (what 6 people?) is abusing the system to delay this project. I know they can, it just makes me angry that it will cost us all money, and maybe get a few people killed because they selfishly take advantage of this ability. Rail isn't going to happen, how often do they take public transportation? What is the environmental impact of sitting in traffic rather than moving along. They should get over it already and spend their time on something more productive. If you're not part of the solution you're part of the problem. They are definitely part of the problem. 2

It is clear to me that Route 93 needs to be widened from the MA border to Rte 293 in Manchester. How many accidents do we have to respond to, how many people have to die before we can see that? I sit in my office at exit 4 and can see the nearly daily slowdowns and sometime stops over on the highway. Driving it when I must (only when I must) I feel as though I am taking my life in my hands as we rush headlong bumper to bumper, side by side at 70+ miles an hour (to avoid getting run over) to Massachusetts or home again. Some extra lanes would give us room to make more lane choices and spread traffic out a little so people have time to react, and a place to go when they must react to a situation. 3

An exit 4A should be part of the project. The traffic on exit 4 in the evening rush hour is unbelievable and backs up onto the highway making it hazardous too. Another exit could help spread this out, improving highway safety. 4

If you want more public comment provide an easier way to do so. A link to your email on the home page is one way to start. 5

Thank you for your consideration and I hope we can finally get this project moving.

Richard Brownell
12 Craven Terrace
Derry, NH 03038

From: Robert Bryant [mailto:bosspeddler@hotmail.com]
Sent: Tuesday, September 29, 2009 2:20 PM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: Expansion of Route 93

Jamie and Peter,

After reading some information contained in the Manchester Union Leader 9-24-09 I felt compelled to let you know how I feel about the snails pace of the above project.

Until 1971 I lived in Somerville MA but with the opening of I93 it became apparent that the area of growth for the foreseeable future would be Southern NH. Easy access to major MA cities, 30 minute commute to Boston and cultural activities, and recreational possibilites both North and East to the shore.

Well, that development continues today although slowed by the current economic conditions. The highway has not been upgraded to keep pace with that development. The traffic and thus the exhaust fumes created by slow moving vehicles heading North at rush hour and South in the AM makes this area one of the most congested in US statistics. 1

The CLF and other groups have lobbied for what I am sure is the public's best interest but it is time to state for the record that all potential issues arising from the expansion have been addressed. We will have more wetland space, we will not allow salt to get into the watershed, and we will finally remove the smog and road rage caused by the continued delays in simply getting to work and home each day.

Please expedite to the best of your ability the continued forward progress that is taking place. I am sure recreational dollars spent in the State of NH will increase once people realize that advertising great skiing, boating, fishing, amusements, and restaurants, all less than 2 hours from Boston really means 2 hours from Boston.

Thanks
Bob Bryant
8 Clinton Street
Salem NH 03079

From: egbbce@gmail.com
Sent: Friday, September 25, 2009 5:45 AM
To: Jamie.Sikora@dot.gov; pstamnas@dot.state.nh.us
Subject: in support of I-93 widening

I saw the (web-based) article in the Union Leader about the I-93 widening. So I am emailing you in support of the project.

I commute to Billerica, MA every day,and I agree that I-93 needs to be widened. It is over-crowded both during the work-day commute and Friday afternoons & Sunday afternoons -- except mud season. 1

Elizabeth Burns
2 Eastwood Road
Windham, NH 03087

1

From: Elaine [mailto:elainec@asafeplacenh.org]
Sent: Thursday, October 08, 2009 4:29 PM
To: Peter Stamnas
Cc: jamie.sikora@fhwa.dot.gov
Subject: Comments I-93 widening

I-93 needs to be widened to at least three lanes. I live near Exit 2 and there is always bumper to bumper traffic during rush hours after the road breaks down to two lanes at Exit 1. If anything happens on that stretch of highway to Manchester, there can be a tie up for hours.
There is also a lot of traffic on Sunday evenings of people coming south from the mountains and other northern points. I would not think that would be good for people who come to NH for recreation. 1

Emergency vehicles would not stand a chance of getting through.

The Chamber of Commerce In Salem forwarded your form, but I was unable to write on the form.
I hope this e-mail is sufficient.

Elaine

"A strong woman is a woman determined to do something others are determined not to be done." Marge Piercy
Elaine C.
Community Service Advocate
A Safe Place
603-890-6392

I-93 Improvements Draft Supplemental Environmental Impact Statement and Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009.**

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

1 I would like to follow up on comments that I made at last nights public meeting I hope this project continues at a rapid rate + that final approval will come by the spring of 2010. The sooner the project gets going, the better. I am in favor of 4 full lanes in each direction. We don't want to address another 93 expansion in 20 years because we only did "3" lanes. Do it right, once.

2 The idea of a toll booth between the Mass border + exit 15 is a "very bad idea." It will only cause more congestion in both direction.

(OVER)

Name (please print) Thomas Cardon

Affiliation DERRY Resident

Address 2 Cunningham Drive Derry N.H.

3

The STATE has The PERFECT opportunity TO CREATE A good POSITIVE GATEWAY TO NEW HAMPSHIRE. We WANT FREE FLOWING TRAFFIC SO THAT EVERYONE'S EXPERIENCE ON THE ROAD will be A GOOD ONE.

THANKS FOR THE OPPORTUNITY FOR ME TO SPEAK ON THIS MATTER.

Thomas Ambor

From: gerry coffey [mailto:gerrycoffey@tds.net]
Sent: Tuesday, October 06, 2009 8:04 PM
To: Peter Stamnas
Subject: I-93 Widening Project

Dear Peter,

I have travelled south on Rte 3 into Massachusetts. The widening of rte 3 was supposed to do many great things for commuters. But the traffic today is as bad as ever. I wish a high speed rail system was put in along the route instead of additional lanes. 1

The widening of rte 93 will have the same results, none. Why do we keep repeating the same mistake? Has nobody heard and understood the message that cars and traffic are not part of the solution for a better life or for reducing global warming? Can we think out of the box and take the logical step towards train travel? Add a commuter train like the commuter train that runs along the Massachusetts turnpike. 2

Thank You
Gerry Coffey

CONCORD COACH LINES

Mr. Peter Stamnas
Project Manager
NHDOT-Bureau of Highway Design
John O. Morton Building
PO Box 483, 7 Hazen Drive
Concord, NH 03302-0483

Oct. 7, 2009

Dear Mr. Stamnas,

We are writing in support of the full four-lane build-out of Interstate 93 from Manchester, NH, to the New Hampshire state line.

Safety is the No. 1 reason why the full build-out is needed. Over the years, our observation has been that many accidents occurring within that corridor can be attributed to the poor design and inadequate capacity of the highway. It is no secret the high volume of commuter traffic filling I-93 every day has triggered countless accidents. The risk of injury and death is unacceptable at bottlenecks that force vehicles to stop. The risk is especially high at blind curves, where it is impossible for vehicles moving at highway speed to see vehicles that have stopped ahead. A good example of this situation is Exit 3 traveling southbound.

Further, the narrowing of the highway at the New Hampshire line has been a hot spot for accidents, as vehicles traveling north from Massachusetts come to a halt then jockey in the confusion for position as the road goes from four lanes to two lanes. 1

In addition to our safety concerns, we believe a full build-out of I-93 to four lanes would make traveling I-93 more reliable by eliminating constant delays. This, in turn, would help to promote public transportation, because the build-out would enable carriers to remain on schedule and offer more dependable service.

Among our three companies, we carry more than 600,000 people annually through this corridor. The full build-out will advance our ability to carry these passengers in a more efficient and environmentally friendly way.

Sincerely,

Harry W. Blunt
President

7 Langdon Street | Concord, New Hampshire 03301 | Phone: 603-228-3535 | Fax: 603-228-3524 | concordcoachlines.com

From: connorsfam@comcast.net [mailto:connorsfam@comcast.net]
Sent: Friday, September 25, 2009 2:11 PM
To: Peter Stamnas; jamie.sikora@fhwa.dot.gov
Subject: I-93 Widening Support

Hello,

My name is Mark Connors and I am a resident of Derry, NH. I saw in the Union Leader today an article discussing a recent public meeting regarding the I-93 widening project. Unfortunately I was out of town on business and unable to attend. I was disappointed to learn that few members of the public attended in support of the project. I guess I had wrongly assumed that this project was already a done deal and underway, since I have been watching the projects at Exit 5 and Exit 3 proceed. 1

I am writing to you to express my support for the widening project. I am a daily commuter from Derry down to Peabody, MA and I can say unequivocally that this project needs to be completed - and the sooner the better! The traffic coming north into NH from MA backs up on a daily basis at state line in Salem - adding anywhere from 10 minutes to sometimes 30 minutes (particularly on Fridays) to my commute. Having the highway drop from multiple lanes (in MA they allow breakdown lane travel during rush hour) to just two at the state line is ridiculous! 2

Also, the winding nature of the road and its design have led to many crashes - some that I have witnessed - and many more close calls!

Prior to moving to NH 5 years ago I lived in Chelmsford MA and commuted down Rte 3 for 10 years. I can honestly say that the widening of that highway was the best thing that ever happened. I am hopeful that the I-93 project moves forward quickly and I look forward to the day I can drive home on a Friday night without having to exit Rte 93 at Exit 1 and wind my way up Rte 28 and through the back roads of Windham and Derry to get home.

As someone who is very concerned about our environment and the preservation of open space I would also like to say that I don't think that the groups opposing this project are spending their time and money in the right place. It appears to me that the opposition has only succeeded in raising the pricetag of the project at the expense of taxpayers - and the money they are spending fighting this project could likely be much better spent!

My only concern with the I-93 project (and it seems to be being addressed) is that the old M&L Rail Corridor be preserved for the planned Salem- Concord Bike Path. I am a volunteer board member on the Derry Rail Trail Alliance which is working to pave the old rail corridor in Derry as part of this larger project. We have a section of trail that comes close to I-93 that we are working on trying to get funding to pave at this time. It appears from the online plans that this section of trail is not affected by the widening and I hope this remains so. I am also pleased with the work at Exit 5 which appears to include overpasses for the rail right of way which will allow the Rail Trail Bike 3

Path to continue North from Londonderry to Manchester. It would be nice if some of the money being spent on the I-93 widening project could be used to help build/pave these bike paths too!!! Perhaps that would help with the Conservation groups objections to the project? 3

So, again in closing I would like to add my voice to the support of the I-93 project and if possible I would request that the State and Federal Government consider some additional funding for the alternative transportation corridor known as the Salem-Concord Bikeway that parallels this section of I-93.

Thank you,

Mark Connors
5 Cabot Drive
Derry, NH 03038

978-852-4390 cell phone

www.derryrailtrail.org - to learn more about our Rail Trail project.

APPALACHIAN MOUNTAIN CLUB
CONSERVATION LAW FOUNDATION
ENVIRONMENT NEW HAMPSHIRE
GRANITE STATE CONSERVATION VOTERS
NEW HAMPSHIRE AUBUBON
NEW HAMPSHIRE LAKES ASSOCIATION
NEW HAMPSHIRE PUBLIC INTEREST RESEARCH GROUP
NEW HAMPSHIRE RIVERS COUNCIL
NEW HAMPSHIRE SIERRA CLUB

October 6, 2009

Hand-delivered

Mr. Jamie Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, NH 03301

Mr. Peter Stamnas
Project Manager
N.H. Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, NH 03302

Re: Draft Supplemental Environmental Impact Statement for Proposed Widening of I-93 (Salem – Manchester)

Dear Messrs. Sikora and Stamnas:

We appreciate the opportunity to comment on the Draft Supplemental Environmental Impact Statement (DSEIS) for the proposed widening of I-93 between the New Hampshire – Massachusetts border and Manchester. We view this proposed project as highly significant to the future of New Hampshire in terms of transportation, land use, climate and water quality. As outlined below, we have substantial concerns regarding the DSEIS's failure to address, and to apprise the public and decisionmakers of, critically important issues.

We believe the proposed 4-lane alternative identified in the DSEIS as the "selected alternative" is the wrong approach for this project, and for the State of New Hampshire. As further discussed below, the proposed 4-lane alternative will have dramatic greenhouse gas emission impacts – leading to the annual emission of 253,000 metric tons of carbon dioxide in 2030 – and is grossly inconsistent with important goals

1

recently established in the New Hampshire Climate Action Plan. The proposed 4-lane alternative will establish highway capacity that induces substantial increases in vehicle miles of travel (VMT), undermines public transit strategies, and commits New Hampshire to an unbalanced and polluting transportation system for the foreseeable future. It also will cause violations of the Clean Water Act as a result of increased chlorides pollution associated with the winter maintenance of four additional lanes. Finally, the proposed 4-lane alternative will have far-reaching impacts on the statewide transportation system. 1

Rather than the proposed 4-lane alternative, we believe selection of the 3-lane alternative is the best approach for: addressing highway transportation needs in the I-93 corridor; allowing for the development and greater use of public transportation as part of a more balanced transportation strategy; and avoiding the more significant greenhouse gas, water pollution and land-use impacts associated with the proposed 4-lane widening. We strongly urge NHDOT and FHWA to proceed with this more balanced, lesser impacting alternative, and we hope to have the opportunity to work with you to implement this approach.

I. THE DSEIS VIOLATES NEPA BY FAILING TO ASSESS ALL REASONABLE ALTERNATIVES IN LIGHT OF SIGNIFICANT NEW INFORMATION – INFORMATION WHICH REQUIRES RE-EVALUATION OF WHETHER THE 4-LANE ALTERNATIVE IS THE "LEDPA".

A. By failing to assess the 3-Lane alternative, the DSEIS violates NEPA's alternatives-analysis requirements, and affirms selection of the 4-Lane alternative based on a rationale that is unsupported by the record.

NHDOT and FHWA determined, for NEPA review purposes, a reasonable range of alternatives to be assessed for this project. As set forth and assessed in the Draft and Final Environmental Impact Statements (EISs), the reasonable range of alternatives determined for evaluation included No-Build, 3-Lane, 4-Lane and 3-Lane/4-Lane Combination alternatives. Draft EIS § 2.5; Final EIS § 2.5. The Final EIS (FEIS) conducted an analysis of traffic demand – measured in terms of average daily traffic – for six segments of I-93 under the No-Build, 3-Lane Build, and 4-Lane Build scenarios. FEIS at 4-7, Table 4.2-2. It also contained an analysis of projected levels of service for the six highway segments, under each of the above-referenced scenarios. FEIS at 4-8, Table 4.2-3. It further assessed future operations of each of the five highway interchanges located within the project (i.e., Exits 1 through 5) under the 3-Lane and 4-Lane Build scenarios. FEIS at 4-8, 4-9. 2

In preparing the DSEIS, NHDOT and FHWA relied upon important new information and methodologies. Specifically, the agencies relied upon an updated New Hampshire Statewide Traffic Model;[1] use of a gravity-model approach instead of the Delphi Panel projections developed for the DEIS and FEIS; new, updated population data

[1] *See, e.g.,* DSEIS, Appendix A-2, New Hampshire Statewide Model Update Documentation.

supplied by the N.H. Office of Energy and Planning, projecting lower population growth; and new, updated data regarding future employment. With respect to population growth, the DSEIS notes: "Since 2000, more recent demographic information strongly indicates that the expected growth pressures on southern New Hampshire have either not materialized or have waned. The long term rate of growth for southern New Hampshire has been lowered." DSEIS at 1-8. Despite relying on the above significant new information, however, the DSEIS focuses solely on the No-Build and 4-Lane alternatives, to the exclusion of the other alternatives previously determined to be within "the reasonable range" during the EIS process.

By excluding from its new analysis the reasonable range of alternatives identified in the DEIS and FEIS, the DSEIS violates the Council on Environmental Quality's (CEQ) unequivocal mandate pertaining to the assessment of alternatives, including the requirement that all reasonable alternatives be rigorously explored and objectively evaluated as part of the evaluation and decision-making process,[2] as well as the mandate that alternatives be assessed using complete and accurate information.[3] 40 CFR § 1500.1(b) ("The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."). *See also* Preamble to Final CEQ NEPA Regulations, 43 Fed. Reg. 55978 (Nov. 29, 1978) ("The regulations require accurate documents as the basis for sound decisions."). It also violates the requirement that significant new information be considered.[4] These violations, in turn, violate NEPA's dual, essential purposes of ensuring (1) informed agency decision-making, and (2) the ability for meaningful public involvement. *See, e.g.,* 2

---

[2] *See* 42 U.S.C. § 4332(2)(C), (E); 40 CFR § 1502.14; 40 CFR § 1505.1(e). In discussing 40 CFR § 1505.1(3), the CEQ has stated:

> The phrase "range of alternatives" refers to the alternatives discussed in environmental documents. It includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them. Section 1502.14. A decisionmaker must not consider alternatives beyond the range of alternatives discussed in the relevant environmental documents. *Moreover, a decisionmaker must, **in fact**, consider all the alternatives discussed in an EIS.* Section 1505.1(e).

Council on Environmental Quality, *NEPA's Forty Most Asked Questions*, Question No. 1a (emphases added).

[3] These requirements apply with equal force to a supplemental EIS. *See Natural Res. Def. Council*, 524 F.2d at 79, *supra* note 3. *See also Mississippi River Basin Alliance v. Westphal*, 230 F.3d 170, 174 (5th Cir. 2000) (outlining criteria – including sufficiency of alternatives analysis – used to determine the adequacy of an EIS, and stating that "[t]he SEIS must provide information to satisfy these criteria."); *Id.* at 177 ("Under NEPA, the SEIS should 'rigorously explore and objectively evaluate all reasonable alternatives.") (*citing* 40 C.F.R. § 1502.14(a)); *Friends of Yosemite Valley v. Kempthorne*, -- F.3d --, 2008 WL 795334 (9th Cir. 2008) (holding SEIS alternatives analysis deficient). The Council on Environmental Quality's and FHWA's NEPA regulations each provide that, exclusive of scoping, supplemental EISs are to be prepared in the same manner as draft and final EISs (*see* 40 CFR § 1502.9; 23 CFR § 771.130(d)), each of which require an evaluation of all reasonable alternatives. *See* 40 CFR § 1502.10; 23 CFR §§ 771.123(c), 771.125.

[4] The new population and employment data, and traffic modeling methodology, constitute significant new information which the agencies must apply to all reasonable alternatives. As acknowledged by NHDOT's and FHWA's consultant at the September 22, 2009 public hearing on the Draft SEIS, future population and employment projections are "key inputs" to travel demand modeling. NHDOT/FHWA Powerpoint Presentation, Sept. 22, 2009 Public Hearing, Derry Municipal Center, slide 22.

Natural Res. Def. Council v. Callaway, 524 F.2d 79, 94 (2d Cir. 1975) ("By failing to present a complete analysis and comparison of the possible [alternatives], the Final EIS fails to perform its vital task of exposing the reasoning and data of the agency proposing the action to scrutiny by the public and by other branches of government.") (citations omitted). These violations are all the more egregious in light of significant chlorides pollution problems associated with I-93. *See infra*, Part III.

In addition to CEQ regulations, case law strongly supports the proposition that the DSEIS's failure to assess the reasonable range of alternatives violates NEPA. In *Natural Resources Defense Council*, 524 F.2d at 79, the Court of Appeals for the Second Circuit held that the U.S. Navy violated NEPA because a supplement, or "Addendum," to a Revised draft EIS failed to assess all alternatives contained in the Revised draft EIS, as did the final EIS post-dating the Addendum. In reaching its decision, the Court reasoned: "Although an EIS may be supplemented, the critical agency decision must, of course, be made after the supplement has been circulated, considered and discussed *in the light of the alternatives*, not before." *Natural Res. Def. Council*, 524 F.2d at 92. It further explained:

> [T]he Addendum failed adequately to explain and evaluate the change of the primary dump site from Brenton Reef to New London and failed to make an adequate analysis of the comparative environmental merits and disadvantages of the New London site and of the alternative sites that had figured prominently in the Navy's earlier decision.
>
> Section 102(2)(C) of NEPA, 42 U.S.C. § 4332(2)(C), specifically requires the inclusion in the EIS of a "detailed statement" of "alternatives to the proposed action," including an evaluation of the environmental consequences of the suggested alternatives. . . . The importance of this section of the EIS to the NEPA process has been stressed repeatedly by this and other federal courts. . . . It is absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that we have characterized as "the linchpin of the entire impact statement" . . . .

2

Id. at 92 (citations omitted). As stated in *Oregon Natural Resources Council Action v. U.S. Forest Service*, 445 F.Supp.2d 1211, 1224 (D. Ore. 2006): "NEPA obliges an agency to revisit its alternatives analysis . . . whenever there are changed circumstances that affect the factors relevant to the development and evaluation of alternatives." There, the court held that Supplemental Environmental Assessments prepared by the U.S. Forest Service violated NEPA because they failed to evaluate "no action" alternatives that had been considered and rejected in the original Environmental Assessments. *Id.* at 1223-1225.[5] It further held that "[o]n remand, the Forest Service must supplement its SEAs to

[5] The court reasoned, *inter alia:*

> Because the Forest Service had an obligation to supplement its original EAs and the agency still had to decide whether to proceed with the timber sales after preparing the SEAs, compliance with NEPA dictated that the agency thoroughly consider alternatives in light of the combined effects on survey and manage species together with other environmental impacts the agency has identified.

consider a full range of alternatives in light of the survey and manage duties and other environmental impacts from the proposed logging, including objectively considering the alternative of abandoning these projects." *Id.* at 1225. Here, "fresh consideration of [the reasonable range of alternatives] . . . is consistent with [NHDOT's and FHWA's] obligation to take a meaningful look at the environmental consequences of the proposed action at a point early enough to contribute to the decisionmaking process, and not simply 'rationalize or justify decisions already made.'" *Id.* (citing 40 C.F.R. § 1502.5; *Ctr. For Biological Diversity v. U.S. Forest Service*, 349 F.3d 1157, 1166 (9th Cir. 2003)). 2

In addition to violating the above NEPA requirements, NHDOT's and FHWA's failure to apply the updated model and new data to the 3-Lane alternative undermines a key finding of the DSEIS. Specifically, the DSEIS states:

> 3.3.3 Rationale for the 2005 Selected Alternative
> The No Build Alternative would not meet the purpose and need for the project. The four-lane alternative rather than the three-lane alternative or combination alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment, at a similar cost (5% increase) . . . . On December 30, 2003 ACOE issued a letter to NHDOT identifying the four-lane alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) under the Section 404(b)(1) Guidelines. *The information gathered during the reevaluation of the 2005 Selected Alternative for this DSEIS does not change the validity of the decision to select the four-lane alternative instead of the three-lane or combination alternative.* 3

DSEIS at 3-10 (emphasis added). Because the information gathered during the DSEIS reevaluation was not applied to the 3-Lane alternative, the DSEIS's selection of the 4-Lane alternative instead of the 3-Lane or "combination" alternatives is unreasonable and unsupported by the record.[6]

B. The Army Corps of Engineers' LEDPA determination must be re-visited.

As part of the federal wetlands permitting process required by Section 404 of the Clean Water Act, the Army Corps of Engineers (Corps) – with EPA concurrence – was required to determine whether the proposed project is the least environmentally damaging practicable alternative, or "LEDPA." The Section 404(b) Guidelines, promulgated pursuant to Section 404 of the Clean Water Act, provide, in pertinent part, that no permit to fill wetlands shall be issued "if there is a practicable alternative to the proposed 4

Oregon Natural Resources Council Action, 445 F.Supp. 2d at 1223-1224.

[6] Interestingly, the above-quoted "Rationale for the 2005 Selected Alternative" does not include a determination that a 3-Lane alternative will not meet the purpose and need for the project. Nor does it state that a 3-Lane alternative will not provide an adequate level of service. Instead, it appears to distinguish among the alternatives – for purposes of re-affirming the selection of the 4-Lane alternative – based on what it claims to be a "similar cost" of construction.

discharge which would have less adverse impact on the aquatic ecosystem." 40 C.F.R. sec. 230.10(a). The Guidelines further provide that "[a]n alternative is practicable if it is available and capable of being done, after taking into consideration cost, existing technology, and logistics in light of the overall project purposes." *Id.* § 230.10(a)(2). Where, as here, the project is not water dependent, a more stringent standard applies: "practicable alternatives that do not involve special aquatic sites are *presumed to be available unless clearly demonstrated otherwise.*" *Id.* § 230.10(a)(3) (emphasis added). If this presumption is not clearly rebutted by a permit applicant, no permit may be issued.

On December 30, 2003, the Corps issued a letter to NHDOT identifying the proposed 4-Lane alternative as the LEDPA. On March 29, 2007, the Corps issued a Record of Decision in which it concluded that a Corps permit "should be issued." *See* RECORD OF DECISION AND STATEMENT OF FINDINGS INCORPORATING SEC. 404 MITIGATION MOA FOR I-93 (Corps' ROD) at 24. The Corps' ROD includes assumptions and findings premised on FHWA's and NHDOT's original analyses relative to future traffic projections and explicitly relies upon the FEIS and FHWA's Record of Decision in responding to concerns raised by commenters relative to traffic projections. *Id.* at 9, 17, 19.

4

The assumptions upon which the Corps based its LEDPA determination and ROD are no longer reliable in light of new traffic modeling and related new information. Unless and until NHDOT and FHWA apply the updated traffic modeling analysis (including updated population projections) to the 3-Lane alternative, the Corps and EPA cannot reasonably conclude that NHDOT and FHWA have met their burden of clearly demonstrating that the 4-Lane alternative, as opposed to the 3-Lane alternative – which will have a lesser impact on wetlands, wildlife resources, and water quality – is the LEDPA. Stated in other terms, NHDOT and FHWA have not met their burden of clearly demonstrating that the lesser-impacting 3-Lane alternative is not practicable.

The necessity of re-evaluating which alternative is the LEDPA is all the greater in light of new information in the DSEIS indicating that the direct impacts of the proposed project are substantially greater than originally projected in the FEIS, with impacts to wetlands and wildlife resources anticipated to increase by 11 percent, amounting to the loss of an additional eight acres of wetlands and an additional 30 acres of wildlife habitat. DSEIS at 10-20, 10-21. In addition to these increased environmental impacts, the DSEIS also reports an increase in the number of business relocations (from 14 to 23) that will be required for the 4-Lane alternative. DSEIS at 7-4. NHDOT and FHWA should assess the extent to which business-relocation impacts could be reduced with a 3-Lane alternative. The Corps, as well, should consider this information as part of its Section 404 public interest review.

C. The DSEIS traffic analysis relies on inaccurate assumptions and overlooks important transportation-demand-management (TDM) measures.

5

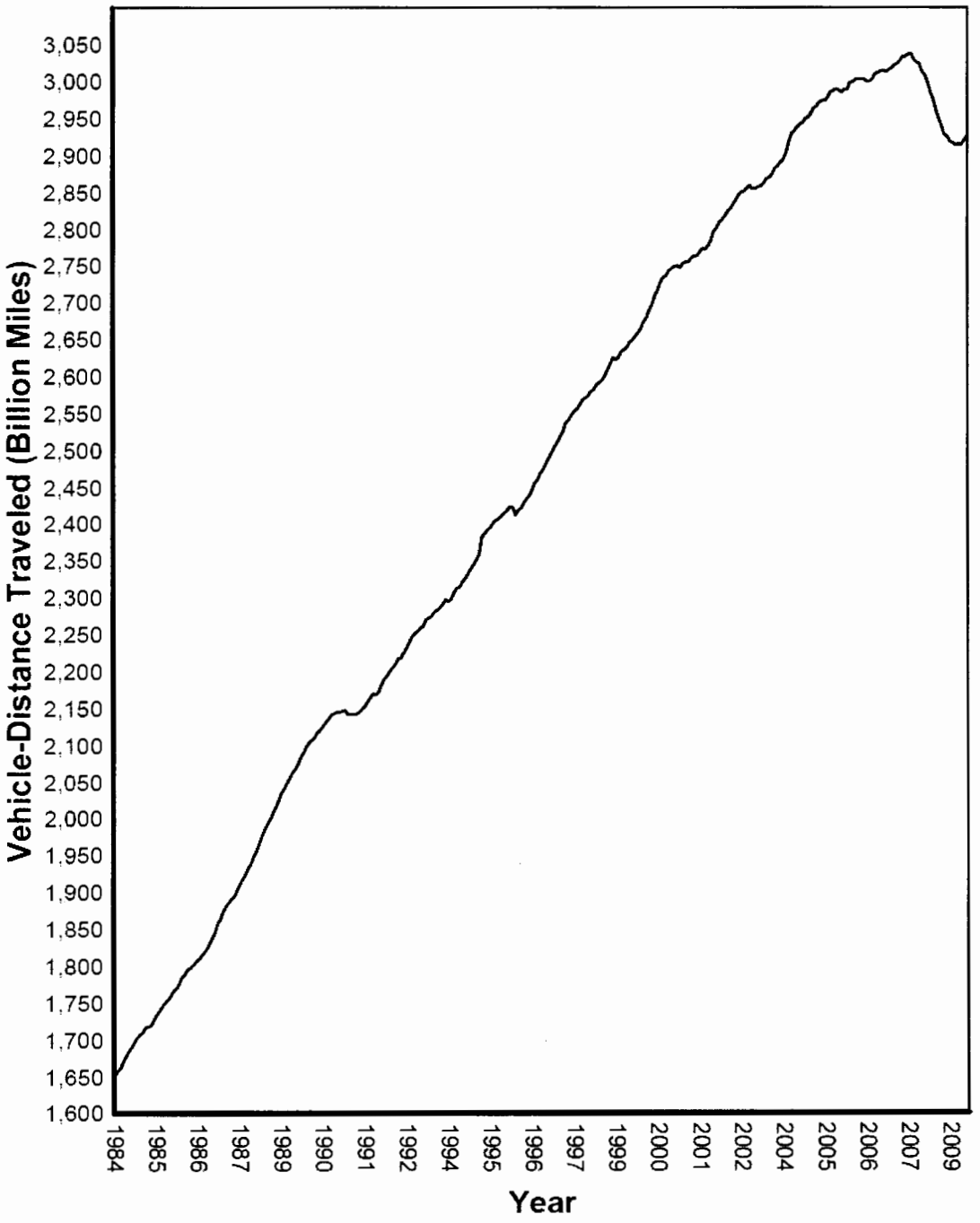
As discussed below, the DSEIS traffic analysis is flawed in that it relies on 2030 traffic projections that overlook important recent trends, resulting in unrealistically high traffic projections, and fails to consider important transportation-demand-management (TDM) measures, including congestion pricing and public transit. The DSEIS traffic analysis must be updated and applied to all reasonable alternatives in order to comply with NEPA, and to determine which alternative is the LEDPA. 5

i. The DSEIS traffic analysis is flawed because it overlooks significant new information demonstrating reduced traffic demand since 2005.

In its new traffic modeling, the DSEIS relies upon 2005 as the base year for projecting future traffic demand. DSEIS at 4-11. However, in more recent years, travel demand has decreased. According to the DSEIS, vehicle miles traveled (VMT) decreased in 2006 and 2007 as compared to the 2000 – 2005 period. *Id.* at 2-4.[7] According to a recently released report, the trend of declining VMT continued in New Hampshire between 2007 and 2008, with VMT decreasing 1 percent between those years. GETTING ON TRACK: RECORD TRANSIT RIDERSHIP INCREASES ENERGY INDEPENDENCE, Environment America Research & Policy Center (Sept. 2009) (Attachment 1) at 5. Indeed, nationally, VMT declined after 2005 and is still significantly lower than that year. This important trend is evident in the figure below, excerpted from FHWA's traffic volume trends data: 6

[7] Traffic volumes on I-93 at the New Hampshire – Massachusetts state line were 10 percent lower in 2008 than 2002. Report of Norman L. Marshall, Smart Mobility (Attachment 2) at 3.

Figure - 1. Moving 12-Month Total on ALL Roads



6

FHWA TRAFFIC VOLUME TRENDS (July 2009) (Attachment 3) at 9, Fig. 1. The trend of declining and at times flattening VMT has occurred on urban highways. *See* FHWA TRAFFIC VOLUME TRENDS (Dec. 2005) (Attachment 4) at 10, Fig. 2 (showing increasing VMT on urban highways between 2003 – 2005) *and compare with* FHWA TRAFFIC

VOLUME TRENDS (Dec. 2007) (Attachment 5) at 10, Fig. 2 (showing flattening VMT on urban highways) and Attachment 3 at 10, Fig. 2.

By relying on 2005 as the base year for its traffic analysis, the DSEIS ignores significant new information that must be considered to accurately evaluate future traffic demand and highway operations. The significant change in VMT trends that has occurred since 2005 requires re-evaluation of the base year and the selection of a more recent one. At a minimum, these trends require an analysis and re-calibration of the traffic model to ensure that 2020 and 2030 traffic projections – which should be conducted for the 3-Lane alternative as well as the 4-Lane alternative – are accurate.[8] 6

ii. The DSEIS must be amended to assess the effects of congestion pricing.

According to the DSEIS, the inclusion of a southbound toll on I-93 will reduce Average Daily Traffic by 9.4 percent in 2020, and by 12.4 percent in 2030, and will result in regional reductions in VMT. DSEIS, App. A, Written Reevaluation/Technical Report No. 1 at 40; DSEIS at 5-18. Congestion pricing (i.e., imposing a variable toll rate to discourage peak-hour traffic) would achieve even greater traffic/VMT reductions and is a powerful TDM tool which, if used, would play a significant role in reducing traffic demand on I-93 and reducing the induced land-use-change and VMT impacts projected by the DSEIS. Report of Norman L. Marshall, Smart Mobility ("Marshall Report") (Attachment 2) at 4 - 7. To rigorously explore all reasonable alternatives, and to determine the LEDPA, the DSEIS must evaluate the TDM benefits of congestion pricing in terms of future traffic demand and highway operations. 7

iii. The DSEIS must be amended to assess the benefits of a 55 m.p.h. speed limit.

Reducing the speed limit on I-93 from 65 m.p.h. to 55 m.p.h. would reduce travel demand on I-93, as well as the induced land-use-change and VMT impacts of widening the highway. Marshall Report (Attachment 2) at 8. It also would have important benefits in enhancing safety, and in reducing greenhouse gas emissions. *Id.* With respect to the latter, the N.H. Climate Action Plan, discussed *infra*, recommends that mechanisms be explored "to reduce average travel speeds on state and interstate highways," and that "[e]valuation of a lower speed limit should . . . be conducted." N.H. CLIMATE ACTION PLAN (Attachment 6) at 49. It is worth noting that the speed limit on the section of Route 3 recently widened in Massachusetts operates with a 55 m.p.h. speed limit. In light of NHDOT's safety concerns with respect to I-93, as well as the important TDM benefits that could result from a lower speed limit, this factor must be considered in assessing future traffic demand and operations on I-93. 8

[8] To achieve the traffic levels projected by the DSEIS, traffic demand would have to increase by 21 percent between 2008 and 2020, and by 27 percent between 2008 and 2030. Marshall Report (Attachment 2) at 3. In light of recent VMT trends, an increase of this magnitude is questionable. Moreover, even if such a projected increase were reasonable, the TDM measures discussed below could play an important role in preventing such an increase. *Id.* at 3-4.

iv. The DSEIS must be amended to assess the benefits of implementing public transit, including the recommendations of the I-93 Transit Investment Study and implementation of the N.H. Capitol Corridor rail project.

The transportation agencies have taken far too long in completing the I-93 Transit Investment Study. Even more troubling, however, is the suggestion in the DSEIS that the first recommended transit investment – bus-on-shoulder service – "is not reasonably foreseeable for 2030." DSEIS at 4-13. This statement, and the failure of the DSEIS to include implementation of the Transit Investment Study's recommendations *at least* as part of a sensitivity analysis, demonstrate a disturbing lack of commitment to transit.

Like other parts of the country, the demand for public transit in New Hampshire continues to grow. *See* GETTING ON TRACK: RECORD TRANSIT RIDERSHIP INCREASES ENERGY INDEPENDENCE, *supra* (Attachment 1) at 1, 5 (showing transit ridership increase of 6 percent between 2007 and 2008). It is essential that the agencies stop ignoring transit as part of the solution for I-93, work to aggressively pursue the recommendations of the I-93 Transit Investment Study, and include associated transit ridership in its traffic modeling for the 3-Lane and 4-Lane alternatives. In conducting this analysis, NHDOT and FHWA must not simply assess whether transit will obviate the need to widen I-93, but determine the effect of transit on highway operations for the 3-Lane and 4-Lane alternatives.[9] In doing so, NHDOT and FHWA must take into account the increased public-transit demand that would result from a toll and congestion pricing. *See* Marshall Report (Attachment 2) at 8. The failure to address the Transit Investment Study's recommendations flies in the face of the New Hampshire Climate Action Plan, which calls for greater commitments to transit and an integrated multi-modal transportation system to reduce VMT and greenhouse gas emissions. *See* Part II, *infra*. 9

In addition to the recommendations of the I-93 Transit Investment Study, the DSEIS traffic analysis must be amended to address the N.H. Capitol Corridor rail project, for which NHDOT and the N.H. Rail Transit Authority are actively pursuing funding from the U.S. Department of Transportation's Federal Railroad Administration. NHDOT has been working in coordination with other states in an effort to advance this project. According to a document prepared collectively by the New England departments of transportation, including NHDOT:

> New Hampshire's Capital corridor will create easily accessible passenger rail service for more than 500,000 residents of Southern New Hampshire with stops in the cities of Concord, Manchester, Nashua and Boston. The rail line will serve as

[9] A memorandum included as Appendix A-4 of the DSEIS briefly discusses the 2001 I-93 Rationale Report, 2005 Traffic Sensitivity Analysis, and ridership projected for the I-93 Transit Investment Study alternatives "in order to draw conclusions about the ability of these alternatives to affect the need to widen I-93 between Salem and Manchester." DSEIS Appendix A-4 at 1. To reiterate, the critical analysis is not whether transit can preclude the need to widen I-93, but how it affects highway operations for the 3-Lane and 4-Lane alternatives, to allow for an informed, reasoned decision with respect to these build alternatives.

the backbone of a technology and communications corridor extending up New Hampshire's Merrimack Valley, creating economic development and new, livable communities outside of Boston. More than one million riders annually are estimated to use the rail service in its first year, ***significantly relieving highway congestion on Interstate 93***, improving air quality and lowering fuel consumption.

VISION FOR THE NEW ENGLAND HIGH-SPEED AND INTERCITY RAIL NETWORK (Attachment 7) at 3 (emphases added). NHDOT has a currently pending application for planning funds to complete necessary studies for the N.H. Capitol Corridor rail project, and anticipates applying for federal funds next summer to construct the project. *See* http://www.nhpr.org/node/27101 (Interview of NHDOT Commissioner Campbell on NHPR's "The Exchange" (Sept. 30, 2009). The State's active work to implement this important rail project, as well as the new funding opportunities that have arisen at the federal level, constitute significant new information which must be considered as part of the supplemental EIS process. NHDOT and FHWA must consider this project, including its above-stated congestion-relieving benefits for I-93, as part of its traffic study. 9

Finally, it is not clear that the DSEIS has factored Expanded Bus Service – which has now begun operations – into its traffic modeling. Doing so will be essential to assessing future demand and traffic operations for the 3-Lane and 4-Lane alternatives. 10

II. THE DSEIS VIOLATES NEPA BY FAILING TO ANALYZE THE SIGNIFICANT CLIMATE-CHANGE AND GREENHOUSE-GAS IMPACTS OF THE PROPOSED PROJECT AND OTHER ALTERNATIVES

Since the publication of the original Record of Decision (ROD) for the proposed project, significant new information and circumstances have developed with respect to the issue of global climate change. A recent and growing body of evidence has developed regarding the severity of the climate change problem and anthropogenic causes;[10] the U.S. Supreme Court held in a recent landmark decision that greenhouse gases fit within the Clean Air Act's definition of "air pollutant," and that the Environmental Protection Agency has authority to regulate greenhouse gases from new motor vehicles, *Massachusetts v. EPA*, 127 S.Ct. 1438 (2007); and the Ninth Circuit Court of Appeals issued a landmark decision invalidating an Environmental Assessment prepared by the National Highway Traffic Safety Administration for its failure to properly consider the cumulative impacts of GHG emissions – noting that "the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to consider" – and, discussing the growing body of evidence regarding global climate change, invalidating its Environmental Assessment (EA) and remanding to the agency for either the preparation of a revised EA, or an 11

[10] Such new information regarding the science, impacts, and needed solutions relative to climate change can be accessed through the State's website, www.nh.gov/climate (Attachment 8). *See also Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1221-1222 (9th Cir. 2008).

Environmental Impact Statement. *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217, 1219-1228 (9th Cir. 2008).

The growing importance of global climate change – and the Supreme Court's decision in *Massachusetts v. EPA*, *supra* – have led to the EPA's issuance of a proposed rule finding that greenhouse gases in the atmosphere endanger the public health and welfare of current and future generations. *See* 74 Fed. Reg. 18886, "Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" (Apr. 24, 2009). In discussing the scientific evidence in support of its proposed finding, the EPA states:

> The [EPA] Administrator recognizes these scientific findings that *the current global atmospheric concentrations of the six greenhouse gases are now at unprecedented and record-high levels compared to both the recent and distant past.*[11] It is also unambiguous that the current elevated greenhouse gas concentrations are the primary result of human activities.
>
> Total concentrations of these greenhouse gases are projected to continue climbing, and thus to continue pushing unprecedented levels upwards for the foreseeable future under different plausible assumptions of U.S. and global greenhouse gas-emitting activities. *Given the long atmospheric lifetime of the six greenhouse gases,*[12] *significant changes in total greenhouse gas global atmospheric concentrations do not come about quickly (i.e., within a few years). Future atmospheric greenhouse gas concentrations – not only for the remainder of the current century but indeed for decades and in some cases centuries well beyond 2100 – will be influenced by our present and near-term greenhouse gas emissions. Consideration of future plausible scenarios, and how our current greenhouse gas emissions essentially commit present and future generations to cope with an altered atmosphere and climate*, reinforces the Adminstrator's judgment that it is appropriate to define the combination of the six key greenhouse gases as the air pollution.

11

74 Fed. Reg. 18886, 18896 (emphases added). In support of its proposed finding of endangerment, the EPA "concludes that the case for finding that greenhouse gases in the atmosphere endanger public health and welfare is compelling and, indeed,

---

[11] The six greenhouse gases addressed in the proposed rule are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. 74 Fed. Reg. 18886. The first four of these six greenhouse gases are emitted by motor vehicles. *Id.*

[12] The six greenhouse gases, "once emitted, remain in the atmosphere for decades to centuries." 74 Fed. Reg. 18886, 18888. Of the greenhouse gases emitted by motor vehicles:

> Methane has an atmospheric lifetime of roughly a decade. One of the most commonly used hydrofluorocarbons (HFC-134a) has a lifetime of 14 years. Nitrous oxide has a lifetime of 114 years. . . . Carbon dioxide is generally thought to have a lifetime of roughly 100 years, but for a given amount of carbon dioxide emitted some fraction is quickly absorbed by the oceans and terrestrial vegetation and the remainder will only slowly decay in the atmosphere after several years, and indeed some portion will remain in the atmosphere for many centuries.

Id. at 18895.

overwhelming." *Id.* at 18904. It further notes: "This is not a close case in which the magnitude of the harm is small and the probability great, or the magnitude large and the probability small. In both magnitude and probability, climate change is an enormous problem." *Id.*

In addition to recent action at the federal level, and building off work at the regional level,[13] the growing importance of the climate change crisis has prompted action at the state level. In New Hampshire, acknowledging that "there is scientific consensus that, without concerted action, global climate change has the potential to harm our environment, damage our economy and jeopardize the health of our citizens," and that "cuts in greenhouse gas emissions will help preserve New Hampshire's valuable environmental resources, protect the health of our citizens, and contribute to the state's economic vitality," Governor Lynch issued Executive Order Number 2007-3 on December 6, 2007, calling for the creation of Climate Change Policy Task Force. (Attachment 9). In March 2009, the Climate Change Policy Task Force issued THE NEW HAMPSHIRE CLIMATE ACTION PLAN: A PLAN FOR NEW HAMPSHIRE'S ENERGY, ENVIRONMENTAL AND ECONOMIC DEVELOPMENT FUTURE. *See* Attachment 6. The Plan establishes a long-term goal of reducing greenhouse gas emissions 80 percent below 1990 levels by 2050, and a mid-term goal of reducing emissions 20 percent below 1990 levels by 2025. N.H. CLIMATE ACTION PLAN at 19, 24-25. It also establishes interim emission reduction targets, with specific targets for 2012, 2105, 2018, 2021, and 2024. *Id.* at 25. Addressing the urgency of reducing emissions, the Plan states: 11

> The sooner New Hampshire takes action to reduce its greenhouse gas emissions, the less costly it will be for the state, and the less CO_2 that will be emitted into the atmosphere. *Delaying action will necessitate greater reductions in the future, which will come at higher cost, to achieve the same emission reduction goals.* Delaying action may also place the state at a disadvantage in terms of responding to any federal policies requiring reductions in greenhouse gas emissions that may be forthcoming from the Obama Administration.

Id. at 25 (emphasis added). The Plan recognizes the transportation sector as a significant source of New Hampshire's greenhouse gas emissions, and notes with respect to its identified implementation actions:

> The greatest reductions would come from improvements in the building sector, followed by the transportation and electric generation sectors.

---

[13] In 2001, the New England states, in collaboration with the Eastern Canadian Premiers, endorsed a Climate Change Action Plan in 2001, appended as Attachment 10. This regional plan "is the culmination of efforts between the New England governors and the Eastern Canadian premiers and their respective environment and energy agencies." New England Governors/Eastern Canadian Premiers, CLIMATE CHANGE ACTION PLAN 2001 (Attachment 10) at 1. It "identifies steps to address those aspects of global warming which are within the region's control to influence," and establishes: a short-term goal of reducing regional greenhouse gas emissions to 1990 levels by 2010; a mid-term goal of reducing greenhouse gas emissions to at least 10 percent below 1990 levels by 2020; and a long-term goal of "[r]educ[ing] regional [greenhouse gas] emissions sufficiently to eliminate any dangerous threat to the climate; current science suggests this will require reductions of 75-85% below current levels." *Id.* at 2, 7.

. . . .

> In the transportation sector, implementation of the plan is expected to avoid the consumption of 374 million gallons of gas and 81 million gallons of diesel, a reduction of 52 percent and 33 percent below [business as usual] by 2025.

Id. at 26. The Plan's implementation actions relative to transportation and land use include actions to reduce vehicle miles of travel, increase public transportation (including improvement and expansion of bus and rail), and support more compact land use patterns, including transit-oriented development.[14] *See e.g., id.* at 50-55 (discussing VMT-reduction strategies 5 and 6). *See also id.* Appendices 4.5, 4.6. 11

Reducing greenhouse gas emissions from the transportation sector is essential to federal, state and regional efforts to tackle the problem of global climate change. The transportation sector is an enormous contributor of greenhouse gases. According to the EPA's proposed endangerment finding, "[t]he U.S. transportation sector is a significant contributor to total U.S. and global anthropogenic emissions of greenhouse gases." 74 Fed. Reg. at 18888. It is second only to the electricity-generating sector as a source of greenhouse gas emissions, accounting for 24 percent of total U.S. emissions in 2006. *Id.* In terms of the scale of its emissions, if the United States' transportation sources subject to regulation under section 202(a) of the Clean Air Act were ranked against total greenhouse gas outputs of entire countries, their emissions "would rank behind only China, the U.S. as a whole, Russia and India, and would rank ahead of Japan, Brazil, Germany and every other country in the world." *Id.* at 18906 - 18907. 12

Transportation is a leading source of greenhouse gas emissions in New Hampshire and is the largest and fastest growing source of greenhouse gases in New

---

[14] Like New Hampshire, Massachusetts has adopted a plan to address the problem of climate change. Massachusetts' plan – the MASSACHUSETTS CLIMATE PRESERVATION PLAN (MCPP) – establishes specific goals over the next few decades to reduce the state's impact on global warming by reducing greenhouse gas emissions. Massachusetts Office for Commonwealth Development, MASSACHUSETTS CLIMATE PRESERVATION PLAN (2004), appended as Attachment 11. The Commonwealth's emission goals are: in the short-term, to reduce greenhouse gas emissions to 1990 levels by the year 2010; in the medium-term, to reduce emissions 10 percent below 1990 levels by the year 2020; and in the long-term, to reduce emissions sufficiently to eliminate any dangerous threat to the climate (potentially 75 to 85 percent below current levels). *Id.* at 13. According to the MCPP: "These goals embody Massachusetts' pledge to take responsibility for its contributions to climate change and to work to minimize the damage that a changing climate will cause in the future. Massachusetts will attempt to exceed the regional emissions targets." *Id.* The MCPP emphasizes the urgency of the climate change/greenhouse-gas-reduction issue, explaining that success in meeting the state's goals requires immediate action because the major scientific and technological advances required will take decades to develop. *Id.* at 13. With specific regard to transportation, the MCPP states: "Transportation – including cars, trucks, buses, and trains – is the source of more than 30% of the state's GHG emissions. [The Commonwealth] need[s] to develop an efficient transportation system that both stops the anticipated growth of GHG emissions and reduces current emissions." *Id.* at 10. For purposes of achieving its goals, the MCPP discusses the need to "encourag[e] people to travel in more climate friendly ways, especially via mass transit," *id.*, as well as the need to promote more efficient land use. *Id.* at 35. In addition to the MCCP, in 2008 Massachusetts enacted the Global Warming Solutions Act (GWSA), which requires the establishment of incremental statewide greenhouse gas emission limits (i.e., for 2020, 2030, 2040, and 2050), as well as plans to achieve those limits. Mass. Gen. Laws ch. 21N, §§ 3b, 4, 6 (2008).

England. FALLING BEHIND: NEW ENGLAND MUST ACT NOW TO REDUCE GLOBAL WARMING POLLUTION, Envt. N.H. Research & Policy Center, Clean Water Fund (March 2008) (Attachment 12) at 7; DRIVING GLOBAL WARMING: COMMUTING IN NEW HAMPSHIRE AND ITS CONTRIBUTION TO GLOBAL WARMING, NHPIRG Education Fund, Clean Water Fund (Jan. 2006) (Attachment 13). Accordingly, if New Hampshire and other states in the New England region are to seriously pursue the greenhouse gas reductions that are required to address the problem of global climate change, they must reduce emissions from the transportation sector, and they must do so by reducing vehicle miles of travel (VMT).[15]

12

According to the DSEIS, however, the proposed four-lane widening of I-93 will result in a significant 3.7 percent increase in VMT, amounting to an additional 2.5 million miles of additional vehicle travel per day by 2020, and an additional 2.8 million miles of additional travel per day by 2030. DSEIS at 4-28, Table 4-18. According to the DSEIS, these significant increases will result not only from land use changes, but also from the fact that the increased highway capacity would cause people to drive greater distances. *Id.* at 4-27, 4-28. This substantial change in VMT would lead to an additional 1.01 billion miles of VMT in 2030, which would result in the annual emission of 252,000 metric tons of carbon dioxide. Marshall Report (Attachment 2) at 2. To put this in perspective, the additional 252,000 metric tons of carbon dioxide associated with the DSEIS's 2030 VMT projections is equivalent to 2.45 percent of *all* New Hampshire carbon dioxide emissions in 1993 (i.e., emissions not from only transportation, but from transportation, industrial, commercial and residential sectors *combined*). *Id.*

13

---

[15] *See* N.H. CLIMATE ACTION PLAN, discussed *supra.* The New England Governors/Eastern Canadian Premiers' Climate Change Action Plan identifies the need to achieve a decrease in the transportation sector's growth in greenhouse gas emissions. NEW ENGLAND GOVERNORS/EASTERN CANADIAN PREMIERS CLIMATE CHANGE ACTION PLAN 2001 (Attachment 10) at 17. Of particular relevance, the Plan includes the following recommendations:

26. Disclose GHG emission impacts from new publicly-funded passenger and freight transportation projects and alternatives.
27. Promote compact development and transit/pedestrian development and other "smart growth" measures to encourage local communities to consider the energy impacts of development and infrastructure construction.
28. Undertake programs designed to manage and reduce transportation demand in communities.
29. Enhance mass transit infrastructure, intermodal connections, optimizing existing services and, where feasible, boosting ridership.

Id. See also COOL MOVES: TRANSIT IN NEW ENGLAND AND ITS ROLE IN CURBING GLOBAL WARMING POLLUTION, Environment Rhode Island Research & Policy Center, Clean Water Fund (Fall 2007) (Attachment 14); DRIVING GLOBAL WARMING (Attachment 13); Davis, Todd & Monica Hale, PUBLIC TRANSPORTATION'S CONTRIBUTION TO U.S. GREENHOUSE GAS REDUCTION (Sept. 2007) (Attachment 15). VMT increases have the potential to cancel out the benefits of improved fuel efficiency of motor vehicles and less carbon-intensive fuels. *See* Ewing, Reid *et al.*, GROWING COOLER: THE EVIDENCE ON URBAN DEVELOPMENT AND CLIMATE CHANGE, Executive Summary, at 2-3 (Attachment 16) (entire report available at http://www.uli.org/Books/Books.aspx?iframe=http://commerce.uli.org/AM/Ecommerce/ProductDisplay.cfm?Productid=1725).

A. The DSEIS violates NEPA because it fails to assess the greenhouse-gas and climate-change impacts of the proposed project and project alternatives.

The DSEIS acknowledges that transportation is a significant source of greenhouse gases, and that the transportation sector's "emissions have grown considerably faster than those of other sectors." DSEIS at 5-4. It also acknowledges (though in insufficient detail) the N.H. Climate Action Plan. *Id.* at 5-4, 5-5. However, despite these acknowledgments and significant projected increases in VMT, and despite the importance and urgency of reducing greenhouse gas emissions as recognized at the federal, regional and state levels (*see* discussion above), the DSEIS reaches the incredible conclusion that "[i]t is not useful or informative at this point to consider greenhouse gas emissions as part of the I-93 DSEIS." *Id.* at 5-9. In justifying this conclusion, it states that NEPA does not "explicitly" require a project-level analysis of greenhouse gases, and relies on the global nature of climate change as somehow obviating the need to address the issue and making a useful analysis infeasible.

To ensure an informed public and informed decision-making, NEPA requires the assessment and disclosure of a project's impacts (and the impacts of alternatives) on the environment.[16] In light of the significant role of the transportation sector in emitting greenhouse gases, the magnitude of the proposed project, and the significant increases in VMT projected in the DSEIS, NHDOT and FHWA cannot credibly claim that an analysis of greenhouse gas emissions and climate change is not required. To the contrary, as discussed above, the Ninth Circuit Court of Appeals issued a landmark decision invalidating an Environmental Assessment prepared by the National Highway Traffic Safety Administration for its failure to properly consider the cumulative impacts of greenhouse gas emissions. *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008). In reaching its decision, the court stated: "the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to consider." *Id.* at 1217. The court held the National Highway Traffic Safety Administration's environmental documentation not to comply with NEPA. It did so regardless of the fact that NEPA does not contain specific language pertaining to greenhouse gas and climate issues. It also did so regardless of the global nature of the climate-change crisis, stating: "[T]he fact that

14

[16] As described in *Center for Biological Diversity*, 538 F.3d at 1185:

> NEPA requires a federal agency "to the fullest extent possible," to prepare a "detailed statement on . . . the environmental impact" of "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(c)(i)(2007); *see also* 40 C.F.R. § 1500.2 (2007). The purpose of NEPA is twofold: " 'ensure[] that the agency . . . will have available, and will carefully consider, detailed information concerning significant environmental impacts[, and] guarantee [ ] that the relevant information will be made available to the larger [public] audience.' " *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 329 . . . (1989); *see also* 40 C.F.R. § 1500.1(b) (stating that environmental information must be provided "before decisions are made and before actions are taken."). "NEPA expresses a Congressional determination that procrastination on environmental concerns is no longer acceptable." *Found. For N.Am. Wild Sheep v. U.S. Dep't of Agric.*, 681 F.2d 1172, 1181 (9th Cir. 1982). NEPA "is our basic environmental charter for protection of the environment." 40 C.F.R. § 1500.1(a).

'climate change is a largely global phenomenon that includes actions that are outside of [the agency's] control . . . does not release the agency from the duty of assessing the effects of *its* actions on global warming within the context of other actions that also affect global warming." *Id.* (quoting States' Gray Brief at 15 (emphasis added by court)). *See also Massachusetts v. EPA*, 549 U.S. 497 (2007).[17]

As one commentator has noted with specific regard to the *Center for Biological Diversity* decision: "agencies will be hard pressed to avoid evaluating climate change impacts for a broad range of projects requiring federal approvals or permits, such as energy facilities and transmission lines, casinos, landfills, mines, and transportation projects." Steven G. Jones, ASSESSING CLIMATE CHANGE: EVALUATING GLOBAL WARMING IMPACTS UNDER NEPA AND STATE ENVIRONMENTAL REVIEW STATUTES, Marten Law Group PLLC (Dec. 13, 2007)[18] at 5. *See also Border Power Plant Working Group v. Dept. of Energy*, 260 F.Supp.2d 997, 1029 (S.D. Cal. 2003) (holding, in its invalidation of Environmental Assessment, that where record showed that power plant would emit carbon dioxide, and that carbon dioxide is a greenhouse gas, "[b]ecause these emissions have potential environmental impacts . . . the EA's failure to disclose and analyze their significance is counter to NEPA.").

In addition to *Center for Biological Integrity* and *Border Power Plant Working Group*, *supra*, the Council on Environmental Quality (CEQ) has noted that a cumulative impacts assessment should include the "stress factors pertaining to each resource, ecosystem, and human community" in order "to determine whether the resources, ecosystems, and human communities of concern are approaching conditions where additional stresses will have an important cumulative effect." CEQ, CONSIDERING CUMULATIVE EFFECTS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT at 27, 29 (Jan. 1997). The growing body of evidence regarding the severity of the present and future effects of climate change on human communities, ecosystems, and resources within New Hampshire, and on larger geographic scales, requires such an analysis.[19] 14

NHDOT and FHWA cannot credibly claim that "climate change does not easily lend itself to an analysis at a local level" to avoid studying greenhouse gas emission/climate impacts. DSEIS at 5-9. FHWA has already engaged in a project-

---

[17] In *Massachusetts v. EPA*, 549 U.S. 497 (2007), in which the Supreme Court held that the EPA has the authority to regulate greenhouse gas emissions from new motor vehicles, the Supreme Court rejected the EPA's argument that it could not regulate greenhouse gas emissions because climate change was a global phenomenon. The Court found that it was not dispositive that other countries, such as China and India, continue to increase their greenhouse gas emissions, as "[a] reduction in domestic emissions would slow the pace of global emissions increases, no matter what happens elsewhere." *Id.* at 525. Thus, although NHDOT cannot solve the global warming crisis itself, it cannot escape from its requirements to study greenhouse gas emissions by arguing it is a "global issue."

[18] This commentary predates the above-cited *Center for Biological Diversity* opinion because it was published after publication of a prior, 2007 Ninth Circuit decision, *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 508 F.3d 508. The above-described 2008 opinion supersedes the 2007 decision. The latter decision, however, did not alter the court's decision regarding the need for the agency to address the issue of greenhouse gas emissions and climate change in assessing cumulative impacts.

[19] *See* information at www.nh.gov/climate; 74 Fed. Reg. 18886, "Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" (Apr. 24, 2009).

specific greenhouse gas emissions analysis for the Columbia River Crossing Project in Oregon and Washington. *See* SUCCESSES IN STEWARDSHIP (FHWA newsletter), Aug. 2009 (Attachment 17). According to FHWA: "Integral to the project is the integration of a greenhouse gas (GHG) emissions analysis into the Environmental Impact Statement (EIS)." *Id.* at 1. FHWA's newsletter further explains:

> The [Columbia River Crossing] project included a unique GHG emissions analysis as part of the Draft EIS (DEIS) issued in May 2008. This analysis helped the project team to demonstrate to local decisionmakers and the public the congestion and emissions-reducing value of replacing the present bridge with a multimodal facility. The GHG emissions analysis was designed to compare each build alternative with the no build alternative by showing how bus rapid transit, light rail, and tolls would affect traffic and emissions. The project team determined how each of the tested alternatives would reduce emissions more than would the no-build alternative. The light-rail scenario with bicycle and pedestrian facilities, funded by tolling, was recommended as the locally preferred alternative.

Id. at 2. *See also* excerpts from COLUMBIA RIVER CROSSING PROJECT 2008 TECHNICAL REPORTS (Attachment 18). 14

The feasibility of conducting project-specific greenhouse-gas emissions analyses is further evidenced in Massachusetts where, in 2007, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) determined that projects undergoing Massachusetts Environmental Policy Act (MEPA) review must quantify the project's greenhouse gas emissions and identify measures to avoid, minimize, or mitigate such emissions. EEA, MEPA GREENHOUSE GAS EMISSIONS POLICY AND PROTOCOL at 1 (2007) (Attachment 19). *See also* EEA, ENVIRONMENTAL NOTICE FORM CERTIFICATE: I-93/ROUTE 110/ROUTE 113 INTERCHANGE RECONFIGURATION AND RECONSTRUCTION PROJECT (2008) (Attachment 20) at 9-10 (notifying the Massachusetts Highway Department that the proposed Methuen Rotary Project must undergo a greenhouse gas emissions analysis, and that such analysis must include greenhouse gas emissions that will be generated from vehicle congestion for the project and proposed alternatives; greenhouse gas emissions associated with all phases of the project; and an estimation of greenhouse gas emissions from potential build-out scenarios if new developable land becomes available as a result of the project).

An analysis of the greenhouse-gas and climate impacts of the proposed widening of I-93, including alternatives, is both required by NEPA and entirely feasible. By failing to include such an analysis, the DSEIS deprives the public and decisionmakers of critical information and violates NEPA.

B. The DSEIS violates NEPA because it fails to assess whether the proposed project is inconsistent with state climate-change/greenhouse-gas-reduction plans.

The Council on Environmental Quality's NEPA regulations mandate that an EIS assess the consistency of a proposed project with state and local plans:

> To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

40 C.F.R. § 1506.2(d). *See also* 40 C.F.R. § 1502.16(c) (requiring an assessment of "[p]ossible conflicts between the proposed action and the objectives of Federal, regional, State, and local . . . land use plans, policies, and controls for the area concerned. (See § 1506.2(d))").

As discussed above, New Hampshire has adopted a Climate Action Plan with specific goals to reduce greenhouse gas emissions, and outlining the need to reduce vehicle miles traveled. The DSEIS fails to assess, in any way, the extent to which the proposed project will prevent the attainment of the N.H. Climate Action Plan's greenhouse-gas reduction goals. This omission is deeply troubling. As discussed above, the proposed project is anticipated to induce an additional 1.01 billion miles of vehicle travel, on an annual basis, in 2030. Seventy-seven percent of that induced VMT will occur on New Hampshire roads, with a significant proportion occurring on roads other than I-93. Marshall Report (Attachment 2) at 1, 4. This, in turn, will cause the emission of 195,000 metric tons of carbon dioxide from within New Hampshire – the equivalent of nearly two percent of *all* of New Hampshire's 1993 carbon dioxide emissions. *Id.* at 2. 15

The DSEIS' failure to assess the proposed project's inconsistency with the N.H. Climate Action Plan also is troubling in light of the likelihood that the proposed widening will reduce future ridership and demand for public transportation, as well as the significant potential for the proposed project to induce and perpetuate low-density development patterns. These impacts contradict important actions identified in the N.H. Climate Action Plan relative to VMT reduction, and raise the important question whether they will preclude the attainment of interim and long-term goals established by the Plan. Similarly, the DSEIS has failed to assess the extent to which the project is inconsistent with the plan adopted by the New England Governors and Eastern Canadian Premiers,[20]

---

[20] A 2008 report published by Environment New Hampshire Research & Policy Center, and Clean Water Fund, demonstrates that New Hampshire and the rest of the New England region is falling behind in its ability to meet the 2001 resolution of the New England Governors and Eastern Canadian Premieres to reduce the region's emissions of global warming pollution to 1990 levels by 2010, and to 10 percent below 1990 levels by 2020. FALLING BEHIND: NEW ENGLAND MUST ACT NOW TO REDUCE GLOBAL WARMING POLLUTION, Envt. N.H. Research & Policy Center, Clean Water Fund (March 2008) (Attachment 12). According to the report, emissions of global warming pollution from the transportation sector increased 7 percent across the region, and 2.4 percent in New Hampshire, between 2001 and 2005. Although data show reductions in global warming pollution in 2005 and 2006, the report notes:

> [T]he region has experienced year-to-year reductions in emissions before, only to see global warming pollution increase once again. To achieve the significant, sustained emission reductions

as well as the Massachusetts Climate Preservation Plan. By ignoring these important issues and thereby failing to inform the public and decision-makers as to impact of the proposed project on the attainment of important state and regional greenhouse-gas reduction goals, the DSEIS violates NEPA. 15

III. THE DSEIS VIOLATES NEPA BY FAILING TO PROPERLY ASSESS AND PUBLICIZE THE IMPACTS OF THE PROPOSED PROJECT ON IMPAIRED WATERS

The proposed project will affect four watersheds – Beaver Brook, Dinsmore Brook, the Northern Tributary to Canobie Lake, and Porcupine-Policy Brook – that have been identified as impaired (i.e., violating state water quality standards) as a result of excessive chlorides pollution associated with winter road-salting activities. The DSEIS fails to properly address, and to notify the public and decisionmakers of, the significant impact the proposed project will have on the ability to satisfy requirements under the Clean Water Act for these impaired waters. 16

A. The DSEIS fails to properly inform the public of important conditions in the Section 401 Water Quality Certificate issued by the Department of Environmental Services.

State roads, including I-93, are a significant source of chlorides pollution in the impaired watersheds. According to Total Maximum Daily Loads (TMDLs) approved by the EPA, state roads account for 84 percent of the chlorides pollutant load in the Northern Tributary to Canobie Lake, 50 percent of the load in Dinsmore Brook, ten percent in Beaver Brook, and 9 percent in Policy-Porcupine Brook. In recognition of the contribution to chlorides pollution caused by state roads, and the significant expansion of I-93 proposed by NHDOT, the N.H. Department of Environmental Services (NHDES) imposed important conditions governing the proposed widening project. Specifically, the Section 401 Water Quality Certificate (WQC) issued by NHDES authorizes NHDOT to proceed with construction of one additional highway lane in each direction, but prohibits the construction of fourth lanes until such time as the TMDL pollutant load allocations have been established, and NHDOT has demonstrated that it can comply with the TMDL for all state roads with the full eight-lane highway in place. As described by Paul Currier, of NHDES, in testimony before the N.H. Water Council: 17

> [T]he understanding was that the construction, the creation of bridges and fill, and so on, for a fourth lane, could proceed but paving of the fourth lane and any traffic on the fourth lane would not be allowed until the TMDL load reductions had been implemented by DOT, not just on I-93 but on all DOT maintained roads in the TMDL watershed.

---

science tells us are necessary to avoid the worst impacts of global warming, the region must commit to policies and practices that will ensure fundamental changes in the way the region obtains and uses energy.

Id. at 20-21.

Paul Currier, NHDES, Testimony before N.H. Water Council (Jan. 10, 2007). The WQC also prohibits activities that cause or contribute to water quality violations. Moreover, the Small MS4 General Permit, which covers many of NHDOT's discharges from I-93 into the impaired water bodies, does not authorize discharges that cause or contribute to the violation of water quality standards. *See* NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Apr. 18, 2003) at 5. 17

The DSEIS ignores, and fails to apprise the public and decisionmakers of, these important conditions. To the contrary, it makes no mention of the possibility that only the 3-Lane alternative may be permissible under the Section 401 WQC and Clean Water Act requirements set forth in NHDOT's Small MS4 General Permit. The public and decisionmakers deserve to be informed of these requirements, which make the DSEIS's failure to apply its updated traffic analysis to the 3-Lane alternative all the more egregious.

B. The DSEIS fails to discuss the significant burden a 4-Lane alternative will impose on municipalities and the private sector, as well as the likelihood that the proposed project will preclude the attainment of water quality standards.

The overriding purpose for establishing TMDLs, as mandated by the Clean Water Act, is to end water-quality impairment conditions and ensure the attainment and maintenance of state water quality standards. Effective implementation of the TMDLs established for the water bodies at issue, including the establishment of pollutant load allocations, will be essential for reducing chlorides pollution in compliance with the Clean Water Act.

As referenced in the DSEIS, NHDOT has proposed an IMPLEMENTATION PLAN TO INCREASE THE EFFICIENCY AND EFFECTIVENESS OF ROAD SALT USE TO MEET TOTAL MAXIMUM DAILY LOAD FOR CHLORIDE (hereinafter "Proposal Document" or "proposal"). In it, NHDOT proposes a new "vehicle-usage" based approach to establishing its chlorides load allocation. NHDOT's proposal is troubling on several grounds and has significant ramifications that must be disclosed to the public and decisionmakers. 18

First, NHDOT's proposal will impose greater load reduction burdens on municipalities and private parking lots and, in so doing, will effectively prevent the attainment of water quality standards. *See* Proposal Document at 15, Table 4-5. The non-attainment of water quality standards under NHDOT's proposal is abundantly evident in Dinsmore Brook, where NHDOT's proposed allocation for itself would require a *zero-load* allocation for the Town of Windham and private parking lots. *Id.* Unless other sources in the Dinsmore Brook watershed are to completely stop using road salt – a highly unlikely scenario – water quality violations will continue unabated. The significant burden shifted to municipalities and private parking lots in other watersheds,

as well, will, for all practical purposes, likely perpetuate violations of water quality standards.

Second, like the DSEIS, NHDOT's proposal fails to include any discussion whatsoever of the WQC's above-described legal prohibition relative to the construction of fourth lanes (i.e., an eight-lane highway). Rather, NHDOT's entire analysis underlying its proposal to shift a greater load reduction burden to the municipalities and private parking lots, is premised on the assumption that I-93 will be expanded in accordance with NHDOT's desired eight-lane "full build" alternative, as well as NHDOT's plans to widen Route 111.[21] NHDOT's proposal document asserts:

> The Department has thoroughly evaluated various alternatives, technologies and operational practices to reduce annual salt usage and improve efficiency of use and has determined that the anticipated reduction proposed in this Plan [approximately 20 percent] represents the maximum extent practicable.

Proposal Document at 2. Among the alternatives evaluated, however, NHDOT has *not* considered the 3-Lane alternative and the chloride load reductions, and associated load allocations, that would result from a lesser-scaled project. Rather, as evidenced by its discussion of Dinsmore Brook, it appears NHDOT is content to ignore the requirements of the WQC by proceeding with its proposed 4-Lane alternative and perpetuating non-compliance with the Clean Water Act. According to NHDOT's proposal: 18

> For Dinsmore Brook, there is essentially no surplus [i.e., NHDOT would need to use the entirety (and then some) of its proposed vehicle-usage based allocation)] and the estimated future needs to accommodate the proposed I-93 expansion would utilize both the vehicle based and the DES suggested allocation for the entire watershed.

Proposal Document at 15. NHDOT's failure to assess the chlorides reduction benefits of a lesser-scaled highway expansion is putting it on a clear path to violate its Section 401 WQC and its duties under the Small MS4 General Permit. It also is putting the entire TMDL process on the path to failure, in violation of the Clean Water Act, and will likely result in discharges not authorized by the Small MS4 General Permit as it pertains to the municipalities.

---

[21] NHDOT's Proposal Document states:

> The expansion of I-93 must also be factored into the allocation as in many locations there will be twice the number of roadway lane-miles as the mainline is increased from four to eight travel lanes and some of the secondary roads and ramps will also be widened to provide turning lanes and other traffic management improvements as part of the interchange upgrades. An additional small section of NH Route 111 in Windham will involve the construction of four new travel lanes. This additional roadway lane mileage will become part of the winter maintenance operations for each of the respective patrol sheds. The total amount of road salt used each year will increase to maintain reasonably safe travel conditions on these roadway lane miles.

Proposal Document at 8.

Third, it must be acknowledged that NHDOT, through its proposal, will increase the burden on municipalities not only by claiming a greater load allocation for itself, but also by either (1) effectively eliminating, as a matter of law, the potential for new development in certain municipalities, or (2) inducing new development which, with the addition of parking lots and other impervious surfaces, will impose greater responsibility on the municipalities through the Small MS4 General Permit. By increasing its load allocations, NHDOT's proposal will likely put municipalities in the position of allowing no additional economic development, unless offsets for additional loads from new development can somehow be obtained from existing dischargers. Alternatively, if new development can be allowed, the proposed project is likely to induce new growth, including additional parking lots and other impervious surfaces, which will further exacerbate existing chlorides problems.[22] Under this latter scenario, NHDOT would be increasing the burden on the municipalities by inducing yet further chlorides pollution which the municipalities – through the Small MS4 General Permit program – will be required to manage.

Finally, in addition to proceeding on the blanket assumption that the I-93 expansion will involve eight lanes – and entirely ignoring the requirements of the Section 401 WQC – the NHDOT load allocation proposal fails to include behavior modifications and related approaches, such as variable message boards with reduced speed limits in winter-storm conditions, as a means to further reduce chlorides loads. NHDOT acknowledges that "driving behavior and expectations may need to change and adjust to the possibility of longer periods of poor road conditions during winter weather, especially during severe winter weather." Proposal Document at 19. Nonetheless, it is not evident that NHDOT has assessed the extent to which chlorides loads could be reduced through education, enforcement, and other efforts designed to modify driver behavior and expectations. To the contrary, it appears that the proposal is based on a perpetuation of a "bare pavement" policy. 18

In sum, NHDOT seeks a much greater "piece of the pie" in terms of a chlorides load allocation – at the expense of the municipalities – in order to proceed with its full proposed project, with no consideration whatsoever of a less chlorides-intensive 3-Lane alternative. This approach will result in failures to comply with the Clean Water Act and violation of a critically important condition in the Section 401 Water Quality Certificate issued for the I-93 widening project. The DSEIS's failure to discuss these significant issues – including its failure to identify 401 WQC compliance and TMDL allocations as an area of controversy that has yet to be resolved – deprives the public and decisionmakers of important information, in violation of NEPA.

[22] *See* DSEIS Figs. 12-1, 12-2; Tables 12-6, 12-7, 12-8, 12-9. *See also id.* at 13-6, 13-7.

IV. THE DSEIS MUST BE UPDATED TO DISCLOSE THE PROPOSED PROJECT'S IMPACT ON THE STATEWIDE TRANSPORTATION SYSTEM

In recent years (since the original EIS process), significant new information has been developed and publicized regarding a major funding crisis facing New Hampshire's transportation system. A Draft 2009-2018 Ten Year Plan published by NHDOT and presented at a July 18, 2007 meeting of the Governor's Advisory Commission on Intermodal Transportation (GACIT) explained:

> It is becoming increasingly difficult to meet the project expectations set forth in the approved, oversubscribed Ten Year Plan. Construction costs have jumped dramatically in recent years by almost 45% and funding has remained relatively flat. These trends are expected to continue. With increasing costs of projects outdistancing available funding, the "Ten Year Plan" is that in name only. With future inflation considered and no additional funding for capital improvements, it could take 35 years to build all of the $4.1 billion worth of projects in the current Ten Year Plan.

19

DRAFT 09-18 PROJECT LISTING at 1. The above-referenced draft Ten Year Plan further explained that "the reconstruction of I-93 [Salem-Manchester] is a major project *with significant financial implications in terms of long-term debt and the viability of the States [sic.] overall transportation program.*" *Id.* at 4 (emphasis added).

The current Ten Year Plan (2009-2018) "proposes substantial reductions in both the number and costs of projects from the previous 2007-2016 Ten Year Plan to develop a financially constrained plan aligned more closely to anticipated funding." TEN YEAR TRANSPORTATION IMPROVEMENT PLAN 2009-2018 SUPPLEMENT (June 25, 2008) at 2. It further states: "[w]hile the plan is reasonably financially constrained, it does still contain approximately $200 million more in projects than there are in anticipated revenues." *Id.* The means by which to generate revenues to cover this shortfall have not been determined, and the amount of funding which can be anticipated from the federal government is not presently known. *Id.* at 2-3. *See also* 2011-2020 TEN YEAR TRANSPORTATION PLAN PRESENTED TO GACIT (Aug. 24, 2009) (Attachment 21) at 10.

According to a recent NHDOT presentation to the Governor's Advisory Commission on Intermodal Transportation (GACIT), the current Ten Year Plan continues to be oversubscribed by $200 million. *Id.* at 3, 12. To make matters worse, an additional $250 million needed to cover I-93 project costs *are not included* in the oversubscribed Ten Year Plan. *Id.* at 12, 22. This future capital need is significant and, with the exception of statewide "future project needs" ($290 million), dwarfs all other future capital needs statewide – including red-list bridge priorities ($100 million), statewide preservation projects ($120 million), and previously deferred projects ($40 million). *Id.* at 14.

The impact of the proposed project's cost – now projected to be $780 million – will have a significant impact on New Hampshire's transportation system. NHDOT has admitted as much in its recent August 21 presentation to the GACIT. *Id.* at 22 (noting, with respect to I-93 further improvements, "Major Effect on Rest of Program"). Of course, the impacts of the proposed I-93 project will likely go beyond the current Ten Year Plan, with debt service on approximately $195 million in GARVEE bonds (amounting to approximately $24 million annually following project construction), "anticipated to extend beyond the Ten Year Plan Horizon." 2009-2018 TEN YEAR PLAN at 49. 19

The public and decisionmakers must be fully informed of the cost implications of the proposed project as it relates to the State's ability to address other transportation needs throughout New Hampshire, including its ability to fulfill the State's Long Range Transportation Plan and the broad transportation vision established by the Citizens Advisory Committee and incorporated into the current Ten Year Plan.[23] The DSEIS must be supplemented to include this analysis, which should also address project costs associated with other alternatives, including the 3-Lane alternative.

* * * *

To comply with the purposes and requirements of NEPA in allowing for meaningful public review and input, and informed decision-making, it is essential that the above issues be addressed in a manner that allows further public review and input. In other words, simply adding new analyses to the Final SEIS – without the public comment opportunities afforded during the *Draft* SEIS stage – will undermine the public's ability to meaningfully participate in the process. Accordingly, we ask that the above issues be addressed in an addendum or supplement to the DSEIS and that public review and comment on those issues be allowed in advance of the publication of a Final SEIS. 20

Again, we appreciate the opportunity to provide these comments, and we hope to have the opportunity to work with you to develop a workable and lesser-impacting alternative to the proposed 4-Lane widening.

[23] The Citizen Advisory Committee's transportation vision, as set forth in the current Ten Year Plan, is as follows:

A Transportation Vision for 2030

In the year 2030, transportation in New Hampshire plays a critical role in preserving the state's unique character and quality of life, enhancing environmental quality, and promoting sustainable economic development and land use.

Transportation in New Hampshire provides safe and secure mobility and travel options for all the state's residents, visitors and goods movement; is well maintained, efficient and reliable; and provides seamless interstate and intrastate connectivity.

Respectfully submitted,

Appalachian Mountain Club
Susan Arnold
Director of Conservation
75 Sunny Oak Terrace
Strafford, NH 03884

Conservation Law Foundation
Thomas F. Irwin
Senior Attorney
27 North Main Street
Concord, NH 03301

Environment New Hampshire
Paul Burns
Regional Program Director
30 South Main Street, Suite 301
Concord, NH 03301

Granite State Conservation Voters
Jim O'Brien
Executive Director
88 North Main Street, Suite 303
Concord, NH 03301

New Hampshire Audubon
Michael Bartlett
President
84 Silk Farm Road
Concord, NH 03301

New Hampshire Lakes Association
Jared A. Teutsch, J.D.
President & CEO
84 Silk Farm Road
Concord, NH 03301

New Hampshire Public Interest Research Group (NHPIRG)
Steve Blackledge
Board Member
30 South Main Street, Suite 301-A
Concord, NH 03301

New Hampshire Rivers Council
Joshua Cline
Executive Director
54 Portsmouth Street
Concord, NH 03301

New Hampshire Sierra Club
Catherine M. Corkery
Chapter Director
40 North Main Street, 2nd Floor
Concord, NH 03301

Review of the Draft Supplemental Environmental Impact Statement for the I-93 Improvement Project

Norman L. Marshall

October, 2009

Overview

Data in the *Draft Supplemental Environmental Impact Statement for the I-93 Improvement Project* (DSEIS) shows that the project would result in 1 billion more vehicle miles traveled (VMT) per year in 2030 than if the project were not done. If proposed EPA/NHTSA fleet efficiency standards are adopted, this would produce additional carbon dioxide emissions of 252,000 metric tons per year in 2030, which is equal to 2.45% of carbon dioxide emissions from all sources in New Hampshire in the base statistical year 1993.

These impacts are being planned to meet traffic growth which currently is not occurring. At the New Hampshire/Massachusetts state line, I-93 traffic volumes have declined by 10% between 2002 and 2008. 21

Some combination of congestion pricing, a 55 m.p.h. speed limit, and expanded public transportation could reduce peak period demand significantly so that the widening could be avoided or the plan could be changed to a plan with 3 lanes in each direction while providing a satisfactory future level of service. Less widening would result in less induced traffic and induced greenhouse gas emissions, and reduced land use impacts.

Project Would Cause Huge Increase in Vehicle Miles Traveled and Greenhouse Gas Emissions

The DSEIS reports that the project would result in 3.7% more Vehicle Miles of Travel (VMT) in 2030 in the modeled area (New Hampshire plus substantial parts of Massachusetts, Maine and Vermont)[1]. The difference between the Build and No Build scenarios is approximately 2.8 million VMT per day. Multiplying the modeled VMT growth by 365 days/year results in 1.01 billion VMT per year. Over three quarters (77.5%) of this VMT increase, amounting to 796 million miles per year, would be in New Hampshire.[2] These numbers are summarized in Table 1. 22

Table 1: Additional Vehicle Miles Traveled (VMT) in 2030: Build vs. No Build

Daily VMT increase in modeled area	2,762,000
Annual VMT increase in modeled area	1,010,000,000
Annual VMT increase in New Hampshire	796,000,000

The 2030 land use effects of the project (compared to the No Build alternative) include 11,100 more people in New Hampshire, 12,900 fewer people in Massachusetts, and small population increases in

[1] DSEIS, Table 4-18, p. 28.

[2] Calculated by Smart Mobility, Inc. from DSEIS model files provided by NHDOT.

1

Maine and Vermont.[3] The increased VMT is caused by a combination of greater decentralization of residences and jobs, and travelers choosing destinations that are farther away. The DSEIS states:

> In addition to changes due to different land use conditions, VMT increases in the Build condition because travelers would be able to travel longer distances in the same amount of time due to reduced congestion and increased speeds on I-93. As a result, some of the trip origin/destinations throughout the region would change in the Build condition (e.g. some travelers would choose to make longer trips). VHT [Vehicle Hours of Travel] would increase as well in the Build condition due to the longer travel distances. (DSEIS, p. 4-27 – 4-28)

Assuming that the average car and light truck fleet efficiency could be raised to 35.5 miles per gallon and carbon dioxide emissions reduced to 250 g./mi. by 2030 as currently proposed[4] (not considering the higher fuel consumption of medium and heavy trucks[5]), 1.01 billion more VMT per year is equivalent to 252,000 metric tons of carbon dioxide per year, and the 796 million vehicle miles that would occur per year in New Hampshire would cause 195,000 metric tons being emitted in New Hampshire.[6] If these or higher standards were not adopted, emissions would be even higher. These numbers are summarized in Table 2.

Table 2: Additional Carbon Dioxide Emission (Metric Tons) in 2030: Build vs. No Build

Annual carbon dioxide emissions increase in modeled area	252,000
Annual carbon dioxide emissions increase in New Hampshire	195,000

22

These increases, the differences between the Build and No build scenarios, are equal to 2.45% and 1.90%, respectively, of all New Hampshire carbon dioxide emissions in 1993 from all sources – not just transportation, but also emissions from the industrial, commercial and residential sectors.[7]

[3] DSEIS, Table 12-4, p. 12-18.

[4] The U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration have proposed revised Corporate Average Fuel Economy (CAFE) standards that would achieve a combined car and light truck fuel efficiency of 35.5 miles per gallon and 250 g/mi carbon dioxide emissions in the 2016 model year. http://www.epa.gov/OTAQ/climate/regulations/420f09047.htm#2

[5] Smart Mobility, Inc. calculated from the DSEIS model files provided by NHDOT that the Build scenario has 0.7% more heavy truck VMT than the No Build scenario, 0.9% more medium truck VMT and 0.9% more light truck VMT.

[6] Calculated using 250 g/mi in proposed standards cited above.

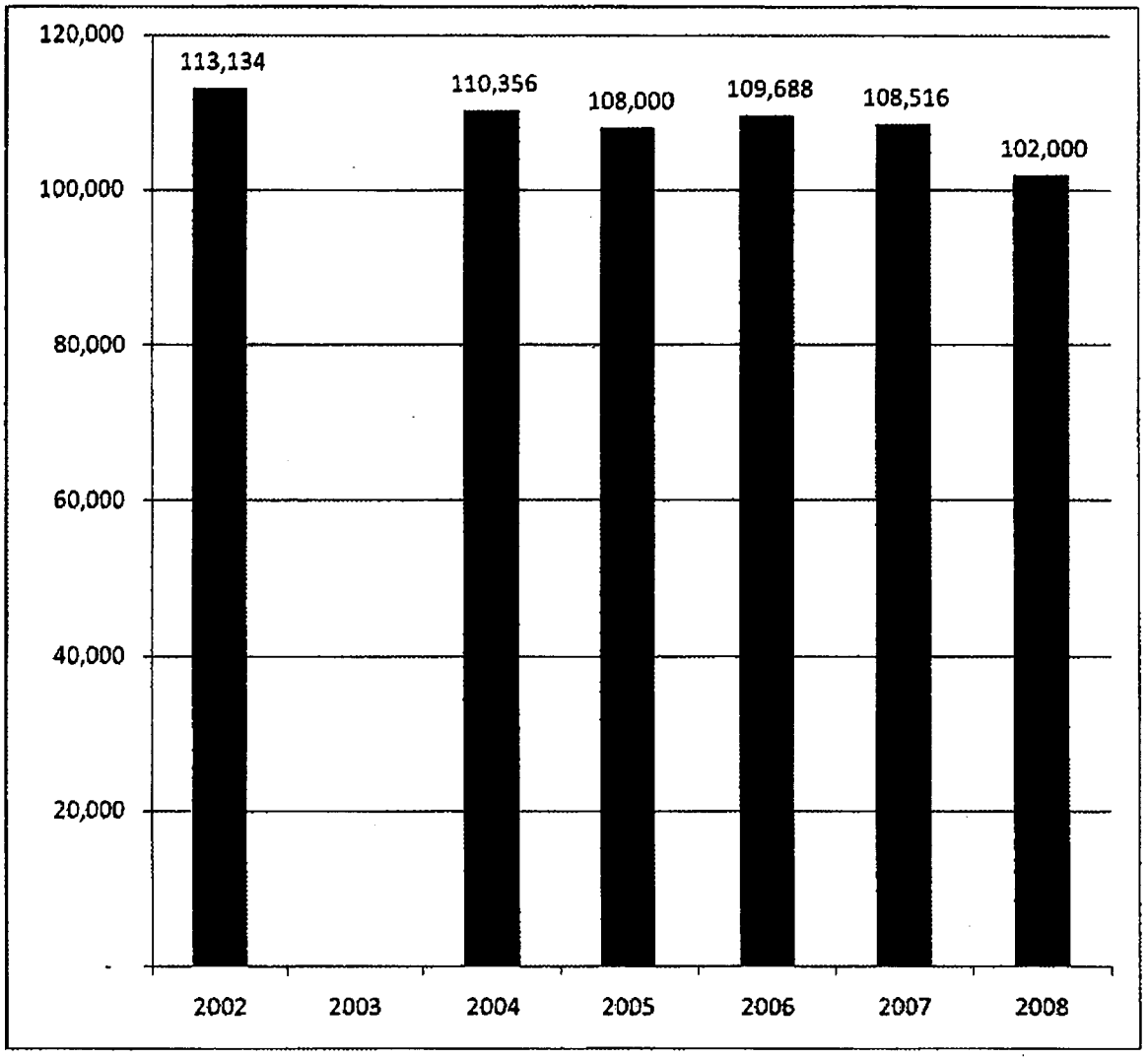
[7] 1993 carbon dioxide emissions for New Hampshire were 10.3 million metric tons. http://www.epa.gov/climatechange/emissions/downloads/NHSummary2.PDF (Data from the 1990s is commonly used for greenhouse gas baseline information; e.g. the Kyoto Accord referenced 1990 emission.)

2

I-93 Traffic Volumes Have Dropped in Recent Years

Even without the Transportation Demand Management (TDM) measures discussed below, I-93 traffic volumes have **declined** in recent years – by a total of 10 percent over 6 years.

I-93 Traffic Volume at New Hampshire – Massachusetts State Line: Adjusted Average Day[8]



Note: Station did not operate in 2003.

In contrast, the DSEIS assumes that traffic volumes in this location will reach 123,100 in 2020 and 129,800 in 2030, increases of 21% and 27% respectively as compared to 2008.[9] It is questionable whether these numbers will be reached. Travel Demand Management (TDM) measures, including

23

[8] NHDOT Automatic Traffic Recorder Reports http://www.nh.gov/dot/org/operations/traffic/tvr/atr/index.htm (The figure includes all years in the online reports.)

[9] DSEIS, Table. 4-12, p. 4-23.

3

congestion pricing, a lower speed limit and expanded public transit, all discussed below, would help to assure that these numbers will not be reached. 23

Need for New Approach for Addressing Congestion

The proposed project represents a continuation of an approach to addressing congestion that has failed throughout the U.S. Widening roads causes land use to further decentralize and increases VMT, which requires widening other roads. In New Hampshire, this would include other sections of I-93 and likely other roads as well. No trip begins or ends on a freeway, and increasing freeway traffic volumes will increase traffic volumes on other roads. Of the 1 billion additional VMT per year in 2030, only 31% of the VMT increase is on I-93 (including all of I-93 in New Hampshire and I-93 in Massachusetts all the way south to the model boundary south of Boston); the other 69% is on other roadways.[10] This approach to congestion has failed to solve the problem, is enormously costly, and is inconsistent with efforts to manage greenhouse gas emissions. 24

A better approach would emphasize some combination of congestion pricing, reduced speed limit, and expanded public transportation options, while keeping any roadway widening to an absolute minimum.

Highway Tolls and Congestion Pricing

The DSEIS includes a Tolling Sensitivity Analysis that shows that even small tolls would have a large effect on future traffic volumes, VMT, vehicle hours of travel (VHT) and congestion. A $2.00 toll was assumed in one direction only, southbound. Therefore, the toll is equivalent to a $1 toll in both directions. For a 20-mile roadway, this is only $0.05 per mile, and is not increased during peak traffic periods. 25

Even this small toll has a major effect on modeled traffic. Compared to the Build scenario without a toll, the Build scenario with a toll results in 25% less of an increase in VMT, preventing an additional 250 million VMT per year in 2030.[11] The toll is assumed to be on the Massachusetts state line. Therefore, it has a much greater effect on the southern segments of I-93 than the more northern segments as shown in the Table below, with differences ranging from 12.4% to 4.0%.

[10] Calculated by Smart Mobility, Inc. from DSEIS modeling files provided by NHDOT

[11] Calculated by Smart Mobility, Inc. from DSEIS modeling files provided by NHDOT.

DSEIS Technical Report 1 (Traffic), Table 3-2 (p. 40)

Table 3-2
Average Daily Traffic (ADT)
Build with Toll Compared to Build without Toll, Scenario 2 2030

Segment	2030 Build with Toll	2030 Build without Toll	Difference	Percent Change
MA. Line to Exit 1	133,900	152,900	-19,000	-12.4%
Exit 1 to Exit 2	122,700	134,900	-12,200	-9.0%
Exit 2 to Exit 3	127,400	135,800	-8,400	-6.2%
Exit 3 to Exit 4	103,200	109,000	-5,800	-5.3%
Exit 4 to Exit 4A	97,400	101,500	-4,100	-4.0%
Exit 4A to Exit 5	111,500	116,100	-4,600	-4.0%
North of Exit 5	108,600	113,100	-4,500	-4.0%

The DSEIS describes how the toll affects regional traffic.

> The traffic modeling results for the tolling sensitivity analysis show that the implementation of the toll not only affects the I-93 corridor, but has a region-wide effect. Generally, the change in traffic volumes is spread throughout the region and is not focused on the parallel roads closest to I-93 (e.g. NH 28). The reason this occurs is because the toll changes trip distribution patterns, both destinations and route choice. Based on the value of time, the toll is treated as a travel time impedance in the model—resulting in changes in destination choices. For example, fewer people would leave New Hampshire to travel to Massachusetts as a result of the toll. In addition to the changes in destinations as a result of the toll, some of the changes in route choice that does occur involve other regional roadways farther away from the I-93 corridor. (DSEIS, p. 4-31)

25

The regional effects of the toll are the mirror image of the regional effects of the widening. The widening reduces travel times, and induces land use decentralization and longer trips. Tolls would discourage induced land use decentralization and associated additional vehicle travel[12] and discourage longer trips (as discussed in the excerpt from the DSEIS). Higher tolls and/or tolling at more locations would reduce or eliminate the undesirable increases in VMT that would otherwise result from the proposed project.

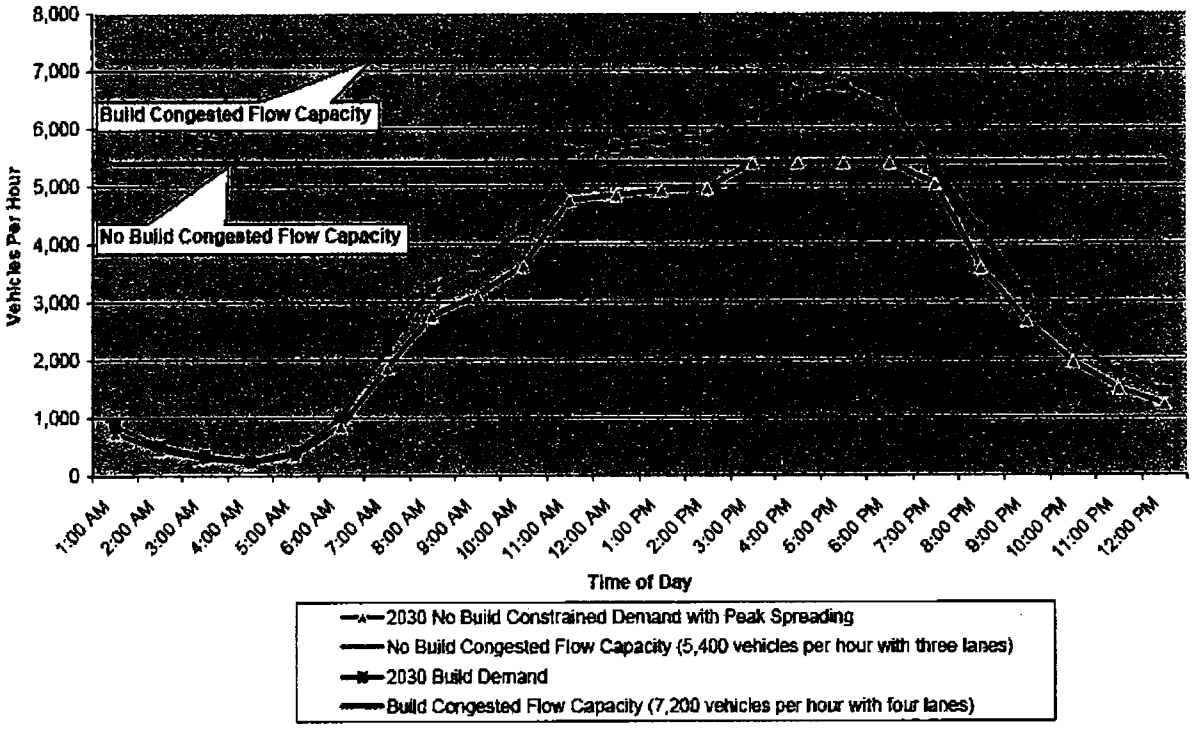
The highest traffic volumes are forecast to be at the southern segment between the state line and Exit 1. As shown in the figure below, the traffic congestion problem which is intended to be addressed by the proposed roadway expansion is a peak period problem.

[12] The land use effects of tolling were not considered in the Tolling Sensitivity Analysis.

5

DSEIS Figure 4-4

Figure 4-4
2030 Scenario 2
Temporal Distribution of No Build and Build Average Daily Traffic in August
I-93 Northbound Between State Line and Exit 1



25

The $2 one-direction toll is modeled as sufficient to reduce the daily traffic by 12.4% as shown in DSEIS Table 3-2 reproduced above.[13] If the August No Build scenario peak was reduced by 12.4%, the 2030 No Build afternoon peak problem shown in the figure above would be eliminated.[14] The DSEIS states that

[13] The DSEIS analyses assume that the Design Hour Volume (DHV) is equal to 9.4% of daily traffic, and the Directional Design Hour Volume (DDHV) is equal to 60% of the DHV (DSEIS, p. 4-3). Therefore, the DDHV is 60% x 9.4% = 5.64% of daily traffic. Because the DDHV is calculated as a constant fraction of the daily traffic, a 12.4% reduction in daily traffic also results a 12.4% reduction in DDHV. Table 3-4 of the Traffic Technical Report shows an 11.6% reduction instead, but this difference is due to rounding errors. For the non-toll case, it shows 5.64% of 152,900 as 8,600 instead of 8,623 (rounding down). For the toll case, it shows 5.64% of 133,900 as 7,600 instead of 7,552 (rounding up). Then it subtracts 7,600 from 8,600 to get 1,000, but subtracting 7,552 from 8,623 actually is a difference 1,071, and 1,071 is 12.4% of 8,623.

[14] The Scenario 2 2030 No Build daily traffic volume at this location is 129,800, which is 84.9% of the 152,900 Build scenario traffic volume (DSEIS Table 4-12, p. 4-23). Without the peak spreading in Figure 4-4, the blue No Build scenario curve would have the same shape as the orange Build scenario line, but be factored down to 84.9% of the orange line (i.e. there would be no flattening at the peak).

The Toll Sensitivity Analysis showed that a $2 one-direction toll would reduce the Build Scenario volumes by 12.4%, i.e. to 87.6% of the volumes without tolls. If the $2 one-direction toll is instead applied to the No Build volumes,

6

I-93 traffic volumes in August are about 10% higher than the annual average (p. 4-14), so this level of toll would be sufficient for most of the year for the No Build scenario (3 lanes per direction at this location). Higher tolls could be introduced, if necessary, to manage even higher traffic demand.

The example above involves the fixed tolls modeled in the toll sensitivity analysis. However, the most effective way to address the peak period capacity issue is through variable congestion pricing.[15] One of the great benefits of congestion pricing is that it is adaptive. It isn't necessary to figure out what tolls should be in 2030; they can be raised as needed or lowered as needed. Tolls recently have been reduced on SR-91 in California in response to reduced traffic volumes.[16] In contrast, changing roadway capacity has long lead times, is very expensive, and subjects travelers to long construction delays.

If I-93 were widened to 3 lanes per direction throughout the project area, the greatest traffic density would be at the southern end, just as the greatest traffic density in the Build scenario (4 lanes per direction) would be at the southern end. As discussed above, a $2 one-direction toll could eliminate congestion at this location in the No Build scenario. The DSEIS did not consider or model an alternative with 3 lanes in each direction. If this scenario were modeled without tolls, I-93 traffic volumes would likely be somewhat higher than in the No Build scenario, and variable congestion pricing might be necessary. Congestion pricing is more powerful in reducing congestion than a single toll because it achieves a lower daily traffic volume plus shifts some of the daily traffic volume out of the peak periods. Properly-priced congestion pricing would eliminate traffic congestion at this location and therefore throughout the rest of the project. Less widening would result in less induced travel and reduced land use impacts. 25

---

and similarly reduces them to 87.6% of the original number, the daily No Build scenario volumes would be lowered to 113,700 vehicles per day (87.6% x 129,800 = 113,700).

The entire daily curve would be shifted down to 74.4% of the Build scenario values due to the combination of the lack of induced traffic and the effects of tolling (84.9% x 87.6% = 74.4%). The No Build capacity at this location is 75% of the Build capacity (5400 vehicles per hour compared to 7200 vehicles per hour). The figure above indicates that 100% of the Build capacity adequately serves 100% of the Build traffic volume. Therefore, the No Build capacity (75% of the Build capacity) also would be adequate to service 74.4% of the Build traffic volume – which can be achieved through TDM with a $2 one-direction toll. The volume-to-capacity ratio would be slightly lower than for the Build scenario.

[15] For congestion pricing to be most effective, tolling should be done in both directions. Tolling both directions is the current norm in New Hampshire anyway. One-way tolling generally is limited to bridges and tunnels where there are no practical alternative routes.

[16] http://www.octa.net/pdf/91spring09.pdf

55 M.P.H. Speed Limit

Lowering the speed limit to 55 m.p.h. would reduce energy consumption and greenhouse gas emissions and improve safety. Tolls are modeled as equivalent to travel time. The DSEIS assumes a value of time of $9.50/hour for cars[17], so that the $2.00 toll is equivalent to 12.6 minutes, or 6.3 minutes in each direction. Therefore, the effects of a reduced speed limit on a trip of 40 miles would be roughly equivalent to the $2.00 single direction toll. These effects would similarly be expected to include less induced land use decentralization and less induced VMT. 26

Transit

The DSEIS updates the analysis year to 2030 from 2020. DSEIS Appendix A-4 is a 2009 memo that summarizes the current state of transit forecasts in the corridor. It reports that the "total southbound boardings in New Hampshire with the Bus on Shoulder alternative would be 2,670 to 3,035" (p. 4). This represents 5,340 to 6,070 daily one-way trips which is a significant number compared to the lowered traffic growth forecasts in the DSEIS as compared to the FEIS. Ridership would be significantly higher with a toll on I-93, and particularly with congestion pricing. However, realizing the full potential of public transportation would require a comprehensive public transportation strategy rather than just a single rail line. 27

[17] DSEIS, Technical Report 1 (Traffic), p. 39.

8

From: Tracy Cosgriff [mailto:sojusan@hotmail.com]
Sent: Tuesday, October 06, 2009 8:04 PM
To: Peter Stamnas
Subject: I-93

Dear Mr. Stamnas,

*I am writing to you about the widening of I-93 to _three lanes each direction_. It is my belief that this will accomplish the necessary goals of widening the existing road by 50% while providing a minimizing of the negative impacts that the proposed eight lane highway would bring. *

The three lane alternative would:
*Lower the cost to NH taxpayers, cut the funds required for the State of New Hampshire's share of the costs (now costing approximately $160,000,000 or 20% of the project) and thus enable other badly needed projects in the underfunded DOT Highway Plan that have been deemed important for safety and traffic flow concerns to be funded. *

*Possibly eliminate the need for a toll booth to be built at the southern most stretch to help NH generate the excessive funds needed for the four-lane build, currently estimated at $ 800 million. *

*Cut the salt and chemical usage required to keep the road "Clean and Dry" by 33%, enabling towns and their road agents along the highway to re-gain the ability to clean and winterize their own town roads. Given the fixed amount of chemicals that can be applied to the roads in the water districts along the highway under current regulations and negotiations, any additions to the I-93 quotas by definition reduces that which is available for the nearby towns. Less road means less salt which, in turn, means cleaner streams and safer drinking water. *

Provide incentives for a more thoughtful and efficient strategy to move people through the corridor that might emphasize HOV preferences, railroad and bus alternatives, plans to even out traffic flow at the busiest times, provide railroad alternatives for freight, and for the utilization of other "best practices" used successfully across America.

*Help New Hampshire to achieve its publically stated goal in the Governor's Climate Change Action Plan of reducing the harmful carbon emissions from traffic by 20% by 2020 and by 80% by 2050. Those important goals will never be reached if the DOT and other State and Federal agencies continue to provide encouragement and incentives to single passenger petroleum based travel and ever more roads. *

*Help us resolve and correct the violations that currently exist under the Clean Water Act due to excessive chloride use polluting the streams and aquifers along the highway. By law, this must be corrected! *

Minimize the extensive and costly impacts on many towns near and not-so-*near the I-93 corridor. This highway will drive new growth in the Southern NH tier, increasing the population, eliminating valuable open spaces, forcing the need for locally funded new schools and emergency services and driving locally funded property taxes unnecessarily higher. Safety on secondary roads will also be made worse as cars speed from areas with cheaper land to highways like "101" that will

then feed traffic to the new highway. *

*An example- Amherst has already exceeded its OEP projected population growth of _2020_, has far more traffic on its feeder roads and more accidents as well, than just a few years ago. We are using 11 modular temporary classrooms at our schools and will eventually need another expensive building and more teachers. Our population in 2000 was 10,769, was projected by the NH Office of Energy and Planning to go to 12000 by 2010 and to 13,000 by 2020. Today it stands at _13,945_. Meanwhile my property taxes are up over 30%. I am confident that the nearby towns of Milford, Wilton, Lyndeborough, Brookline Mt. Vernon and Hollis are or will soon experience the same impacts. *

*In conclusion, I believe that a compromise build of a six lane road, providing for _50%_ more traffic flow and enabling a series of limitations to the above stated negative impacts would work to everyone's advantage in both the short and long run. *

Sincerely,
Tracy Cosgriff

From: aljadanh@comcast.net [mailto:aljadanh@comcast.net]
Sent: Thursday, September 24, 2009 12:37 PM
To: Sikora, Jamie (FHWA)
Subject: ReBuilding I93

Per the Union Leader article of 09/24/09, I would like to add my voice to those that believe that the expansion of I-93 is extremely important to the safety and function of this important highway. As a resident of Windham, I am on I-93 daily and find the current usage well beyond the capacity of this out-of-date road design. In fact, the highway" is almost a misnomer during heavy usage and becomes a huge, frustrating parking lot. One of the main entrance's to our state deserves better. 1

PLEASE DO EVERYTHING POSSIBLE TO MAKE THIS A FOUR LANE HIGHWAY.

Thank You,

Alan Daigneault
17 Gordon Mountain Road
Windham, NH 03087
603-894-6526

October 2, 2009

Dear Mr. Stamnas,

In reference to the Draft Supplemental Environmental Impact Statement for Interstate 93 widening project, I submit this statement.

"Following the ruling, the Federal District Court approved an agreement allowing additional I-93 construction projects to move ahead.

I often travel southbound on I 93 in the early evening while returning from a job as an associate professor in Manchester. I read that there is a movement to further study a three lane alternative. The southbound exit ramp to Windham is dangerous and made worse as it is currently under construction. I think it is time to complete I 93 construction as planned for four lanes in a timely manner. My sense is that the cost of this highway construction has increased significantly, perhaps almost doubling, while these lawsuits continue. I was on the Windham planning board 15 years ago when I 93/Rt 111 corrective discussions were taking place. Air quality in southern NH has become polluted by fumes from traffic congestion between Salem and Manchester. After 20 years of planning and traffic studies I think NH can little afford the lost revenue from the hazards of congestion and increased costs from construction while additional studies or redesign are added. 1

Sally D'Angelo
Windham resident of 31 years

From: RebuildingI93.com [mailto:postmaster@rebuildingi93.com]
Sent: Friday, September 25, 2009 3:30 PM
To: contact@rebuildingi93.com
Subject: i93: Submission to RebuildingI93.com Contact Form

The "Contact Us" form on the RebuildingI93.com website was submitted with the following information:

NAME: Kathleen Davis
E-MAIL ADDRESS: kdavis@windhamnewhampshire.com

QUESTION/COMMENT:
Wish to state my support for the I 93 expansion being 4 lanes each way. I realize there has been opposition to this (wanting it reduced to 3 lanes each way). I have and still drive from Manchester to Windham twice daily in rush hour and the need is surely there for 4 lanes each way. 1

Thanks

Submitted from 71.255.123.98 at 15:29:41 on 2009-09-25

Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322; InfoPath.2; .NET CLR 2.0.50727; .NET CLR 3.0.4506.2152; .NET CLR 3.5.30729)

From: Michelle's Menagerie Michelle DeBye [mailto:mmzoo@live.com]
Sent: Friday, October 09, 2009 4:22 PM
To: Peter Stamnas
Subject: Expansion of Route 93

Hello Mr. Stamnas,
I have only lived in Londonderry, NH, for three years. But that has been enough time to know that I am tired of sitting in the Route 93 traffic! Please do all you can to get the 4-lane expansion to go through. There have been way too many accidents in the exit 4/exit 5 area, many quite serious! A wider highway will cut down on accidents. 1

Michelle DeBye
Michelle's Menagerie
603 537 0123
http://www.michellesmenagerie.com
USDA Lic. #12-C-0039

"Until one has loved an animal, part of their soul remains unawakened."

From: pauldebye@hotmail.com
To: Jamie.Sikora@dot.gov
Subject: I-93 Widening!
Date: Friday, October 09, 2009 4:30:21 PM

Please do not allow these obstructionists who have thus far denied the will of the people of Southern N.H to prevail in their latest tactic to prevent the widening of I-93 to 4 lanes not 3 but 4 lanes. This project would be done by now if not for these people! 1

Thank you!

Paul L. DeBye
Londonderry, N.H

From: Roger Dieker [mailto:Roger.Dieker@cbre-ne.com]
Sent: Wednesday, October 07, 2009 3:13 PM
To: Peter Stamnas
Subject: I-93 widening

Hi Peter.

I would be happy to provide support for the widening in any way I can. As a Commercial Real Estate Broker, I can provide countless examples of how the widening would increase commercial activity and commerce in that corridor. 1

Please let me know how we can show our support.

Roger A. Dieker | Managing Broker
CB Richard Ellis/New England | Brokerage Services
2 Wall Street | Manchester, NH 03101
T 603 540 8315 | F 603 626 0249
roger.dieker@cbre-ne.com | www.cbre.com/roger.dieker

VIEW OUR LISTINGS

From: Joe Doherty [mailto:Joe.Doherty@optimation.us]
Sent: Wednesday, October 07, 2009 11:37 AM
To: Peter Stamnas
Cc: 'jamie.sikora@fhwa.dot.gov'
Subject: NH I-93 Expansion

It is no secret to anyone traveling I-93 from Manchester into Mass that the highway is unsafe and overcrowded in both directions. Not everyone travels all the way to Boston. Some only go as far a River Rd or I-495 in Andover. This 15-20 mile commute can not be considered long in terms of mileage. However, it is in terms of time.

I have traveled into Boston on Friday afternoon and have seen solid traffic backed-up from NH Exit 5 through Boston. If there is an accident and now the 2 lanes must merge into 1 it is unbearable and many get off at the nearest exit and travel the side roads, even if it is longer, we feel better if we are moving rather than sitting for who knows how long.

I-93 needs to be expanded to 4 lanes in both directions. I live in Londonderry and had the opportunity in 2007 to relocate my Nashua office. With the changes made to Rte 3 in Mass and Nashua, that road is now manageable in the morning and evening with the Jam-ups at Drum Hill and 495. Northbound the road jams-up again in Merrimack where it drops to 2 lanes. So I kept my office in Nashua rather than move to I-93 corridor even though most of our clients in Mass along I-93.

On Sunday afternoons when coming South from spending time at the Seacoast or the Mts, I have to exit I-93 at 293 and take South Willow St into Londonderry because the back-up at the lane drops is so bad. It has improved with the longer merges from 293 to 93 South but it still jams up for several hours back to 93 – 293 split.

The current 2 lanes is 2 lanes too small. The is ample evidence around the region to see that for anyone who has lived here for 20 years like I have and travel frequently as part of my work.

The CLF has done nothing to help only to obstruct. The idea of rail lines down the middle is a dream and is only playing on people's nostalgia to delay what needs to be done. Build it at 4 lanes and no more delays that cost multi-million $$. The side roads need the relief especially in bad weather when the accidents occur. When that happens, Derry, Londonderry, Windham and Salem side roads are clogged for hours. This includes not only the state highways but also the shortcuts through neighborhoods. Then there are always accidents on these side roads because of too many cars that do not belong there.

20 year Londonderry resident and UNH class of 1981.

Joe

Joseph P. Doherty, PE
General Manager

Optimation / Dumont Associates

9 Trafalgar Square
Suite 270
Nashua, NH 03063
603-883-9400
603-589-7700 Direct Dial
603-548-7700 Cell
Joe.Doherty@optimation.us
www.optimation.us

1

From: Richard Dooley [mailto:rfdooley01@aol.com]
Sent: Sunday, October 04, 2009 9:03 PM
To: Peter Stamnas
Subject: I-93 Project

Clearly the widening of this corridor of I-93 is long overdue, primarily due to the actions of such groups as the Conservation Law Foundation. The goal of these groups is to stall the project and drive up the cost and thus far they are succeeding. We need to have a legal mechanism to hold these groups accountable for the money that they are costing the taxpayers. 1

Sincerely,
Richard Dooley
Windham, NH

From: dseis.tidrisco@geoshell.com [mailto:dseis.tidrisco@geoshell.com]
Sent: Friday, September 25, 2009 8:56 AM
To: Peter Stamnas
Subject: Comments on DSEIS I93 Improvement

To: Mr Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration

Mr. Peter Stamnas
Project Manager
New Hampshire Department of Transportation

Re: Comments on Draft Supplemental Environmental Impact Study
I93 Improvement

I am a daily commuter on I93 from Manchester, NH to Andover, Ma and have been using this highway since 1990.

I am in favor of widening the highway as a means to lessen congestion and traffic jams, thus reducing gasoline consumption and air pollution. I have noticed that with only two lanes available for travel, a single slow-moving vehicle in the left-hand passing lane can slow down traffic for miles. The addition of one or two more lanes (and laws allowing passing on the right) alleviates this situation. Also, additional lanes would improve safety by providing more room for emergency vehicles. **1**

To me, the biggest environmental impact with any highway is visual and audible. I understand that there will be noise barriers of some type constructed along portions of the highway as part of the widening project. My concern is what will be done to maintain these noise barriers so that they do not become a magnet for graffiti. I did not see this mentioned in the DSEIS and perhaps such a concern falls outside of the purpose of an environmental impact study. Although graffiti will not impact water, air or wildlife, it can affect people and in particular, can have a negative impact on visitors perception of New Hampshire's environment. **2**

Regards,

Tim Driscoll
Auburn, NH

From: Laura El-Azem [mailto:lelazem@hotmail.com]
Sent: Friday, October 09, 2009 3:19 PM
To: Peter Stamnas
Subject: W I D E N 93!

Dear Mr. Stamnas,

I am fully, enthusiastically in support of WIDENING ROUTE 93. It is a hassle and a hazard in its current condition.

Although I am not a commuter, I must consciously schedule my entire life around the traffic patterns on 93. This includes planning for anything that may bring friends or family to me in Londonderry, lest they get stuck. God forbid I need to head south on a summer Sunday afternoon, or north on ANY Friday of the year! Certainly, one could argue that there will be an environmental impact, but we ALREADY suffer the deleterious effects of thousands of traffic-idled cars every day, and this problem would be alleviated. 1

Even more important are the safety hazards posed to commuters on such a vastly undersized road. Plan for the future by building four lanes, and the sooner the better!

Regards,

Laura El-Azem
Summer Drive
Londonderry, NH

Paul and Jean Eno
28 Bay Shore Drive
Greenland, NH 03840
Phone: 603.431.7009
E-mail: jmeno@comcast.net

January 24, 2010

NHDOT – Bureau of Highway Design
7 Hazen Drive
Concord, NH 03302

Attention Mr. Peter Stamnas, Project Manager

Subject: I-93 Expansion Project

Dear Mr. Stamnas,

I have followed much of the outreach on the I-93 widening project since early 2007. While I recognize you are in need of addressing corridor congestion, it is my belief that, in proposing a 4-lane widening project, NHDOT has failed to identify and assess several issues that I, as a citizen taxpayer in this state, consider incredibly important.

For example, based on recent information I have read, your data show that a 4-lane widening of I-93 will lead to an additional 3.7 percent increase in vehicle miles traveled by the year 2030 – amounting to an additional 2.8 million miles of vehicle travel per day. Yet it seems apparent that NHDOT has neglected to assess the cumulative greenhouse gas and climate change impacts that such a project clearly will contribute to. We are already confronted by impacts of coal-fired power plants from our neighbors to the west. What is NHDOT's plan for alleviating the pollution and its cumulative effects from this additional 2.8 million miles? Do you recognize that your project completely contradicts Governor Lynch's 'Climate Change Action Plan', and calls into question whether New Hampshire will be able to achieve its goals of reducing carbon pollution? Certainly, with 4-lane "highwaycentric" byways being constructed, our state will never meet 20% by 2020, let alone 80% by 2050. How most unfortunate that our state (the 6th oldest state in the U.S. in terms of demographics, incidentally) can't lead the way as the U.S. strives for improving its carbon gluttony. Is the world watching? I hope so. 1

In an age when we all need to be curtailing our carbon consumption, and not just for the environment but for our health, I find it reprehensible that our state's Department of Transportation has embraced such a flagrant increase in energy demand, especially when the technology and insight is available for developing cleaner, more intelligent transit methods that are safer for our communities and our upcoming generations. To undermine these clean transit strategies that pollute less, offer greater transportation choice, and build stronger communities is quite frankly disturbing. Instead, your project will encourage sprawl, sprawl that will result in increased pollution and loss of open space for thousands of New Hampshire citizens, and loss of critical, viable wildlife habitat (peatlands, shrub wetlands and wet meadows, among other types) that New Hampshire is so renowned for. 2

Speaking of our natural world, I read through all of the comments from readers of the Union Leader articles, and it is VERY clear to me that now more than ever our citizens must be educated on the need for protecting our environment. We are a part of our environment, not apart from it. Mitigated wetlands are not biologically effective, let alone an offset to such a project as yours. Nor is paving through and impacting four watersheds with even more chemicals and salts (TMDLs or no TMDLs) an answer. In my eyes, these "band-aids" violate the very notion of responsible stewardship of our natural world and the life it supports. For this view, I am deemed a "radical" and a "communist" by 3

advocates of your project. I guess it's not enough for them that we radicals have 4-year degrees in Environmental/Conservation Studies from renowned land grant universities. 3

If protecting our health, our communities, and our wildlife is out of the question, then please, as a bare minimum, consider a 3-lane highway over the 4-lane option. From what I understand, your data show less future traffic demand on I-93 than originally anticipated. So what about that? 4

Sincerely,

Jean Eno

P.S. You might want to change the name for your 'Intelligent Transportation Systems' page. I clicked on that link from your home page thinking it was actually going to take me to a page detailing the state's interest in fuel-efficient public transit (an "intelligent" system), not a page detailing computer generated warning mechanisms! 5

From: SE [mailto:se434@comcast.net]
Sent: Friday, October 09, 2009 3:03 PM
To: Peter Stamnas
Subject: Highway expansion

Hello,

I live in Londonderry, NH and it only makes sense to expand the highway to 4 lanes. It's horrendous how the traffic is now and 3 lanes will do nothing to help. It's only common sense to build a 4 lane highway now, instead of having to do it later. With the time and money to have to redo this will be way too much. 1

Sharon Enright

From: Joe Friedman [mailto:jfriedman@brooksproperties.com]
Sent: Tuesday, October 06, 2009 8:53 AM
To: Peter Stamnas
Subject: I-93 Widening Project

Hello Peter,

This letter comes in support of the full widening (to 4 lanes) of I-93 from the Massachusetts Border to Manchester. As someone who has worked in these markets since 1991 I believe that the widening is very important to the continued good health of business in southern New Hampshire. It will also make it easier and more productive for those in other parts of the state to do business with each other. Maintaining and improving our infrastructure will allow us to continue to grow and provide high quality services and jobs for those throughout the region.

If you have ever seen the long lines of cars along I-93 heading south at the beginning of the day and north at the end of the day then you can understand how many people depend on these good roads to get to work and earn a living for their families. On weekends the traffic is particularly heavy northbound on Fridays and southbound on Sundays showing how many tourists want to be in NH. They don't want to sit in traffic. They want to get to their destination whether it be the Merrimack Valley, the Lakes Region or the White Mountains. 1

At Exit 2 on I-93 it is dangerous at various times of day and through the year as traffic backs all the way up the off ramp and on to the main highway. The curves around Exit 3 are also very dangerous as shown by the number of serious accidents that have occurred in that area. I believe that the widening will fix these problems.

In summary, for business, quality of life and safety issues my company and I fully support the State's current plan for the widening of I-93.

Best Regards and Good Luck with this project.

Joe Friedman
President
Brooks Properties

9 Red Roof Lane
Salem, NH 03079
603.894.1104 (t) 603.894.4788 (f) 603.957.1600 (c)
www.BrooksProperties.com

GALLAGHER, CALLAHAN & GARTRELL

PDF FORWARD TO GROUP
THANK ACKNOWLEDGE
RECEIPT
FOR COMMENTS

October 9, 2009

Mr. Peter Stamnas
Project Manager
NHDOT Bureau of Highway Design
7 Hazen Drive
Concord, NH 03302

Dear Mr. Stamnas;

At your recent 1-93 SEIS Hearing, the Department requested public comment that might help you finalize the document. 1

We fully support the Department's efforts to expedite the full widening of I-93.

Additionally, our properties adjacent to and abutting I-93 in the Exit 4A area involve hundreds of acres that are right now aggressively being designed. Upon submission, review and completion of local approvals, construction will begin immediately. Due to the magnitude of these projects, it is appropriate that the State be made aware of the intensity of development planning underway in the vicinity, the traffic impacts that will reflect at current Exit 4, and significant relief Exit 4A will provide to the current network, particularly in light of our land plans.

Therefore, we believe that the Department should consider a more aggressive construction schedule for Exit 4A in the I-93 SEIS, as very intensive development scenarios in the immediate vicinity of the proposed interchange are underway. This consideration by the Department will more accurately match our property development plans in the 4A interchange area. 2

We would be happy to meet with the Department to discuss some of the parameters of how such an accelerated scenario might affect the findings of the I-93 SEIS as well as the Exit 4A FEIS.

Very truly yours,

Donald E. Gartrell

Donald E. Gartrell
Counsel to Abutting Landowners

I-93 Improvements Draft Supplemental Environmental Impact Statement and Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009.**

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

I am a resident of Salem NH and live on North Policy Street. North Policy Street becomes a "cut through" whenever the traffic is backed up on I-93. People get off Exit 2 and use N.Policy to get to Rt. 111. I know when there is an accident on I-93 when the traffic backs up in front of my house. This has a trickle effect on many of our other secondary roads as well increasing the chance of additional collisions in the Town of Salem.

I am the Deputy Chief of Police for the Town of Salem and have seen first-hand the problems emergency responders deal with on I-93 in Salem. Constraining the project to only widen the highway to three lanes in each direction rather than four will have a negative impact on rescue operations. 1

I ask you to reject the proposal to limit the widening of the highway to three lanes and continue with widening I-93 to four lanes as soon as possible.

Name: William J. Ganley III

Affiliation: Resident and Deputy Chief, Salem Police

Address: 176 North Policy Street, Salem NH 03079

From: Ed Gawrys jr [mailto:edgawrysjr@yahoo.com]
Sent: Monday, October 05, 2009 1:25 PM
To: Peter Stamnas
Subject: Rte 93

Dear Mr Stamnas,

I am 52 years old and a lifelong citizen of the state of NH. I have also driven commercially in the state for 35 years. I remember the money being available for the widening of Rte 93 in the early nineties with the finish date being on or around 1994. The money was used by the Governor at that time for something else as I recall. Everyone's intention at the time was to go back to the widening in the very near future. We all know what happened next in regards to this project. Nothing. Or next to nothing as the years passed by . This Conservative Law Foundation is doing everything in their power to stall this necessary project at the cost of putting tens of thopusands of people's lives in danger each day. There are so many blind spots on that current stretch of highway on both the northbound and southbound sides between Salem and Manchester that I have lost count.There are also way more commercial vehicles and this road than it was designed for. I have made thousands of trips on both sides of this highway over the years both in my personal vehicles and in commercial vehicles owned by my employers.I have had many close calls that include driving along at the speed limit and all of a sudden, around the next corner traffic is stopped 100 feet away and everyone has to slam on the brakes. A few years ago on a Saturday morning I was in the middle of a 30 or so car pileup on a snowcovered Rte 93 just beyond Exit 5 on the southbound side. I came around a corner and saw dozens of vehicles bouncing off each other at high speed as if they were in a pinball game. I was pulling a set of doubles that were empty. With the hand of God reaching down, I was able to use a stab braking technique that enabled me to stop without hitting a single vehicle,even though they were crashing all around me.My rig was the only vehicle out of dozens that was not damaged. Again, a flat out miracle is what it was. When I stopped I was immediately approached by five men in business suits with outstretched hands all thanking me for not killing them with my rig, which was more than eighty feet in combined length.They said it was a miracle. They asked how I did it. I said with God's help and many years experience.They were all very visibly shaken and told me they were 100 % sure that my rig would smash into them..Although nobody was seriously injured, it took several hours for the State Police and tow truck drivers to untangle the twisted wreckage. Their were cars that hit each other so hard that they drove underneath the car in front of them.Over the next few years I read of more and more such accidents on this very unsafe stretch of highway. I find it amazing that other human beings can resort to stalling practices such as what is being thrown at the proposed widening plan as we speak. People are being seriously injured and killed because the road is way over capacity. For the life of me I cannot understand how other human beings can sleep at night while creating legal roadblocks against the plan to make the interstate highway much safer for the tens of thousands of people of all ages that use this highway each day.People are dying and being seriously injured all because of a few legal T's that weren't crossed and I's that weren't dotted, that could by all intents and purposes be settled very easily AFTER the road is made safer. I also can't help but believe that part of these stalling tactics are the brainchild of some very intelligent people with law degrees that have some very large ego's and must have it their way at any cost. All at the expense of the human beings that literally take the lives of themselves and their families in their hands each time they enter Rte 93 between Exits one and six. Sincerely,

Edward A. Gawrys jr Manchester N.H.

1

From: Gesualdo, Ken [mailto:Ken.Gesualdo@bsci.com]
Sent: Friday, October 09, 2009 4:15 PM
To: Peter Stamnas
Subject: Expansion of 93

Please widen Rt 93. It is a very dangerous high especially during the rush hour commute. There is no room for error when drivers encounter a dangerous situation. Examples of these are: Deer running across the 2 lane highway and drivers trying to avoid it forcing them off the road or into another car, snow plows trying to do there job and cant because cars are stuck on the 2 lane high and they cant get around it. People trying to avoid accidents and and can't become victims of a 2 lane highway. Police, Fire and Emergency works trying to save a life can't because they can't get there in time all because of a 2 lane highway. Guest of New Hampshire trying to enjoy what this great state has to offer end up frustrated do to there long commute as indicated in the examples above all because of a 2 lane highway. If the Conservation Law Foundation was concerned about the environment they would look at all the idling cars during times when 93 is a parking lot and do a study on how much air pollution is generated impacting are local environment. 1

Regards,
Ken Gesualdo
48 Buckingham Dr.
Londonderry NH

Reevaluation/ Section 4(f) Evaluation

Comment Form

This form may be submitted at the public hearing or sent to the Federal Highway Administration or the New Hampshire Department of Transportation at the addresses provided below. The deadline for submitting comments is **October 2, 2009.**

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire 03301
jamie.sikora@fhwa.dot.gov

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, PO Box 483
Concord, New Hampshire 03302
PStamnas@dot.state.nh.us

Please did not make another planning mistake, Route 93 from Salem NH needs to be widened to (4) four Lanes. It is important to the NH economy, employment and fuel savings. Doing anything less will cause us to visit this problem again and force the additional expenditure of Sacred tax payer funds. Stop the madness!!! 1

Name (please print) Stephen A. Gorski

Affiliation (NH Citizen) 16 Cirtle Ln, Plaistow, NH 03865

Stephen A. Gorski 9/28/09

Greater Salem Chamber of Commerce
Atkinson • Hampstead • Pelham • Salem • Windham

October 7, 2009

Mr. Peter Stamnas, P.E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive, P.O. Box 483
Concord, NH 03302

RE: Support of Four Lane Expansion of Interstate 93

Dear Mr. Stamnas,

On behalf of the Greater Salem Chamber of Commerce, I am writing to express support for Interstate 93 to be widened to four lanes between the Massachusetts border and Manchester, NH.

The Greater Salem Chamber of Commerce represents hundreds of businesses along the I-93 corridor. Economic development is vital to our members. The aging transportation infrastructure chokes economic development. Substantial upgrades and widening of I-93 to four lanes must be constructed to improve public safety and to continue economic growth between Salem and Manchester. The increased tax revenue generated by this growth will surely be a welcome asset to our state. 1

The Greater Salem Chamber of Commerce understands that responsible growth is critical to maintain the character of the Granite State. Salem is a gateway community to New Hampshire and always has been a major proponent of leveraging the New Hampshire advantage. The Board of Directors of our Chamber strongly supports the Department of Transportation to continue their work to help the businesses and citizens of NH by widening the I-93 corridor to four lanes.

Sincerely,

Keith Belair
Chairman

Donna Morris
Executive Director

From: Jim Greene [mailto:jim@jmrsys.com]
Sent: Monday, September 28, 2009 10:03 AM
To: Peter Stamnas
Subject: Widening I-93

Mr. Stamnas,

I am writing to state my support for widening the lower section of I-92. As a Derry resident and business owner I have seen too many unsafe conditions on the interstate. Two lanes each way causes many to drive unsafely in an effort to push ahead. I believe doubling the lanes would relieve the congestion and improve the safety of all residents and travelers using the highway. 1

Regards,

Jim Greene
42 East Derry Road
Derry, NH 03038
603-421-1932
www.jmrsys.com

From: leeweld@comcast.net [mailto:leeweld@comcast.net]
Sent: Thursday, September 24, 2009 11:07 AM
To: Peter Stamnas
Cc: jamie sikora
Subject: I-93 widening project/NH

Dear Sirs;

I am writing in response to a recent news article in the Union Leader. Many of the citizens who use the 93 corridor everyday were never aware of the meeting to express our opinion. I would love to give my input now.

I've been using this road everyday for as long as I can remember. I've also been involved in many situations ,including fatal accidents, that were a direct result of lane reductions as well as people merging from ramps. The need for widening has been necessary for many years and is way overdue for the safety of all our citizens, as well as the many tourists that travel to and through our beautiful state. We need this NOW, and without a TOLL BOOTH ! The thousands of Hampshire's who travel for work everyday and pay Ma. income tax (which Ma. calls a road tax) pay way too much in property tax. 1

In closing I hope that you will not let the the few dictate the outcome for the many.

Yours,
Leon

Guay

From: S Gudek [SGudek@techneeds.com]
Sent: Friday, September 25, 2009 11:34 AM
To: Peter Stamnas
Cc: jamie.sikora@fhwa.dot.gov

Dear Gentleman

I wanted to affirm my continued support for the widening of the route 93 corridor from Salem to Manchester. I am in disbelief that the safety of the many are overlooked for the whims of those who choose to obstruct. Please please hasten my ability to move safely north & south on this highway. 1

Stephen Gudek
20 Martin Ave.
Salem NH 03079

From: Andrew Guirguis [mailto:chequesome@gmail.com]
Sent: Friday, October 09, 2009 4:58 PM
To: Peter Stamnas
Cc: Jamie.sikora@fhwa.dot.gov
Subject: I-93 Widening, Salem to Manchester

I am writing to you concerning the expansion of I-93 from two lanes in each direction to four lanes in each direction between the Massachusetts stateline and Manchester. I feel that the addition of two lanes in each direction may be excessive, and that the effect on the highway's widening on population (induced demand) is underestimated.

Widening I-93 to three lanes in each direction would certainly be sufficient for current traffic needs. The peak hourly volume on I-93 NB is about 5,000 cars an hour. However, the projected peak hourly volumes in 2020 at Exit 1 is about 7,5000 vehicles an hour, which means that if only three lanes are added at this point, traffic would be similar to what it is now in this area. Four lanes would be sufficient. However, at Exit 4, the 2020 peak hourly projection is only about 4,000 vehicles per hour, so three lanes would still provide an acceptable LOS. This is why I was surprised the number of lanes was not reduced north of Exit 3, as suggested in alternative 5. Is it because volume is higher between Exit 5 and Manchester city line? 1

By adding lanes beyond what is strictly neccesary, towns in the I-93 corridor that would otherwise not become desireable for commuters, suddenly become attractive, increasing development and creating new demand on the highway that would otherwise not exist. I feel that making I-93 four lanes in either direction in southern New Hampshire would ruin the charm of the area as well as spur an influx of development that would have a deletorious effect on the area. 2

Thank you for your time,
Andrew Guirguis

From: RebuildingI93.com [mailto:postmaster@rebuildingi93.com]
Sent: Friday, September 25, 2009 12:49 PM
To: contact@rebuildingi93.com
Subject: i93: Submission to RebuildingI93.com Contact Form

The "Contact Us" form on the RebuildingI93.com website was submitted with the following information:

NAME: Matthew Habinowski
E-MAIL ADDRESS: Habinowski@hotmail.com

QUESTION/COMMENT:
We have waited a long time for Rt 93 to be built and I want to see the original 4 lanes and not a cutback to three as suggested by the out of state environmentalist. 1

Thanks

Matt Habinowski
Salem,NH

From: Chalmers Hardenbergh [mailto:editor@atlanticnortheast.com]
Sent: Friday, September 25, 2009 5:06 PM
To: Peter Stamnas
Subject: Build it and they will surely come: opposed to I-93 widening

Dear Mr. Sikora and Mr. Stamnas:

I write as a summer resident (Intervale, New Hampshire) opposed to the widening of I-93. I agree with the people Carolyn Rabidoux interviewed for her article in the Union Leader of today, 25 September. No question the road is now too crowded.

Unfortunately, as experience shows, the widening will only lead to more people driving on I-93. We will have a few years of better traffic flows, then congestion will again set in. 1

Example: the Long Island Expressway. I lived on Long Island before and after it was built. For awhile, it helped. Now, it's a parking lot, just like I-93, in peak times.

Therefore please enter my comment as opposed to the widening.

Chalmers Hardenbergh
162 Main Street
Yarmouth, Maine 04096

From: Travis Heinstrom [mailto:theinstrom@hollisinteractive.com]
Sent: Friday, October 09, 2009 3:35 PM
To: Peter Stamnas
Subject: Widen 93. Now.

93 Needs to be widened, end of story.

Please do everything in your power to allow this to happen. 1

Thank You.

--

Travis Heinstrom
Lead Developer
Hollis Interactive, Inc.

360 Amherst Street
Nashua, NH 03063
P: 603.598.2929
F: 866.613.8272

http://www.hollisinteractive.com/

From: Deb Hewitt [mailto:DHewitt@WinchesterSavings.com]
Sent: Friday, October 09, 2009 2:06 PM
To: Peter Stamnas
Subject: Highway widening

With about an hour commute each way in the BEST of conditions, and double that for something as silly as a traffic stop, and TRIPLE that at times when there is an accident (we won't even go in to the snowy drives back and forth), the stretch of highway between exit 5 and the Massachusetts state line absolutely needs to be widened. The drive times back and forth to work seriously cut in to family time and the nice way of life people came to Londonderry for. 1

Sincerely,
Deb Hewitt
11 Grove St.
Londonderry, NH 03053

Assistant Treasurer
Winchester Savings Bank
661 Main St
Winchester, Ma 01890

From: Howie Howe [mailto:howiehowe@myfairpoint.net]
Sent: Friday, September 25, 2009 1:32 PM
To: Peter Stamnas; William Boynton
Subject: I-93 Widening

Next time let Bill boynton put otu the word to all of those who contact him on issues - We need I-93 widened 1

From: Diana Jacobs [mailto:jacobs@harriscenter.org]
Sent: Wednesday, October 07, 2009 8:56 AM
To: Peter Stamnas
Subject: I-93 Widening

Dear Peter,

Thank you for accepting public input on this important project.

New Hampshire has often been, and can continue to be on the forefront of progressive and aware responsibility in choices of construction projects and their style and scope. For instance, on an aesthetic basis, I was most impressed this summer to see that a replacement bridge on a quiet, tree-lined section of road was finished with guard rails in a style reflecting the site, rather than a concrete or galvanized intrusion.

The progressive choice in the case of I-93 widening, in this time of economic strain and rising atmospheric carbon content, would be to create a 6-lane rather than an 8-lane widened corridor, and finding a way to incorporate (and encourage the use of) excellent bike paths – which I hear repeated call for – from business and industry alike. Let's make New Hampshire the responsibly responsive leader when it comes to highway construction! 1

Again, my thanks for your consideration,

Diana Jacobs

83 King's Highway

Hancock, NH 03449

From: Jerryjohnson53@myfairpoint.net
To: Jamie.Sikora@dot.gov
Subject: I 93 widening
Date: Friday, October 09, 2009 4:21:03 PM

As a dispatcher here in Londonderry NH the interstate needs to be widened as soon as possible. 1

From: Johnson Chip W. [mailto:CWJohnson@wyeth.com]
Sent: Friday, September 25, 2009 11:09 AM
To: Peter Stamnas
Subject: I-93 comments

Good morning. After reading the article in the Union Leader
http://www.unionleader.com/article.aspx?headline=Anyone+want+a+wider+I-93%3f+Hello%3f+Anyone%3f&articleId=754eb526-3bc1-456d-a9d7-caefab28609f
I thought it would be a good idea to submit a few comments regarding the widening of I-93.

First of all, I think the public needs to be better informed. I did know of the meeting, however I had no intention of attending. I think that part of the problem is that meetings are just difficult for people to attend. Parents have kids in school and sports, others have standing committments. I have both, as I coach a youth football team, and am Vice President of my local snowmobile club. Not to mention the fact that I live 30 mins from where the meeting was held. Getting this article in the paper I am sure will help you receive feedback. As someone stated in the comments section of the article, it seems that the vocal minority always seems to get their way. I would think that is because the minority (in this case, the opposers) take the time to speak their minds. Those of us that are for the widening just sit back and assume things will go our way. Part of that assumption I think comes from people who think that since there is work currently being done means that the widening is already in progress.

I drive I-93 from Exit 11 in Hooksett into Massachusetts and back five days a week. I have witnessed countless accidents happen, most of them were minor. I have been in traffic from major accidents more times than I can count. And I have even been involved in one minor accident myself. Every day (and I mean every day!) I see at least one near-miss. I can remember back in the early 90's the accident that happened between Exits 4 and 5, where the trash truck rear-ended the car full of people, and if I remember correctly, 4 people were killed. That should be reason enough right there. That accident was not even during commuting hours.

I agree that people drive too fast, and are distracted by cell phones or other things. However, the road has been a problem since before cell phones were very popular. Vehicle count is nearly twice as much as the road was designed for. The road is simply not designed for the amount of traffic that it sees, and it is simply not safe. Putting the project off while looking into mass-transit options (such as a rail line) is simply not realistic. 1

In summary, I have been in support of widening I-93 for as long as I have been driving it, and will be in support of it until it is completed.

Chip Johnson
Bow, NH

Testimony regarding the widening of I-93

9/22/09

- **I am here to speak for a widening of I-93 to three lanes each direction. It is my belief that this will accomplish the necessary goals of the widening the existing road by 50% while providing a minimizing of the negative impacts that a four lane highway would bring.**
- ***Three lanes would:***
  - **Lower the cost to the taxpayers, cut the funds required (Approximately $150,000,000) by the State of New Hampshire and enable other badly needed projects in the underfunded Highway Plan that have been deemed important for safety and traffic flow concerns to be funded.** 1
  - **Possibly eliminate the need for a toll booth to be built to help generate the excessive funds needed for the four-lane build.** 2
  - **Cut the salt and chemical usage to keep the road "Clean and Dry" by 1/3, enabling towns and road agents along the highway to re-gain the ability to clean and winterize their town roads. Given a fixed amount of chemicals that can be applied to the roads in the water districts along the highway, any additions to the I-93 quotas by definition reduces that which is available for the nearby towns.** 3
  - ***Provide incentives for a more thoughtful and efficient strategy to move people* through the corridor that might emphasize HOV preferences, railroad and bus alternatives, plans to even out traffic flow at the busiest times, provide RR alternatives for freight, and for the use of other "best practices" used successfully across America.** 4
  - **Aid New Hampshire to achieve its publically stated goal in the Governor's Climate Change Action Plan of reducing the harmful carbon emissions from traffic by 20% by 2020 and by 80% by 2050. Those important goals will never be reached if the DOT and other State and Federal agencies continue to *provide encouragement and incentives to single passenger petroleum based* travel.** 5
  - **Help us resolve and correct the violations that currently exist regarding the Clean Water Act due to excessive chloride use polluting the streams and aquifers along the highway.** 6
  - **Minimize the extensive and costly impacts on many towns near and not-so-near the I-93 corridor. This highway will drive new growth in the Southern NH tier, increasing the population, eliminating valuable open spaces, forcing the** 7

need for locally funded new schools and emergency services and driving locally funded property taxes unnecessarily higher. Safety on secondary roads will also be made worse as cars speed from areas with cheaper land to highways like 101 that feed the new highway. 7

- An example- Amherst has already exceeded it's projected population growth of 2020, has far more traffic on its feeder roads and more accidents as well than just a few years ago. We are using 8-10 modular temporary structures at our schools and will eventually need another expensive building and more teachers. Our population in 2000 was 10,769, was projected to go to 12000 by 2010 and to 13,000 by 2020. Today it stands at 13,945. Meanwhile my property taxes are up over 30%. I am confident that the nearby towns of Milford, Wilton, Lyndeborough, Brookline and Hollis are or will soon experience the same impacts. 8

- In conclusion, I believe that a compromise build of a six lane road, adding 50% more traffic flow and enabling a series of limitations to the above stated negative impacts would work to everyone's advantage in both the short and long run. 9

Respectfully submitted,

Richard Katzenberg

97 Boston Post Road

Amherst, NH 03031

(603) 673-0553

From: Jay Koelb [mailto:jkoelb@gmail.com]
Sent: Friday, September 25, 2009 7:46 PM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: widening I-93

Jamison and Peter

I live in southern NH and frequently use I-93 south of Manchester. I-93 is one of the major economic boons to southern NH and it would be a shame to miss the opportunity to widen it to help with the congestion. Mass transit is a terrific option but unless massive funding appears from somewhere it is not likely in the short term. Bus use is growing along the corridor and is a great option for many, and additional lanes will increase that option. Perhaps we could add a fourth lane for bus or HOV to appease those screaming for light rail or other options. For most of us that live in a rural area the door-to-door convenience of car use will be very hard to leave. 1

Thanks

Jay Koelb

From: Bill Koury [mailto:bkoury@comcast.net]
Sent: Friday, October 09, 2009 1:42 PM
To: Peter Stamnas
Subject: Rt 93 widening

Dear Mr. Stamnos,

I've commuted up and down Route 93 since 1977. I have seen first hand how bad and dangerous driving has become over those 32 years, and especially in the past 10 years.

Route 93 must be widened to four lanes both ways to relieve the congestion which promotes lane changing and accidents. Regardless of how many years it will be before it reaches capacity, it's very dangerous now, and leaving it be is a much worse alternative. 1

Sincerely,
Bill Koury
4 Plummer Drive
Londonderry, NH

From: Sandra Lane [mailto:neaq2002@yahoo.com]
Sent: Friday, October 09, 2009 2:04 PM
To: Peter Stamnas
Subject: Widening of Rte. 93

Dear Mr. Stamnas:

I have commuted from Londonderry, NH to Boston and back for the last fourteen years on route 93. There is no question in my mind or my van mates on the commuter van that I ride in that 93 needs to be widened ASAP. Coming from the 4 lanes of traffic south of our border down to 2 lanes in Salem is a total bottle neck and has people weaving in and out trying to jockey for position at the lane drop. The state police are certainly aware of it since they regularly have a trooper sitting there to handle the more aggressive drivers. Holiday and snowy weekends are the worst, but every year the traffic increases and worsens an already bad situation. I cannot believe that there is any question about widening the road. All you have to do is drive on it to see the necessity. 1

Thanks for letting me express my opinion.

Sincerely,

Sandra Lane
12 Windsor Blvd
Londonderry, NH 03053

From: Pete Langlois [mailto:pete.langlois@gmail.com]
Sent: Monday, September 28, 2009 2:47 PM
To: Peter Stamnas; jamie.sikora@fhwa.dot.gov
Subject: Widen I-93 already

As a Derry resident and tax payer in two states, Massachusetts and New Hampshire, who drives to Boston M-F to work it's about time we get more than 2 lanes to get in and out of MA. Fridays are the worst almost year round. You have leaf peepers in the fall, snow sports enthusiasts in the winter and spring, and spring through fall you have people visiting the lakes region all traveling on 2 lanes from Salem to Manchester. One accident immediately causes a 4-7 mile backup in either direction. 1

Marc Peter Langlois
32R Derryfield Road
Derry, NH 03038

--
http://www.petelanglois.net

From: Ben Lefebvre [mailto:Ben@tasctech.com]
Sent: Friday, September 25, 2009 9:48 AM
To: Peter Stamnas
Subject: I-93 Widening

Hello,

I am writing in regards to the project proposal for widening Interstate 93.

I travel this stretch of highway everyday during my commute to and from work. Even though most days I can get to the Mass border and back with no major problems, the highway is just too congested. There is rarely a break in car volume in either lane, and in the winter time this makes for many accidents and even more delays. Speaking strictly for the safety of my fellow commuters, I think the highway should be widened to at least 3 lanes with the possibility of a 4th to be added in the future when the need arises. Why wait until the highway becomes a 20 mile stretch of parking lot and NH's secondary roads are being overused. This needs to be done now. Also, the addition of a commuter rail from Manchester linking to the Mass commuter rail system is a priority. 1

Thank you for your time.

Ben Lefebvre
Manchester, NH Resident

From: LeSuer, Gary [mailto:GLeSuer@LMH.edu]
Sent: Friday, September 25, 2009 9:24 AM
To: Peter Stamnas
Subject: FW: Widening I-93

-----Original Message-----
From: LeSuer, Gary
Sent: Friday, September 25, 2009 9:20 AM
To: 'pstamnas@dot.state.nh.us'
Subject: Widening I-93

I have been traveling to Medford, MA everyday for twenty-five years on I-93. I have gone off the highway five times and the traffic is unbearable. The widening project should have

happened years ago. People's lives are put at risk everyday and to delay any further because of the "tree huggers" is unbelievable. Every night going home from work is a nightmare

at Exit (1) in Salem. On Friday nights I always takes 25 minutes to merger into two lanes. No one seems to care how many people are killed or injured on I-93 as long as we protect

the trees. 1

Lets be reasonable Mass Transit is never going to happen as the railroad tracks from Manchester to Lawrence are gone. That was another short-sigheted idea on someone's part.

Since the majority of the population in southern New Hampshite works in Massachusetts as I do this a BIG priority for us commuters. Earlier in the year when Gov Lynch

was in Derry he said there was nothing he could do/ It seems to me if he was on the people commuting everyday it certainly would move along much faster.

Widen 93 NOW before more lives are lost!!!!!!!!!

Thanks,

Gary Le Suer
41L Tigertail Circle
Derry, NH 03038
603-425-7626

From: David-Karen [mailto:david-karenlewis@comcast.net]
Sent: Monday, September 28, 2009 8:09 PM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: Rt. I-93 Widening, in favor

Jamie and Peter,

After reading an article in the New Hampshire Union Leader, I felt compelled to write to both of you. It seems that there is a misconception out there that people in favor of widening I-93 are not willing to attend the public meetings concerning them. I was not able to attend the last two meetings because I had to work, and was unable to secure the time off. So, in place of those meetings I would like to share some of my thoughts on why I think it is a good thing.

First, I live in Salem, NH, right off of the intersection of Rt. 28 and Rt. 97 (Exit 2 is the closest exit). I use to work in Cambridge, MA and now work in Manchester, NH so I have experience using I-93 in both directions.
I am not coming from New York, or Southern MA where some lawyers or people who do not use this road are making themselves heard on this subject.

I am in favor of widening I-93.

First, traffic is a major issue. From my 5 years experience driving back from Boston, the section from Rt. 495 to the border is where I found the traffic to be the most frustrating. Was it the worse traffic, no, the I-95/I-93 merge in Stoneham/Woburn is worse. But I would occasionally leave I-93 and take back roads from Pelham Street in Methuen into Salem. In fact, I use to do that a lot. The back roads would add 10 minutes or more to my commute, but was much faster than I-93N.

Next, I-93S from Manchester to the border is almost always jammed in the mornings. I see that as I drive north. I also noticed on a few occasions that I've had to go south, that once you hit the border the traffic tends to ease out. We go from 2 lanes to 3 lanes at that point.

From I-93N from Lawrence, MA to Manchester in the evening is, well, a joke. The traffic move at 10-20 mph and if there is an accident or someone pulled over into the breakdown lane, that traffic could be twice as long and time consuming.

Rt. 28 (which I experience every day) is also affected by the I-93N/S traffic. The more traffic on the highway the more people get off and use the back roads.

I can't say that a wider I-93 will slow traffic down (for those who complain about speeding) but I do not believe that is a major issue here. There is speeding on the back roads of Salem, Windham, Derry, well, in every city. And the speeders are not just assigned to cars or motorcycles. Snow Mobiles, Off-Road Vehicles, and ATV's are more apt to speed recklessly than a highway driver.

1

2

Will widening the highway make for the possibility more traffic will come? Well, yes, but that was inevitable. I was once a resident of Somerville, MA and moved north, just like my brother, sister, and mother (as well as 3 cousins). With New Hampshire being a Tax Free state with lower home prices more people will come up here. 3

As Boston and Manchester NH grows, so will the towns between the two. It is our responsibility to make sure that those areas are well prepared for that growth in 10 or 20 years.

I have also heard rumblings that maybe we should go three lanes instead of four! Well, The developers of MA Rte. 128 once thought 2 lanes was enough, then three, and finally they went to 4 lanes. Same thing for Rt. 3 from Nashua to Burlington. Two lanes to three lanes, and I will place a $100 bet right now that in 10-15 years they will want 4 lanes. Anything short of four lanes is wrong and a waste of time and money. I'm not sure the actual cost difference of the two, but to have three lanes and then have to add another one 15 years from now would cost more. 4

Now, what is the worst thing that I hate about this project, the I-93 widening project. They did not put in the Rail Option which would have done wonders for travelers in the future. I am sad about that. I want that added back in but know it won't happen. I want the old railway from Lawrence to Manchester re-opened. Buy the land back, put down new rail beds, and start the flow of trains back to Boston. 5

If that rail existed when I was commuting to Cambridge, I WOULD HAVE TAKEN THE TRAIN EVERY DAY! I live in the Depot area of Salem and would have had a stop no more than a 5 minute walk from my house.

Thank you for paying attention to this lengthy email. I apologize if I rambled too much. I am tired of seeing this project slowed down to a crawl when we could have had free flowing project that would bring jobs into Southern NH for years to come.

Regards,

David B. Lewis
13 Millville St.
Salem, NH 03079
603-458-5765
dave@david-karen.com

From: plomanno@gmail.com
Sent: Thursday, September 24, 2009 7:14 AM
To: Jamie.Sikora@dot.gov
Subject: I-93

I moved to NH in 1977, and moved to Londonderry in 1978.(Exit 4)
I live and work in NH, and travel 93 almost everyday.
This project has been delayed long enough, traffic seems to be
increasing daily, 2 lanes are not adequate for the amount of cars &
trucks on this interstate.
It seems like the discussions on widening 93 have been ongoing since the 80's

1

Thanks
Paul Lomanno
Londonderry, NH

From: Wayne MacLeay [mailto:wayne.macleay@degreec.com]
Sent: Friday, September 25, 2009 9:03 AM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: I-93 Widening project

I read the article in the Union Leader this morning and was surprised to find that this project is still up in the air given all the construction that is going on at Exit 5 and Exit 3. My wife and I have lived in Londonderry for 18+ years and believe we have heard about this project since we moved in. 1

Both of us travel the highway daily and are in complete favor of the project continuing. We would prefer that the road be increased to 4 lanes in both directions but as I though I understood it only 3 lanes were being considered. 2

I believe that the state should move forward with this project and stop negotiating additional environmental easements to placate those that are against the project. I am in favor of a 1 to 1 replacement of wetlands that are impacted but no more than that. As I thought I understood it the state has already agreed to a much larger ratio of new wetlands. The state should rescind that decision immediately and return to a 1:1 ratio. I do not believe that a mass transport system (train or otherwise) will be widely used by the public to travel southbound as most commuters will still need additional methods of transportation between a train station and where they work. 3

Please feel free to contact us if you need additional input.

Wayne & Cindy MacLeay
164 South Road
Londonderry, NH 03053
603.437.6234

Wayne C. MacLeay
Director of Operations
DegreeC Inc.
(t) 603.672.8900 x 124
(f) 603.672.9565
wayne.macleay@degreec.com

From: Melissa Magnuson [mailto:melodvm@hotmail.com]
Sent: Friday, October 09, 2009 1:31 PM
To: Peter Stamnas
Subject: widening 93

I am in support of widening Rt 93. Please add my name to any list of citizens wanting this to happen. 1

Thank you

Dr. Melissa Magnuson
Londonderry New Hampshire

From: Andrew J. Manuse [mailto:amanuse@gmail.com]
Sent: Friday, September 25, 2009 3:14 PM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Cc: pat.dowling@prudential.com; bevferrante@msn.com; rmfesh@comcast.net; kensel@verizon.net; theredstars@yahoo.com; pkatsakiores@comcast.net; jfmbam@msn.coms; james.rausch@leg.state.nh.us; sapareto@ntr.net; robert.letourneau@leg.state.nh.us; councilors@ci.derry.nh.us
Subject: Comment on Expanding I-93

Dear Jamison Sikora of the Federal Highway Administration, Peter Stamnas of the New Hampshire DOT, Derry state Sen. Robert Letourneau, Derry state representative delegation, Derry Town Council:

I just finished reading, with interest, the Union Leader article, "Anyone want a wider I-93? Hello? Anyone?," accessible at <http://www.unionleader.com/article.aspx?articleId=754eb526-3bc1-456d-a9d7-caefab28609f&headline=Anyone+want+a+wider+I-93%3f+Hello%3f+Anyone%3f>.

The article was the first time I've heard about a hearing on Tuesday, Sept. 22, concerning the widening of I-93. Unfortunately, today is Friday, Sept. 25. Otherwise, I would have been there.

Every day I read the Union Leader and NewsFifty.com online and occasionally glance through the Nutfield News to find out what is going on in New Hampshire and Derry, but I did not see anything about this meeting until today. I think it is a shame that this level of activity -- a public hearing -- can go on without announcement in my own town even while I diligently read newspapers online that allegedly cover Derry. Perhaps you should consider new methods to notify people about events such as this. Perhaps the newspapers need to be reminded about their purpose and get with the times. People don't buy hard copies anymore. It's expensive, wasteful and not a pleasant reading experience. Online, I get all of the news I need, or so I thought. 1

Had I seen a notice about the hearing on Tuesday, I would have prepared statements in enthusiastic support of the project. Anyone with a car that drives the I-93 corridor knows unequivocally that it needs to be widened, even the environmentalists know this if they're honest with themselves. Drive home from a trip to the White Mountains or the Lakes District on the weekend; drive down to work in Massachusetts or home from Massachusetts during rush hour -- the trip is miserable, and it doesn't have to be. Heading South, I usually get off at I-93 and take Rte. 28 the remainder of the way home to Derry. Heading North, I have sometimes got off the highway in Metheun, Mass., to take 28 north and avoid lengthy traffic jams caused by the merging of an adequate number of lanes in Massachusetts or north of I-293 into an inadequate number of lanes in New Hampshire on I-93 between Salem and I-293. I have read of horrible accidents at Exit 5, the one I use to get home, and pray every day that my wife isn't involved in one of them. Thankfully, the exit and entrance ramps have been lengthened at Exit 5, and hopefully that will fix part of the problem. 2

Now, having seen the exit ramps being lengthened at Exit 5, I had assumed that the I-93 project was moving ahead. Is it not? The article I linked to above suggests that there may be further delays. THAT IS AN ABOMINATION! Look, when I read about the widening project the first time, I had a moment of sentimentality: "Oh, that's too bad, all those nice trees that give a New 3

Hampshire feel along the way are going to be cut down." It would be good if you tried to preserve as many of them as you can when you widen the highway, but you know, a few miles of trees being cut is not the end of the world. If someone I know or love gets hurt or killed in an accident on the highway because it's not wide enough, that may as well be the end of the world for me.

Ironically, many people may not have showed up at your hearing on Tuesday because they were stuck in traffic on their way home from work in Massachusetts. That so many New Hampshire residents have to look for work in Massachusetts is another topic of discussion and concern for me, but it is a fact at the moment, for my wife included. By delaying the widening of the highway, how many hours are you taking away of mothers and fathers with their children? How many arguments result from annoyed motorists who are exhausted when they get home and can't take another complaint? How many dinner times have been moved to 8 p.m. from the regular 6 p.m. because of this highway? How many don't eat dinner as a family because of it? What other social ills result?

As for the environmentalists, I have some political arguments against them, but I'll start with the logical ones. I know that the state is already taking the needed steps to make sure that salt runoff from the highway will not cause major issues with groundwater or any other issue. That's good enough for me. Any lost habitat from the expansion is just too bad. You know, I like trees, I like the wilderness, but humanity comes first. The highway expansion is simply necessary, so whatever loss of trees or animal habitat comes to pass is also simply necessary. 4

Now, to the political arena. I understand that the environmentalists want to force the state to also put in a corridor for commuter rail as part of this project. To me, that doesn't make any sense whatsoever. If the state wants to consider commuter rail as an option for people, that's fine. Let the Legislature take that issue up separately, because it is A COMPLETELY SEPARATE ISSUE.

It is my understanding that the Legislature already decided to expand the I-93 corridor. So any attempt to slow down that effort is a HUGE waste of my money (and other taxpayer dollars) as well as an unjust delay to the decision that We the People of New Hampshire made through our elected representatives. No affinity group, particularly the out-of-state Conservation Law Foundation, should have any say over matters that have already been decided by the Legislature. Such is a violation of the public trust and of the Constitutional Republic that exists at both the state and federal levels. Do not let these groups continue to thwart the Will of the People, who are busy stuck in traffic and working, and don't have time or money to spend on lawsuits against the state for taking too long to do this job and wasting our money on study after study after study. GET IT DONE!

If I had the time and money, I'd sue the Sierra Club and Conservation Law Foundation for collusion with the rail lobby and certain politicians who are working to use this expansion project to get their way with rail. If I was the state, I'd sue them to recover the lost dollars spent needlessly on studies and lawsuits. If I were the Legislature, and I do plan to run in Derry for state Rep. in 2010, I would vote for and support a law to limit the ability of groups like the Conservation Law Foundation from filing frivolous lawsuits against the state that have nothing

to do with the law or the project that has been already approved by the Legislature.

Yes, both the highway expansion and commuter rail ideas concern transportation to and from Massachusetts and New Hampshire, but I can assure you, my wife or I will NEVER, NEVER, EVER ride on a commuter rail. It's inconvenient, it's slow and it's costly (to taxpayers). Unless it totally pays for itself, I consider the idea an immoral seizure of private property for the good of a heavily exaggerated group of people. I don't care if gas is $15 a gallon (actually, I would rather it didn't get that high or any higher than it currently is), I don't care if gas doesn't exist anymore, my wife and I will always use a personal vehicle to go to and from work or to drive to recreational destinations. For one thing, it is our choice and it is our freedom to choose. For another, it allows us to go where we want to go, when we want to go. And the simple truth is, if the state would do its job and expand the highway to meet demand, it would be less expensive and more efficient to take a car to and from work than any other method. You will never see demand for a commuter rail reach the level of demand for a highway expansion. I don't think that many people will ride the rail and I think most people agree with me. But like I said, the two projects are completely separate and unrelated and they should be treated that way by the state, the Legislature and the federal government. We can debate the need for a commuter rail separately once I-93 is expanded to a safe and efficient width. 4

Please, I'm begging you, stop talking about this. Stop the environmental groups from hijacking this project. Counter sue them to get our money back. And get building. If the courts use illegitimate authority to hold up the process, then impeach the judges that are abusing their power. Enough is enough! Get on with it. Expand I-93 NOW!

Sincerely,

Andrew J. Manuse
amanuse@gmail.com
M: 603-703-8857
3 Hilda Ave., Derry, N.H. 03038

From: Clint.Miller@blackwave.tv
Sent: Thursday, September 24, 2009 10:28 AM
To: Jamie.Sikora@dot.gov; pstamnas@dot.state.nh.us
Subject: Widening of I93

Hello,

I read the article today regarding the I93 project and frankly am amazed that this is still being debated. I appreciate the environmental concern as I consider myself pro green but, the fact of the matter is that New Hampshire has to wake up and realize this project needs to happen. We simply can not ignore the fact that there are more cars on the road, more people living in New Hampshire, more people vacationing in New Hampshire and even more people shopping in our great state! I93 is the main corridor for our state and as it said in the article the road is 50 years old and has had no major renovations....

From a purely personal perspective, I have lived in New Hampshire for 10+ years now and drive 93 regularly. At one point I was driving it every day for a number of years but, this took its toll on me so I started working from home at least 2-3 days a week. I would challenge some of the people who do not understand why we need to expand 93 to drive it on a Friday afternoon during the summer when everyone is heading north for the weekend. Or try on a Friday afternoon during ski season same thing. Even during the week it can be a long commute especially if there is an accident. There is no good way to take 4 lanes of traffic and stuff them into 2 lanes and have a positive outcome.... 1

New Hampshire needs the people coming into our state to keep our businesses running and our economy strong and people in work. If we continue to ignore this huge bottleneck there will be a ripple effect period end of story.

Regards,
Clint Miller

From: Jon Miner [mailto:cp_n18@yahoo.com]
Sent: Friday, September 25, 2009 3:59 PM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: RE: I-93 widening

Jamison Sikora
c/o Federal Highway Administration
19 Chenell Dr., Suite 1
Concord, NH 03301

Peter Stamnas
c/o NH DOT
7 Hazen Dr., PO Box 483
Concord, NH 03302

Dear Sirs:

I read the recent article in the Union Leader regarding the I-93 widening project. Highway widening does not work to fix long term problems. Look at US-3 in Mass... when it was first widened it was great, then within a year or two it was back to gridlock during commuting hours. Widening the highway made it more attractive for people to live in NH, and urban sprawl increased, cycling us right back into highway gridlock.

Instead of the continuing widening, we need to focus on transportation methods that have less environment impacts. Imagine how many cars can be taken off the road by an efficient commuter rail system? Imagine the railroad network we would still have if we had not made highway construction a National priority?

I'm against any further I-93 widening.

Sincerely yours,

Jonathan Miner

1

From: cnavarro@allegrotech.com
To: Jamie.Sikora@dot.gov
Subject: I93 Widening
Date: Friday, October 09, 2009 6:29:22 PM

Dear Mr. Sikora,

I am writing tell you that it is ridiculous that it has taken this long to get this project off the ground. I apologize for not attending the last meeting regarding this issue. For some reason, I thought it was a done deal, and that the project moving forward.

The current situation on our highways is unacceptable. The highway needs to be widened to 4 lanes, and it need to be started right now. The delay tactics being used are costing this state, and us taxpayers, an inordinate amount of money. Money that could be spent elsewhere with much better results. 1

I urge you to go forward, right now. Let's have a little foresight on this issue. I don't want to hear or discuss 3 lanes. A little prevention (and foresight) goes a long way.

Sincerely,

Clarissa Navarro
11 East Woodbine Dr.
Londonderry, NH 03053
437-9385

From: norton426@comcast.net [mailto:norton426@comcast.net]
Sent: Friday, October 09, 2009 2:27 PM
To: Peter Stamnas; Peter Stamnas
Subject: Widening Route 93

PLEASE consider **4 lanes** rather than 2!! Slow traffic, and more importantly, car accidents, some of which have been fatal can very well be avoided with an expansion. We are in total favor of such a project, and our property even **BOARDERS** 93. A little more noise vs. **SAFETY** -- not a difficult decision to make in our eyes!! 1
Steve and Jeanne Norton
Residents of Londonderry

From: Sean O'Keefe [mailto:sokeefe@heilind.com]
Sent: Friday, October 09, 2009 12:05 PM
To: Peter Stamnas
Subject: Route 93
Importance: High

Hello Peter,

Thanks for taking the time to read this email about the proposed widening of route 93,I am a resident and town councilor in Londonderry NH. as you can see I work in the state of Massachusetts and travel 93 , 5-6 days a week twice a day and have been hoping to see this project come through for a very long time.

I have lived in NH since 1978 and have seen the immense growth on 93 and it's effects on driver safety. I respectfully ask you to consider the 4 lanes each side or 8 total lanes proposal before you as it makes the most sense to plan for the future instead of coming back to the table in 20 years in need of another construction project.Lets do this once planning for the needs for improved safety now and for the future. 1

I appreciate your time and consideration.

Best Regards
Sean O'Keefe
163 Mammoth Rd
Londonderry,NH. 03053

Sean O'Keefe

Corporate Traffic Supervisor
Heilind Electronics
DB Roberts
DAC Group
58 Jonspin Rd
Wilmington,Ma. 01887
Direct 1-978-988-3448
Fax 1-978-694-9145
Cell 1-603-498-9772

PAUL J. PARISI
29 SULLIVAN AVENUE
SALEM, NEW HAMPSHIRE 03079
(603) 898-9725

October 5, 2009

Mr. Peter Stamnas, P. E.
Project Manager
New Hampshire Department of Transportation
John O. Morton Building
7 Hazen Drive – PO Box 483
Concord, New Hampshire 03302

Re: Letter of Support – Full Widening of I-93

Dear Mr. Stamnas:

I recently read a news story in the Union Leader newspaper regarding the I-93 expansion project. More specifically, the article seemed to indicate that there may not be a lot of public support for the "full" widening of I-93 to four lanes from Salem to Manchester (as opposed to three lanes). In my eyes, nothing could be further from the truth.

As a resident of Salem for the last 18 years, I see first hand the problem with I-93 not having the capacity to handle the volume it is faced with every day. The collateral damage Salem ends up with is increased congestion on our secondary roads, leading to longer lines at traffic lights, more accidents, and an environmental concern from vehicles at idle. 1

Professionally, I have been a Firefighter in Salem for over 20 years. I have responded to the Interstate for motor vehicle crashes dozens of times. Rarely is there a week that goes by that we aren't out on the highway during the morning rush or the evening commute for accidents. Many of them are caused by congestion and stop and go traffic. It is frustrating to hear that groups are putting up road blocks to a project that is so desperately needed.

In summary, I am in support of the "full" I-93 expansion project to four lanes wide from Salem to Manchester.

Thank you for the opportunity to comment on this project. If you have any questions please feel free to contact me at your convenience.

Sincerely,

Paul J. Parisi

From: Ryan Ridley [mailto:Ryan@provc.net]
Sent: Monday, September 28, 2009 9:45 AM
To: jamie.sikora@fhwa.dot.gov
Cc: Peter Stamnas
Subject:

Gentlemen, as a frequent driver on RT. 93 I fully support the widening of I-93 in NH. I also work as a first responder for a southern NH fire department and fully realize the impact that this 1960/70 era highway system
has upon the people traveling on I-93. Thanks, Ryan Ridley 1
Ryan Ridley

Maine Office
Professional Vehicle Corporation
12 Industrial Park Road
Rumford ME 04276
207-364-2400
207-364-2440 - Fax
1-800-894-7788

NH Office
3 Modean Drive
Derry, NH 03038
603-396-7934 - Cell

From: bob8345@hotmail.com
Sent: Friday, September 25, 2009 7:01 AM
To: Jamie.Sikora@dot.gov
Subject: I-93

I just read of the frustration of trying to move forward on widening 93 from Salem to Manchester.
I live in Windham and for 30 years have commuted back and forth to Boston. I also have been frustrated every day commuting home and having to crawl from before the state line pass the Exit 1 bottleneck where 4 lanes drops to 2 lanes. The crawl continues until the Exit 3 at Windham every day. Enough already. Widen the road. 1

Bob Rigby

From: Simon Rios [mailto:elektrodread@gmail.com]
Sent: Tuesday, October 06, 2009 7:21 PM
To: Peter Stamnas
Subject: with regards to I-93

Dear Mr. Stamnas,

I caught wind of plans to widen 93 to 8 lanes and would like to express my opposition. In these times of dwindling fossil fuels & environmental degradation due largely to our methods of transportation, we need to be seeking alternative ways of getting around. Three lanes is plenty. 1

Sincerely,
Simon Rios

--
Simon Rios
(603) 233-1922

My address is as follows:

Simon Rios
5 Dinsmore St.
Nashua, NH 03064

Thank you!

From: Arthur_Rugg@vrtx.com [mailto:Arthur_Rugg@vrtx.com]
Sent: Wednesday, October 07, 2009 11:03 AM
To: Peter Stamnas
Subject: I-93 Expansion Comment

Hi Peter,

I am responding as an individual because the Londonderry Planning Board has not taken a formal position at this time. I do travel I-93 every day

by Boston Express bus, a very nice service that makes commuting this distance worthwhile. I do feel that I-93 needs to be increased in capacity to the four lanes in each direction, but to leave one lane in each direction as a lane for the buses and high occupancy vehicle usage.
Otherwise, the expansion will only create more traffic. We really want to see the expansion to make it safer for the current commuters, but not to

draw more traffic. Reality tells us that will not happen. It will draw more traffic, but we must work to minimize single vehicle usage and more

traffic generation. Once people see that a high occupancy vehicle lane and the bus service will be the easier way to commute, more people will travel this way. The diehard single vehicle users will be stuck in traffic.

1

Thanks for listening,

Art Rugg

Arthur E. Rugg
Research Scientist,
Drug Innovation PharmacoKinetics
Bioanalytical Group
Vertex Pharmaceuticals, Inc.
130 Waverly Street
Cambridge, MA 02139-4242
617-444-6814
fax: 617-444-7821
arthur_rugg@vrtx.com
www.vrtx.com

From: jeff.rupert@comcast.net [mailto:jeff.rupert@comcast.net]
Sent: Friday, September 25, 2009 11:43 AM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: RE Rt 93 Southern NH widening project

Misters Sikora and Stamnas:

Please accept these comments in whatever official capacities they can be utilized.

As a resident of Manchester who works in coastal Massachusetts, I commute on rt 93 daily.

My opinion of the proposed widening of 93?
DO IT! PLEASE!

Any improvement on 93 would be helpful, but priority should be given to widening northbound (starting south and proceeding north to the 293 interchange) improving southbound exit 3 on ramp (only in second priority because it's already in process) 1

This road is regularly beyond its capacity, resulting in compromised safety and increased polution
as vehicles run longer than they would otherwise need to.

I am not a biologist, environmental chemyst, or engineer, but I am a reasonably intelligent educated citizen, and familiar with the situation.
The thought to me that some think the environmental concerns this of project could in any way even come close to the concerns of
safety and efficiency of society, would be laughable were it not for the fact they (ridiculously!) seem to have actually caused delays on this.

I beleive there are no endangered species inhabiting the proposed areas, and even if there are, the area is not unique in any way - nearby habitat would be equally suitable for any wildlife in question. 2

I suspect most people arguing the environmental concern have little capacity to think in terms of marginal effect, and base their emotional conclusions
on the difference between NO road vs the improvement, rather than judge base on the small increase in footprint that would be required for widening.

With a few simple wetland offsets, the footprint can be easlily set to vegatitively neutral, and the reduced emmisions gained from eliminating traffic jams and significant slowdowns should offset inefficiencies caused by higher speed driving, and could even be net positive in terms of environmental impact. 3

This is without even getting into the effect of improved safety, and of improved commutes benefiting toursim, local commerce, and property values as access to/from the high density areas (JOBS!) of Mass. gets increased. 3

All of these things would be significant benefits to New Hampshire and its residents.,

Thanks again for taking the time to read this and including it in whatever official capacities it can be utilized.

Jeff Rupert
54 Vandora Dr
Manchester NH 03103

Mr. Peter Stamnas
NHDOT
John O. Morton Building
7 Hazen Drive
P O Box 483
Concord NH 03302-0483

Dear Mr. Stamnas,

Unfortunately I was unable to make the public hearing on September 22nd in Derry but wanted to make sure my viewpoints were known regarding the Rte 93 expansion project. The Conservation Law Foundation has caused too many delays and much cost expansion of this vitally important project with their frivolous law suits. While the requirement for the Draft Supplemental Environmental Impact Statement was a direct result of a law suit filed by the Foundation, the report does not in any way reduce the long term needs of the highway in order to serve the citizens of southern NH and the tourists that travel that road annually which produces important economic stimulus to our travel industries. While the current economic climate has certainly slowed both household foundations and job creation not only in NH but our entire nation, like all recessions this one will eventually end. Recessions are always followed by periods of expansion and this will be no different. Unfortunately the DSEIS was done in a period of time that clearly picked up these current economic retraction trends. 1

While the traffic and population impacts on the highway will be less over the next 10 years than originally projected, the fact is as long as the land is available, it will eventually be developed. The full build-out analysis' done in many NH communities continue to show higher, not lower future growth impacts. What this means is that the highway usage is likely to be higher than originally projected but that those impacts are likely to be pushed out further in time. Under no circumstances should the DOT make the decision to reduce the lane count from 4 to 3. It is very important that NHDOT continue their long range planning and outlooks. A reduction in lane counts now will only require a future road expansion in the future at much higher costs than anyone can afford. It's time to move this project forward as designed so that the citizens of NH can eventually see the long term benefits of an excellent transportation system in southern NH which will help NH attract new businesses and create new jobs to fuel our future economic success. As a member of the Pelham Economic Development Committee, I feel that improvements in infrastructure are vital to giving businesses a reason to relocate to our state. 2

Thank you for taking the time to collect important responses to this project.

Respectfully Submitted,

Bill Scanzani
1 Victoria Circle
Pelham NH 03076
603-635-0877

cc: Ansel Sanborn NHDOT
Jeff Gowan Town of Pelham

From: Thomas_Selinka@raytheon.com
Sent: Friday, September 25, 2009 6:05 AM
To: Jamie.Sikora@dot.gov; pstamnas@dot.state.nh.us
Subject: I-93 widening

Sirs,
I would like to express my strong support for the widening of I-93 project. For the last 10 years I have made the daily commute from NH to MA and back on this antiquated stretch of I-93. I have been amazed at the difference between the highway in the two states. Travel in NH is often backed up, stop and go, and dangerous. Travel in MA, which has been widened is congested, but flowing. The NH portion of I-93 continues to require the widening. Traffic flow and public safety demand it. 1

Thomas Selinka
Supportability Engineer
Whole Life Engineering Directorate
Raytheon Integrated Defense Systems

339-645-1372 office
Thomas_Selinka@raytheon.com

From: scott@theseverns.com
To: Jamie.Sikora@dot.gov; pstamnas@dot.state.nh.us
Subject: Fwd: Widen I-93 already!
Date: Friday, October 09, 2009 5:00:56 PM

Hi Again,

In addition, I know I have many neighbors and coworkers that feel the same way I do. We are flat-out amazed that there could even be opposition? Don't we want New Hampshire to be a great place to live? Part of making it a good place to live means that it is easy to get places! over congested and dangerous highways are exactly the opposite of that.

-Scott

---------- Forwarded message ----------
From: **Scott Severn** <scott@theseverns.com>
Date: Fri, Oct 9, 2009 at 4:57 PM
Subject: Widen I-93 already!
To: jamie.sikora@fhwa.dot.gov

Dear Jamison Sikora,

I am writing to express my desire to see I-93 in New Hampshire widened as much and as quickly as possible.

I live in Londonderry, NH, and for nearly 7 years I have commuted daily to Chelmsford, MA via I-93 and 495. During commuting hours, traffic each way is absolutely unbearable in both directions. And since there are only two lanes in each direction, there is not much room for use as a buffer from an accident. I have been rear-ended because traffic stopped so suddenly that drives could not stop in time. I firmly believe that additional lanes would reduce congestion, allowing more space between cars. This would help prevent this type of accident. 1

I also firmly believe that as societies grow, their roads need to grow with them. It is very simple, really. If you do not grow the roads, you hinder economic growth. As traffic increases, more traffic is diverted to rural community roads, such as Mammoth Road. This in turn makes these roads busier and more dangerous.

I beg you to help see that this project moves forward quickly!

Sincerely,

Scott Severn
28 Red Deer Rd.
Londonderry, NH 03053
603-505-1674

From: tjsxx@comcast.net [mailto:tjsxx@comcast.net]
Sent: Friday, October 09, 2009 12:08 PM
To: Peter Stamnas
Subject: Expand I93 ASAP

Please make this happen. Four lanes is a must. Traffic on and OFF the highway will be a disaster if this project is not completed with four lanes.
A lot of people get off exits early or avoid the highway all together. This generates addition traffic on local streets that wouldn't be there if I93 was more usable. This is not limited to Mon-Fri rush hours. 1

Regards;

Tom Shanley
7 Fairway RD
Londonderry, NH 03053

From: Caroline Snyder [mailto:carlice.snyder@gmail.com]
Sent: Wednesday, October 07, 2009 4:46 PM
To: Peter Stamnas
Subject: I-93 Public Comment

To: Peter Stamnas--Project Director
NH Department of Transportation
Bureau of Highway Design
Concord NH 03302

From: Caroline Snyder -- Sierra Club
603-284-6998

Re: Widening of !-93

Date: October 6, 2009

The Sierra Club, with over 700,000 members nationally, is working with

state and federal legislators and agencies across the nation to reduce fossil fuel use, climate changing greenhouse gas emissions, and supporting green transportation options.

Widening I-93 to eight lanes does not serve these goals. This planned expansion is overkill, an unnecessary expenditure of public funds with

major environmental impacts. 1

I urge you to consider scaling down this project to six lanes. The resulting savings could then be used for other much more urgent projects, including supporting green transportation.

For additional reasons why this project should be scaled down, please see the comments by the Conservation Law Foundation and Rick Katzenberg.

Thank you for this opportunity to comment.

From: Dave Souter [mailto:david@baronsmajorbrands.com]
Sent: Thursday, October 08, 2009 1:18 PM
To: Peter Stamnas
Cc: "'jamie.sikora@fhwa.dot.gov.'"@mail44.atl.registeredsite.com
Subject: I-93 expansion

Pete,

My name is Dave Souter, owner of Baron's Major Brands and resident of Windham.

My comments on the I-93 expansion are that we need to get this project moving. As a resident who travels the road daily, we need to expand the road because of traffic congestion during commuter times and more specifically during weekend travel times when we get the heavy congestion from visitors going north and south.

On a business side, we need to get this expansion on the move to continue being a desired vacation and tourist destination. This is good for our state and its businesses. Our state relies on tourism and retail. We want to have more visitors. It will generate sales and revenue for many of the retail businesses like ours. We also want this project to start sooner than later because it will motivate more MA residents to move to our state. This will help motivate the building industry in our state. 1

We need and want this project.

As a concerned citizen, I feel the state is doing a good job listening to all the environmental issues, but we can't let these issues stop the project. I feel NH has too much to lose if we don't move now.

Dave Souter

From: A Stahly [mailto:astahly@msn.com]
Sent: Friday, October 09, 2009 1:30 PM
To: Peter Stamnas
Subject: widening I-93

PLEASE widen this highway!! We are way way way overdue and tired of sitting on the highway, especially in dangerous conditions. 1

thank you

Andy Stahly
Londonderry, NH

From: Edward J. Stapanon, Jr. [mailto:steppye@verizon.net]
Sent: Friday, September 25, 2009 11:07 AM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: Widening Of I-93 From MA Border To Manchester

I just read the Union Leader article about the I-93 widening project. Anyone who has ever driven (if crawling along at 3 -10 mph can be considered "driven") this road during rush hour is painfully aware that this project is long overdue. The road is obviously overburdened and needs to be widened period. The environmental consequences of all those idling vehicles belching exhaust as they creep along needs to be considered as well. I hope common sense prevails and this project gets off the ground ASAP. 1

I'd suggest that you contact the communities again through which I-93 passes and have them put a question on their annual town meeting ballots asking them if they are in favor of widening I-93 or not. It's time the majority of the citizenry have the final say over a minority of eco-nuts.

Ed Stapanon
93 Walker Hill Rd
Ossipee, NH

From: RebuildingI93.com [mailto:postmaster@rebuildingi93.com]
Sent: Friday, September 25, 2009 9:31 AM
To: contact@rebuildingi93.com
Subject: i93: Submission to RebuildingI93.com Contact Form

The "Contact Us" form on the RebuildingI93.com website was submitted with the following information:

NAME: Deborah A. Starin
E-MAIL ADDRESS: Dstarin52@aol.com

QUESTION/COMMENT:
I fully support widening I-93. I have had to travel to Boston too many times to count while a relative was in the hospital there and been bogged down in traffic due to an accident or just too many cars on a two-lane road. It is frustrating to make what should be an hour's trip at the most into a two-three hour trip. The sooner that interstate is widened and the flow of traffic is eased, the better. Count me in as a definite supporter!!! 1

Submitted from 173.14.129.49 at 09:31:16 on 2009-09-25

Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.9.0.14) Gecko/2009082707 Firefox/3.0.14 (.NET CLR 3.5.30729)

From: RebuildingI93.com [mailto:postmaster@rebuildingi93.com]
Sent: Friday, September 25, 2009 1:54 PM
To: contact@rebuildingi93.com
Subject: i93: Submission to RebuildingI93.com Contact Form

The "Contact Us" form on the RebuildingI93.com website was submitted with the following information:

NAME: Mark Starin
E-MAIL ADDRESS: klrmc@aol.com

QUESTION/COMMENT:
PLEASE widen I-93 before another multi-vehicle accident claims more lives. Thank you! 1

Submitted from 98.216.192.142 at 13:53:37 on 2009-09-25

Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 6.0; Trident/4.0; GTB6; Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1) ; SLCC1; .NET CLR 2.0.50727; Media Center PC 5.0; .NET CLR 3.5.30729; DEL 1.0.195.2; OfficeLiveConnector.1.3; OfficeLivePatch.0.0; .NET CLR 3.0.30729)

From: kstremsky@live.com
To: Jamie.Sikora@dot.gov
Subject: I-93 and transportation
Date: Friday, September 25, 2009 8:28:17 AM

Dear Jamison Sikora:

DOT might want to have a public hearing in Manchester this coming Saturday. DOT might want to have a public hearing on Saturday October 3 in Manchester and allow people more time to submit e-mails if inclusion in the final draft may be extended. Many people may have a hard time attending a public hearing at night during the week especially those people who work in Massachusetts. 1

If DOT is able to improve the Boston Express contract, I hope it will. Boston Express could go from Boston to downtown Manchester, to the Manchester airport, and then to Londonderry which would allow people who have their cars in Londonderry to shop and eat in Manchester before picking up their cars in Londonderry.

I hope DOT cares more about Manchester when it negotiates contracts in the future.

Many cities in New Hampshire have bus service to Boston and not Manchester. I hope DOT will work with the airport, the business community, and non profits to get more bus service from many cities in New Hampshire to Manchester airport and then downtown Manchester. 2

DOT could ask Conservation Law Foundation, the Sierra Club, and many other non profits to have fundraisers for better bus service within cities and between cities in New Hampshire. If they want New Hampshire to have cleaner air, they should be willing to have fundraisers on a regular basis that benefit buses. They could buy 10 ride tickets and unlimited monthly bus passes on Manchester Transit Authority http://www.mtabus.org and give them away. They could do similar for other bus companies. They could advertise inside of buses causes they care about. They could buy enclosed bus bench/shelters and advertise causes they care about.

I e-mailed the following letter
to Conservation Law Foundation.

From: kstremsky@live.com
To: e-info@clf.org
Subject: some ideas to reduce need for cars
Date: Sat, 19 Sep 2009 21:53:54 -0400

Dear Conservation Law Foundation:

If you want to be more helpful, I recommend you do the following:

Ask people and businesses to donate money to you for buses and passenger rail.

You could buy 10 ride tickets and unlimited monthly passes from Manchester Transit Authority http://www.mtabus.org and give them away along with bus schedules.

If Manchester has better bus service, fuel usage may decrease, the air may be cleaner, and there may be less congestion. You may buy advertising space inside of buses and discuss causes you care about. You may buy enclosed bus bench/shelters and advertise causes you care about.

http://www.nhtransit.com/members/operators.htm has city bus companies in New Hampshire

You could buy tickets from Nashua's bus system,COAST, and other city bus companies and give them away.

You could buy bus tickets from Boston Express and other bus companies and give them away.

You could help fund better bus service between many cities in New Hampshire.

You could help fund better bus service within many cities in New Hampshire.

You could ask Hollywood stars and others to donate money for buses. You could ask Hollywood stars and others to donate money for the building and operating of passenger rail.

I hope Boston Express and other bus companies will have a bus stop at Manchester airport. Boston Express could go from Boston to downtown Manchester, to Manchester airport, and then to Londonderry which would allow people who have their cars in Londonderry to shop and eat in Manchester before picking up their cars.

I hope there will be bus service between Manchester and Portsmouth and Portsmouth and Manchester. Bus could go from Portsmouth to the airport and then downtown Manchester. The airport and businesses could help to fund it.

If there is not bus service between Lebanon, Keene, Nashua, and many other cities in New Hampshire to the Manchester airport and then downtown Manchester, I hope there will be. The airport and the business community may want to help fund it. Manchester may get more value from its $100 million plus investment in Verizon Wireless Arena and $20 million plus investment in MerchantsAuto.com Stadium. More businesses may want to locate downtown helping to increase the business tax base.

DOT needs to think more about improving bus service between cities in New Hampshire and within cities in New Hampshire.

If Manchester Transit Authority has evening bus service to at least 10 pm and Sunday bus service, more green businesses and other businesses may want to be located in Manchester. The air may be cleaner. Many downtown businesses may have more customers which may encourage more businesses to be located downtown. If people are better able to get to and from jobs, New Hampshire may spend less money on food stamps and Medicaid. If people are able to spend less money on cars, they will have more money for food and other things.

I hope DOT is going to be talking with Canadian governments and Canadian businesses about getting passenger rail between Boston and Canada that will have a stop in Manchester and many other cities in New Hampshire. Cities north of

Manchester may especially benefit from passenger rail. If New Hampshire has passenger rail between Boston and Canada, more businesses may want to locate in New Hampshire and more tourists may want to visit New Hampshire which may increase the amount of money New Hampshire obtains from the business profits tax and rooms and meals tax. Manchester airport and many New Hampshire businesses may have a lot more customers. I hope the Manchester airport and many New Hampshire businesses will be willing to help fund passenger rail. Canadian governments and Canadian businesses may be willing to help fund if they realize what the benefits may be for them. Advertising inside of passenger rail - text and video could help provide some of the funding for passenger rail.

Sincerely,

Ken Stremsky
187 Poplar Street
Manchester, NH 03104

Friends

I drive from Londonderry to Back by Boston daily. I love living in Southern NH and have made this commute for over 13 years. I93 in New Hampshire between Manchester and the Massachusetts state line is not wide enough to support the current volume of traffic. I have noticed a continual growth of volume and increased amount of accidents as more citizens are drawn to live in southern New Hampshire but continue to commute to Massachusetts.

Personally my schedule is not indicative to the bus services, I do car pool and have had two to three folks driving with me for the past 6-8 years. I telecommute at least once a week as well. However the only time I have seen a notable drop in volume was when gas was over $3.00 a gallon. Seeing that I drive a hybrid, this had little impact on my experience but I know it was difficult for others. 1

It seems that the obvious solution is to increase capacity; I am delighted that the sate is considering light rail service as well as widened highways. I would also suggest tools or gas tax to help support this endeavor. Those of us that take advantage of this service should be willing to support it financially.

Thanks for your time.

Fred

A. Frederick Telschow
Broadcast & Multimedia Production Services
The Christian Science Publishing Society
Boston MA, USA 02115
617-450-2060
617-450-2225 fax
617-799-3881 cell

A. Frederick Telschow
Broadcast & Multimedia Production Services
The Christian Science Publishing Society
Boston MA, USA 02115
617-450-2060
617-450-2225 fax
617-799-3881 cell

From: JoAnn Thornton [mailto:jt_asne@yahoo.com]
Sent: Thursday, October 01, 2009 7:20 AM
To: contact@rebuildingi93.com
Subject: i93: Rebuilding I-93 Email

Good morning,

I would like to go on record as supporting the widening of I-93.

I travel regularly to southern New England. When there is an accident on 93 there is really no good place to go to get around it. Many sections are dangerous particularly around exit 3 and between 4 and 5. It is a road you do not want to be on when it is snowing.

1

It is absurd that groups from outside our state can stall a project like this with no consideration for the people that use it.

Is there a group of citizens that have banded together to counter these groups?

Respectfully submitted,

JoAnn Thornton

From: Peter Thornton [mailto:peterthornton@neccisgroup.com]
Sent: Monday, September 28, 2009 6:44 AM
To: Peter Stamnas
Subject: I-93
Importance: High

Good morning,
I would like to go on record as supporting the widening of I-93.

I travel regularly to southern New England and New York. I have figure in an extra hour every morning and another returning in the evening due to rush hour traffic. When there is an accident on 93 there is really no good place to go to get around it. Many sections are dangerous particularly around exit 3 and between 4 and 5. It is a road you do not want to be on when it is snowing. 1

It is absurd that groups from outside our state can stall a project like this with no consideration for the people that use it.
Is there a group of citizens that have banded together to counter these groups?

With best regards,
Peter

Peter Thornton

Manufacturer's Representative
NECCIS Group, LLC
P (603) 778-0892
F (603) 642-5702
peterthornton@neccisgroup.com
79 Sandown Road
Danville, NH 03819

From: Steve Tieland [mailto:steve@stieland.com]
Sent: Friday, October 09, 2009 2:42 PM
To: Peter Stamnas
Subject: I-93 Expansion

Please tell me that we are still moving forward with the highway expansion to 4 lanes. I am hearing news that we might not expand at all. There is too much traffic on this road already and it adds to a long day at work to drive home and get stuck at exit 1 in NH as we wait for everyone to move down to 2 lanes. 1

Thanks,

Steve Tieland

From: sharon todd-elliott [mailto:artoddwoman@live.com]
Sent: Wednesday, September 30, 2009 7:28 AM
To: Peter Stamnas
Cc: richard katzenberg
Subject: NH DOT re I-93

Good morning ... I'd like to write of my support of the testimony submitted by Richard Katzenberg on 22 September 2009 with regard to the above. His presentation was well researched in that it provides an alternative to address additional highway usage needs/issues, helps alleviate environmental concerns, and would be cost-effective for the NH taxpayer. What I also find very important are the incentives for travel impact choices to reduce carbon emissions and, to immediately resolve and correct violations that currently exist under the Clean Water Act. There are large numbers of people living in close proximity to the I-93 corridor that obtain water from wells; to not immediately remedy this situation is a violation of the law and a harmful disservice to those citizens and to area wildlife. Additional contamination of this most precious means of survival would be very irresponsible. I strongly support Richard's testimony. Thank you. 1

From: AP Varney [mailto:apvarney@msn.com]
Sent: Friday, September 25, 2009 8:21 AM
To: jamie.sikora@fhwa.dot.gov; Peter Stamnas
Subject: Anyone want a wider I-93? Hello? Anyone? - Manchester Union Leader 24 Sep 2009

Gentlemen -

My wife and I were flabbergasted, to say the least, to read the Manchester Union Leader article of 24 Sep 2009 re: the I-93 widening in NH. We, and the neighbors that we spoke with, were ALL under the impression that this was a done deal. Now we understand the lack of inactivity along this corridor, from the Massachusetts state line to the I-293 split in Manchester. We had written that off as what has come to be known as the typical NH DOT lack of planning/foresight. 1

I visit the Rebuildingi93.com site on a regular basis, and have been completely dumbfounded over the way advertising for bids for sections have been stretched out to 2016. Having grown up in Nashua, and suffering through daily commutes of Rte 3, I was astounded at how quickly both MA & NH widened and upgraded their respective sections of the highway, with minimal disruption to the traffic flow. That was quite impressive!! Kudos to both states. Now that we live (and used to commute) on the I-93 corridor, we held a similar expectation that numerous bids would be put out, and every stretch of that corridor would be getting modernized at the same time. In the meantime, Rte 128, which is the primary feeder for our little neighborhood, has become a major thoroughfare, as more and more people (and large speeding trucks) are using it to avoid I-93. At this point, we will both be too old to take advantage of the widening, should it ever occur. I can tell you that both my wife and I now avoid employment opportunities that would require travelling on this stretch, as it has just become too dangerous of a road to travel. That, and the dearth of plowing/sanding/salting during the winter months and it is only a matter of time before will will be reading about a horrendous pile-up with a large loss of life. 2

As for attending public meetings, none of us in our small section of the neighborhood were aware that meetings were scheduled. However, those of us fortunate to have jobs in this economy find ourselves working 10+ hours a day, including commuting times. As such, there is precious little time to devote to attending meetings, well-publicized or not. 3

We strongly encourage you to do all in your power to get this project off the ground and completed!

Sincerely,

A.P. & Y.D. Varney
Londonderry NH

From: Kathy Wagner [mailto:kathy@imageability.com]
Sent: Friday, October 09, 2009 3:47 PM
To: Peter Stamnas; jamie.sikora@fhwa.dot.gov
Subject: I-93

Hello Peter and Jamie,

I am writing to please ask that the State moves ahead with the widening of Interstate 93. With the amount of traffic on that road daily the small section from the Mass border to Manchester is becoming a serious issue. There are so many accidents in Londonderry because the road closes down from three lanes in Salem to two lanes causing serious backups. When the traffic finally begins to move it is after you have pass Exit 3 in Windham. Everyone starts trying to pass, tailgate and get traffic moving. By the time you reach the straight section of Londonderry people have had enough, and that is why so many accidents.

I-93 is not suitable, and does not have the appropriate infrastructure to handle the traffic currently using that roadway. Londonderry, Derry, and surrounding communities are actively working to bring economic development to the area to lower the tax burden. Londonderry has over 300 acres that will be developed if Exit 4A, now being discussed by the State, is funded. We also have an additional 1000 acres near the Manchester-Boston Regional Airport. There have been numerous articles regarding the Pettengill Road Project. There is the potential for over\ another 400 acres of land near exit 4 to be developed within the next five years. I-93 must be able to meet the growth that will result from all of these projects. I-93 cannot do that today. 1

CLF has neglected to see the importance this highway is to the development of our communities. If they did, they would be working with the communities on an agreeable solution rather then costing taxpayers thousands of dollars with frivolous law suits.

I think the CLF is doing a disservice to the people of New Hampshire. They are risking peoples lives. They are risking peoples lively hood, and they are risking the State of New Hampshire's future. This project needs to move forward. Rail service is a very long way out. It is not going to happen tomorrow. To hold up the I-93 project is wrong.

Kathy Wagner
Vice Chair, Londonderry Town Council

From: churchbiker48@yahoo.com
Sent: Thursday, September 24, 2009 6:59 AM
To: Jamie.Sikora@dot.gov
Subject: Widen 93

I travel 93 6 days a week it is about time we widen it the traffic during the week in the summer going north is over crowed especially the mass residents who like to drive in the breakdown lane then in the winter they do the same and cause unessary accidents tell clf and seirra club to work at getting the law breakers of the road
R.S.Waites a Derry resident

1

From: Ward, Joseph [mailto:Joseph.Ward@crl.com]
Sent: Friday, October 09, 2009 1:22 PM
To: Peter Stamnas
Subject: Widening 93

Hi there,

I have been commuting on 93 for years now and I feel there is a tremendous need to widen the roads both north and south bound. Time spent commuting and safety of the drivers are my main concerns. 1

Thank you,
Joe Ward

From: Linda Winmill [mailto:linda@winmillequipment.com]
Sent: Saturday, October 10, 2009 3:55 PM
To: jamie.sikora@fhwa.dot.gov
Cc: Peter Stamnas
Subject: widening of 93

We have a business just off exit 3 in Windham, NH and we are in total favor of I93 being widened. Almost everyday the traffic is backed on 93 north from exit one which creates a concern for both safety and stains the "tolerance" of drivers. Although we do not have the statistics, we know from that there are frequent traffic accidents on 93 both north and south in the area between exit 4 and exit 3. This section of I93 has been beyond its capacity for a number of years and widening would be a great improvement. 1

New Hampshire depends on tourism and business to keep the economy healthy and the congestion on 93 is a hindrance to New Hampshire's economy.

Linda Winmill
Winmill Equipment Co. Inc.
3 International Rd
Windham, NH 03087

From: Sy Wrenn [mailto:Swrenn@wrenn.com]
Sent: Wednesday, October 07, 2009 5:17 PM
To: Peter Stamnas
Cc: jamie.sikora@fhwa.dot.gov
Subject: expansion of 93

Peter,

I am in support of the expansion of route 93 between the Massachusetts line and Manchester, NH. I have lived in Windham, NH for thirty years and travel this highway in both directions quite often. Over this time the volume of traffic has increased considerably to a point it adversely effects the quality of life for those of us using this roadway and living in the towns adjacent to this stretch of road. I would request that this project be expedited as the various segments seem to be going very slowly. This is simply an observation of a non road builder who is not in tune with the political and financial complications but who is directly effected virtually every day from the construction activity. 1

Regards, Sy Wrenn
39 Hawthorne Road
Windham, NH 03087

Sy Wrenn
President
Wrenn Construction Services, Inc.
49 Range Road - Suite 20
Windham, NH 03087
T: (603) 893-2556 Ext.11
F: (603) 893-0554
email: swrenn@wrenn.com
www.wrenn.com

From: Steve Young [mailto:seyoung@imageability.com]
Sent: Friday, October 09, 2009 1:17 PM
To: Peter Stamnas; jamie.sikora@fhwa.dot.gov
Subject: I93 to four lanes

Good Afternoon,

I nearly forgot to send this email to you, but once again we had a major accident on Route 93, this time just north of Exit 5. The good news is now that the DHART unit is located at Manchester-Boston Regional Airport it was only 6 minutes from the site of the incident. The bad news, of course is the severe injuries that this couple from Manchester received when they went off the side of the roadway.

Dramatic 93 Rollover Ejects Two from Car "Medflight 6 minutes out" 1

Not a busy weekend goes by that the traffic slows to a crawl or even stops for everything from a fender bender to the need to land a helicopter and evacuate patients. Please stop CLF from stalling this regional resource any longer. If I can do anything to assist you please contact me at anytime.

Steve Young
7 Fiddlers Ridge Road Londonderry, NH 03053

Chairman Londonderry School Board
Former Manchester-Boston Regional Airport Authority. 2003-2009
Publisher Londonderry Hometown Online News.

The Associated General Contractors of New Hampshire, Inc.

48 Grandview Road ▼ Bow, New Hampshire 03304
603/225-2701 ▼ Fax 603/226-3859

September 29, 2009

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
19 Chestnut Drive, Suite 1
Concord, NH 03301

Mr. Peter Stamnas
Project Manager
NH Department of Transportation
7 Hazen Drive, P.O. Box 483
Concord, NH 03302

Dear Mr. Sikora and Mr. Stamnas,

The Associated General Contractors (AGC) of NH is writing this letter in support of the Environmental Impact Statement (EIS) for the I-93 project that will increase the highway to four lanes in each direction between Manchester and the Massachusetts border. AGC of NH represents the commercial construction industry in New Hampshire, and believes that completing and funding this project should be at the top of the Department of Transportation's (DOT) priority list. As one of the state's main roadways for residents and visitors, it is vital to the state's economy that this road is maintained and adequately prepared to handle the volume of traffic it experiences.

The Association has long been in support of this project, as it will reduce the heavy congestion that occurs daily on this stretch of highway, and provide much needed economic benefits for the entire State. In November of 2002, the Association wrote a letter/position paper supporting DOT's Environmental Impact Statement for the project at that time. Attached is that letter, and many of those statements still ring true today. 1

AGC of NH believes in the betterment of New Hampshire's roadways, and feels that this project is especially important in maintaining the State's highway system. Thank you for taking the time to consider AGC of NH position on this matter.

Sincerely,

Gary Abbott
Executive Vice President

AGC of NH's membership includes contractors from both the building and highway industry, which perform commercial and industrial, public and private work in the state. AGC of NH serves as a liaison between its membership and government bodies, provides informational support services, safety training, construction documents, and plans room facilities for the construction industry.

The Associated General Contractors of New Hampshire, Inc.

48 Grandview Road Bow, New Hampshire 03304
603/225-2701 Fax 603/226-3859

In Support of the Comprehensive I-93 Proposal Submitted by the NH Department of Transportation

Gary A. Abbott, Executive Vice President
Associated General Contractors of NH

November 12, 2002

The Associated General Contractors (AGC) of New Hampshire is a non-profit trade association of general and specialty contractors dedicated to improving the professional standards of the construction industry. The AGC of New Hampshire has been a significant part of the construction industry since it's inception in 1949. The chapter's membership includes contractors, both building and highway, which perform commercial, industrial, public and private work in the state of New Hampshire.

The AGC of New Hampshire supports the NHDOT's proposed mitigation package as presented. Over the last few months, the association has reviewed the I-93 Environmental Impact Statement and attended NHDOT's public informational session in July. After comparing the NHDOT mitigation package with similar projects in other states, **it is apparent that New Hampshire's effort to address the environmental and municipal issues on this project is exemplary.**

The association has been involved in many state highway projects over the years, but cannot remember a project of this size and complexity to have so thoroughly addressed the issues. The Department of Transportation has taken its role very seriously, from its recommendation to include the project in the 10-year highway plan to this near-final design stage and permit approvals. **This project seems to have everything anyone has ever asked for including; upgrading the highway to accommodate the projected volume of traffic, adding park & ride facilities and a rail corridor to provide alternative modes of transportation for the future, and the addition of a bike & walk path that runs the entire length of the corridor.** 2

The purpose of my testimony today is to **encourage the agencies and departments responsible for issuing the pending permits and approvals to do so expeditiously**. It is apparent that this project is the highest priority for state and local communities along this highway to address the congestion that currently exists.

Below I have addressed some of those issues that have the potential to slow the progress of this project, if taken out of context with respect to the overall goal of congestion relief. This information was put together in order to place in the record some of the fact-finding information the association reviewed relative to this project.

Wetland Mitigation under the US Army Corps 404 Permit Process and the State of NH Wetland Permit – The association reviewed the federal guideline of "no net loss" criteria and feels that the state proposal goes beyond this requirement with a ratio of nearly eight to one. We recognize that higher ratios are given for high quality wetlands and low quality wetlands are mitigated at lower ratios to correlate with the environmental benefits. After reviewing this project, we feel most would agree that the majority of directly impacted wetlands are of low quality. Next we reviewed similar projects in the New England area and found that the Massachusetts Route 3 project, south of Nashua, used a ratio of one to one. The Maine Turnpike expansion used a ratio of less than two to one. New Hampshire's recently completed Route 101 project used an overall ratio of about five to one. When comparing state regulations in New England (see attachment), the AGC found that this proposed project would meet the highest ratio required, which was in Maine, however the state of Maine requirement allows the greatest flexibility in how an applicant achieves it's wetland mitigation ratio. Considering all of this, the association believes that the NHDOT has more than satisfied both of the federal and state wetland permit objectives. 3

NEPA Required Study and Secondary Impacts – In reviewing the Environmental Impact Statement (EIS) as required by the federal NEPA Act, the AGC found that the NHDOT would dedicate assistance to communities surrounding the project that may see some related growth impact in the future. This is consistent with previous state legislative study recommendations regarding future growth. The statewide study committee recommended that the NH Office of State Planning work and consult with communities on planning for future growth through the use of local planning and zoning. In our review, we could find no requirement for a highway project to compensate for speculative or hypothetical growth outside the impacted highway project, know as secondary impacts. The association believes that if this project required secondary impacts, as some have suggested, then the government would be requiring mitigation before the fact and then again in the future, through either the federal or state permitting process at the time of a proposed development or project. This would be, in our opinion, asking for mitigation twice, since any new development or project would have to comply with existing state and federal mitigation requirements at that time. We believe that these speculative secondary impacts are an attempt to either delay this project or to obtain funding for conservation efforts in surrounding communities by misusing the state highway trust fund, which was intended to repair and maintain our state highway system. Cities and towns have other available means to preserve local resources through existing state and local programs. 4

The association strongly urges those agencies responsible for these final permits to act responsibly and expeditiously so the congestion issues along the corridor can be addressed as soon as possible. Thank you for taking our position into consideration on this project.

Respectfully,

Gary A. Abbott
Executive Vice President

ATTACHMENT A

Federal Wetlands Program

A 1990 Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) explains how mitigation determinations should be made. The mitigation MOA states that mitigation should provide "one-for-one functional replacement (i.e., no net loss of values)." This ratio may be less than 1 to 1 for areas where the functional values associated with the area being impacted are demonstrably low and the likelihood of success associated with the mitigation proposal is high. The MOA also recognizes that the goal of "no net loss" may not be satisfied in every Section 404 permit action. Accordingly, the agencies acknowledge that the program is not expected to achieve the goal of no net loss of "existing" wetland functions all by itself.

New England District

The New England District has comprehensive Programmatic General Permits (PGPs) in place in each of the six New England states covering work with minimal impact on the aquatic environment. Up to 98 percent of all permits issued in New England are PGPs, according to the Corps. The PGPs are based on the state thresholds for most categories of environmental impacts, and applicants generally need only file with the states.

The New England District does not use compensatory mitigation ratios. In fact, the district recognizes that mitigation is not always necessary when an applicant is operating under a general permit, as the authorized activity is deemed to have a minimal impact on the environment. To this end, the district's Chief of Permits & Enforcement believes that the application of mandatory formulas would make the mitigation process too rigid. Instead, the district operates under a flexible framework. 3

In situations where compensation of wetland loss is appropriate, the district follows the 1:1 rule. As a general rule, the regulatory branch works with the applicant to determine what type of mitigation is suitable—creation, restoration, preservation or enhancement—or a combination of techniques. The permitting officer will evaluate potential on-site compensation opportunities, but the district accepts that it may not be practical to mitigate in the same watershed. In addition, it may not be practical to undertake a mitigation project with a similar plan community type to the wetland being impacted. According to the Corps, applicants have commented favorably about the simplicity, predictability and efficiency of the PGPs.

Other State Mitigation Requirements

Modeled after the federal requirements, state mitigation programs throughout New England follow a sequence of three steps leading to mitigation: first, activities in wetlands should be avoided when possible; second, when they can not be avoided, impacts should be minimized; and third, where minimum impacts are still unacceptable, mitigation is appropriate. When determining what type of compensation and how much is allowed or required, the dominant theme throughout New England is flexibility. Agency staff must have the flexibility to make

good decisions. As a general rule, the size and quality of the wetland impacts must be analyzed before an appropriate mitigation plan can be developed.

Below is a chart outlining the mitigation requirements that are currently (reviewed August 2001) in effect in the New England states.

STATE	AGENCY	LAW	MITIGATION REQUIREMENTS
CT	Dept. Envt'l Protection	Inland Wetlands & Watercourses Act	State agencies get wetland permits from the CT DEP – private applicants get permits from the appropriate municipal inland wetland agency. If wetland loss is unavoidable, DEP will consider mitigation measures in the following order: restoration, enhancement, and creation. DEP generally requires mitigation of 1:1, but it may go as high as 2:1.
ME	Dept. Envt'l Protection	Natural Resources Protection Act	Mitigation ratios are 1:1 for projects impacting wetlands of low significance and 2:1 for projects impacting wetlands of high significance. Preservation of existing wetlands (in lieu of creating or restoring wetlands) requires a ratio of 8:1.
MA	Dept. Envt'l Protection	Wetlands Protection Act	Mitigation ratio is 1:1 for projects up to 5,000 square feet. For projects greater than 5,000 square feet, mitigation ratios vary on case-by-case basis. Exceptions are made for projects that are in the public's best interest.
RI	Dept. Envt'l Management	Freshwater Wetlands Act	No mitigation ratios. Applicant must show to DEM that all impacts to the wetlands functions and values have been avoided or reduced to the maximum extent possible.
VT	Dept. Envt'l Conservation	Wetlands Rule	No mitigation ratios. The mitigation steps include avoidance, minimization, restoration, enhancement and compensation and must be addressed sequentially. DEC's main objective is on no net loss of wetland functions and values. Less weight is put on 1 for 1 acreage parameter.

3

RESPONSES TO COMMENTS FROM PRIVATE ORGANIZATIONS AND INDIVIDUALS

Response to Comments Made by
Paul Alessi
Windham, NH
Email sent October 8, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would reduce congestion in the NH-MA border area cited in the comment. Under Scenario 2, the State Line to Exit 1 segment of I-93 would be improved from LOS F in the 2020 and 2030 No Build condition to LOS E in the Build condition. The importance of the I-93 corridor in accommodating economic activity and tourist access to the Lakes Region is acknowledged. However, the proposed project is not designed as an economic development project.

Response to Comments Made by
Richard Areand
Bow, NH
Letter dated September 20, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would reduce the peak period congestion cited in the comment, see Section 4.6.2.

Response to Comments Made by
Laura Aronson
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
John Bachner
Derry, NH
Email sent September 25, 2009

1. The September 22, 2009 public hearing on the DSEIS was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS.

2. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. As described in Section 3.2.2, the 2005 Selected Alternative includes the replacement of the deficient interchanges in the corridor with new interchanges that meet current design standards.

3. Public transportation improvements for the I-93 corridor are being considered through the separate I-93 Bi-State Transit Investment Study. While the train or bus-on-shoulder services being evaluated in the I-93 Bi-State Transit Investment Study would improve transportation options in the corridor, they would not reduce vehicle trips to an extent that would affect the need to widen I-93 between Salem and Manchester (See DSEIS Appendix A-4: I-93 Transit Investment Study Ridership Memo).

Response to Comments Made by
Charles Bazdanes
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the safety issues cited in the comment.

Response to Comments Made by
John M. Beltogen
Comment form submitted September 25, 2009

1. Your support for the project is noted.

   The construction activities referenced in the comment were permitted under an agreement with the Conservation Law Foundation following the 2007 Court Order. The construction work allowed by this agreement is focused on removing traffic from "red list" bridges in an effort to improve safety along the I-93 corridor, as well as the construction of park-and-ride facilities.

   To address the long-term needs of the corridor, the 2005 Selected Alternative involves four lanes in each direction, not three lanes. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS.

Response to Comments Made by
Kathy Bove
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative involves widening I-93 to four lanes in each direction and the replacement of the deficient interchanges in the corridor with new interchanges that meet current design standards (See Section 3.2.2). The widening and interchange improvements would address the safety issues at Exit 4 and Exit 5 cited in the comment.

Response to Comments Made by
Trina Brand
Derry, NH
Email sent September 25, 2009

1. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS).

   As part of the response to comments on the DSEIS, NHDOT has prepared an updated cost estimate for the three-lane alternative for comparison to the current cost estimates for the 2005 Selected Alternative. The updated estimate still shows that the three-lane alternative would not substantially reduce the cost of the project in comparison to the

2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

2. Shoulder lane use was considered for the portion of I-93 between Exit 1 and Exit 3 during alternatives screening process for the 2004 FEIS. However, shoulder lane use was determined to be impractical and was not proposed for further consideration. The rationale for this conclusion is described in Section 2.3.2.3 of the 2004 FEIS. Key reasons for the elimination of shoulder lane use as an alternative for further study included:

   - Literature showing that shoulder lane use in other locations has increased crash rates.
   - Issues with emergency response vehicles being able to respond to incidents on I-93 if traffic flow in the shoulder lane is affected by the incident.
   - Issues with disabled vehicles and the need for emergency pull-off areas.
   - The close interchange spacing between Exit 1 and Exit 2 would reduce the effectiveness of shoulder lane use and increase safety concerns.
   - The roadway curvature and grade (4-5 percent) between Exit 2 and Exit 3 make shoulder lane use undesirable for this segment.
   - Shoulder lane use would not be a quick or low cost alternative due to the need to widen bridges and improve clear zone offsets.

3. The issues raised by the comment do not change the basis for the decision to select the four-lane alternative instead of the three-lane alternative.

   With respect to congestion and safety issues, the four-lane alternative would be more effective than the three-lane alternative. The 2004 FEIS analysis showed that the three-lane alternative would result in LOS F in the State Line to Exit 1 segment and LOS E between Exit 1 and Exit 3 in 2020. NHDOT and FHWA are not aware of any studies showing that people drive faster on four-lane roadways than three-lane roadways during off-peak hours, holding all other factors influencing driver behavior constant (congestion, grade, sight distance etc.).

   As discussed in Section 4.9.1 of the 2004 FEIS, the visual impact of the four-lane alternative would not be substantially greater than the three-lane alternative. The four-lane alternative adds an additional 12 feet of highway width for both the north and southbound barrels, resulting in a slight increase of the visual scale of the four-lane widening of the highway relative to the three-lane alternative.

4. As discussed in Chapter 6, noise barrier construction is proposed in several locations along the I-93 corridor.

5. The towns of Derry and Londonderry, NH have proposed the construction of I-93 Exit 4A, a new interchange between the existing Exit 4 and Exit 5. This project is separate from the NHDOT I-93 Improvements project. A Draft EIS for the I-93 Exit 4A Interchange Study Derry-Londonderry project was published in July 2007.

   Exit 4A is included in the I-93 Improvements SEIS traffic modeling as reasonably foreseeable future transportation project. The portion of I-93 between Exits 4 and 5 is expected to operate at LOS C under the 2020 and 2030 Scenario 2 Build condition. It is not possible to conclude from the SEIS traffic analysis the incremental traffic effect of

the Exit 4A project because it is included in both the No Build and Build condition. For information on the Exit 4A project traffic analysis results, refer to the Draft EIS, available at http://www.cldengineers.com/updates_londonderryexit.htm

Response to Comments Made by
Eleanor Briggs
Email sent October 6, 2009

1. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). As discussed below, the issues raised by the comment do not change the basis for the decision to select the four-lane alternative instead of the three-lane alternative.

2. At the time of the 2004 FEIS, the Selected Alternative was estimated to cost $421.4 million, compared $401.2 million for a three-lane alternative using the same design options as the Selected Alternative (See Figures 2.8-1 and 2.8-2 in the 2004 FEIS). The difference between the cost of the four-lane alternative and three-lane alternative was $20.2 million or five percent. The difference in the cost estimates is less than one would expect due to a need to provide sufficient highway width during construction to safely maintain a minimum of two lanes for both northbound and southbound traffic. With the four-lane alternative, traffic would be maintained on the existing two-lane highway while the highway is widened to accommodate the additional two lanes. However, to safely maintain traffic for the three-lane alternative, the highway would require over-widening to a width nearly that of the four-lane alternative to provide the minimum two lanes of traffic in each direction.

   As part of the response to comments on the DSEIS, NHDOT has prepared an updated cost estimate for the three-lane alternative for comparison to the current cost estimates for the 2005 Selected Alternative. The updated estimate still shows that the three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

   The allocation of transportation funds to specific projects is a policy decision beyond the scope of this SEIS.

3. The comment is fundamentally incorrect. As discussed in response to comment #2, the three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The comment is incorrect in asserting that alternative funding sources would not be needed for the three-lane alternative. Note that tolling on I-93 southbound in Salem is no longer under consideration for funding the project, see Section 1.3.1 of the FSEIS.

4. The comment is correct that the three-lane alternative would require less deicing salt application than the four-lane alternative. The FSEIS acknowledges that incremental implementation of the project (three-lanes in each direction) is possible in the interim to meet the Record of Decision commitments and Water Quality Certification condition E-10 (See Chapter 3). However, the long-term plan remains to implement the four-lane 2005 Selected Alternative, not the three-lane alternative. NHDOT and FHWA are

cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

5. The alternatives suggested by the comment (HOV lanes, rail service and bus service) were considered and determined not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). These alternatives would result in little or no reduction in travel on I-93 during the design hour and would not reduce the number of additional travel lanes required to provide acceptable levels of service on I-93.

   NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

6. The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

   - Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
   - Improve Traffic Flow (TLU 1.D.3)
   - Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
   - Various policies related to improving and expanding bus service
   - Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

   Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation, etc.).

   With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

   The statement in the comment that the project provides incentives to "single passenger petroleum based travel" is not accurate. As discussed in response to comment #5, the project includes new park and ride lots and expanded bus service, not just new highway capacity.

7. Chloride issues are being addressed through NHDES's TMDL implementation process, see response to comment #4.

8. The potential indirect land use effects of the 2005 Selected Alternative have been thoroughly evaluated, see Chapter 12. Under Scenario 2, the project is not expected to

change population and employment totals at a regional level. However, the location of a small amount of future population and employment growth could shift to areas closer to the I-93 corridor. For example, the 2030 population of the 29-community Delphi study area is expected to be 9,707 or 1.32 percent higher in the Build condition as compared to the No Build condition. The Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of future growth will be determined to a large extent by local land use regulations and planning.

The indirect effects analysis for Scenario 2 does not support the assertion in the comment that the project will be a substantial force in impacting open space, creating the need for new schools and emergency response services, or increasing local property taxes. The potential effect of the I-93 project on these issues is negligible in comparison to the impacts of the growth that is expected whether or not the project is constructed.

Traffic on secondary roads was analyzed in the SEIS in accordance with the Court Order, see Chapter 4. The secondary roadway network consists of the parallel roadways and feeder roads in the vicinity of I-93. The primary parallel roadways are NH Route 28 and NH Route 128. The feeder roadways include NH Routes 97, 111, 111A, and 102. While detailed capacity analyses were not conducted for NH 101, traffic volume estimates were generated for this roadway. The traffic modeling shows that under Scenario 2 2030 conditions, traffic volumes on NH 101/I-293 would increase by six percent between NH 28 and US 3A/Brown Avenue as a result of the 2005 Selected Alternative.

For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five secondary road intersections during the AM peak hour and four intersections in the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole. To the contrary, safety on secondary roads would be expected to improve overall as a result of these congestion reduction benefits.

9. The comment is incorrect in stating that the current population of Amherst has exceeded the New Hampshire Office of Energy and Planning's (OEP's) population projection for 2020. The OEP 2005 base year population estimate for Amherst used in the SEIS traffic modeling was 11,611. The OEP's 2008 population estimate (published in July 2009) for Amherst is very similar, 11,584. The current population of Amherst is well below the projected 2020 population of 13,030 and the 2030 population of 13,964.

10. See response to comment #1.

Response to Comments Made by
Bob Brown
Londonderry, NH
Email sent October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Richard Brownell
Derry, NH
Email sent September 24, 2009

1. The September 22, 2009 public hearing on the DSEIS was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS. The distribution list is provided in Chapter 17 of the DSEIS.

   A "submit comments" link was added to the rebuilding I-93 homepage to make it easier to submit comments.

2. Your frustration with the delays in the project is noted.

3. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

4. The towns of Derry and Londonderry, NH have proposed the construction of I-93 Exit 4A, a new interchange between the existing Exit 4 and Exit 5. This project is separate from the NHDOT I-93 Improvements project. A Draft EIS for the I-93 Exit 4A Interchange Study Derry-Londonderry project was published in July 2007.

   For information on the Exit 4A project traffic analysis results, refer to the Draft EIS, available at http://www.cldengineers.com/updates_londonderryexit.htm

5. NHDOT has implemented the improvement to the project website suggested by the comment.

Response to Comments Made by
Bob Bryant
Salem, NH
Email sent September 29, 2009

1. Your support for the project and frustration with the delays is noted.

Response to Comments Made by
Elizabeth Burns
Windham, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Elaine C
Email sent October 8, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Thomas Cardon
Derry, NH
Comment form submitted September 25, 2009

1. Your support for the project is noted.

2. Subsequent to the publication of the DSEIS, NHDOT has decided not pursue the tolling on I-93 southbound in Salem at this time (See Section 1.3.1 of the FSEIS).

3. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Gerry Coffey
Email sent October 6, 2009

1. The existing traffic conditions on U.S. 3 in Massachusetts do not provide a basis for drawing conclusions on the effectiveness of the widening project in that area, the appropriate comparison would be to the No Build condition (without the widening).

2. Rail alternatives were considered and determined not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). They were found to not have the potential to substantially affect I-93 traffic volumes or the need to widen the roadway. The 2005 Record of Decision included commitments to accommodate future rail service on Manchester-Lawrence line, reserve space for transit opportunities and to conduct a Bi-State Transit Investment Study for the I-93 corridor.

   NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

Response to Comments Made by
Harry W. Blunt, President
Concord Coach Lines
Letter dated October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the safety and congestion issues cited in the comment, including increased reliability of bus service through the corridor.

Response to Comments Made by
Mark Connors
Derry, NH
Email sent September 25, 2009

1. The construction activities referenced in the comment were permitted under an agreement with the Conservation Law Foundation following the 2007 Court Order. The construction work allowed by this agreement is focused on removing traffic from "red list" bridges in an effort to improve safety along the I-93 corridor, as well as the construction of park-and-ride facilities.

2. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

3. The section of the proposed trail within the Town of Derry is not impacted by the 2005 Selected Alternative.

   NHDOT and FHWA are not proposing to fund the Salem-Concord Bikeway project as part of the I-93 Improvements project. The Southern New Hampshire Rail Trail Alliance has applied for 2009-2010 Transportation Enhancement Program funding for the Salem-Concord Bikeway project. NHDOT is expected to decide on the projects to receive Transportation Enhancement funding by Spring, 2010.

Response to Comments Made by
Appalachian Mountain Club
Conservation Law Foundation
Environment New Hampshire
Granite State Conservation Voters
New Hampshire Audubon
New Hampshire Lakes Association
New Hampshire Public Interest Research Group
New Hampshire Rivers Council
New Hampshire Sierra Club
Letter dated October 6, 2009 with attachments[1]

1. NHDOT and FHWA disagree with the comment that the DSEIS failed to address important issues.

   The increase in greenhouse gas emissions cited in the comment is not accurate, see response to comments #11 through #14. The project is consistent with the applicable recommendations of the New Hampshire Climate Action Plan, see response to comment #15.

   The project does increase VMT, but it does not "undermine public transit strategies" as stated in the comment. In fact, the project includes numerous commitments to improve public transportation service, including park-and-ride lots and an expanded commuter bus service. By reducing congestion, the project will also improve travel time reliability for bus service.

   The project will not cause violations of the Clean Water Act; this assertion is not supported by the facts. The Section 401 Water Quality Certificate contains a provision requiring incremental implementation of the project if TMDL salt reduction loads cannot be met to ensure compliance with the Clean Water Act. NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

   As discussed in response to comment #2, the basis for the selection of the four-lane alternative instead of the three-lane alternative remains valid. As noted in the 2004 FEIS, the three-lane alternative does not result in substantial reductions in environmental impacts over the four-lane alternative.

2. The three-lane alternative was analyzed in the 2004 FEIS. The comment states that the three-lane alternative should be analyzed in the SEIS based on the following new information: 1) the updated New Hampshire Statewide Model, 2) the use of the gravity model approach instead of the Delphi Panel for Scenario 2, and 3) population projections that have been revised downward since the 2004 FEIS. Analysis of the three-lane alternative in the SEIS is not warranted because of the limited scope of the SEIS resulting from the Court Order. More importantly, the changes and new information since the 2004

[1] As responses to these comments were developed, all the attachments were considered. The Smart Mobility, Inc. report contained in Attachment 2 is included in this appendix. The remaining attachments are summarized in a table at the end of these responses and are on file at either NHDOT or FHWA's Concord, NH office.

FEIS do not change the previous conclusions regarding the three-lane alternative. The basis for the decision not to analyze the three-lane alternative in the SEIS is discussed in detail below.

Limited Scope Due to Court Order

As a result of the Court Order, the scope of the SEIS is limited and does not include analysis of alternatives other than the 2005 Selected Alternative. The Court Order directed NHDOT and FHWA to prepare a focused SEIS: "....that specifically considers how the Delphi Panel's population forecasts affect Defendant's analysis of both the effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the population predicted by those forecasts on secondary road traffic and air quality issues." The Court Order did not require additional analysis of the three-lane alternative. The limited scope of this SEIS was disclosed in the Notice of Intent published in the Federal Register on March 12, 2008.

The use of a limited scope SEIS is explicitly allowed under FHWA's NEPA regulations (23 CFR 771.130 (f). In the absence of significant new information pertaining to the analysis of the three-lane alternative, there is no requirement for the three-lane alternative to be reanalyzed in the SEIS. As discussed further below, the changes and new information since the 2004 FEIS would not substantially affect the transportation performance of the three-lane alternative. Therefore, the exclusion of the three-lane alternative from the scope of the SEIS is reasonable and consistent with NEPA requirements.

Updated New Hampshire Statewide Model

The primary change to the New Hampshire Statewide Model since the 2004 FEIS has been the updates to population and employment information. This issue addressed in a separate section, below. In addition to the population and employment updates, the updates to the New Hampshire Statewide Model between 2005 and 2007 included:

- Conversion of the model software platform from EMME/2 to TransCAD. The current TransCAD model retains the same basic structure and inputs as the original EMME/2 model developed in 1997. Therefore, this change would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative.
- Tourist trip purpose modeling. This additional feature would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative because tourist trips remain a limited proportion of overall travel activity.
- Transit model update. The transit network was updated to account for service changes since 1995-1998. These minor updates to the modeling of intercity rail and bus service would not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative because transit ridership remains very small in comparison to the number of trips on I-93 made by automobiles and trucks.

The New Hampshire Statewide Model is an updated and improved tool, not new information unto itself. For more information on the updates to the New Hampshire Statewide Model, refer to DSEIS Appendix A-2.

Use of Gravity Model Approach for Scenario 2

The gravity model approach was used to model potential indirect land use effects under Scenario 2, instead of the Delphi approach used in the analysis of Scenario 1. The gravity model changes the distribution of population and employment in the region based solely on changes in accessibility.[2] In this case, the New Hampshire Office of Energy and Planning's (OEP's) population forecast is used as the basis for the Build Condition and the gravity model is used to define the No Build condition (distribution of population and employment without the project). However, the gravity model analysis for Scenario 2 shows a relatively small change in the distribution of population and employment as a result of the project (See for example, Table 12-7). Therefore, the gravity model approach itself does not substantially affect the results of the 2004 FEIS analysis of the three-lane alternative. The issue of changes in population and employment projections is addressed below.

Updated Population and Employment Projections

The Scenario 2 2020 population and employment projections used in the traffic modeling for the SEIS are only slightly higher than the population and employment projections used in the traffic modeling for the 2004 FEIS. As a result, the three-lane alternative would perform similar to or worse than it did in the 2004 FEIS analysis under Scenario 2 in 2020. This conclusion is supported by the discussion of the expected Level of Service for the three-lane alternative provided in FSEIS Appendix B. Therefore, additional detailed analysis of the three-lane alternative in the SEIS is not warranted or necessary.

The 2020 population and employment levels used in the 2004 FEIS traffic modeling were based on OEP projections from the mid-1990's. These projections were developed using the results of the 1990 Census. Subsequent to the release of the 2000 Census results, growth projections were revised upward. The 2005 Traffic Sensitivity Analysis (TSA) reported that the population projections used in the 2004 FEIS traffic model for the 23 communities in the New Hampshire portion of the Delphi study area was 11 percent lower than the latest available OEP projection at that time (See DSEIS Appendix A-1). Since the release of the TSA, OEP has lowered their growth projections, but they still remain slightly higher than the projections used in the traffic modeling for the 2004 FEIS. For example, the 2020 population for the 23 communities under Scenario 2 No Build is 3.9 percent higher than the population used in the 2004 FEIS modeling. The 2020 employment for the 23 communities under Scenario 2 No Build is 7 percent higher than the population used in the 2004 FEIS modeling. A detailed table comparing the population levels used in the 2004 FEIS traffic modeling with the Scenario 2 2020 and 2030 No Build is provided below. The relative difference between the 2004 FEIS population levels and the Scenario 2 population levels would be slightly larger if the

[2] Accessibility can be understood as the attractiveness of a place of origin (how easy it is to get from there to all other destinations) and as a destination (how easy it is to get to there from all other origins and destinations). Consequently, the structure and capacity of the transportation network affect the level of accessibility in a given area. The accessibility of places can have an impact on land value, and hence the use to which land is put. Holding all other factors constant, the gravity model formulation assumes that areas where accessibility increases as a result of a transportation project will be relatively more attractive for development than if the project had not been built.

comparison was made to the Scenario 2 Build condition instead of the No Build condition.

Comparison of Population Projections Used in Transportation Modeling
2004 FEIS vs. Scenario 2 2020 and 2030 No Build

	2004 FEIS 2020 Population	Scenario 2 2020 No Build Population	Difference	Percent Difference	2030 No Build Population	Difference	Percent Difference
Allenstown	5,731	5,634	-97	-1.7%	5,976	245	4.1%
Atkinson	6,639	7,307	668	9.1%	7,707	1,068	13.9%
Auburn	6,308	5,680	-628	-11.1%	5,999	-309	-5.2%
Bedford	28,250	23,730	-4,520	-19.0%	24,978	-3,272	-13.1%
Bow	7,974	9,731	1,757	18.1%	10,838	2,864	26.4%
Candia	4,594	4,516	-78	-1.7%	4,755	161	3.4%
Chester	3,753	5,116	1,363	26.6%	5,449	1,696	31.1%
Concord	41,813	47,626	5,813	12.2%	50,527	8,714	17.2%
Danville	5,484	5,057	-427	-8.4%	5,383	-101	-1.9%
Deerfield	5,537	4,744	-793	-16.7%	5,035	-502	-10.0%
Derry	49,547	37,960	-11,587	-30.5%	39,086	-10,461	-26.8%
Dunbarton	2,980	2,881	-99	-3.4%	3,102	122	3.9%
Goffstown	18,480	20,104	1,624	8.1%	21,474	2,994	13.9%
Hampstead	13,565	9,770	-3,795	-38.8%	10,440	-3,125	-29.9%
Hooksett	10,694	16,159	5,465	33.8%	17,725	7,031	39.7%
Londonderry	31,699	27,683	-4,016	-14.5%	29,456	-2,243	-7.6%
Manchester	94,633	116,515	21,882	18.8%	119,764	25,131	21.0%
Pelham	13,053	16,822	3,769	22.4%	19,612	6,559	33.4%
Pembroke	7,924	8,332	408	4.9%	8,926	1,002	11.2%
Raymond	15,236	11,843	-3,393	-28.6%	12,509	-2,727	-21.8%
Salem	27,879	32,484	4,605	14.2%	33,926	6,047	17.8%
Sandown	8,931	6,573	-2,358	-35.9%	7,007	-1,924	-27.5%
Windham	12,214	13,892	1,678	12.1%	14,728	2,514	17.1%
Total	**422,918**	**440,159**	**17,241**	**3.9%**	**464,402**	**41,484**	**8.9%**

3. As discussed in response to comment #2, the statement from the DSEIS cited in the comment is factually correct. The changes since the 2004 FEIS, including changes in population and employment growth projections, show that the three-lane alternative would perform similar or worse than it did in the 2004 FEIS. The three-lane alternative underperformed as a congestion mitigation measure for 2020 and would continue to provide inadequate LOS for 2030. No new information has been identified that would change the conclusions of the 2004 FEIS regarding the three-lane alternative. Therefore, the information used in the decision to select the four-lane alternative remains valid. Detailed modeling of the three-lane alternative is not necessary to reach this conclusion. The basis for this conclusion is amply supported by the record. Refer to FSEIS Appendix B for detailed information on the expected LOS for the three-lane alternative for Scenario 2 2020 and 2030.

4. NHDOT and FHWA disagree with the assertion that the new information provided in the DSEIS calls into question the 2003 LEDPA decision. As discussed in the response to comment #2, above, the population and employment projections used in the SEIS Scenario 2 traffic modeling are actually higher than those used in the 2004 FEIS traffic modeling. As a result, the three-lane alternative would perform similar to or worse than it did in the 2004 FEIS analysis under Scenario 2 in 2020. Therefore, the transportation performance considerations favoring the four-lane alternative over the three-lane alternative remain valid and do not change the basis for the LEDPA decision and Section 404 permit approval.

   The wetland impacts of the 2005 Selected Alternative have increased since the 2004 FEIS as a result of revised delineation of wetlands along the corridor, design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping. If advanced through final design and reanalyzed with updated mapping, the wetland impacts of the three-lane alternative would also be expected to increase for these same reasons. Therefore, the relative comparison of wetland and wildlife habitat impacts of the three-lane alternative vs. the four-lane alternative in the 2004 FEIS remains valid and does not change the basis for the LEDPA decision and Section 404 permit approval.

   The increase in business displacements cited by the comment occurs as a result of interchange improvements that would be nearly identical for both the three-lane and four-lane alternatives. Therefore, the relative comparison of business displacements of the three-lane alternative vs. the four-lane alternative in the 2004 FEIS remains valid and does not change the basis for the LEDPA decision and Section 404 permit approval.

5. As discussed in responses to comments #6 through #10, the SEIS transportation analysis was reasonable and consistent with transportation planning practice.

6. The demographic projections used in the SEIS transportation modeling were reasonable and the latest available information at that time. Vehicle travel is linked to economic activity and employment. Historically, VMT has exhibited continued growth despite temporary dips. While decreases in VMT have been observed in recent years as a result of an economic recession, it is unlikely that this downward trend will continue through 2030. In fact, the annual VMT in New Hampshire increased by 0.8 percent or 107 million vehicle miles between 2008 and 2009.[3]

   The 2005 base year of the New Hampshire Statewide Model is reasonable and consistent with prudent transportation modeling practice. It also represents a substantial upgrade from the 1997 base year used in the traffic modeling for the 2004 FEIS. Due to the level of effort and cost involved, it is not practicable for the transportation model base year to be updated every year to respond to short-term events. An "analysis and recalibration" of the traffic model is not warranted.

7. Congestion pricing was considered during the alternatives screening process for the 2004 FEIS (See Section 2.3.4.2 of the 2004 FEIS). It was concluded that congestion pricing would be impracticable. A congestion pricing alternative would still be impracticable for the following reasons:

[3] FHWA's Traffic Volume Trends reports for 2008 and 2009. (http://www.fhwa.dot.gov/ohim/tvtw/tvtpage.cfm).

- Impacts on other roadways- shifting traffic to other facilities from I-93 would not be consistent with the purpose and need for the project (improving transportation system efficiency);
- Public acceptance issues with the relatively high charges that would be needed to manage traffic demand in the peak periods without widening the roadway; and
- Social justice issues raised by disparate impacts by congestion pricing.

As discussed in Section 1.3.1, the $2 non-variable toll on I-93 southbound between the Stateline and Exit 1 under consideration at the time of the preparation of the DSEIS has since been found to be impracticable.

No new information has been identified that would change the conclusions of the 2004 FEIS regarding congestion pricing. Therefore, the information used in the decision to reject this alternative remains valid.

8. The speed limit on I-93 south of Exit 2 is 55 mph. Reducing the speed limit on I-93 north of Exit 2 to 55 mph would be inconsistent with the purpose of the project related to improving transportation system efficiency. A lower speed limit would increase travel times and costs for individuals and businesses.

As for the safety goals of the project, the effect of speed limit policies on safety on interstate highways is unclear. While some studies have shown a reduction in accident rates with a lower speed limit, others have shown no change.[4] In addition, experience with the National maximum speed limit law (repealed in 1995) has shown that the majority of drivers ignore a 55 mph speed limit on interstate highways. Therefore, reducing the speed limit on I-93 to 55 mph would not be an effective strategy for improving safety.

Note that reducing travel demand, VMT growth and greenhouse gas emissions are not aspects of the purpose and need statement for this project. The recommendation in the New Hampshire Climate Action Plan to evaluate a lower speed limit was made in a statewide policy context, not as a requirement for individual transportation projects.

9. The conclusion that the bus-on-shoulder service recommended by the I-93 Transit Investment Study is not reasonably foreseeable was thoroughly explained in Section 4.4.5 of the DSEIS. It is important to note that the NEPA analysis decision concerning which projects to include in the No Build condition has nothing to do with NHDOT's commitment to I-93 Transit Investment Study or public transportation in general.

The assertion in the comment that the effect of the bus-on-shoulder service on highway operations of the four-lane alternative has not been considered is not accurate. The analysis in DSEIS Appendix A-4: I-93 Transit Investment Study Ridership Memo shows that the bus-on-shoulder service would not substantially affect design hour traffic volumes or level of service. This conclusion is valid even for a scenario with no widening of I-93, where transit ridership would be the highest due to severe congestion. Ridership under the three-lane alternative would be less than under the scenario with no widening

[4] See for example: Malyshkina and Mannering, 2008. "Effect of Increases in Speed Limits on Severities of Injuries in Accidents" Transportation Research Record, No. 2083. (An increase in the speed limit from 65 mph to 70 mph did not have a statistically significant effect on the severity of accidents on Interstate highways in Indiana).

of I-93 and would similarly not substantially affect design hour traffic volumes or level of service.

As discussed in response to comment #7, congestion pricing is not a reasonable alternative. Therefore, evaluating the effect of the bus-on-shoulder service on highway operations in conjunction with congestion pricing is not reasonable. Reducing VMT and greenhouse gas emissions are not part of the purpose and need for this project.

Adding the Capitol Corridor project to the SEIS traffic modeling is not warranted given the lack of potential for measurable effects on I-93 traffic volumes. Rail service between Manchester and Lowell (along the Capitol Corridor) was evaluated during alternatives screening for the 2004 EIS (the West Rail Corridor). The ridership estimates showed that the project would not alter the need to widen I-93, and would be less effective than the other rail alternatives considered in affecting I-93 traffic conditions. In addition, SNHPC prepared ridership estimates in 2008 for the Capitol Corridor project that showed that 4,620 to 5,280 daily trips would be attracted to the new stations (although 840 of these boardings would be diversions from the existing Lowell station). One of the proposed stations included in the ridership estimates above is located in Massachusetts (Chelmsford- 920 to 1,080 daily boardings). Given the location of the proposed new stations within the F.E. Everett Turnpike/U.S. 3 corridor, the small effect of the project on highway traffic would be primarily focused on the F.E. Everett Turnpike, not I-93.

NHDOT ultimately decided not to apply for Federal high-speed rail funding for the Capitol Corridor project due to a lack of cooperation from Pan Am Railways, as owner of the right-of-way. The statement in the "Vision for the New England High-Speed and Intercity Rail Network" document that the Capitol Corridor project would significantly relieve highway congestion on I-93 between Salem and Manchester is speculative and not supported by the ridership study conducted for the Capitol Corridor project.

10. The commuter bus service on I-93 did not begin operation until November 2008, and therefore is not included in the 2005 base year for the New Hampshire Statewide Model.

The commuter bus service was not added to the future No Build condition (2020 and 2030) because the ridership levels on this service would not substantially affect the traffic operations on I-93. In 2009, there were a total of 392 average daily inbound boardings on the commuter bus service at Exits 2, 4 and 5. Assuming an average vehicle occupancy of 1.12, this is the equivalent of approximately 350 daily vehicle trips or less than one percent of the SEIS Scenario 2 2030 southbound daily traffic volumes on I-93 between Exit 1 and the State line (65,800).

11. The issue of climate change was acknowledged in the DSEIS, including the *Massachusetts et al. v. Environmental Protection Agency et al.* 549 U.S. 497 (2007) US. Supreme Court Decision, EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, and New Hampshire's Climate Action Plan. However, NHDOT and FHWA concluded that no analysis of greenhouse gas emissions in the SEIS is required or warranted on a project- level basis. As discussed in Section 5.3.7, it is analytically problematic to conduct a project-level cumulative effects analysis of greenhouse gas emissions on a global-scale problem.

The Center for Biological Diversity v. National Highway Traffic Safety Administration Court Decision dealt with setting new corporate average fuel economy (CAFE) standards

for light trucks, an action involving substantially greater effects on reducing greenhouse gas emissions and climate change than any single transportation project. The case does not create a greenhouse gas or climate change analysis requirement for transportation projects.

The interstate highway system includes a total of 46,726 miles (as of October 31, 2002),[5] while New Hampshire contains 225 miles of interstate highways. The proposed project would improve 19.8 miles of the interstate highway system. Given that the portion of I-93 that would be affected by the proposed project is miniscule in comparison to the larger transportation system – roughly 0.04 percent of the total interstate system mileage and approximately 0.00012 percent of the National Highway System (160,000 miles) – a project-level greenhouse gas emissions analysis is not reasonable.

Refer to response to comment #15 with respect to the consistency of the project with the New Hampshire Climate Action Plan.

12. The role of the transportation sector as a source of greenhouse gas emissions is acknowledged. However, the comment incorrectly asserts that the only way to reduce greenhouse gas emissions from the transportation sector is to reduce VMT. Since greenhouse gas emission rates are highest at very low speeds, emission reductions are also achieved through congestion relief projects. Fuel economy standards and the introduction of hybrid, electric and alternative fuel vehicles will play a key role in reducing emissions from the transportation sector. Other strategies that do not require VMT reductions include projects and policies to reduce idling emissions (such as the I-93 improvements) and pollution control retrofit equipment.

13. The calculation of an annual increase in CO_2 emissions of 252,000 metric tons under Scenario 2 in 2030 is not accurate. The commenter calculated this number by multiplying the annual VMT increase by a flat CO_2 emission rate of 250 grams/mile. This approach does not take into account the congestion reduction benefits of the 2005 Selected Alternative. By reducing congested conditions where CO_2 emission rates are very high, the emission reduction benefits would be achieved that would significantly offset emissions increases from the increase in highway VMT.

14. NHDOT and FHWA acknowledge that analysis of greenhouse gas emissions at the project-level is possible. However, it is not feasible to conduct a project-level analysis of how such changes in greenhouse gas emissions would affect climate change or climate change impacts. The NEPA process is meant to concentrate on the analyses of issues that can be truly meaningful to the consideration of project alternatives, rather than simply "amassing" data. In the absence of a regional or national framework for considering the implications of a project-level greenhouse gas analysis, such an analysis would not inform project decision-making, while adding to the administrative burden and greatly increasing the cost.

The Center for Biological Diversity v. National Highway Traffic Safety Administration court decision dealt with an environmental assessment and finding of no significant impact accompanying a Final Rulemaking that established new corporate average fuel economy (CAFE) standards for the U.S. fleet of light trucks, SUVs, and mini-vans for the model years 2008 – 2011. The Border Power Plant Working Group v. Department of

[5] http://www.fhwa.dot.gov/programadmin/interstate.cfm

Energy court decision involved a DOE environmental assessment and finding of no significant impact that failed to disclose the significance of CO_2 and ammonia emissions that would result from six natural gas combustion turbines in two internationally operating power plants on the U.S.-Mexico border. These actions potentially involve substantially greater effects on greenhouse gas emissions and climate change than any single transportation project, and these cases do not create a NEPA requirement that greenhouse gas emissions be quantified for individual transportation projects and that those emissions be translated to global level climate change impacts. The DSEIS acknowledged the role of the transportation sector as a source of greenhouse gas emissions and explained that climate change does not lend itself to analysis at the local level.

For the Columbia River Crossing (CRC) EIS, a greenhouse gas analysis was performed because of widespread interest in the topic in both Oregon and Washington. Portland, a national leader in linking transportation and land use, is keenly interested in the greenhouse gas reduction potential of transportation projects. In addition, the major MPOs in each state (Portland Metro in Oregon and Puget Sound Regional Council in Seattle, Washington) have been performing greenhouse gas analyses of their transportation plans. In the case of CRC, a large portion of the comments on the DEIS were related to climate change and an expert peer review panel was convened to review the draft greenhouse gas analysis and comment on the methodology. There was a much higher agency and public interest in greenhouse gas issues for CRC than for the I-93 improvements project. A unique set of circumstances associated with the CRC EIS led to the greenhouse gas analysis; however, these circumstances are not applicable to the proposed project.

The methodology recommended for transportation emissions in the Massachusetts Environmental Policy Act guidance cited in the comment would not be appropriate for the I-93 project. The guidance recommends multiplying VMT by CO_2 emission factors from MOBILE6.2. However, the MOBILE6.2 emission factors for CO_2 do not take into account important factors influencing CO_2 emissions, including changes in vehicle speed. While the MOBILE6.2 emission factors may be appropriate for a project that does not change vehicle speeds, they are not appropriate for a major congestion reduction project.

15. Chapter 5 of the FSEIS provides additional information on the consistency of the project with the New Hampshire Climate Action Plan policies. The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

- Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
- Improve Traffic Flow (TLU 1.D.3)
- Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
- Various policies related to improving and expanding bus service
- Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation etc.).

With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

16. As discussed in the responses to comment #18, below, the assertions in the comment regarding the effect of the project on chloride issues in the TMDL watersheds are unsubstantiated.

17. The comment incorrectly summarizes the Record of Decision and Water Quality Certificate conditions by stating that the construction of a fourth lane is prohibited until the TMDL load reductions for state roads are met. The Water Quality Certificate authorizes incremental implementation of the project through an adaptive management approach-- paving and operating three-lanes in each direction until it can shown that operating the fourth lane will be in compliance with the TMDL. The Water Quality Certificate does not prohibit the construction of a four-lane facility. Section 1.3 of the 2005 ROD (which is referenced in the Water Quality Certificate) explains that incrementally implementing the project means building the full footprint of the four-lane Selected Alternative, but only paving and operating the highway as a six lane facility (three-lanes in each direction). The Paul Currier quote in the comment is a correct interpretation of the Water Quality Certificate and Record of Decision incremental implementation requirement. However, the quote does not support the argument of the commenter.

The DSEIS summarized the Record of Decision and Water Quality Certificate conditions, including the provision related to adaptive management approach to implementing the project in the event that TMDL load reductions for state roads are not met (DSEIS, Page 10-8).

NHDOT and FHWA and NHDES (through MOA) agree that the incremental implementation provision is important to make clear to the public. Information on this provision has been added to the executive summary and project description components of the FSEIS (See Section 3.2.2). Note that the Water Quality Certificate went through a public review process.

The possibility of a three-lane I-93 in the interim while chloride TMDL issues are resolved does not require a traffic analysis for the three-lane alternative in the SEIS. Analysis of the three-lane alternative in the SEIS is not warranted because of the limited scope of the SEIS resulting from the Court Order. More importantly, the changes and new information since the 2004 FEIS do not change the previous conclusions regarding the three-lane alternative (See response to comment #2). The changes since the 2004 FEIS, including changes in population and employment growth projections, show that the three-lane alternative would perform similar or worse than it did in the 2004 FEIS. The three-lane alternative underperformed as a congestion mitigation measure for 2020 and would continue to provide inadequate LOS for 2030. No new information has been identified that would change the conclusions of the 2004 FEIS regarding the three-lane alternative. Therefore, the information used in the decision to select the four-lane alternative remains valid. Detailed modeling of the three-lane alternative is not necessary to reach this conclusion. The basis for this conclusion is amply supported by the record. Refer to FSEIS Appendix B for detailed information on the expected LOS for the three-lane alternative for Scenario 2 2020 and 2030.

18. Comments on the NHDOT TMDL implementation plan are beyond the scope of this SEIS. TMDL implementation is within the purview of NHDES. NHDOT has submitted an implementation plan that addresses its contribution to chloride loadings from State highways. The NHDOT TMDL implementation plan is available on the project website (www.rebuildingi93.com/). The NHDOT TMDL implementation plan is summarized in the SEIS for information disclosure purposes. Analysis of the effects of the TMDL implementation plan on municipalities and the private sector is also beyond the scope of this SEIS. Any such assessment would be speculative because the details of how NHDES will implement the TMDLs are not known at this time.

With respect to Dinsmore Brook, the NHDOT Implementation Plan does not exceed the Total Watershed Allocation. After the project is complete, the overwhelming majority of the impervious surface area in this watershed will be state maintained. Therefore, the fact that I-93 would use the entire allowable chloride loading for this watershed does not place a substantial burden on the town or the private sector as suggested by the comment.

The assertion that the project will preclude the attainment of water quality standards is unfounded. There is no evidence that construction of a four-lane facility will violate the Clean Water Act. The NHDOT Implementation Plan does not exceed the Total Watershed Allocation. Details of Sector Allocations are being developed in cooperation with NHDES, the municipalities and NHDOT. Chloride loading reductions have not yet been addressed in NHDES's Implementation plan and the private sector, which is the largest contributor to the current chloride impairment, are presently essentially unregulated.

NHDOT does not have a "bare-pavement" policy as stated in the comment.

19. Comments on the Ten Year Plan are beyond the scope of this SEIS. NEPA does not require an analysis of cost implications of proposed projects.

NHDOT continues to gather and evaluate information on various funding alternatives. The main focus of this effort is identifying new revenue sources to pay for the $250 million in I-93 construction that is not currently included in the State's Ten Year Transportation Improvement Plan. Some of the alternatives include increased legislative bonding authority and increased gas tax. NHDOT's plan is to secure funding and complete the construction of the I-93 Salem to Manchester corridor by 2020.

The HB 2 Financial Commission has been established by the legislature to study and make recommendations on the funding of transportation in New Hampshire. This is an important step that provides a critical venue for specifically considering the funding of I-93 with legislative leadership as a precursor to full legislative action. The best means to fund I-93 construction will be a key part of the Commission's work, whether bond financing supported by a dedicated revenue or gas tax.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably

expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

Although not required, NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million, which is approximately 4 percent less than the 2005 Selected Alternative.

20. The FSEIS is the appropriate place for presenting the responses to the comments on the DSEIS, no addendum or supplement to the DSEIS is required. Public comments on the FSEIS will be accepted and responded to in the Supplemental Record of Decision. Electronic copies of the FSEIS on CD will be distributed to the agencies, organizations and individuals that received a copy of the DSEIS, as well as those that commented on the DSEIS. The FSEIS will be made available on the project website and at the public libraries of the I-93 corridor municipalities. The availability of the FSEIS will be noticed in the Federal Register and in local newspapers. In accordance with NEPA, the Supplemental ROD will not be issued sooner than 30 days after the FSEIS. NHDOT and FHWA believe this will allow for the public to provide meaningful input into the process.

21. The methodology used to estimate the increase in greenhouse gas emissions cited in the comment is flawed because it does not take into account the congestion reduction benefits of the project, see response to comment # 13.

The use of the New Hampshire Statewide Model for the SEIS future traffic projections is reasonable and consistent with transportation planning practice. Vehicle travel is linked to economic activity and employment. The 2008 decline in traffic volumes was an anomaly resulting from an economic recession and not an indication of a long-term trend. Data for 2009 shows that traffic volumes increased by 4.5 percent between 2008 and 2009, see response to comment #23 for more information.

South of Exit 2, the speed limit on I-93 is 55 mph. Reducing the speed limit on I-93 north of Exit 2 to 55 mph would be inconsistent with the purpose of the project related to improving transportation system efficiency. A lower speed limit would increase travel times and costs for individuals and businesses.

Various combinations of public transportation improvements and highway widening were evaluated in the alternatives screening process for the 2004 FEIS. They were found to not have the potential to substantially affect I-93 traffic volumes or the need to widen the roadway. Combining a 55 mph speed limit with public transportation improvements and widening to three-lanes in each direction is not a reasonable alternative and would not address the long-term needs for the I-93 corridor.

22. The methodology used to estimate the increase in greenhouse gas emissions cited in the comment is flawed because it does not take into account the congestion reduction benefits of the project, see response to comment # 13.

23. First, it is not appropriate to base future traffic projections on a small sample of variation in recent years. The use of the New Hampshire Statewide Model for the SEIS future traffic projections was reasonable and consistent with transportation planning practice. Second, the ATR data for 2009 (not available at the time this comment was prepared) show that the drop in traffic volumes in 2008 was an anomaly resulting from an economic recession and not an indication of a long-term trend. Adjusted average daily traffic volumes at the Stateline station increased from 102,000 in 2008 to 106,542 in 2009, an increase of 4.5 percent. Taking into account the 2009 data, the total decrease in traffic volumes from 2002 levels at the Stateline was 5.8 percent, not 10 percent as cited in the comment. The decrease over this time period was smaller at the Derry-Windham town line station (3.2 percent decrease).

While continued year-to-year variations are expected, a long-term pattern of traffic growth through 2020 and 2030 is expected based on the latest available population and employment projections for New Hampshire.

24. The issues raised by the comment are thoroughly addressed through the SEIS transportation modeling framework, including indirect land use effects, changes in traffic patterns, and potential traffic impacts on the secondary road network.

The assertion that roadway widening is a failed approach to addressing congestion is incorrect. Under Scenario 2, the project is not expected to change population and employment totals at a regional level. However, the location of a small amount of future population and employment growth could shift to areas closer to the I-93 corridor. For example, the 2030 population of the 29-community Delphi study area is expected to be 9,707 or 1.32 percent higher in the Build condition as compared to the No Build condition.

In terms of traffic impacts on other roads, it is important to note that the VMT increase cited in the comment is spread over the entire statewide model region (all of New Hampshire and portions of Massachusetts, Maine and Vermont). The project has a net positive impact on secondary road congestion in the vicinity of the I-93 corridor. For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five secondary road intersections during the AM peak hour and four intersections in the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole.

The alternatives suggested by the comment are addressed in responses to comments #25 through #27.

25. The comment is correct that the toll modeled in the tolling sensitivity analysis reduces VMT and that a higher toll would reduce VMT more than a smaller one. This occurs because tolls make travel more costly. For modeling purposes, the cost of the toll is treated as a travel time impedance based on the value of time for different road users.

The comment is correct that the proposed project is intended to address peak period congestion, consistent with transportation planning practice for addressing the time when the greatest congestion occurs. As noted in Section 4.6.2, the hours of congestion have increased due to peak spreading.

The analysis of DSEIS Figure 4-4 provided in the comment is incorrect. The comment applies the effect of the toll on the four-lane Build condition traffic volumes (12.4 percent reduction) to estimate the effect of the toll on No Build condition traffic volumes. This approach ignores the effect of higher congestion under the No Build condition on trip-making decisions. The effect of the toll under the No Build condition would likely be less than in the Build condition because more traffic is already diverting to roads other than I-93 in the No Build condition to avoid congestion.

The comment recommends variable congestion pricing to manage travel demand on I-93. Congestion pricing was considered during the alternatives screening process for the 2004 FEIS (See Section 2.3.4.2 of the 2004 FEIS). It was concluded that congestion pricing would be impracticable. A congestion pricing alternative would still be impracticable for the following reasons:

- Impacts on other roadways- shifting traffic to other facilities from I-93 would not be consistent with the purpose and need for the project (improving transportation system efficiency);
- Public acceptance issues with the relatively high charges that would be needed to manage traffic demand in the peak periods without widening the roadway; and
- Social justice issues raised by disparate impacts by congestion pricing.

As discussed in Section 1.3.1, the $2 non-variable toll on I-93 southbound between the Stateline and Exit 1 under consideration at the time of the preparation of the DSEIS has since been found to be impracticable.

No new information has been identified that would change the conclusions of the 2004 FEIS regarding congestion pricing. Therefore, the information used in the decision to reject this alternative remains valid.

26. South of Exit 2, the speed limit on I-93 is 55 mph. Reducing the speed limit on I-93 north of Exit 2 to 55 mph would be inconsistent with the purpose of the project related to improving transportation system efficiency. A lower speed limit would increase travel times and costs for individuals and businesses. Therefore, reducing the speed limit to 55 mph is not a reasonable alternative.

27. The bus-on-shoulder ridership projections are not substantial in comparison to the traffic projections for I-93. The Scenario 2 2030 No Build southbound daily traffic volumes on I-93 between Exit 1 and the State line are 65,800.

The comment is incorrect in stating that traffic growth forecasts have been reduced in comparison to the 2004 FEIS. With the exception of the segment south of Exit 1 (which is only slightly lower) the remaining I-93 segments would have higher traffic volumes under the SEIS Scenario 2 2020 Build condition as compared to the 2004 FEIS 2020 Build condition. Traffic volumes would be even higher under the Scenario 2 2030 Build condition, see the table below.

Comparison of Average Daily Traffic Volume Projections, 2004 FEIS vs. SEIS Scenario 2

Segment	2020 Build Condition ADT		2030 Build Condition ADT
	2004 FEIS	SEIS Scenario 2	SEIS Scenario 2
MA. Line to Exit 1	143,600	137,000	152,900
Exit 1 to Exit 2	116,500	118,000	134,900
Exit 2 to Exit 3	108,900	116,900	135,800
Exit 3 to Exit 4	76,600	94,800	109,000
Exit 4 to Exit 4A	85,200	88,200	101,500
Exit 4A to Exit 5	85,200	100,600	116,100
North of Exit 5	88,900	97,600	113,100

The comment is correct that transit ridership would be higher with congestion pricing. However, as discussed in response to comment #25, congestion pricing is not a reasonable alternative. Therefore, the combination of transit improvements with congestion pricing is not a reasonable alternative, nor would it divert significant traffic to obviate the need for project.

Attachments to Letter P-19

	Title	Author	Date
1	Getting on Track: Record Transit Ridership Increases Energy Independence	Environment America Research and Policy Center	September, 2009
2	Review of the Draft Supplemental Environmental Impact Statement for the I-93 Improvement Project	Norman Marshall, Smart Mobility, Inc.	October, 2009
3	Traffic Volume Trends, July 2009	Federal Highway Administration	September, 2009
4	Traffic Volume Trends, December 2005	Federal Highway Administration	February, 2006
5	Traffic Volume Trends, December 2007	Federal Highway Administration	February, 2008
6	The New Hampshire Climate Action Plan	New Hampshire Department of Environmental Services	March, 2009
7	Vision for the New England High-Speed and Intercity Rail Network	State Departments of Transportation in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.	July, 2009
8	New Hampshire Climate Change Website	State of New Hampshire	October, 2009
9	New Hampshire Executive Order 2007-3	John Lynch, Governor	December, 2007
10	Climate Change Action Plan 2001	New England Governors and Eastern Canadian Premiers	August, 2001
11	Massachusetts Climate Protection Plan	Massachusetts Office for Commonwealth Development	2004
12	Falling Behind: New England Must Act Now to Reduce Global Warming Pollution	Environment Connecticut Research and Policy Center and Clean Water Fund	March, 2008

	Title	Author	Date
13	Driving Global Warming: Commuting in New Hampshire and its Contribution to Global Warming	NHPIRG Education Fund and Clean Water Fund	January, 2006
14	Cool Moves: Transit in New England and its Role in Curbing Global Warming Pollution	Environment Maine Research and Policy Center and Natural Resources Council of Maine	2007
15	Public Transportation's Contribution to U.S. Greenhouse Gas Reduction	American Public Transportation Association	September, 2007
16	Growing Cooler: The Evidence on Urban Development and Climate Change	Urban Land Institute	April, 2008
17	Successes in Stewardship	Federal Highway Administration	August, 2009
18	Excerpts from the Columbia River Crossing Project Cumulative Impacts and Energy Technical Reports	Washington State Department of Transportation and Oregon State Department of Transportation	2008
19	MEPA Greenhouse Gas Emissions Policy and Protocol	Massachusetts Executive Office of Energy and Environmental Affairs	2007
20	I-93/Route 110/Route 113 Interchange Reconfiguration and Reconstruction Project ENF Certificate	Massachusetts Executive Office of Energy and Environmental Affairs	July, 2008
21	2011-2020 Ten Year Transportation Plan Presentation to GACIT	New Hampshire Department of Transportation	August, 2009

Response to Comments Made by
Tracy Cosgriff
Email sent October 6, 2009

1. Refer to the responses to identical comments from Eleanor Briggs (comment document P-9).

Response to Comments Made by
Alan Daigneault
Windham, NH
Email sent September 24, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Sally D'Angelo
Windham, NH
Letter dated October 2, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Kathleen Davis
Windham, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Michelle DeBye
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Paul DeBye
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted.

Response to Comments Made by
Roger Deiker
Email sent October 7, 2009

1. Your support for the project is noted.

Response to Comments Made by
Joseph Doherty
Londonderry, NH
Email sent October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Richard Dooley
Windham, NH
Email sent October 4, 2009

1. Your support for the project is noted.

Response to Comments Made by
Tim Driscoll
Auburn, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

2. NHDOT will be responsible for the maintenance of the noise barriers constructed as part of this project, including the removal of graffiti as appropriate.

Response to Comments Made by
Laura El-Azem
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Paul and Jean Eno
Greenland, NH
Letter dated January 24, 2010

1. The issue of climate change was acknowledged in the DSEIS. However, NHDOT and FHWA decided that no analysis of greenhouse gas emissions in the SEIS is required or warranted. As discussed in Section 5.3.7, it is analytically problematic to conduct a project level cumulative effects analysis of greenhouse gas emissions on a global-scale problem.

   Chapter 5 of the FSEIS provides additional information on the consistency of the project with the New Hampshire Climate Action Plan policies. The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

   - Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
   - Improve Traffic Flow (TLU 1.D.3)
   - Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
   - Various policies related to improving and expanding bus service
   - Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

   Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation etc.).

   With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

2. Numerous transit options were evaluated during the alternatives screening process for the 2004 FEIS. NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

   With respect to the statements in the comment regarding sprawl, the potential indirect land use effects of the 2005 Selected Alternative have been thoroughly evaluated, see Chapter 12. Under Scenario 2, the project is not expected to change population and employment totals at a regional level. However, the location of a small amount of future population and employment growth could shift to areas closer to the I-93 corridor. For example, the 2030 population of the 29-community Delphi study area is expected to be 9,707 or 1.32 percent higher in the Build condition as compared to the No Build condition. The Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of future growth will be determined to a large extent by local land use regulations and planning.

3. The wetland mitigation package is designed to replicate lost functions and values. Mitigation by restoring and/or creating wetlands is an established science that has been and continues to be endorsed nationwide. Federal and State natural resource agencies. EPA, USACOE, USFWS, NHDES and NHFGD have provided input on the I-93 mitigation package and continued coordination is ongoing on the design and establishment of biologically-effective mitigation. Monitoring and adaptive management is required in the Section 404 permit conditions to ensure the mitigation sites are developing as planned. In addition to creation and restoration, the mitigation plan includes extensive land preservation.

   The chloride issues cited in the comment are being addressed. NHDOT is on the cutting edge of environmentally responsible deicing salt application best management practices.

4. Analysis of the three-lane alternative in the SEIS is not warranted because of the limited scope of the SEIS resulting from the Court Order. As discussed in response to comment document P-19, the changes and new information since the 2004 FEIS do not change the previous conclusions regarding the three-lane alternative. The changes since the 2004 FEIS, including changes in population and employment growth projections, show that the three-lane alternative would perform similar or worse than it did in the 2004 FEIS. The three-lane alternative underperformed as a congestion mitigation measure for 2020 and would continue to provide inadequate LOS for 2030. This conclusion is supported by the discussion of the expected Level of Service for the three-lane alternative provided in FSEIS Appendix B. No new information has been identified that would change the conclusions of the 2004 FEIS regarding the three-lane alternative. Therefore, the information used in the decision to select the four-lane alternative remains valid.

5. Intelligent Transportation System (ITS) is a term widely used by transportation officials and planners that generally refers to the integrated application of advanced technologies (i.e. computing and communication technologies) to improve the transportation system by making it more efficient, safer and sustainable. As indicated in Section 4.2.3 of the FSEIS, ITS technologies will be incorporated into the overall I-93 improvements to better manage traffic/travel demand, enhance safety and capacity, and supplement incident management initiatives.

   With respect to public transportation, the project includes numerous commitments to improve public transportation service, including park-and-ride lots and an expanded commuter bus service. By reducing congestion, the project will also improve travel time reliability for bus service.

Response to Comments Made by
Sharon Enright
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Joe Friedman
Salem, NH
Email sent October 6, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Donald E. Gartrell, Counsel to Abutting Landowners
Gallagher, Callahan & Gartrell
Letter dated October 9, 2009

1. Your support for the project is noted.

2. The towns of Derry and Londonderry, NH have proposed the construction of I-93 Exit 4A, a new interchange between the existing Exit 4 and Exit 5. This project is separate from the NHDOT I-93 Improvements project. The opening year for Exit 4A assumed in the FEIS being prepared for the project is 2015, which is consistent with the SEIS modeling assumption that the project would be complete by the 2020 analysis year. The details of the construction schedule for the Exit 4A project are beyond the scope of this SEIS.

   NHDOT appreciates the notification regarding the development plans for the Exit 4A area. However, these plans were not available at the time of the preparation of the DSEIS. As discussed in greater detail below, the DSEIS provided a reasonable basis for accounting for potential employment growth surrounding Exit 4A by the analysis year of 2030.

Exit 4A is included in the I-93 Improvements SEIS traffic modeling as reasonably foreseeable future transportation project. In addition, the I-93 SEIS project team decided to update the 2030 analysis year model for the SEIS Scenario 2 (No Build and Build) to account for the potential indirect land use effects of Exit 4A. The methodology involved estimating the total possible employment growth surrounding Exit 4A assuming the available land was developed at a density similar to existing industrial employment centers in Londonderry and Derry. For additional information on the methodology and results of the Exit 4A indirect land use effects assessment, refer to the memo entitled *Revised Employment Estimates to Account for the Potential Indirect Land Use Effects of I-93 Exit 4A* (Indirect Effects Written Reevaluation/Technical Report, Appendix G-1).

Response to Comments Made by
William Ganley
Salem, NH
Email sent October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment, as well as improving mobility for emergency responders.

Response to Comments Made by
Edward Gawrys
Manchester, NH
Email sent October 5, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Ken Gesualdo
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment, as well as improving mobility for emergency responders.

Response to Comments Made by
Stephen A. Gorski
Comment form submitted September 25, 2009

1. Your support for the project is noted. To address the long-term needs of the corridor, the 2005 Selected Alternative involves four lanes in each direction. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS. The importance of the proposed project with respect to the economy, employment and fuel savings is acknowledged.

Response to Comments Made by
Greater Salem Chamber of Commerce
24 North Broadway
Salem, NH
Letter dated October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. The role of the I-93 corridor in accommodating economic activity and in maintaining public safety is acknowledged. However, the proposed project is not designed as an economic development project.

Response to Comments Made by
Jim Greene
Derry, NH
Email sent September 28, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Leon Guay
Email sent September 24, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

   Subsequent to the publication of the DSEIS, NHDOT has decided not pursue the tolling on I-93 at this time (See Section 1.3.1 of the FSEIS).

   NHDOT continues to gather and evaluate information on various funding alternatives. The main focus of this effort is identifying a new revenue sources to pay for the $250 million in I-93 construction that is not currently included in the State's Ten Year Transportation Improvement Plan. Some of the alternatives include increased legislative bonding authority and increased gas tax. The NHDOT's plan is to secure funding and complete the construction of the I-93 Salem to Manchester corridor by 2020.

   The HB 2 Financial Commission has been established by the legislature to study and make recommendations on the funding of transportation in New Hampshire. This is an important step that provides a critical venue for specifically considering the funding of I-93 with legislative leadership as a precursor to full legislative action. The best means to fund I-93 construction will be a key part of the Commission's work whether other bond financing supported by a dedicated revenue or gas tax.

   The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative

approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

Response to Comments Made by
Stephen Gudek
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the safety and accessibility concerns cited in the comment.

Response to Comments Made by
Andrew Guirquis
Email sent October 9, 2009

1. The proposed four-lane widening is not excessive, as evidenced by the Build condition LOS of all segments in 2020 and 2030. While it is true that the segments north of Exit 3 are less congested than the southern segments, the segments north of Exit 3 would operate at LOS C in 2020 and 2030 under Scenario 2. LOS C describes a stable flow condition and is considered desirable for peak or design hour traffic flow. If four lanes in each direction was excessive capacity, the Build Condition LOS of these segments would be B or A, not C.

2. The widening does not add lanes that are not necessary. The indirect effects analysis conducted for the SEIS does not support the assertions in the comment regarding increased development. The potential incremental effect of the project is tiny in comparison to the level of growth anticipated with or without the project.

Response to Comments Made by
Matt Habinowski
Submitted September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative involves four lanes in each direction, not three lanes. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS.

Response to Comments Made by
Chalmers Hardenbergh
Intervale, NH
Email sent September 25, 2009

1. Your opposition to the project is noted.

   The comment describes the concept of induced travel. The New Hampshire Statewide Model takes into account potential "induced travel" resulting from people choosing to change their travel mode, route choice, or destination in response to a change in travel times. The transportation modeling framework for the SEIS (different population and employment levels for the No Build condition vs. the Build condition) accounts for potential induced travel related to indirect land use effects.

The issue induced travel was also addressed as part of the 2004 FEIS (See the technical memorandum in Appendix A of the 2001 Rationale Report). For more information on induced travel and FHWA's current position on this issue, refer to http://www.fhwa.dot.gov/planning/itfaq.htm

Response to Comments Made by
Travis Heinstrom
Email sent October 9, 2009

1. Your support for the project is noted.

Response to Comments Made by
Deb Hewitt
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Howie Howe
Email sent September 25, 2009

1. Your support for the project is noted.

Response to Comments Made by
Diana Jacobs
Hancock, NH
Email sent October 7, 2009

1. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

   Incorporating bicycle facilities into the design of the project was evaluated in the 2002 DEIS. However, bicycle facilities were eliminated from the design in the 2004 FEIS in response to a separate Bikeway Feasibility study that recommended the development of a rail trail along the abandoned Manchester- Lawrence railroad corridor, rather than the I-93 bicycle path evaluated in the DEIS. The NHDOT is continuing to work with regional and local officials to implement the Bikeway Feasibility Study recommendations.

Response to Comments Made by
Jerry Johnson
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Chip Johnson
Bow, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Richard Katzenberg
Amherst, NH
Letter dated September 22, 2009

1. The $150 million cost savings for the three-lane alternative vs. the four-lane alternative cited in the comment is not accurate. At the time of the 2004 FEIS, the Selected Alternative was estimated to cost $421.4 million, compared $401.2 million for a three-lane alternative using the same design options as the Selected Alternative (See Figures 2.8-1 and 2.8-2 in the 2004 FEIS). The difference between the cost of the four-lane alternative and three-lane alternative was $20.2 million or five percent. The difference in the cost estimates is less than one would expect due to a need to provide sufficient highway width during construction to safely maintain a minimum of two lanes for both northbound and southbound traffic. With the four-lane alternative, traffic would be maintained on the existing two-lane highway while the highway is widened to accommodate the additional two lanes. However, to safely maintain traffic for the three-lane alternative, the highway would require over-widening to a width nearly that of the four-lane alternative to provide the minimum two lanes of traffic in each direction.

   NHDOT has prepared an updated cost estimate for the three-lane alternative. The updated estimate still shows that the three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

   The allocation of transportation funds to specific projects is a policy decision beyond the scope of this SEIS.

2. As discussed in response to comment #1, the cost difference between the four-lane alternative and the three-lane alternative is not substantial. The three-lane alternative would not eliminate the need to consider alternative funding sources.

3. The comment is correct that the three-lane alternative would require less deicing salt application than the four-lane alternative. The FSEIS acknowledges that incremental implementation of the project (three-lanes in each direction) is possible in the interim to meet the Record of Decision commitments and Water Quality Certification condition E-10 (See Chapter 3). However, the long-term plan remains to implement the four-lane

2005 Selected Alternative, not the three-lane alternative. NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

4. The alternatives suggested by the comment were considered and found not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). These alternatives would result in little or no reduction in travel on I-93 during the design hour and would not reduce the number of additional travel lanes required to provide acceptable levels of service on I-93.

   NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

5. The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

   - Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
   - Improve Traffic Flow (TLU 1.D.3)
   - Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
   - Various policies related to improving and expanding bus service
   - Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

   Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation etc.).

   With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

   The statement in the comment that the project provides incentives to "single passenger petroleum based travel" is not accurate. The demand for single occupancy vehicle travel exists regardless of whether or not the proposed project is constructed. The project accommodates expected current and future public demand for mobility and alternatives to the single occupancy vehicle. As discussed in response to comment #4, the project includes new park and ride lots and expanded bus service, not just new highway capacity.

6. Chloride issues are being addressed through NHDES's TMDL implementation process, see response to comment #3.

7. The potential indirect land use effects of the 2005 Selected Alternative have been thoroughly evaluated, see Chapter 12. Under Scenario 2, the project is not expected to change population and employment totals at a regional level. However, the location of a small amount of future population and employment growth could shift to areas closer to the I-93 corridor. For example, the 2030 population of the 29-community Delphi study area is expected to be 9,707 or 1.32 percent higher in the Build condition as compared to the No Build condition. The Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of future growth will be determined to a large extent by local land use regulations and planning.

   The indirect effects analysis for Scenario 2 does not support the assertion in the comment that the project will be a substantial force in impacting open space, creating the need for new schools and emergency response services, or increasing local property taxes. The potential effect of the I-93 project on these issues is negligible in comparison to the impacts of the growth that is expected whether or not the project is constructed.

   Traffic on secondary roads was analyzed in the SEIS in accordance with the Court Order, see Chapter 4. The secondary roadway network consists of the parallel roadways and feeder roads in the vicinity of I-93. The primary parallel roadways are NH Route 28 and NH Route 128. The feeder roadways include NH Routes 97, 111, 111A, and 102. While detailed capacity analyses were not conducted for NH 101, traffic volume estimates were generated for this roadway. The traffic modeling shows that under Scenario 2 2030 conditions, traffic volumes on NH 101/I-293 would increase by six percent between NH 28 and US 3A/Brown Avenue as a result of the 2005 Selected Alternative.

   For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five secondary road intersections during the AM peak hour and four intersections in the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole. Safety on secondary roads would be expected to improve overall as a result of these congestion reduction benefits.

8. The comment is incorrect in stating that the current population of Amherst has exceeded the New Hampshire Office of Energy and Planning's (OEP's) population projection for 2020. The OEP 2005 base year population estimate for Amherst used in the SEIS traffic modeling was 11,611. The OEP's 2008 population estimate (published in July 2009) for Amherst is very similar, 11,584. The current population of Amherst is well below the projected 2020 population of 13,030 and the 2030 population of 13,964.

9. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative. As discussed above, the issues raised by the comment do

not change the basis for the decision to select the four-lane alternative instead of the three-lane alternative.

Response to Comments Made by
Jay Koelb
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment. Incorporating HOV or bus lanes into the project was considered during the alternatives screening process for the 2004 EIS. However, these alternatives were ultimately found to not be reasonable.

Response to Comments Made by
Bill Koury
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Sandra Lane
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Peter Langlois
Derry, NH
Email sent September 28, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Ben Lefebvre
Manchester, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. The 2005 Selected Alternative involves four lanes in each direction to address the long-term needs of the corridor.

   Commuter rail from Manchester to Massachusetts is among the options being considered by the separate I-93 Bi-State Transit Investment Study.

Response to Comments Made by
Gary LeSuer
Derry, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
David Lewis
Salem, NH
Email sent September 28, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

2. The speed limit on the widened roadway will remain the same as the existing speed limit (55 mph south of Exit 2 and 65 mph north of Exit 2).

3. The traffic modeling for the SEIS takes into account the potential additional traffic from people changing the mode choice, route choice and destination in response to the widened roadway. The modeling also takes into account the potential additional traffic from indirect land use effects.

4. The cost difference between the three-lane alternative and the four-lane alternative is not substantial. NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

5. Rail alternatives were considered during the alternatives screening process for the 2004 EIS (See Section 2.3 of the 2004 FEIS). They were found to not have the potential to substantially affect I-93 traffic volumes or the need to widen the roadway. Rail alternatives are also being evaluated as part of the separate I-93 Bi-State Transit Investment Study.

Response to Comments Made by
Paul Lomanno
Londonderry, NH
Email sent September 24, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Wayne MacLeay
Londonderry, NH
Email sent September 25, 2009

1. The construction activities referenced in the comment were permitted under an agreement with the Conservation Law Foundation following the 2007 Court Order. The construction

work allowed by this agreement is focused on removing traffic from "red list" bridges in an effort to improve safety along the I-93 corridor, as well as the construction of park-and-ride facilities.

2. Your support for the project is noted. The 2005 Selected Alternative involves four lanes in each direction, not three lanes. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS.

3. The wetland mitigation package has been negotiated with the resource agencies.

Response to Comments Made by
Melissa Magnuson
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted.

Response to Comments Made by
Andrew Manuse
Derry, NH
Email sent September 25, 2009

1. The September 22, 2009 public hearing on the DSEIS was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS.

2. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

3. The construction activities referenced in the comment were permitted under an agreement with the Conservation Law Foundation following the 2007 Court Order. The construction work allowed by this agreement is focused on removing traffic from "red list" bridges in an effort to improve safety along the I-93 corridor, as well as the construction of park-and-ride facilities.

4. Your frustration with the delays in the project is noted. NHDOT and FHWA are working to finalize the project as expeditiously as possible.

Response to Comments Made by
Clint Miller
Email sent September 24, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Jonathan Miner
Email sent September 25, 2009

1. The issue of indirect land use effects has been thoroughly accounted for in the transportation modeling for the SEIS (See Chapter 12). The 2005 Selected Alternative substantially reduces congestion through 2030.

2. Your opposition to the project is noted. The rail alternatives suggested by the comment were considered during the alternatives screening process (See Section 2.3 of the 2004 FEIS). They were found to not have the potential to substantially affect I-93 traffic volumes or the need to widen the roadway. Rail options are also being evaluated in the separate I-93 Bi-State Transit Investment Study.

Response to Comments Made by
Clarissa Navarro
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted.

Response to Comments Made by
Steve Norton
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative involves four lanes in each direction and would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Sean O'Keefe
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. To address the long-term needs of the corridor, the 2005 Selected Alternative involves four lanes in each direction. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Paul J. Parisi
Salem, NH
Letter dated October 5, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment, while improving emergency response time.

Response to Comments Made by
Ryan Ridley
Email sent September 28, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Bob Rigby
Windham, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment.

Response to Comments Made by
Simon Rios
Nashua, NH
Email sent October 6, 2009

1. Your opposition to the project is noted. Environmental issues and opportunities of alternative transportation have been thoroughly considered throughout the development of this project. The 2005 Selected Alternative incorporates expanded bus service and park and ride facilities, not just highway widening.

Response to Comments Made by
Arthur Rugg
Email sent October 7, 2009

1. Incorporating HOV or bus lanes into the project was considered during the alternatives screening process for the 2004 EIS. However, these alternatives were ultimately found to not be reasonable.

Response to Comments Made by
Jeff Rupert
Manchester, NH
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

2. The comment is correct that there are no known federally endangered species in the areas that would be impacted. However, there are State-endangered lupines and potentially hognose snakes within the project limits. Mitigation measures to protect these species are are included in the project construction contracts (See Section 10.2.5 of the FSEIS).

3. The wetland mitigation package is summarized in Chapter 10. The comment is correct that the project would reduce congestion and the generally higher pollutant emissions associated with congested conditions. The role of I-93 in accommodating access to jobs and enabling tourism is acknowledged. However, the proposed project is not designed as an economic development project.

Response to Comments Made by
Bill Scanzani
Pelham, NH

1. Your support for the project and frustration with the delays is noted. The population and employment forecasts used in the SEIS traffic modeling were based on the latest available information from the New Hampshire Office of Energy and Planning (OEP) and the New Hampshire Economic and Labor Market Information Bureau (ELMI).

2. The 2005 Selected Alternative involves four lanes in each direction, not three lanes. The traffic modeling for the SEIS supports the need for four lanes and includes a 2030 analysis year in addition to the 2020 analysis year used in the 2004 FEIS.

Response to Comments Made by
Thomas Selinka
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Scott Severn
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. The importance of the I-93 corridor in accommodating economic activity and improving accessibility is acknowledged. However, the proposed project is not designed as an economic development project.

Response to Comments Made by
Tom Shanley
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Sierra Club
Email sent October 7, 2009

1. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). As part of the response to comments on the DSEIS, NHDOT has prepared an updated cost estimate for the three-lane alternative for comparison to the current cost estimates for the 2005 Selected Alternative. The updated estimate still shows that the three-lane alternative would not

substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

2. The comment is incorrect in stating that the expansion to four lanes is not necessary, see Chapters 2 and 4 of the FSEIS for a discussion of the No Build condition transportation problems.

Response to Comments Made by
Dave Souter
Windham, NH
Email sent October 8, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment. The role of I-93 in accommodating economic activity (including tourism) is acknowledged. However, the proposed project is not designed as an economic development project.

Response to Comments Made by
Andy Stahly
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Ed Stapanon
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues (and related environmental consequences) cited in the comment.

Response to Comments Made by
Deborah Starin
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Mark Starin
Email sent September 25, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Ken Stremsky
Manchester, NH
Email sent September 25, 2009

1. The public comment period was extended from October 2 to October 9, 2009. No additional public hearings were held.

2. Boston Express increased the number of stops in Manchester in response to the service reductions by Concord Trailways referred to in the comment. NHDOT is working with the City of Manchester to improve the existing terminal facilities for the short term. The construction of a new bus terminal with adequate parking will be necessary to support a more robust bus schedule for Manchester. There are plans to establish East-West bus service between Manchester and Portsmouth in the near future.

Response to Comments Made by
Frederick Telschow
Londonderry, NH

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. Transit options for the corridor are being considered through the separate I-93 Bi-State Transit Investment Study.

Response to Comments Made by
JoAnn Thornton
Email sent October 1, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Peter Thornton
Email sent September 28, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Steve Tieland
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. The 2005 Selected Alternative involves four lanes in each direction.

Response to Comments Made by
Sharon Todd-Elliot
Email sent September 30, 2009

1. Your support for the testimony of Richard Katzenberg is noted. Please refer to the responses to Mr. Katzenberg's public hearing comments.

Response to Comments Made by
AP Varney
Londonderry, NH
Email sent September 25, 2009

1. The widening of I-93 is not a "done deal" due to the 2007 Court Decision that required this SEIS. However, certain portions of the project (e.g. replacement of red list bridges) are continuing under an agreement with the Conservation Law Foundation. The completion of these components of the project will not impact the outcome of the SEIS process.

2. The issues raised by the comment regarding construction contracts and the construction schedule of other projects are beyond the scope of this SEIS.

   The 2005 Selected Alternative would help to address the congestion and safety issues cited in the comment.

3. Your support for the project is noted. The September 22, 2009 public hearing on the DSEIS was noticed through advertisements in local newspapers and the project website. The date, time and location of the public hearing was also provided on a note distributed with hardcopies and CD-ROMs of the DSEIS.

Response to Comments Made by
Kathy Wagner
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
R.S. Waites
Derry, NH
Email sent September 24, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Joe Ward
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Linda Winmill
Winmill Equip Co. Inc
Windham, NH
Email sent October 10, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Sy Wrenn
Windham, NH
Email sent October 7, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion issues cited in the comment. FHWA and NHDOT are advancing the project as expeditiously as possible.

Response to Comments Made by
Steve Young
Londonderry, NH
Email sent October 9, 2009

1. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

Response to Comments Made by
Gary Abbott, Executive Vice President
The Associated General Contractors of New Hampshire, Inc.
Letter dated September 29, 2009

1. Your support for the project is noted. The project is a high priority for NHDOT.

   The 2005 Selected Alternative would address the congestion issues cited in the comment.

   The importance of the I-93 corridor in accommodating economic activity is acknowledged. However, the proposed project is not designed as an economic development project.

2. The mitigation package noted in the comment was negotiated with the resource agencies. For updated information on the status of mitigation package, refer to Chapter 10 of the FSEIS.

   The I-93 bike path included in the 2002 DEIS was removed for the 2004 FEIS based on a separate Feasibility Study completed in March 2003 to identify alternative transportation corridors for pedestrian and bicycle travel between Salem and Concord, NH. The study included consideration of on-road shared shoulder alternatives along local roads, the I-93 corridor bike path presented in the DEIS, and a rail trail alternative. The study recommended the development of a rail trail facility located along the abandoned Manchester-Lawrence railroad corridor. The Feasibility Study recommended that the I-93

bicycle path layout not be pursued. NHDOT is continuing to work with regional and local officials to implement the Bikeway Feasibility Study recommendations.

3. Comment noted. The wetland mitigation package has been negotiated with the resource agencies. The wetland permits referenced in the comment have been issued; see Chapter 10 of the FSEIS.

4. Comment Noted. The Record of Decision committed $3.5 million for a Community Technical Assistance Program (CTAP) to help communities in the area influenced by this section of I-93 better deal with and manage growth-related issues. Detailed information on CTAP is provided in DSEIS Appendix G: Indirect Effects Written Reevaluation/Technical Report.

Public Hearing

Town of Derry, Derry Municipal Center
September 22, 2009, 7:00 pm

Page	Name
18	Richard Roach, U.S. Army Corps of Engineers
18	Bob Letourneau, State Senator
20	John Gleason, State Representative
21	Lois Sciarett
22	Tom Harden
23	Richard Katzenberg
24	Mike Speltz
27	David Anderson, Repower America
27	Tom Irwin, Conservation Law Foundation and Environment New Hampshire
30	Peter Griffin, New Hampshire Railroad Revitalization Association.
33	Cathy Corkery, New Hampshire Sierra Club
35	William Schroeder
35	Bob Letourneau, State Senator
36	Richard Katzenberg

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

September 22, 2009

Widening of I-93

DISCLAIMER

No representative of/for CIS Secretarial Services was present for the taping of this hearing and no equipment of CIS Secretarial Services was used in connection with the recording of this matter. The bracketed words or conversation are either phonetic interpretations or if blank indicate that it could not be transcribed due to sound quality, noises such as coughing, sneezing, papers being shuffled. All spelling relating to individuals, places or organizations contained on these tapes have been accomplished with phonetic interpretations as well.

Lee A. Currier
CIS Secretarial Services, llc
1260 Briar Hill Road
Hopkinton, NH 03229
(603) 746-3938
E-mail: cisnh@tds.net

Peter Stamnas: Good evening. It's 7 p.m. and I'd like to call this meeting to order. My name is Peter Stamnas. I'm the I-93 Project Manager for the New Hampshire Department of Transportation. I'd like to welcome you here this evening. This hearing is being held to present a general summary of findings contained in the Draft Supplemental Environmental Impact Statement and Draft 4(f) Evaluation prepared for State Project 10418C, the I-93 improvements from Salem to Manchester and to solicit comments from the public. This meeting is being recorded and will be transcribed for the record. The notice of availability for this Draft SEIS was published in the Federal Register on August 14th, 2009 and the comment period will extend for forty-five days and that's until October 2nd, 2009. The DSEIS is prepared to meet the requirements of the August 30th, 2007 decision of the US District Court of New Hampshire in the case of the *Conservation Law Foundation v. the Federal Highway Administration and New Hampshire Department of Transportation.* The Court ordered the preparation of an SEIS specifically to address the effects of induced growth on the overall effectiveness of the four-lane selected alternative as a congestion mitigation measure and also how induced growth impacts traffic and air quality on secondary roads. The DSEIS also provides a comprehensive reevaluation of environmental impacts and mitigation associated with the selected alternative and serves as a supplement to the April 2004 I-93 Improvements Project from Salem to Manchester – the Final Environmental Impact Statement. I would like to introduce others that will be participating this evening in the presentation. To my immediate left is Jamie Sikora who is the Environmental Project Manager for the Federal Highway Administration Division Office in Concord. At my far left is Larry Pesesky who is the principal investigator for Louis Berger Group who prepared this statement for Federal Highway and the NH DOT. And with that I'm going to stand up here and we'll walk through the presentation. Overall agenda for the public hearing – I'm going to provide a project description and give you some background on the project. We'll go through the Federal Highway role in the process; walk through the DSEIS process and present some of the findings that are contained in the report. I'm going to provide a general status update on construction and where the project stands currently. And then we'll open it up for public comment at the end of the presentation. The scope of the project, the left hand side of

the screen shows you a yellow highlighted area that runs from the Mass state line at Salem through the towns of Windham, Derry, Londonderry and ending in Manchester – the twenty mile length of the corridor at the 293 split. We're proposing to widen the existing two-lane facility to four lanes in each direction. Also included in the project is the reconstruction of five existing interchanges and cross roads. We're working on forty-three bridges along the corridor, nineteen of which were identified as "red list" bridges. There is public transportation and transportation demand management enhancements - new park and ride lots at exit two, exit five and exit three. We have new bus terminals at exit two, exit four and exit five and these facilities are to provide opportunities for people to get out of their cars and to ride-share and also they provide support for the expanded bus service through the corridor to Boston. Some of the environmental commitments that we have included are protecting approximately one thousand acres of land as part of the compensatory wetland and flood plains mitigation. They're funding $3 million for the DEAS Drinking Water Supply Land Grant Program which will be used to purchase land around reservoirs on the corridor to help protect water quality. We are funding $3.5 million for a Community Technical Assistance Program, CTAP program, to help I-93 corridor communities manage growth related issues. There's extensive storm water treatment measures included in the design of the project. We are also participating in ongoing regional chloride studies - salt. There's four impaired waters within the corridor. NH DOT has dedicated $4.5 million to salt reduction including $2.5 million available to I-93 corridor communities to fund salt reduction in their efforts to bring those impaired water bodies off the impaired list. Overall purpose and need for the project will be to improve transportation efficiency and reduce safety problems along the corridor. As everyone knows, there is severe peak period congestion that interferes with the movement of people and goods. At a number of locations on the corridor we have that recurring congestion – hazardous conditions resulting from congestion and geometric deficiencies. Again, there is significant volume using this road, high speeds and very limited room to maneuver. This creates a fairly hazardous condition in a number of locations. There are also deteriorating infrastructure conditions. This corridor was constructed in the late sixties and there's a good portion of it that

hasn't received any major rehabilitation work since it was constructed. The corridor and the infrastructure along the corridor is aging and it needs attention. From a court decision standpoint - initiated this SEIS process August 30th, 2007, the court issued their order in the case of *Conservation Law Foundation vs. Federal Highway,* and the Court directed NH DOT and Federal Highway to prepare a SEIS that specifically considers how induced growth impacts the effectiveness of the selected alternative, the four-lane alternative, as a congestion mitigation measure and also how induced growth impacts traffic and air quality on secondary roads. We've prepared this statement and we're providing a general summary of the results today. And again, at the end of the presentation, we will be opening up for public comment. I also want to mention that we do have copies of the 2004 FEIS available and copies of the Draft Supplement available if anybody is interested in looking at it and if anybody wants a copy of it they can contact me and I will get them copies. With that, I'm going to turn it over to Jamie Sikora to provide his explanation of the Federal Highways' role in the project.

Jamie Sikora: Good evening. As Pete indicated, my name is Jamie Sikora and I work for the Federal Highway Administration's NH Division as the Environment Program Manager. I've been with Federal Highways about fifteen years now, the last eight of which have been in the New Hampshire division. Basically what I wanted to give tonight as my part of the presentation is a basic overview of who Federal Highways is, what our role on the project has been at least in terms of the environmental impact analysis and then touch base on a few of the procedural and other requirements that are associated with a Supplemental Environmental Impact Statement because that's the reason we're here tonight. So with that I'll begin my presentation. The Federal Highway Administration is an agency that's under the US Department of Transportation, similar to the Federal Aviation Administration and Federal Transit Administration. Our mission is to improve the nation's highway network, its intermodal connections, and we work with many partners to ensure transportation plans and/or proposed improvements take into full account potential impacts that are caused by such plans or improvements. Because federal aid highway funds are being used on this project, the Federal Highway Administration is tasked with

being the lead federal agency to ensure the project is evaluated and developed in compliance with the National Environmental Policy Act or NEPA, as they call it. NEPA requires all federal projects to be evaluated for potential impacts to both the natural and human environment and basically to determine the significance of the impacts, if they can be avoided. And if they can't be avoided then full consideration must be given to minimizing or mitigating the impacts. For projects such as I-93 that are felt may result in significant impacts on the environment, NEPA requires the preparation of an Environment Impact Statement. Now NEPA is often thought of as this big umbrella because there are numerous other federal laws and requirements that must be considered under it and they can heavily influence our decision on the projects. Some of these are Section 404 of the Clean Waters Act. It protects wetlands and other surface waters. Section 106 of the Historic Preservation Act protects cultural and historic resources and Section 4(f) of the US Department of Transportation Act of 1966 which requires us to avoid all 4(f) resources such as significant publicly owned parks and recreational areas, wildlife refuges and historic sites unless it's been shown that there are no feasible or prudent alternatives to avoiding such resources. As Pete will go into a little more detail on the background of the project, the original Notice of Intent (NOI) to prepare the original EIS document was published in the year 2000. Soon after we began the scoping, the early coordination process with all the other federal and state agencies and other project stakeholders. By 2002 we had completed the draft and by 2004 the final EIS was completed. Throughout that process there was an extensive amount of public and agency involvement and input and in June 2005 we issued our record of decision which basically identified the selected alternative and outlined all the various environmental commitments that we had committed to. In 2006, again I think Pete mentioned this, a law suit was filed and eventually in 2007 the US District Court had issued a requirement for us to prepare a Supplemental Environmental Impact Statement. Now I just want to touch base on some of the process and other requirements. A Supplemental EIS is required whenever there are changes, new information or other further developments on a project that were never originally identified and could result in significant impacts, that were never identified in the original or the most recently distributed copy of the Environmental Impact

Statement. There is no required format but the Supplement needs to adequately address what the proposed action is, what the purpose of the Supplement… why it's being required, and then provide an up-to-date status on the previous document. Basically have there been any changes? Are previous environmental analyses still valid? And are previous commitments made still valid? The SEIS needs to only address those changes or new information that are the basis of preparing the Supplement that were not addressed in the previous EIS. Reference to and summarized in the previous EIS is preferable to repeating unchanged but still valid portions of the original document. New environmental requirements effective after the date of the EIS only need to address to the extent that they are applicable to what's being studied and required by the Supplement. SEIS is developed using the same process used to prepare an original EIS except that scoping is not required so you still have the Notice of Intent and the draft and hear public input. In some cases, such as with I-93 and I think Pete referred to this, the Supplement sometimes is only required to address issues of limited scope. In such cases the preparation of the EIS will not necessarily prevent the granting of new approvals, require withdrawals of previous approvals or require the suspension of project activities not directly affected by the Supplement. And I mention this because even in spite of the law suit and the court order to prepare the Supplement, a lot of the final design on the I-93 project has moved forward as with the right-of-way acquisitioning and as many of you know, some of the construction contracts which were determined to have independent utility have been allowed to move forward. And I believe Pete will touch base on some of that information as well. There's more procedural requirements: A Draft SEIS, as Pete noted, must be made available at public hearing and/or 15 days in advance of it for review and comment. There is a minimum 45 day comment period because, as Pete mentioned, and I've got that the Notice of Availability was published on August 17th. We've got to clarify if that was the 14th or 17th but we are accepting comments until October 2nd. The comments we receive – we've got to review and adequately address them in the final Supplemental EIS document and depending on the degree and types of comments we get, our division office will eventually make a determination if we can issue a Supplemental Record of Decision. We cannot issue such a Supplemental Record of Decision (ROD) any sooner than

thirty days after the Federal Register Notice of Availability for the final Supplemental Impact Statement or no sooner than ninety days after the Notice of Availability has been published in the Federal Register for the Draft. And given that we published it in mid-August, even the best scenario, the soonest we could issue a Supplemental ROD would be sometime towards the end of December. That's basically all I have to provide for an overview. I'd be happy to try to clarify any comments you have but I think we're waiting until after the presentations are over.

Peter Stamnas: Thank you, Jamie. With that, I'd like to turn it over to Larry Pesesky to provide the general summary of the findings contained in the report.

Larry Pesesky: Thank you, Pete and Jamie. As Pete said, my name is Larry Pesesky. I work for the consulting engineering firm, the Louis Berger Group, and I was the Project Manager for the firm assisting in the preparation of this Draft Supplemental Environmental Impact Statement. The purpose of the Draft Supplemental Environmental Impact Statement has already been stated as to primarily focus on the traffic and air quality effects on areas surrounding the I-93 corridor with and without the construction of the project. There's also been a broader reevaluation of topics covered in the final EIS that was published in 2004. So this EIS, although it has been stated that it was primarily focused on traffic and air quality effects, an additional analysis of those effects, there's been a broad range of topic areas in this document. A substantial portion of the effort of preparing a Draft Supplemental Environmental Impact Statement focused on population employment scenarios. You may ask, well why are we focused on population employment scenarios? One of the reasons for focusing on this is that population employment are obviously major contributors to how many trips are made in the area and those trips contribute to traffic on the area's roadways – I-93, the roads the feed on 93 and on out in the roadway network of southern New Hampshire and the surrounding areas. So it is very important to understand future population employment as these are key inputs to understanding travel demand in the area. I will be referring to two scenarios of population employment that were evaluated and documented in the Draft Supplemental Environmental Impact Statement. Scenario one constitutes the

Delphi panel approach that was referenced in the 2004 FEIS. The court order basically instructed the Department to take a look at how the Delphi panels or the estimate that came out of the Delphi panel process would influence traffic and air quality, specific traffic and air quality on secondary roads nearby I-93. So that's scenario one. Basically it was work that was done as part of preparing the 2004 FEIS. Scenario two is based on the latest official state population employment projections. The population comes from the Office of Energy Planning and the employment comes from the Employment and Labor Management Information Bureau of the State, so the Department of Employment. The scenario one Delphi panel results that are documented in the Draft Supplemental Environmental Impact Statement, they meet the requirements of the court order, again, specifically to study the traffic and air quality effects using the population employment results that came out of the Delphi panel process. In hindsight, here we are in 2009, looking back on when this work was done which was actually done in 2000, and some of the information that was fed to this group of individuals who comprised this Delphi panel that actually pre-dated the 2000 census result. So it's outdated information and in hindsight, it's unrealistically high. The growth rates projected, and I'll have some bar charts here in a second that show that basically based on current official state projections that are formulated for use in planning in the State, these numbers are unrealistically high. The official State projections also meet the purpose of the objective of a Supplemental Environmental Impact Statement generally, because they use the latest information. And as Jamie stated, there's various reasons for updating analyses when you're preparing a Supplemental Environment Impact Statement and one of those reasons is you have new information that is substantially different from that that was presented previously. Scenario two is more consistent with current best practices for estimating the effects of transportation projects and growth patterns. Population and employment leads to growth in development and that's evaluated in scenario two. Scenario two also maintains the integrity of the projections for the region as a whole, and I'll elaborate on that in a second, while it redistributes the future growth within the region to account for an improved I-93. That's a mouth full and there's a couple of graphics coming up here that I hope will help clarify that. If it doesn't, feel free to ask questions after our presentation. So

what we have here, as I said before, these are just some illustrative bar charts of information presented in the document that show a comparison in the green, of scenario one population results and scenario two which are in magenta, based on the official state projections that currently exist. And as you can see, for example, we look here and this is just a summary. All the communities in the area are examined and you can find the population employment results that underlie the traffic projections in the document. But just summarizing here for four communities, you see Salem, Windham, Derry, and Londonderry and in all cases the Delphi estimates for year 2020 in the Build condition which is I-93 is improved, in all cases the Delphi estimates are higher than the current official state projections for that period of time. And using Salem as an example here, the Delphi estimate is approaching 40,000 in year 2020 and the current state projections are roughly 33,000, just for example. You can find details about your particular community in the document. So what do we do with this population employment information? Well, it's fed into a computerized model that estimates travel demand in the State and surrounding areas. It's a little hard to see. This graphic also appears in the document and each one of these colored areas are what are known as traffic analysis zones. The traffic analysis zones are where the population employment and land use are basically fed into the model and there's various trip making characteristics that are assigned to residential developments versus commercial developments. And all that feeds into this computerized model of travel. And these zones are either municipal level, township level or sub-municipal level. Cities, for example, like Manchester would have numerous sub areas of sub-municipal level because portions of Manchester are highly residential, they have different trip making characteristics than the more commercial and industrial areas of Manchester. So these are the zones in the model and there's roughly, I think, 570 zones in the model. I don't remember the exact number but it's in the document. And the model includes the entire State of New Hampshire, the abutting areas of Southern Maine, Eastern Vermont and a good portion of Eastern Massachusetts, Northeastern Massachusetts. Therefore, by having a computer model that's set up to cover this geographic area, it captures the regional effects of an I-93 improvement. So here we have an illustration of the scenario two changes in population and employment with the I-93

project. So this is basically the percentage change that you would get in year 2030 in four populations in the areas in Southern New Hampshire compared with not improving I-93 to an improved I-93. And this chart is also over here if you want to study it in more detail. But the different colored gradations show… the green, which is just a little washed out here but the green areas are where you have an increase in population in a traffic analysis zone or a community from improving 93. The break point is yellow, orange and red and that's where you would have a decrease in a particular community's population as a result of I-93. And this is what I meant earlier – on the previous slide where it mentioned basically that the regional totals, going back to the region being all the State of New Hampshire plus the abutting areas of the surrounding states, that's what we mean by the region. The regional total stays constant in the analysis. And why does it stay constant? Because what the literature tells us from people who have studied the effects of transportation projects on population employment growth, is that a project like I-93 is not going to attract new people into a region the size of this area. In other words, people are not going to decide to move from Missouri to New Hampshire just because I-93 is improved. What the analysis does tell us looking at this slide is that within that region, and this is just a portion of that larger region you saw in the previous slide, within that region I-93 will influence where development occurs. In other words, communities nearby I-93 will likely become more densely developed because it's easier for people to make their trips throughout the region because they live near I-93. It's more attractive to development and communities abutting I-93 versus those that are further away. So some places, the darker green areas, Derry, Londonderry and Windham, will grow on the order of two to five percent in population as a result of widening I-93. The less dark green areas are between one and two percent increase in population, showing that the further you get away from I-93, the less effect the project will have on population growth and distribution of population. The yellow and the lime sort of get washed out here but there's a further ring here where there's a slight increase, anywhere between a tenth of a percent and one percent of population. And then you get beyond that ring and you can see it more clearly on the display board here, there will be some slight reductions in communities because relative to communities near I-93, they won't be afforded the same level of accessibility to

transportation. So when you net it out, the model regional area, there's no change in population employment but there are localized distributional shifts from constructing I-93. And you can kind of see that. Usually there's more dense development near Interstate highways and the interchanges. There's denser development around rail lines, near train stations because people want to live near or have their employment constructed where you have good transportation access. Same thing for employment in terms of the gradations and the attractiveness from improving I-93 being primarily felt on communities nearby I-93. So there are development shifts is what the analysis shows. And as I said previously, the scenario two, using the current state projections and factoring in the effects of I-93, you wind up with less population and employment growth in southern New Hampshire than what is shown in scenario one and in the 2004 FEIS. So we'll shift from population employment to traffic. The traffic methodology is based on collecting current traffic data on I-93 as well as the secondary roads. This is done by putting people at the corners and manually counting vehicles, putting out the rubber strips and collecting traffic data off the automated methods. The model that I explained previously, the computerized model, is used to project the future traffic volumes and the growth rates in traffic volumes along each roadway segment in the model. We did traffic analysis using both scenario one and scenario two population employment so people could fully understand the comparative differences. And it's also good to know that the traffic model incorporates other future transportation improvements that are considered reasonably foreseeable. And the reasonably foreseeable includes projects in the Regional Planning Commission's Long Range Transportation Plans, the Ten-Year Plan of the Department – that's the basis for considering projects reasonably foreseeable as well as projects for which the Environmental Impact Review has commenced. Continuing the traffic methodology we look at future traffic flow and congestion. The model tells us what the volumes will be on the roadways. We then look at congestion using a methodology from the Highway Capacity Manual. The Highway Capacity Manual is a publication of the Transportation Research Board. It's the standard used for evaluating traffic flow and congestion throughout the country. The document considers both the No Build, which is without the project, the do nothing scenario, and the Build, or with

the project constructed. And level of service (LOS) is the performance measure that comes out of using the Highway Capacity Manual analysis. For the mainline I-93 and other freeways, these are the definition of level of service or the abbreviated definitions. It's like a report card. A is free flow conditions. F is failure, forced or break-down flow and various gradations in between. Generally if you're planning a project out into the future as the Department is doing here, planning it out to 2030, you want to make sure that you're generally achieving better than E or F for your conditions in the future. Some photographs help you translate or visualize what level of service looks like, and we're picking the lower end of the range, D, E, and F just to show… and this is out of the Highway Capacity Manual. This is level of service D conditions, E conditions and F conditions. And here's an illustration of F conditions more locally on the I-93 main line, right at exit 1 in the afternoon peak period in the north bound direction. So we compare existing conditions. We use 2005 as a base year, existing conditions which you can see here. The charts show the varied segments of I-93 main line, the Mass line to exit 1, 1 to 2, etcetera, up to north of exit 5. And you see in 2005, I-93 main line already experiences E or F conditions. These will worsen under the No Build. We show here scenario one, it worsened to almost all F conditions. With an improved I-93 using the scenario one population employment input, the conditions on I-93 would improve to D or better except on two segments as shown here. We look at scenario two, also. I should mention that scenario one, the Delphi work was done out to 2020, which was the planning year when the original FEIS was prepared. Given that we're approaching 2010 here, the Department thought it would be wise to look out to 2030 conditions, which twenty years being a typical planning horizon for designing and constructing and planning highway projects. So using the scenario two results, you get the same base year results. There's no difference between scenario one and scenario two for a base year. That's your existing conditions. Then you see the No Build and Build comparisons for 2020 and 2030 using the scenario two results. No Build conditions again being primarily a mix of F and E conditions in 2020; worsens to almost all F conditions in 2030. The I-93 improvement would improve those conditions to D or better except on the segment between the Mass line and exit 1. In 2030, again, you would have

D or better conditions except for that Mass line to exit 1 where the conditions would be level E or approaching the capacity of the roadway. So there's an elimination of LOS F conditions under scenario two above 2020 and 2030 on all segments. I mentioned the one remaining segment with an LOS E condition and looking beyond the main line at the ramps where the ramps join I-93, the reconstruction at the interchanges which are also part of the project would eliminate all LOS E and F conditions. We look as LOS in the design hour, we think of it as the peak hour. What the analysis also showed and what people who drive I-93 are probably starting to experience is that there is a spreading of the peak beyond just a one hour period of time. And that's shown on this chart here which again is repeated over here on the display board. This is for the segment between the Mass State line and the exit one in the northbound direction. It's a time of day analysis over the course of an entire 24-hour day. It's for 2030 conditions. This blue line shows the congested flow capacity of that segment of I-93 and you see here that the travel demand, which is this line, butts up against the capacity of the roadway so that you have level F conditions not for just one hour but as shown in this analysis, for a three hour period. That's what we mean by the peak spread. An improved I-93 improves the flow capacity of the roadway by 1800 vehicles. And what that does, there'll be more demand on the roadway as traffic gets drawn from the parallel roads, which are themselves congested, over to the mainline of I-93, but even with that increased demand, the traffic flow would be adequate given the capacities here in demand except for just in the 6 pm time – it gets closer to the capacity but doesn't exceed it and that's what we mean by the level of service E in that peak hourly period. We then shift from the main line to the secondary roads. In the vicinity of I-93 these are the roads that parallel I-93 like NH 28 and the roads that intersect and direct traffic let's say, from the parallel roads to I-93 like NH 102. The analysis that we did on secondary roads show that it's a mixed situation. Some intersections and segments on these secondary roads have improved traffic flow; some have a decline in traffic flow. But overall, you have more intersections where you have improved conditions than you do that have worsened conditions. And by example, in 2030 the project is expected to eliminate LOS E and F conditions at five intersections during the a.m. peak hour and four intersections in the p.m. peak

hour but we'd only create E conditions at one intersection during the peak p.m. hours. That's a mouth full. If you want to see details, they're in the document and we have a summary chart here that you can look at after the hearing if you want to see a particular intersection to see how it performed. As I mentioned when I had that sort of "L" shaped chart up there, I-93 traffic will increase as a result of improving I-93. And this traffic materializes by reducing congestion on the parallel roads. I-93 becomes the desired route as intended as a regional freeway to carry traffic. The project will reduce traffic on parallel roads. It diverts traffic back to I-93 and there will be some slight increase in traffic volume on some of the feeder roads, the east-west roads that feed traffic to I-93. That is expected. So in conclusion, for traffic, the I-93 mainline and ramp junction LOS analysis reaffirm that there will be a congestion reduction benefit of the project and that the project will not degrade travel conditions on the secondary road system as a whole. We shift to air quality. Again, a logical extension of the traffic analysis you look at the tailpipe emissions. There are models that enable us to analyze the effects of transportation on air quality and we do this at several levels and this is documented in the Draft Supplemental EIS. There's a local analysis where we look at air quality concentrations around congested intersections using the traffic analysis results as input to understanding localized air quality. We do a regional analysis, looking at multi-county areas that correspond to the areas that are looked at in the examining and evaluating of performance of air quality improvements in the State. And then we also look at a group of compounds known as mobile source air toxics. There are no exceedances of air quality standards under any of the scenarios or conditions and that's documented in the Draft Supplement EIS. There are emissions budgets established for Southern New Hampshire that are established to make sure that the State is on target for improving air quality. The emissions budget for the regions will not be exceeded as a result of improving I-93 and mobile source air toxin conditions will be decreased substantially in the future, in part because of I-93 and improved traffic flow but also because of improvements in engines that the federal government is requiring to be phased in over the next twenty to thirty years. We reevaluated and updated a broad range of topics other than traffic and air quality. We looked at noise, socioeconomics, land use, hazardous materials, natural resources,

cultural resources, indirect and cumulative impact among other topic areas. These are fully documented. I won't get into them in detail here but the bottom line is that the basic conclusions of the 2004 Final Environmental Impact Statement are supported by the analyses that were conducted as part of this Draft Supplemental EIS. I'll hand it back to Pete now.

Peter Stamnas: Thank you, Larry. Moving on to provide everybody with a general status update on construction activities along the corridor, I get asked on a number of occasions, how are we able to move ahead with construction? And there was a court agreement, basically, coming out of the agreement that construction could move ahead on certain types of projects. And these projects, certain ones that would replace red list bridges to address safety concerns, these projects that are under construction would not commit the DOT to a particular outcome, meaning they're either being paved and operated for two lanes until certain decisions are made and the SEIS process is concluded and the projects will not influence the overall SEIS process or the Record of Decision. From a completed project standpoint, again, you notice the corridor on the left hand side of the slide, there are a number of projects that are already completed. It's focused on park and rides, bus terminals and there was one overpass bridge just north of the border in Salem. These projects total about $40 million and again, the majority of them were completed late last year. Additional work, ongoing at exit 1 and at exit 5, the work at exit 5 is 85% complete. It was a $16 million project. Work at exit 1 is approaching completion, around 95% complete. All told, with the completed projects and these two that will be completed by the end of this construction season is $80 million of construction that will be completed by the end of 2009. We also have $58 million worth of construction ongoing at exit 3. Some of the construction milestones – all those projects that I just mentioned is $138 million of work that's either complete or on the way. That's approximately 22% of the overall total of construction. The earlier projects allowed us to expand bus service with the open park and ride lots; it's a significant milestone for us that happened late last year. The work that's been completed – we've replaced eight red list bridges, taken eight red list bridged out of service and we're working on two additional ones at exit three, out of the 19 that were identified as red list bridges earlier on. And another

recent construction milestone – ramp improvements at exit five. We opened the southbound ramps at exit five. This is a continual, reoccurring congestion problem where ramp traffic backed up onto the main line. Extremely dangerous. And this was a good day when we got this open last week. Every time that I've been by it, it's certainly removed that traffic from the main line and has improved safety at exit five. So that is a significant construction milestone for us. Some of the mitigation milestones – of the thousand acres that we had committed to, to put under preservation, we have eight hundred sixty of those acres with preservation easements on them. We're into year three of the community planning and assistance, the CTAP Program. We continue to provide grants for those communities that are looking to plan for their future. Incident management strategies have been implemented – incident management, looking to enhance safety along the corridor before, during and after construction. These would include the operation of a service patrol; posting of signs along emergency detour routes; installation of emergency access for first responders and some of the support infrastructure like dry hydrants on bridges. There's a number of things that we've committed to, that we've implemented and these strategies are working. We've improved storm water treatment. We have it in place at exit one, exit two and exit five – state of the art water quality improvements through basins where we're cleaning storm water. And we have a noise barrier in place at exit one and there's a lot more of those to come and these are mitigation milestones again, to date. There are a lot more to come. General brush on the overall cost estimate – total estimated cost for the project is $795 million. Engineering, overall estimated at $71 million. Right-of-way at $66 million. Overall mitigation package estimated at $46 million and construction for the entire corridor estimated at $612 million. From an overall completion date we anticipate completion at the end of the 2017 construction season. I want to recognize our project website: rebuildingI93.com. All the information that we've passed out tonight, that we've reviewed on screen, the postings, the Draft Supplemental Environmental Impact Statement, the Final Environmental Impact Statement, anything you want to know about I-93 is posted on rebuildingI93.com. If you're interested in any information, please visit the website. If there's something you can't find, give me a call and I'll help you locate it. Moving into public

comment section of the hearing, we ask that if you are interested in speaking that you come up to the microphone, we'll sign up for you. State your name, affiliation, where you may live or who you may represent at the start of your comments. We also have some other ways to comment on the Supplement. As part of your hand-out package that we provided you, there's a comment sheet. You can write down your comments there and you can mail them to the addresses here to either Jamie Sikora of Federal Highway or myself at NH DOT again, the slide is in your handout. It's also on the comment page, the addresses. And we also have e-mail addresses here in the handout. Again, comments need to be received by us up to October 2nd 2009. How will the comments be addressed? Written responses to substantive public comments will be included in the final Supplement and all public comments will be considered in NH DOT and Federal Highway decision making process. With that, I would like to begin opening up for public comment. Before we get into that, I'd like to ask Rich Roach who represents the Army Corps of Engineers, he'd like to make a brief statement and then I'll open it up to comments from elected officials and then from the general public.

Richard Roach: I'm Richard Roach with the Army Corps of Engineers. I'm here because the Corps gave a permit for fill for this project and placed some reliance on the EIS. We're interested to learn if the Supplemental EIS will reveal impacts that we did not earlier anticipate or occasion the need for a modification of the permit. We're also interested to hear what the public has to say about the issues that are discussed. And I'd like to begin by saying that in as much as it's taken us a couple of years to get to this point, maybe we might extend the period for written comments a little beyond the ten days from tonight. I think you might give them a few more days if you could bring yourself to do it. Thank you. 1 2

Peter Stamnas: We'll consider that. Any public officials that would be interested in making comments? Senator Letourneau? Executive Councilor Wieczorek, I believe is in the room. Anybody else?

Senator Letourneau: Good evening. Senator Bob Letourneau. I live here in Derry, New Hampshire. I represent the 19th District which is completely in this

corridor, the towns of Windham, Derry and Hampstead. I want to begin by saying thank you to the Department of Transportation, Federal Highway Administration for your patience and your work on this project and excellent presentation in getting this done. In way of background, I grew up in Salem, New Hampshire. And in the sixties, as a junior in high school, 1960, 1961 graduating, that's when they built that road. That's the same road they built when I was in high school. Look at me now. You guys were probably still... being fed by your mother. So it's been a long time since this road has been built. We've been talking about widening I-93 since the eighties but I'm not going to go back to that. I'm just going to go back to 1999 when I filed legislation in 2000. We were at a meeting in Salem, New Hampshire, similar to this one and the Federal Highway Administration and the Department of Transportation came in and said, "Oh, we're going to have to delay the widening of I-93." That was in 1999 and here we are in 2009, ten years later, and we're still trying to get this done. The cost at that time was estimated at $200 million. Today we're looking at $800 million. These delays are costing us a fortune. It's costing the taxpayers of this State a fortune. Why do we need this road? Number one reason – safety. We've had two – forty car to fifty car pile-ups between exit four and exit three. Fortunately nobody has died in those crashes but I've spoken to the emergency responders in both towns and they couldn't get to those accidents. If there were serious injuries people would have died because there's not access to get to those. As you know, that highway was built with different standards. Today the standard for breakdown lanes allows for fire trucks and ambulances to get to an accident scene. We've had a number of fatal crashes between exits three and exit 5 and one in particular around between exits 4 and exit 5 where five people died. This road is unsafe, unfit for the motoring public. It needs to be improved. The environment, we don't have to be an engineer or have an engineering degree to understand that when traffic is backed up and stopped on the highway, we're polluting. We understand that. The people understand that. We need to get this highway finished. We've had the most responsive mitigation package ever presented for a small project. I consider this a small project. It's a twenty mile project, a thousand acres of land mitigation for seventy-five acres of wetland. Incidentally those seventy five acres of wetland were created by the building of the

3

4

highway back in the sixties. New cars, as they come along, and we know that they're going to be much more environmentally friendly so that's not going to be an issue in the future. The economics of this is very important. The I-93 corridor is the gateway to New Hampshire. It's the gateway for both the airport in Manchester where we have a huge hub of business and the tourist industry of the North Country. If we can't get them in and out of here, they're not going to come. Sunday nights it is a disaster out there from the Manchester split down. People are stuck in traffic for hours. We have a race track – it's a world class race track and we have two major NASCAR races a year and traffics moves freely between the track until we get to the Manchester split. That section of road needs to be improved. So here we are, thirty years in the making, the current road is definitely in failure and we have lost tens of millions of dollars in delaying this project. Thank you for your work. Let's get this road built. Thank you. 5

Peter Stamnas: Any of elected officials who would like to make a statement or provide comment? Yes, sir.

Representative Gleason: My name is John Gleason. I'm one of the representatives from Derry. A question I have in mind, in doing the additions is the beginning use of the new improvements, will those be phased in gradually or when the widening process is completely completed from the State line to Manchester? 6

Peter Stamnas: There's a phased approach to completing the construction work. We are addressing, as we stated earlier on, constructing the park and rides first to try to get people out of their cars to minimize traffic on the corridor and we're focusing on red list bridges and safety priorities. We'll move from there to work that focuses on, again, red list bridges, exit five and also the major constriction down in the southern end of the corridor and then move northward from there. So it will be phased in. There will be certainly portions of the corridor that will be under construction. We don't anticipate the entire corridor to be under construction all at once.

Representative Gleason: So in the entire 20-mile corridor, there might be two or three phases and portions? 6

Peter Stamnas: Yes, I think the timeline that we have at this time would show widened section in place through exit three and the 2014-15 timeframe and then the remainder of it beyond that. There'll certainly be construction north of that from a proposed schedule standpoint at this point. So it will be phased in over time.

Representative Gleason: Thank you. Because it would seem rather a ponderous situation to wait until the entire twenty miles was completed so that's why I asked.

Peter Stamnas: Okay.

Representative Gleason: Thank you very much.

Peter Stamnas: Thanks for your comment. Are there any other elected officials that would like to make a statement? Yes, ma'am?

Lois Sciaretta: I'm not an elected official but I'm here representing one.

Peter Stamnas: Okay.

Lois Sciarett: I'm here representing Representative Emiro. He had a prior commitment tonight in Concord at the State Veteran's Advisory Council and couldn't be two places at once. So first of all he wanted to thank you for your yield sign that you put at exit four, southbound. I guess before there used to be a stop sign there and it was causing a great deal of commotion and to thank you for the repairs that you did on that intersection. And what he wanted to ask or propose was a southbound entrance to 93 off Stonehenge. And Stonehenge is one of these abutting streets you made reference to. It's just below the little block on this printout you have here. And Stonehenge also goes across to 28 which many people take Stonehenge out of that neighborhood, go north on 28. There's an incline there at 28 so that the bump is out of the road causing hazardous traffic conditions, especially in icy conditions – cars tend to slide off the road if they're coming off Stonehenge and heading north to 93. He's already presented some of this to District Five Engineering about the bump in that road in Stonehenge. It's a large neighborhood and a southbound exit incorporated only, southbound only, out of Stonehenge would alleviate traffic going north on 28 and it would also ease up exit five. And as you can see from the

7

8

little map, like I previously mentioned, it's an abutting road but major population in there. Thank you.

Peter Stamnas: Thank you for your comment. Any other elected officials that would like to be recognized and make a statement? I guess we'll open it up to the general public. Is there anybody who would like to make a statement or provide a comment here this evening?

Tom Harden: Hi. My name is Tom Cardon. I live at 2 Cunningham Drive in Derry. I'm glad that this project is getting to a point where we're almost going to be able to start full construction on it. I'd like to offer a little bit of criticism to the Conservation Law Foundation for their delays in the project which is ultimately cost the people of New Hampshire millions of dollars. But I think it's time to get this project going as Mr. Letourneau talked about the major accident and the one in January of this year where there was a fifty-nine car pile-up with a hundred injuries. I think it's kind of indicative to how unsafe the road is and I think pretty much everybody in this room knows that it's a pretty unsafe road and that it needs to get fixed. Also, I did want to make a comment about your website, the rebuildingI93 – excellent website. I've been there several times looking at the information and it was really nice to see that so I think that was good. One of my biggest concerns was a week or so ago there was an article in the Union Leader that talked about the widening of I-93 and also as a continuation of the article they talked about a toll booth going between the Mass border and exit one. And I guess that's a proposal in Concord. And I think that's a pretty bad idea. I think if you're going to do that, you're going to have one of those "F" conditions that you talked about, certainly backing tracking up much more for Massachusetts and having basically the same scenario for people coming south on a Sunday night after they've been up in the mountains or the lakes region for the weekend. I think what... we really have the perfect opportunity here to make this a good, positive gateway for New Hampshire. I don't think the toll road is going to benefit anybody. We want a good positive image. We want people to leave Andover, Massachusetts, their homes, go up to New Hampshire to Loon Mountain and skiing and eight o'clock they're having dinner, ski a couple of days, get back on 93 at 3 o'clock and zoom right home in

9

10

11

12

a couple of hours. And again, my only other comment is that the sooner this show gets going, the better. Thank you very much.

Peter Stamnas: Thank you. Anybody else wish to provide comment? Yes, sir?

Richard Katzenberg: Hello. My name is Richard Katzenberg. I live in Amherst, New Hampshire and I'm speaking for myself and for my town. I'm here to speak for a widening of I-93 to three lanes in each direction. It is my believe that this will accomplish the necessary goals of the widening of the existing road by 50% while providing a minimizing of the negative impacts that a four-lane highway each way would bring. Three lanes would: lower the cost to the taxpayers; cut the funds required approximately $150 million by the State of New Hampshire; and enable other badly needed projects in the under-funded highway plan that have been deemed important for safety and traffic flow to be funded; possibly eliminate the need for a toll booth to be built to help generate excessive funds needed for the four-lane build; cut the salt and chemical usage to keep the road clean and dry by one-third enabling towns and road agents along the highway to regain the ability to clean and winterize their town roads. Given a fixed amount that can be applied to the roads in the water districts along the highway, any additions to the I-93 quotas by definition reduces that which is available for the nearby towns. Provide incentives for a more thoughtful and efficient strategy to move people through the corridor that might emphasize HOV preferences, railroad and bus alternatives, plans to even out traffic flow at the busiest times, provide railroad alternatives for freight and for the use of other best practices used successfully across America. Aid New Hampshire to achieve its publicly stated goal in the Governor's Climate Change Action Plan of reducing the harmful carbon emissions from traffic by 20% by 2020 and by 80% by 2050. These important goals will never be reached if the DOT and other State and Federal agencies continue to provide encouragement and incentives to single passenger petroleum based travel. Help us resolve and correct the violations that currently exist regarding the Clean Water Act due to excessive chloride use polluting the stream and aquifers along the highway. Minimize the extensive and costly impacts on many towns near and not-so-near the I-93 corridor. This highway will drive new growth in the Southern NH tier, increasing the population, eliminating valuable

13

14

15

16

17

open space, forcing the need for locally funded new schools and emergency services and driving locally funded property taxes unnecessarily higher. Safety on secondary roads will also be made worse as cars speed from areas with cheaper land to highways like 101 that feed the new highway. And lastly, an example, my town, Amherst, has already exceeded its projected population growth of 2020 and those are numbers that came out of OEP, prepared by the Nashua Regional Planning Commission, has far more traffic on its feeder roads and more accidents as well than just a few years ago. We are using eight to ten modular temporary structures at our schools and will eventually need another expensive school building and more teachers. Our population in 2000 was 10,007, was projected to go to 12,000 by 2010 and to 13,000 by 2020. Today, according to our town clerk, it stands at 13,945, already exceeding the 2020 number. Meanwhile my property taxes were up over 30%. I am confident that the nearby towns of Milford, Wilton, Lyndeborough, Brookline and Hollis, none of them covered in your study, are or will soon experience the same impacts. In conclusion, I believe that a compromise build of a six-lane road adding 50% more traffic flow and enabling a series of limitations to the above stated negative impacts would work to everyone's advantage in both the long and short run. And thanks for the opportunity.

17

18

19

20

Peter Stamnas: You're welcome. Thank you. Is there anybody else that would like to provide comment? Yes, sir.

Mike Speltz: Mike Speltz. I'm a Londonderry resident. The background, I guess for the first comment I'd like to make is that in Londonderry most of us get the water we drink out of a hole in the ground and that hole fills up with water from cracks in the bedrock. We are aquifer challenged in Londonderry so it's mostly ground water that's been hanging around for a while. I'd like to direct your attention to two documents that are in your report. One is the Data Report for the TMDL which the Draft Supplement relies on. And it says on page 12, "Groundwater was considered a pathway for chlorides, not an independent source." The effect of that is in terms of the analysis that chloride irons basically passed instantly through the groundwater to wherever they were going and for a good reason because as the study says, it would require a detailed groundwater model which is beyond the scope of the study. My concern is that

21

while much more a difficult project, it may be important to take a look at ground water. If you go to the figures, and I'm on… I think it's called page figure 17 and it's figures 18 and 19, they show a graph of the chlorides going into five water sheds and the chlorides coming out. And in each case, there's more going in than coming out by anywhere from five hundred to two thousand tons of chloride a year. So one has to ask, well, where is it going? Obviously, according to the conservation of math it's got to be someplace. And my concern is that it's in our groundwater. So we are basically banking chlorides every year and have been for some time as we import more into these watersheds than we export out of them. And then if you look at the Water Quality Certificate that DES issued, they say, "If TMDLs are not established with implementation of chloride load reductions in accordance with the plan," the TMDLs, "the Applicant shall incrementally implement the activity," meaning go to only three lanes. And then if you go to page 12 of the Cumulative Impacts technical report which is #8, it says, "Chloride concentrations may increase from present levels in water bodies throughout the study area as an additive effect of the continued application of de-icing salts." So, it seems to me we're sort of on a collision course with the water quality certification. We're saying in our report that likely there's going to be an increase. We've signed up to having a decrease. And so I'm trying to figure out how are you going to manage that? I don't know if you want to address that? I had a couple of other short comments that I wanted to make.

21

Peter Stamnas: I guess I could try to address that briefly. DOT has presented an implementation plan that addresses future salt needs along the corridor without lowering the level of service on the facility. There are multiple groups that apply salt within the corridor and we all need to work together to reach those reductions and we'll continue to work with those groups to reach those reductions so we can remove those impaired waters off of the list. So we've got a plan, we're looking to move ahead with it and in the end it looks at meeting those salt budgets that have been approved by the EPA

Mike Speltz: My concern is that we can get… if we could start from ground zero, that that might work but the fact is that we have banked an awful lot and what I am afraid of is that that's going to keep coming out of

22

the ground water. There's another place in the Technical Report that shows the months in which the violations occurred. And it happens both in winter, which one might expect because that's when all the salt is going down to promote safety but it also occurs in the summer. It coincides with low flow. And low flow is when streams draw ground water into their flow because there isn't enough surface water that's coming over. So ground water is leaving the ground, coming back into the streams and it's picking up as a violation because of water in the ground is saltier than the water that's falling out of the clouds. So I do think that there's a lot in your report that shows that we have an accumulative bank of chloride irons in the ground water and that is going to be a problem and that you may not have adequately addressed that in the work that you've done so far. 22

Peter Stamnas: I think we can take the comment and then we can respond to it. It's more detail than I really want to get into and debate at this point in time.

Mike Speltz: The other very short question, the total wetland impacts have gone from, I think, 77 acres in 2004 to 85 acres currently, about a 10% increase. Have you had a discussion with DES on modifying your wetlands approval to account for additional mitigation? 23

Peter Stamnas: That's an estimated total based on some of the information that we've received as we advance design and as we move into construction we continue to coordinate with the resource agencies and provide them with updated information. So we continually look to try to minimize impacts wherever we can and so we have an update on a regular basis and we'll continue to coordinate with the resource agencies.

Mike Speltz: Thank you. My final comment is just that when you compare scenario one and scenario two, based on the acres developed, they're in almost complete agreement in terms of the No Build, about 51,000 acres. Where the Delphi experts apparently get it wrong is in accounting for the impact of building. In fact, they're wrong by a factor of five. Even though they got it right on the No Build... I don't know which bad data they got but they got it right according to OEP. So there's an unexplained discrepancy there. Why were they right on the No Build and got it so wrong on the 24

effects of Build? I don't have a suggestion or answer but it's a question, I think, that's worth asking. And finally, I'd just like to thank you for being very transparent in all your materials. Obviously I had a chance to look at them all. I found them with no difficulty and I hope that in answering my questions will contribute to a better project. 25

Peter Stamnas: Thank you, sir. I saw somebody in the back that was interested in making a comment.

David Anderson: Hello. My name is David Anderson and I'm here today on behalf of Repower America which is part of the alliance for climate protection. Our local office is located in Concord, New Hampshire. First of all I'd just to thank the panel for convening this meeting. Repower America appreciates that the I-93 improvement plan addresses the need to provide green transportation options by including new park and ride lots and making expanded commuter bus services possible. These kinds of green transportation projects will create new green jobs in New Hampshire and reduce our dependence on foreign oil. The transportation is a major source of air pollution and green house gas emissions so greening out transportation infrastructure is vital to the Granite State's tourism stream which relies on a clean and healthy environment and to the public health. So I just wanted to state that we hope you continue to focus on developing a green transportation structure for New Hampshire that will jumpstart our economy and create green jobs. Thank you. 26

Peter Stamnas: Thanks for your comment.

David Anderson: No problem.

Peter Stamnas: Is there anybody else that would like to speak? Provide comment? Yes, sir.

Tom Irwin: Thank you. My name is Tom Irwin. I'm here today representing both the Conservation Law Foundation and the group Environment New Hampshire. I'd like to raise three concerns, what we consider to be three significant omissions in the Draft Supplemental Environmental Impact Statement in the hopes that these issues will be addressed. The first is the failure of the Draft SEIS to assess the feasibility of a three-lane alternative. Back in preparation of the 27

original Environmental Impact Statement, DOT and the Federal Highway Administration defined the reasonable range of alternatives for this project, for the NEPA analysis as including not only the full four-lane build but also a three-lane build. In the original Environmental Impact Statement it conducted traffic modeling for both the four-land build and the three-lane build. In this analysis, with new information, new more recent population projections and an updated traffic model, you've assessed only the four-lane alternative. NEPA requires a rigorous objective analysis of all reasonable alternatives. We would encourage you, we would urge you to apply the new traffic modeling analysis not only to the full four-lane build but also to the three-land alternative. Second, we're very concerned with the conscious decision in the Draft Supplemental Environmental Impact Statement not to assess the impact of this project as it relates to greenhouse gas emissions and climate. Along those lines, as you know, transportation plays a very significant role in terms of its emission of greenhouse gas emissions. Transportation is the largest and fastest growing source of greenhouse gas emissions in New England. And as you know, the New Hampshire Climate Action Plan identifies the need to address greenhouse gas emissions from the transportation sector. Two major strategies within the climate action plan relate to reducing vehicle miles traveled as an important element of tackling the problem of greenhouse gas emissions and as needed actions to achieve the specific goals set out in the New Hampshire Climate Action Plan for reducing greenhouse gas emissions by certain percentages by certain dates. I'll be brief but I want to read one important provision out of the Climate Action Plan. It says, "The sooner New Hampshire takes action to reduce its greenhouse gas emissions, the less costly it will be for the State and the less carbon dioxide that will be emitted into the atmosphere. Delaying action will necessitate greater reductions in the future which will come at higher costs to achieve the same emission and reduction goals." So it's clear; it's been established by the Climate Action Taskforce that we need to address climate and we need to do so in the very near term to avoid the higher costs of delay. If we don't address this issue now, twenty years from now, thirty years from now the cost will be significantly greater to the State across all sectors in addressing the problem of climate change. The intersection of this issue with this project is in the Draft Supplemental Environmental

27

28

Impact Statement's projection of an additional 2.8 million miles of vehicle miles traveled (VMT) induced by this project by the year 2030. 2.8 million miles per day of additional VMT is very significant and calls into question whether, in fact, we will be able to meet the goals set out in the Climate Action Plan. NEPA case law requires an analysis of greenhouse gas emissions and climate and NEPA regulations require an assessment of the consistency of the project with State and local plans. We think it's essential that you do a greenhouse gas emissions analysis for the project and also assess the extent to which this project is consistent or not with the New Hampshire Climate Action Plan and the goals set forth in that plan. The final issue concern that I'll mention tonight is one that's been alluded to by others and that's the issue of chlorides pollution. As you know there are four water bodies already impaired. TMDLs have been prepared and approved by the EPA. We understand that the Department of Transportation has proposed an implementation plan which proposed various allocations of salt loading within a larger salt loading budget. We're very concerned that the Draft SEIS, in addressing that and in discussing this issue, does not fully address what the impacts of DOT's proposed implementation plan will be on municipalities and on the water quality. In particular, obviously there's a fixed budget in terms of the amount of salt that can be used. If DOT seeks more salt in order to maintain a full four-lane facility, that means less salt available to the municipalities and we have real concerns about whether the municipalities will be able to take on effectively that increased burden of reducing salt load even more. And related to that, we're very concerned that water quality standards won't be attained ultimately with that implementation plan. Related to this issue and disclosure of the ramifications of this issue to the municipalities, there is the very real possibility that if DOT requires too much salt to maintain a four-lane highway and municipalities can't find a way to reduce their loads enough, that it could have a very significant impact on the ability of those municipalities to engage in future economic development. That's an issue that municipalities need to know about and should be fleshed out in the Draft SEIS. And that's all I have for tonight. Thank you.

28

29

Peter Stamnas: Thanks for your comments. Is there anybody else that would like to speak or provide comment?

Peter Griffin: My name is Peter Griffin. I live in Windham. I'm President of the New Hampshire Railroad Revitalization Association. The mission of the NHRRA is to restore a balanced multi-modeled transportation system, something that we had probably up until the early thirties when... And I think it's timely that we're in the town of Derry and along the 93 corridor because historically Derry had two rail corridors providing access to Portland, to Bar Harbor, to Manchester, to Montreal, to Lawrence, to Boston, to New York, to Nashua, to Worcester. And in addition to that, complimenting that system, there was a trolley system that took you every place else. By those standards today, we do not have a transportation system, we have one mode and if you compare that to how we live our lives, it does not provide the choice we need to live our lives either economically, health wise, or in any other way nor does it provide a competitive environment to attract business to New Hampshire. We have never opposed the widening of 93. We understand it's necessary. We understand the historic structure is very poorly designed and now has become a hazard. With that said, too, it is an inanimate object. You have to also blame, if you want to place blame, on the people that drive it - those people who are careless about driving that may cause these accidents. It is not totally inherent in the design of the current structure. With that said, it does need to be widened. I don't think it needs to be widened, nor does NHRRA believe it needs to be widened to four lanes. Obviously this will be something very self-serving. We believe three lanes and restoration of the service on the Manchester-Lawrence corridor will restore a competitive environment to the business community along this corridor. You have parcels such as Rockingham Park, the 800 pound gorilla of economic potential in this area. You have downtown Derry and also downtown Salem which are both creations of the introduction of rail in the 1840s. Both of those communities have historic centers - Salem center, East Derry and also the mercantile centers that we're most familiar with - Salem Depot, downtown Derry. What would something like that do or what would an opportunity like that do or a combination of transportation modes do to both of those communities in fulfilling their economic development potential? Just a couple of other things – Pete, for all of our benefits and I'm not sure I totally understand, could you explain how a highway project like Route 93 is funded?

30

31

32

Peter Stamnas: Currently funding is assigned through the ten-year Transportation Improvement Plan through Federal Highway Administration reimbursement for those projects. Currently there is approximately $250 million worth of construction that is not included in the ten-year plan and that we are looking for alternative means to provide that funding for the projects.

Peter Griffin: What is the origin of the funding currently? Where does the money come from? In other words, the money that comes into the ten-year plan to fund these various projects, what is the origin? 33

Peter Stamnas: Gas tax.

Peter Griffin: Exclusively? Federal funding?

Peter Stamnas: Federal and State funding.

Peter Griffin: Okay. Prior to the 2001 and please correct me if I'm wrong, I believe when the intent was made to widen 93, what was the period of time before that that the widening was under discussion?

Peter Stamnas: Prior to… Excuse me?

Peter Griffin: Prior to the 2001 Letter of Intent to confirm there was an interest to widen 93. How long was this in the thought process? I seem to remember, and I grew up in Windham, reading articles back in the mid-eighties that they were talking about widening I-93 then and DOT was discussing it then.

Peter Stamnas: I believe that's accurate.

34

Peter Griffin: Okay. So I'm getting to my point. I'm concerned. Why would almost twenty years elapse for discussion or whatever before we've reached this point tonight when conversely the widening of Route 3 in Massachusetts from Nashua to Burlington using a Design Build format, and correct me if I'm wrong, you gentlemen know far more about it than I do. It took about three and a half years for a similar scale project. I just don't get it. Could you help me understand that?

Peter Stamnas: I think there are different challenges with this project. It's a different approach to the project from a construction standpoint.

Peter Griffin: Is there something inherent in the way New Hampshire funds road projects? Because I remember having a discussion with a former DOT commissioner, Carol Murray, one time about the widening of Route 101 from Portsmouth the Manchester and I made some comment about it taking thirty years. And she said, "No, Peter. It took forty years." Why would a project take forty years considering the technology we have today? I look at the Big Dig. That was done even over an extended period of time of about fourteen years. Why would it take so long? Why would it take twenty years for the project to elapse from a discussion stage to a point now where we're talking about construction? Even before the court became involved there was this whole gap of time. What is inherent in New Hampshire's funding mechanism, philosophy of building roads that would cause that to happen which if you play that out, in itself would raise the cost of this highway much more than it really needed to be? Can anyone help me with that? 35

Peter Stamnas: I don't know what the right answer is. Maybe you know what the right answer is.

Peter Griffin: No, I'm not really trying to play games or trying to set you up in any way. I'm just trying to better understand that because when I look at what's happening in other states, even other parts of New Hampshire, we just look at the rail option. For instance, along the Route 3 corridor you have the widening of Route 3 south of Nashua and now you have it widened north of Nashua yet there's a whole philosophy over there, they want to see rail restored, extended beyond Lowell to Nashua, Manchester and Concord. The Chambers of Commerce are involved in it. The Economic Development communities are involved with it. The cities are supporting it. Yet, they want the multiple modes of transportation, yet along this corridor we're led to believe that Route 93 is enough. I'm reaching a point in my life and I'm certainly not ancient but what do we say to the people of an advanced age where all around the neighboring states where they're talking about enacting legislation that will restrict peoples' mobility; we are not giving them an opportunity to be mobile. 93 is an excellent project but how does that help someone that needs to get to Boston, that Boston is a medical destination, a cultural, a sports and educational. How is 93 helping them to get there if they don't have the ability to 36

drive? Also too, in your alternatives part of the study, you spoke about running a corridor down Route 93, a rail corridor. Is that correct? 36

Peter Stamnas: That was part of one of the alternatives. That's correct.

Peter Griffin: Okay. Yet in the I-93 transit study, they distilled about twelve different options down to two: the bus on shoulder and restoration of service on the M&L corridor. And they deleted that from one of the choices. Why would you keep it in your alternative? 37

Peter Stamnas: I don't understand your question.

Peter Griffin: In other words you have included in your alternatives list, unless I read it incorrectly, including a rail corridor down the 93 corridor.

Jamie Sikora: I believe it was transit corridor and not specific to rail – for any future transit options, whatever those may be. And we preserved room in the median area is what you're referring to.

Peter Griffin: Okay. All right.

Jamie Sikora: It wasn't specific to rail.

Peter Griffin: And just as a point of reference, too, there was an article in Sunday's Globe, the Globe South section about restoration of service from Boston to New Bedford/Fall River and one of the options they considered was a bus on shoulder which was dismissed because of cost, both construction and maintenance. Thank you very much for answering my questions or at least trying to answer the questions. What you're doing is very important. I think a balanced system that provides options and choices, not just the widening of 93 is really going to be to the best benefit of this area. Thank you very much. 38

Peter Stamnas: Additional comments? Yes, ma'am.

Cathy Corkery: Hello. My name is Cathy Corkery. I live in Concord but I represent New Hampshire Sierra Club. We have members all over the state. The concerns I bring today focus specifically on global warming issues. And I wanted to point out that there was a report today that was released about rail traffic in the State and also just alternative forms of transportation throughout the country. And 39

while certainly the recession has had an effect on increase in ridership, I think it also… this report, and I can certainly give you a copy, shows that there's a real potential for reducing global warming pollution through transit options. Right now the transit choices are very limited in the State. This report highlights that in the past year public transit increased by 6% in the State and that comes out to 125 million miles less driven in the State. And they talk about the vehicle miles traveled were lower due to in part the volatile fuel prices but also decreased economic activity and just car trips were replaced by transit. I certainly try to use the transit options as much as I can in Concord but it is limited in the State. And that equates to… or at least in the last year, about… I think it's five thousand tons of CO_2 reduced from the public transportation use. And I think that shows a real opportunity in the State. There are choices for folks and they'll use them. And it's a really good report. Other concerns, and I'll just echo those that have been voiced already with the vehicle miles traveled. I'm new to looking at these reports but I have a hard time understanding why the vehicles miles traveled increases with the new Draft Environmental Analysis. And we do support the option of having three lanes. I'm not really… I understood that the court order included a requirement to have an analysis for three lanes and I'm not sure why it wasn't in there when it was my understanding that that was part of the court order. It was not?

39

40

41

Jamie Sikora: No, we were not required to revisit alternatives, just the selected alternative.

Cathy Corkery: Oh, okay. I would certainly support you maybe doing another analysis with the three-lane. And lastly we do have some real concerns with water quality, specifically with the blasting in exit three. That's a real concern. There's a real peoples' drinking water and I think that there can be a way to do it without polluting peoples' drinking water. In a separate case, we have worked with volunteers who have had their drinking water contaminated from blasting and it's very traumatic on this particular family where they cannot turn on their water without it being silty, without it having nitrates in it that are at dangerous levels and potentially harming their children. And I'm very concerned about the blasting issue on exit three in particular. So in conclusion, New Hampshire Sierra

41

42

Club has some real concerns about the global warming components of this project and we do support a three-lane option and we also have some concerns about the blasting at exit three. Thank you. 42

Peter Stamnas: Thanks for your comments. Anybody else? Yes, sir.

William Schroeder: My name is William Schroeder and I live in Windham, right near the exit three that we're talking about. Just very briefly, I would like to add my voice to encourage you to look at the three-lane alternative. It seems to me that it's obvious that it would cost less; that it would result in less chloride pollution; that it probably would result in less CO_2 emission and that's something I think we all need to be concerned about and the country is getting a lot more concerned about. And it probably would not result in as much relief of congestion as your four-lane alternative. So it's a trade off. But I think a project like this always involves tradeoffs and at this point I can't see what the tradeoff is. I don't know how much we would lose from a transportation or a congestion perspective. If you did implement the three-lane alternative maybe you would get most of the benefit that you get from four lanes with less of these environmental impacts. So I think we would have a more sound decision for the project if you took a look at that as well. I'd like to add my voice in that. Thank you. 43

Peter Stamnas: Thanks for your comment. Anybody else interested in making a comment? Yes, sir. Senator Letourneau.

Senator Letourneau: I really should have waited to speak last so I could hear the comments that were going to come forward. To answer several of the questions that came forward as to why this project is taking so long, I think you just witnessed why it's taking so long. The problem is we're regurgitating old arguments. The project has got to move forward. I do not support a three-lane. I support a four-lane but one lane being reserved for the busses and for multiple passengers. That is the option. That way there you get the third lane for the traffic that is now backing up and it solves your problems which are load distributed. If we keep on arguing about all these other arguments which you've already put your efforts toward solving, we'll never get the thing done and it just keeps going and costing more and more money. There are 100,000 people a day that use that road. A 100,000 people a day. And 44

they're not in this room. And I represent a lot of them and I'm here to say that they want that done because the most I hear from my constituents is when is that project going to get done? Thank you.

Peter Stamnas: Thank you, sir. Yes, sir?

Richard Katzenberg: Rick Katzenberg again from Amherst - just a couple of quickie questions or comments. Again, I'd like to thank you for a very readable and useful to me as well. A little heavy but other than that, really made it easy to work with. I'm wondering if there was any… what the impact was of the economic stimulus plan. Has there been any financial benefit to the State or to this project from that potential influx of funds?

Peter Stamnas: Yes. There was approximately $27 million worth of stimulus funds that were used for exit three construction, second contract at exit three, which is under construction right now.

Richard Katzenberg: And how about potential down the road… but you get the gist… Might we access more?

Peter Stamnas: Sure. There's a potential. We have another project on this list, Brookdale Road bridge replacement project that's been identified as a potential candidate as well as any other projects that may be appropriate for and timing appropriate for future stimulus funds. 45

Richard Katzenberg: Does that count as State provided funds or is that part of the federal portion? It's 80-20, I think.

Peter Stamnas: Yes.

Richard Katzenberg: Does the economic stimulus dollars… which segment does that fall into? Is that part of the 80 or part of the 20?

Peter Stamnas: It's part of the 80. It's part of the 100%.

Richard Katzenberg: Okay. Also I'd like to reiterate the comment that if we could have another ten days… I only received word of this I think it was dated September 8th when I got a DVD, if there's some way to extend the comment period I think it would be very helpful to a number of communities that are only just becoming aware that there is a heavy document that needs comment upon. Thanks. 46

Peter Stamnas: Thank you. Anybody else wishing to provide comment? Seeing none, I'd like to bring this public hearing to a close. Thank you for your participation and for your attendance. Have a good evening.

STATE OF NEW HAMPSHIRE

MERRIMACK, SS.

I, Lee A. Currier, do hereby certify that I transcribed from a digital recording the foregoing pages and that the same is a true, full and correct transcript of all of the testimony at the hearing, to the best of my knowledge and belief.

I further certify that I am neither attorney nor counsel for, nor related to or employed by any of the parties to the action in which this hearing was taken and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Lee A. Currier/ Notary Public

RESPONSES TO COMMENTS FROM THE PUBLIC HEARING

Response to Comments Made by
Richard Roach
U.S. Army Corps of Engineers
September 22, 2009 Public Hearing

1. Changes in wetland impacts since the issuance of the Section 404 permit are discussed in Section 10.5.3. NHDOT has been and will continue to coordinate with EPA, ACOE, NHDES and other natural resource agencies to determine if additional mitigation is appropriate for the increase in wetland impacts. If additional mitigation is necessary, the In-Lieu-Fee program will be considered.

2. The DSEIS comment period was extended from October 2 to October 9, 2009.

Response to Comments Made by
Bob Letourneau
State Senator, 19th District
September 22, 2009 Public Hearing

3. Your support for the project is noted. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment. As described in Section 3.2.2, the 2005 Selected Alternative includes the replacement of the deficient interchanges in the corridor with new interchanges that meet current design standards.

4. The wetland mitigation package was negotiated with the resource agencies. For updated information on the mitigation package, refer to Chapter 10.

5. The importance of the I-93 corridor in accommodating economic activity and tourist access to New Hampshire is acknowledged.

Response to Comments Made by
John Gleason
State Representative
September 22, 2009 Public Hearing

6. There is a phased approach to completing the construction work. The current construction schedule is provided on the project website (www.rebuildingi93.com/).

Response to Comments Made by
Lois Sciarett
September 22, 2009 Public Hearing

7. Comment noted.

8. The proposed connection between Stonehenge Road and I-93 southbound in Londonderry is not a component of the 2005 Selected Alternative. If considered in the future as part of a separate project, such a connection would require an interchange justification study and approval from FHWA.

Response to Comments Made by
Tom Harden
September 22, 2009 Public Hearing

9. Your frustration with the delays in the project is noted.

10. The 2005 Selected Alternative would address the congestion and safety issues cited in the comment.

11. Comment noted. The project website is a key component of the public information and outreach effort for the project.

12. Subsequent to the publication of the DSEIS, NHDOT has decided not pursue tolling on I-93 southbound in Salem at this time (See Section 1.3.1 of the FSEIS).

Response to Comments Made by
Richard Katzenberg
September 22, 2009 Public Hearing

13. The $150 million cost savings for the three-lane alternative vs. the four-lane alternative cited in the comment is not accurate. At the time of the 2004 FEIS, the Selected Alternative was estimated to cost $421.4 million, compared $401.2 million for a three-lane alternative using the same design options as the Selected Alternative (See Figures 2.8-1 and 2.8-2 in the 2004 FEIS). The difference between the cost of the four-lane alternative and three-lane alternative was $20.2 million or five percent. The difference in the cost estimates is less than one would expect due to a need to provide sufficient highway width during construction to safely maintain a minimum of two lanes for both northbound and southbound traffic. With the four-lane alternative, traffic would be maintained on the existing two-lane highway while the highway is widened to accommodate the additional two lanes. However, to safely maintain traffic for the three-lane alternative, the highway would require over-widening to a width nearly that of the four-lane alternative to provide the minimum two lanes of traffic in each direction.

    NHDOT has prepared an updated cost estimate for the three-lane alternative. The updated estimate still shows that the three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative. The comment is incorrect in asserting that alternative funding sources would not be needed for the three-lane alternative. Note that subsequent to the publication of the DSEIS, NHDOT has decided not pursue tolling on I-93 southbound in Salem at this time (See Section 1.3.1 of the FSEIS).

    The allocation of transportation funds to specific projects is a policy decision beyond the scope of this SEIS.

    The comment is correct that the three-lane alternative would require less deicing salt application than the four-lane alternative. The FSEIS acknowledges that incremental implementation of the project (three-lanes in each direction) is possible in the interim to meet the Record of Decision commitments and Water Quality Certification condition E-10. However, the long-term plan remains to implement the four-lane 2005 Selected

Alternative, not the three-lane alternative. NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

14. The alternatives suggested by the comment were considered and found not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). These alternatives would result in little or no reduction in travel on I-93 during the design hour and would not reduce the number of additional travel lanes required to provide acceptable levels of service on I-93.

    NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

15. The I-93 improvements project is consistent with the applicable recommendations of the 2009 New Hampshire Climate Action Plan. Examples of recommendations the project addresses include:

    - Implement Commuter Trip Reduction Initiative (TLU 2.A.1)
    - Improve Traffic Flow (TLU 1.D.3)
    - Expand Park-and-Ride Infrastructure (TLU 2.B.2.e)
    - Various policies related to improving and expanding bus service
    - Various policies related to improving land use planning and zoning (through the Community Technical Assistance Program).

    Most of the recommendations of the New Hampshire Climate Action Plan are not applicable to the proposed project (e.g. improve fuel economy standards, building efficiency, renewable energy generation etc.).

    With respect to the recommendation to reduce vehicle miles traveled, although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

    The statement in the comment that the project provides incentives to "single passenger petroleum based travel" is not accurate. The demand for single occupancy vehicle travel exists regardless of whether or not the proposed project is constructed. The project accommodates expected current and future public demand for mobility and alternatives to the single occupancy vehicle. The project includes new park and ride lots and expanded bus service, not just new highway capacity.

16. Chloride issues in the I-93 corridor are being addressed through the TMDL process.

17. The potential indirect land use effects of the 2005 Selected Alternative have been thoroughly evaluated, see Chapter 12. Under Scenario 2, the project is not expected to change population and employment totals at a regional level. However, the location of a small amount of future population and employment growth could shift to areas closer to the I-93 corridor. For example, the 2030 population of the 29-community Delphi study area is expected to be 9,707 or 1.32 percent higher in the Build condition as compared to the No Build condition. The Scenario 2 population and employment allocations suggest substantially lower levels of growth and land development in the study area for 2020 (and even for 2030) than estimated for Scenario 1 or in the 2004 FEIS. These lower levels of growth reduce the potential magnitude of land use change related environmental impacts. Impacts of future growth will be determined to a large extent by local land use regulations and planning.

    The indirect effects analysis for Scenario 2 does not support the assertion in the comment that the project will be a substantial force in impacting open space, creating the need for new schools and emergency response services, or increasing local property taxes. The potential effect of the I-93 project on these issues is negligible in comparison to the impacts of the growth that is expected whether or not the project is constructed.

18. Traffic on secondary roads was analyzed in the SEIS in accordance with the Court Order, see Chapter 4. The secondary roadway network consists of the parallel roadways and feeder roads in the vicinity of I-93. The primary parallel roadways are NH Route 28 and NH Route 128. The feeder roadways include NH Routes 97, 111, 111A, and 102. While detailed capacity analyses were not conducted for NH 101, traffic volume estimates were generated for this roadway. The traffic modeling shows that under Scenario 2 2030 conditions, traffic volumes on NH 101/I-293 would increase by six percent between NH 28 and US 3A/Brown Avenue as a result of the 2005 Selected Alternative.

    For Scenario 2 2030, the 2005 Selected Alternative would eliminate LOS E or F conditions at five secondary road intersections during the AM peak hour and four intersections in the PM peak hour, but would only create LOS E conditions at one intersection during the PM peak hour. The results demonstrate that the 2005 Selected Alternative would not degrade travel conditions on the secondary road system as a whole. Safety on secondary roads would be expected to improve overall as a result of these congestion reduction benefits.

19. The comment is incorrect in stating that the current population of Amherst has exceeded the New Hampshire Office of Energy and Planning's (OEP's) population projection for 2020. The OEP 2005 base year population estimate for Amherst used in the SEIS traffic modeling was 11,611. The OEP's 2008 population estimate (published in July 2009) for Amherst is very similar, 11,584. The current population of Amherst is well below the projected 2020 population of 13,030 and the 2030 population of 13,964.

20. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS). NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative. As discussed above, the issues raised by the comment do

not change the basis for the decision to select the four-lane alternative instead of the three-lane alternative.

In terms of CO_2 emissions, the commenter is correct that the emissions under the three-lane alternative would probably be less due to a smaller increase in VMT. However, the three-lane alternative would have less emissions benefits from congestion reduction. NHDOT and FHWA have concluded that that no analysis of greenhouse gas emissions in the SEIS is required or warranted on a project- level basis. As discussed in Section 5.3.7, it is analytically problematic to conduct a project-level cumulative effects analysis of greenhouse gas emissions on a global-scale problem.

Based on the 2004 FEIS analysis, the three-lane alternative would result in LOS F conditions south of Exit 1 and LOS E conditions between Exit 1 and Exit 3 in 2020. This result would not be expected to change for the SEIS Scenario 2 2020 analysis year and the congestion problems would be even worse by the Scenario 2 2030 analysis year (See FSEIS Appendix B).

Response to Comments Made by
Mike Speltz
September 22, 2009 Public Hearing

21. The information from the TMDL data report is not the only source of information used with respect to groundwater issues. An analysis of potential groundwater impacts from chloride loadings was conducted as part of the 2004 FEIS and the conclusions of this analysis remain valid. The 2005 Selected Alternative would increase the area of impervious surface within the stratified-drift aquifers in the project corridor by 82 acres, a small percentage of the overall aquifer size (over 5,000 acres). Given the low transmissivity and the limited overall use of the affected aquifers for water supply, the expected increase in roadway area under the 2005 Selected Alternative was not expected to result in any measurable adverse impacts to the aquifer. The sodium and chloride groundwater analysis found that even with the doubling of roadwaylane miles under the 2005 Selected Alternative, average sodium and chloride concentrations in groundwater at the edge of the right-of-way were projected to be well below the 250 mg/l secondary drinking water standard for sodium and chloride.

    The quote from the Cumulative Impacts Technical Report regarding increases in chloride concentrations is presented out of context. The section in question goes on to note that the goal of the TMDL implementation is to is to protect and restore water quality by controlling chloride loadings to the impaired waterbodies in the I-93 corridor. The expected increase in chloride concentrations is applicable to other waterbodies in the regional cumulative impacts study area, not the chloride impaired waterbodies in the I-93 corridor where chloride issues are being addressed. This point has been clarified in Chapter 13 of the FSEIS. Also, any reduction in the chloride loading that may be achieved through the implementation of salt-reduction measures should reduce the groundwater chloride concentrations as well.

22. Any groundwater chloride issues will be addressed by the implementation of the TMDLs because salt loadings to both surface and groundwater will be reduced.

23. For the first 11 construction contracts, the wetland impacts of the 2005 Selected Alternative have increased by approximately nine acres since the 2004 FEIS as a result of

revised delineation of wetlands along the corridor, design refinements, increases in the number/size of stormwater treatment areas and more accurate mapping, see Chapter 10. The number of stormwater detention basins proposed has increased to approximately 100 and the predominant type of basins has been changed from dry extended detention basins to wet extended detention basins and gravel wetlands.

NHDOT has been and will continue to coordinate with EPA, ACOE, NHDES and other natural resource agencies to determine if additional mitigation is appropriate for the increase in the total acreage of wetland impacts.

24. The population and employment growth estimates developed by the Delphi Panel members were generated with a completely different methodology (professional judgment) than used for Scenario 2 (gravity model). It is important to note that the basis for the land conversion impacts under Scenario 1 is based on the Delphi Panelist Blended Average Allocation population and employment estimates and does not reflect the range of growth estimates generated by each of the panelists.

25. Comment noted.

Response to Comments Made by
David Anderson
Repower America
September 22, 2009 Public Hearing

26. Comment noted.

Response to Comments Made by
Tom Irwin
Conservation Law Foundation and
Environment New Hampshire
September 22, 2009 Public Hearing

27. See response to comment #2 in comment document P-19.

28. See responses to comments #11 through #15 in comment document P-19.

29. See responses to comments #17 and #18 in comment document P-19.

Response to Comments Made by
Peter Griffin
New Hampshire Railroad Revitalization Association
September 22, 2009 Public Hearing

30. NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5

and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

Additional public transportation improvements for the I-93 corridor are being considered through the separate I-93 Bi-State Transit Investment Study. While the train or bus-on-shoulder services being evaluated in the I-93 Bi-State Transit Investment Study would improve transportation options in the corridor, they would not reduce vehicle trips to an extent that would affect the need to widen I-93 between Salem and Manchester (See DSEIS Appendix A-4: I-93 Transit Investment Study Ridership Memo).

31. The combination of the three-lane alternative with service on the M&L line was considered and determined to not meet purpose and need during the alternatives screening process for the 2004 FEIS. For example, mode combination 12 (three-lanes with bus and east rail) resulted in LOS F conditions south of Exit 1 and LOS E conditions between Exit 1 and Exit 3 (See Table 2.3-6 in the 2004 FEIS).

32. The project is funded by federal and state transportation funds. Additional sources of revenue (such as bonding) are under consideration. For more information on funding issues, refer to response to comment #19 in comment document P-19.

The 2005 Selected Alternative is fully funded in the Rockingham Planning Commission (RPC) and Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) long range plans and Transportation Improvement Programs (TIPs) with a 2020 open-to-traffic date. The revenue forecasts in the RPC and SNHPC MPO long range plans assume future revenue sources that are reasonably expected to be available for project implementation. These assumptions are reasonable because the State of New Hampshire has demonstrated their ability to secure legislative approval for GARVEE bond financing for the project, and assumptions of future growth in apportionment of Federal funds, toll rate increases and total resources allocated for I-93 are consistent with historical trends.

33. See the response to public hearing comment #32.

34. The length of project development varies based on numerous project-specific and location-specific factors. Theses issues are beyond the scope of this SEIS.

35. See the response to public hearing comment #34.

36. Public transportation options, including rail service, are being considered for the I-93 corridor as part of the separate Bi-State I-93 Transit Investment Study.

The issue of local support for rail along the US 3 corridor as compared to the I-93 corridor is beyond the scope of this SEIS.

The 2005 Selected Alternative incorporates expanded bus service that would help someone unable to drive to get to Boston. Furthermore, the congestion reduction benefits of the project will also improve travel time reliability for bus service.

37. Comments on the separate Bi-State I-93 Transit Investment Study are beyond the scope of this SEIS.

The proposed layout will not preclude future mass transit opportunities within the I-93 corridor or along the former Manchester-Lawrence line. The 2005 Selected Alternative will accommodate space within the median to allow future mass transit opportunities in the corridor. In addition, the proposed layout will provide provisions, such as bridge replacements and continued grade-separated crossings at Exit 5 to facilitate possible future rail service on the Manchester-Lawrence line.

38. Comments on the South Coast Rail Project in Massachusetts are beyond the scope of this SEIS.

The 2005 Selected Alternative does provide transportation choices because it includes expanded bus service and park-and-ride facilities, in addition to highway widening. Furthermore, the congestion reduction benefits of the project will also improve travel time reliability for bus service.

Response to Comments Made by
Cathy Corkery
New Hampshire Sierra Club
September 22, 2009 Public Hearing

39. Public transportation alternatives (rail service and bus service) were considered and determined not to meet the purpose and need during the alternatives screening process for the 2004 FEIS (See Section 2.3 of the 2004 FEIS). These alternatives would result in little or no reduction in travel on I-93 during the design hour and would not reduce the number of additional travel lanes required to provide acceptable levels of service on I-93.

NHDOT is making substantial improvements to public transportation services as part of this project. The project includes three new park-and-ride lots at Exits 2, 3 and 5, improvements to the existing park-and-ride facility at Exit 4, and new bus terminals at Exits 2, 4 and 5. NHDOT has also developed a program to provide expanded intercity and commuter bus service in the I-93 corridor. In November 2008, the Boston Express bus service began operating between the Exit 5, Exit 4, and Exit 2 bus terminals and South Station and Logan Airport. The service operates seven days a week from Exits 5 and 2 and weekdays only from Exit 4, providing approximately 22 roundtrips on weekdays and 18 roundtrips on weekends.

40. Vehicle Miles Traveled increases in the Build condition because travelers would be able to travel longer distances in the same amount of time due to reduced congestion and increased speeds on I-93. As a result, some of the trip origin/destinations throughout the region would change in the Build condition (e.g. some travelers would choose to make longer trips).

Although the project increases VMT overall, it reduces the severe congestion and improves travel speed. Those outcomes of the project have positive impacts on CO_2 emissions as well as other regulated pollutants like volatile organic compounds and oxides of nitrogen.

41. As a result of the Court Order, the scope of the SEIS is limited and does not include analysis of alternatives other than the 2005 Selected Alternative. The Court Order directed NHDOT and FHWA to prepare a focused SEIS: "....that specifically considers how the Delphi Panel's population forecasts affect Defendant's analysis of both the

effectiveness of the Four Lane Alternative as a traffic congestion reduction measure and the indirect effects of the population predicted by those forecasts on secondary road traffic and air quality issues." The Court Order did not require additional analysis of the three-lane alternative. The limited scope of this SEIS was disclosed in the Notice of Intent published in the Federal Register on March 12, 2008.

42. Additional information on groundwater contamination from blasting at Exit 3 is provided in Section 14.4.4 of the FSEIS. NHDES has concluded that the appropriate approach for addressing this issue involves monitoring and the provision of potable water to all affected properties.

Response to Comments Made by
William Schroeder
September 22, 2009 Public Hearing

43. The four-lane alternative rather than the three-lane alternative was selected as the final configuration, since four lanes provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS).

NHDOT has prepared an updated cost estimate for the three-lane alternative. The three-lane alternative would not substantially reduce the cost of the project in comparison to the 2005 Selected Alternative. The three-lane alternative would cost $590 million or four percent less than the 2005 Selected Alternative.

The comment is correct that the three-lane alternative would require less deicing salt application than the four-lane alternative. The FSEIS acknowledges that incremental implementation of the project (three-lanes in each direction) is possible in the interim to meet the Record of Decision commitments and Water Quality Certification condition E-10 (See Chapter 3). However, the long-term plan remains to implement the four-lane 2005 Selected Alternative, not the three-lane alternative. NHDOT and FHWA are cooperating with NHDES's effort to engage towns and the private sector in order to assist in the development of implementation plans that seek to meet the TMDL load reduction requirements in an equitable manner.

In terms of CO_2 emissions, the commenter is correct that the emissions under the three-lane alternative would probably be less due to a smaller increase in VMT. However, the three-lane alternative would have less emissions benefits from congestion reduction. NHDOT and FHWA have concluded that that no analysis of greenhouse gas emissions in the SEIS is required or warranted on a project- level basis. As discussed in Section 5.3.7, it is analytically problematic to conduct a project-level cumulative effects analysis of greenhouse gas emissions on a global-scale problem.

Based on the 2004 FEIS analysis, the three-lane alternative would result in LOS F conditions south of Exit 1 and LOS E conditions between Exit 1 and Exit 3 in 2020. This result would not be expected to change for the SEIS Scenario 2 2020 analysis year and the congestion problems would be even worse by the Scenario 2 2030 analysis year (See FSEIS Appendix B for detailed discussion of this issue).

As noted in the 2004 FEIS, the four-lane alternative would not result in substantially greater environmental impacts than the three-lane alternative.

The points discussed above support the conclusion that additional analysis of the three-lane alternative is not warranted.

Response to Comments Made by
Bob Letourneau
State Senator
September 22, 2009 Public Hearing

44. Your support for the project is noted.

Response to Comments Made by
Richard Katzenberg
September 22, 2009 Public Hearing

45. As noted during the public hearing, $27 million in American Recovery and Reinvestment Act funds are being use for Exit 3. For more information, refer to www.nh.gov/dot/recovery/index.htm

46. The DSEIS comment period was extended from October 2 to October 9, 2009.

APPENDIX B

THREE-LANE ALTERNATIVE MEMORANDUM

THE Louis Berger Group, INC.
199 Water Street, 23rd Floor, New York, New York 10038
Tel 212 612 7900 Fax 212 363 4341 www.louisberger.com

DATE: April 16, 2010

TO: I-93 Improvements SEIS Project File

FROM: Larry Pesesky

RE: Traffic Performance of the Three-Lane Alternative

Comments on the DSEIS requested an updated analysis of the three-lane alternative analyzed in the 2004 FEIS. This memorandum summarizes the results of the 2004 FEIS analysis of the three-lane alternative and provides the estimated I-93 mainline Level of Service (LOS) for the three-lane alternative that would be expected under Scenario 2 2020 and 2030 conditions.

2004 FEIS Analysis of the Three-Lane Alternative

The three-lane alternative was among the "reasonable range of alternatives" selected for detailed evaluation in the 2002 DEIS and 2004 FEIS. The existing configuration of I-93 includes three-lanes in each direction between the NH/MA Stateline and Exit 1 and two-lanes in each direction north of Exit 1. Therefore, the three-lane alternative would involve widening the portion of the corridor between Exit 1 in Salem and the I-93/I-293 interchange in Manchester to three-lanes in each direction. As with the four-lane 2005 Selected Alternative, the three-lane alternative would include interchange improvements along the corridor.

Table 1 summarizes the directional design hour volume (DDHV) and LOS results from the 2004 FEIS for the I-93 mainline. The results show the three-lane alternative would underperform as a congestion mitigation measure in comparison to the four-lane alternative. Under the three-lane alternative, the Stateline to Exit 1 segment would remain at LOS F and the portion of the corridor between Exit 1 and Exit 3 would be at capacity (LOS E). In contrast, the four-lane alternative would eliminate LOS E and F conditions north of Exit 1 and would improve the Stateline to Exit 1 segment to LOS E. Five lanes in each direction would be required for this segment to achieve LOS D. However, in the design of new roadway facilities, NHDOT policy has established LOS C as desirable and LOS D as minimally acceptable, unless more than four-lanes in each direction would be required.

Table 1
Summary of 2004 FEIS Mainline Traffic Analysis Results, 2020
No Build, Three-Lane Build and Four-Lane Build

Segment	DDHV			LOS		
	No Build	Three-Lane Build	Four-Lane Build	No Build	Three-Lane Build	Four-Lane Build
MA. Line to Exit 1	7,700	8,000	8,100	F	F	E
Exit 1 to Exit 2	5,800	6,400	6,600	F	E	D
Exit 2 to Exit 3	5,500	6,100	6,100	F	E	C
Exit 3 to Exit 4	4,100	4,300	4,300	E	C	B
Exit 4 to Exit 5	4,600	4,700	4,800	E	C	C
North of Exit 5	4,800	5,000	5,000	F	D	C

The 2004 FEIS recommended the four-lane alternative rather than the three-lane alternative as the final configuration, since four lanes would provide an adequate level of service for future traffic projections, with limited additional direct impacts to the environment and at a similar cost (5 percent increase) (See Section 2.8 of the 2004 FEIS).

Methodology

The 2004 FEIS results in Table 1 show that the DDHV of the three-lane alternative is in between the No Build and four-lane alternative conditions. The results also show that the three-lane alternative DDHV is closer to the four-lane alternative DDHV than to the No Build DDHV for a given segment, i.e., well above the average between the No Build and the Build for any segment. Traffic volumes would be higher than the No Build condition because the three-lane alternative would attract traffic from other roadways. Traffic volumes would be less than the four-lane alternative condition because the three-lane alternative provides less capacity and congestion relief, and therefore would not attract as much additional traffic from other roadways as the four-lane alternative. Consequently, this also means that the three-lane alternative results in less relief to the secondary road system.

The same pattern in traffic volumes described above for the 2004 FEIS analysis would hold under Scenario 2 2020 and 2030 conditions. The DDHV for the three-lane alternative under the SEIS Scenario 2 analysis framework would fall in between the Scenario 2 No Build results and the Scenario 2 four-lane alternative results, although closer to the four-lane alternative than to the No Build. Specifically, it is reasonable to assume that at a minimum, the three-lane alternative DDHV would be equal to the average of the No Build DDHV and the four-lane alternative DDHV. The upper limit of the expected three-lane alternative DDHV would be the four-lane alternative DDHV. As a result it is possible to reasonably estimate the range of LOS that would be expected for the three-lane alternative under the SEIS Scenario 2 analysis conditions for 2020 and 2030.

Based on the range of expected DDHV, the corresponding range of LOS for the three-lane alternative was estimated using HCS+, the same software used for the SEIS capacity analyses of the four-lane alternative.

Results

Table 2 provides the expected LOS of the three-lane alternative for Scenario 2 2020 and 2030. The results show that, in 2020, the performance of the three-lane alternative would be similar to the performance reported in the 2004 FEIS. In neither analysis year would the three-lane alternative meet NHDOT standards and policies for LOS for planning freeway capital improvements (e.g., LOS C as desirable, LOS D as minimally acceptable, unless more than four-lanes would be needed). The segment south of Exit 1 would be at LOS F in 2020 and 2030. The segments between Exit 1 and Exit 3 would be at or approaching LOS E in 2020 and would further deteriorate to LOS E or LOS F with additional traffic by 2030. With the possible exception of the segment between Exit 4 and Exit 4A, the remainder of the corridor north of Exit 3 would be at LOS D or LOS E by 2030.

In addition to the design hour LOS results, the three-lane alternative would be substantially less effective than the four-lane alternative in reducing the duration of peak period congestion. The three-lane alternative would divert less traffic from other congested roadways in the area and as a result

would have much less benefit in terms of overall safety and traffic relief on the secondary road system.

Conclusion

The estimated traffic volumes and LOS for the three-lane alternative under Scenario 2 show that the three-lane alternative would perform similar to, or worse than, reported in the 2004 FEIS. The three-lane alternative underperformed as a congestion mitigation measure for 2020 and would continue to provide inadequate LOS for 2030. In addition, the conclusions of the 2004 FEIS with respect to the cost and environmental impacts of the three-lane alternative in comparison to the four-lane alternative remain valid. As part of the response to comments on the DSEIS, NHDOT has prepared an updated cost estimate for the three-lane alternative for comparison to the current cost estimates for the four-lane alternative. The updated estimate still shows that the three-lane alternative would not substantially reduce the cost of the project in comparison to the four-lane alternative. The three-lane alternative would cost $590 million or four percent less than the four-lane alternative. The "footprint" environmental impacts of the three-lane alternative (e.g. wetlands, wildlife habitat etc.) would continue to be similar to the four-lane alternative impacts. Therefore, the information used in the decision to select the four-lane alternative remains valid and a detailed analysis of the three-lane alternative in the FSEIS is not warranted.

Table 2
Expected Three-lane Alternative Level of Service
Scenario 2, 2020 and 2030

	2020				2030			
Segment	No Build DDHV	Expected Three-Lane Build DDHV Range[1]	Expected Three-Lane Build LOS Range	Four-Lane Build LOS	No Build DDHV	Expected Three-Lane Build DDHV Range[1]	Expected Three-Lane Build LOS Range	Four-Lane Build LOS
MA. Line to Exit 1	6,900	7,300-7,700	F*	E	7,300	7,950-8,600	F*	E
Exit 1 to Exit 2	5,500	6,100-6,700	D - E	D	5,700	6,650-7,600	E - F	D
Exit 2 to Exit 3	5,300	5,950-6,600	D - E	D	5,500	6,600-7,700	E - F	D
Exit 3 to Exit 4	4,300	4,800-5,300	C - D	C	4,500	5,300-6,100	D*	C
Exit 4 to Exit 4A	3,900	4,450-5,000	C - D	C	4,100	4,900-5,700	C - D	C
Exit 4A to Exit 5	4,600	5,150-5,700	D*	C	4,800	5,650-6,500	D - E	C
North of Exit 5	4,400	4,950-5,500	D*	C	4,600	5,500-6,400	D - E	C

1. The lower end of expected three-lane alternative DDHV range is based on the average of the Scenario 2 No Build and the Scenario 2 four-lane alternative results. The upper end of the expected DDHV range is based on the Scenario 2 four-lane alternative.

*Both the upper and lower end of the expected three-lane alternative DDHV range result in the same LOS for these segments.

APPENDIX C

SCENARIO 2 INDIRECT EFFECTS ANALYSIS COORDINATION

November 28, 2007

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DESIGN

DRAFT CONFERENCE REPORT

PROJECT: SALEM-MANCHESTER
10418C & 14053
I-93 SEIS

DATE OF CONFERENCE: November 20, 2007

LOCATION OF CONFERENCE: Planning Conference Room

ATTENDED BY:

NHDOT	Pete Stamnas, Subramanian Sharma
NHDOJ	Mark Hodgdon
NHOEP:	Tom Duffy
FHWA:	Bill O'Donnell, Leigh Levine, Brigitte Mandel, Jamie Sikora
Louis Berger Group:	Dane Ismart, Larry Pesesky (phone)

SUBJECT: I93 SEIS – Population Projection Discussion with Tom Duffy

The purpose of this meeting was to have the SEIS Team gain a better understanding of the process and assumptions used by the NH Office of Energy and Planning (OEP) to develop state population projections. Questions were prepared by L. Pesesky and posed by D. Ismart.

1. Confirm that the population projections on the OEP website are the most current. When does OEP anticipate publishing the next update to these numbers?

Tom Duffy Reply==> The information posted on the OEP website www.nh.gov/oep for 2007 are the most current. Projections are completed 3 to 4 times per decade. There are no new projections anticipated in 2008.

2(a). Discuss the driving assumptions behind the projections (both the numbers and their geographic allocation), e.g., economic forecasts, employment projections, etc. & How can one best explain any changes between projections published in 2000-2001 and the current projections (both the numbers and the allocation)?

Tom Duffy Reply==> A number of data sources are utilized including employment security data, census data, economist forecasts, etc. His projections are driven by trends. The growth rate in NH has been very consistent between 1960 to 2000. In that period it averaged between 13,000 to 15,000 increase per year. This trend has been remarkably resilient. There have been times where there have been growth spurts and declines but the average has stayed true until the year 2002. This marked the first year where the growth rate declined. The revised rate is lower than usual, in the 11,000 range. This declining rate occurred during good economic times. That point is significant because the downward trend is expected to continue well into the future. It is not expected to return to the previous rate.

A "top down" approach is used to develop the projections. Starting at the state level to the county then to the municipalities. This approach is universally accepted. This capped total provides discipline to the projections. A "bottom up" approach will typically return projections that are too high. The bottom up approach is what was used in the Delphi Study.

2(b) Are the numbers vetted with regional planning commissions, counties, or towns before they are published?

Tom Duffy Reply==> Yes. .The projections are coordinated with the local planning communities.

2(c) Is there documentation of the population projection methodology that could be shared with us?

Tom Duffy Reply==> There is some measure of explanation in the most current population projection report posted on the web entitled "N.H. Population Projections for State and Counties, 2010 to 2030, Update: November 2006."

3. Where can the previous years projections be accessed?

Tom Duffy Reply==> The data is available and will be forwarded to P. Stamnas for distribution.

4. What effect, if any, do changes in relative accessibility from projects like the I-93 Widening or availability of water and sewer have on the projections? In other words, how critical are these factors to population growth in New Hampshire where in NH that growth occurs.

Tom Duffy Reply==> Projections assume that there is adequate infrastructure to support the population predictions. Time and cost of travel remain relatively consistent. The projections can be considered the build scenario. For example, if he was told that proposed capacity improvements to I93 were not made as anticipated, he might consider lowering his population projections.

5. How does population migration from Massachusetts impact the projections?

Tom Duffy Reply==> 65% of NH's growth is due to migration trends. 40% of that migration is from Massachusetts. The next highest state contributes 8% of the total. These rates have also been very stable over the long term. This migration data is derived from decennial census and IRS reports.

Action Items.
1) Tom Duffy will forward previous years population projection data to P. Stamnas for distribution to all in attendance. (Item complete)
2) P. Stamnas will forward summary comparison of previous population projections (FEIS & Delphi Panel) with the most recent (2007) OEP projections to all attendees. (Item Complete)
3) L. Pesesky/D. Ismart will review the 2007 population projection report to determine if additional information on methodologies is needed. They will prepare a list of additional information required and forward to P. Stamnas for action.

Submitted by:

Peter E. Stamnas, P.E.
Project Manager

cc: all attendees, Bill Cass, project files

1/18/08

Meeting #2 with Tom Duffy, State Demographer for NHOEP
December 18, 2007
NHDOT Offices

Attendees:
NHDOT: Jeff Brillhart, Bill Cass, Pete Stamnas, Marc Laurin, Subramanian Sharma
NH AG's Office: Mark Hodgdon, Edith Pacillo
FHWA: Leigh Levine, Bill O'Donnell, Brigitte Mandel, *Tracy White, *Mike Culp, *Marlys Osterhues
Louis Berger Group: *Doug Lucius
*phoned in

The purpose of this meeting was to obtain additional information regarding the characterization of OEP population projections as a "Build" condition as they specifically relate to the I93 project. This is the position stated by Tom Duffy during a November 20, 2007 meeting.

Background: Using the OEP projections as a "build" condition is counter to the traffic modeling approach detailed in Table 2 - scenario 2 on page 5 of Part 1 of the SEIS scope of work. This "no build" approach would require the traffic model to initially be run with 4 lanes. Four additional lanes would then be added to the model (8 lanes total) to determine the change. The group was reluctant to modify the proposed "no-build" approach , prior to having a second meeting with Mr. Duffy.

Discussion: Mr. Duffy was asked whether he considered the proposed improvements to I93 when making population projections for the state. He stated that the OEP population projections assumed that no infrastructure constraints exist. When asked if the projections would change if I93 improvements were not constructed as proposed, he explained that the state population projections would likely be lowered by some amount in communities along the I93 corridor and the overall state population projection would be lowered similarly. This response confirmed the interpretation that OEP population projections represent a "build" scenario.

Mr. Duffy elaborated by saying the I93 corridor is unique in this instance because it's a direct connection between the population and employment centers of Boston and Manchester. It should be noted that this corridor presently operates in a constrained fashion. The overall impact on state population projections would likely be treated differently if constraints were induced on one of the other major corridors in NH (I95 and Everett Turnpike). Population projections, in such a case, would not necessarily be treated in a fashion similar to the I93 corridor given the uniqueness of the corridor.

Determinations:
Given this unique situation, the group decided it was prudent to revise the modeling approach detailed in part 1 of the scope of work and use the state population projections as a "build" condition. The initial model run would be with 8-lanes and then the proposed improvements would be removed to induce constraint. This scenario would replace current scenario 2. There would be no changes to scenario 1 (Delphi). It was also decided that it would be prudent to analyze the "no-build" approach to evaluate the sensitivity of the model. All of the results would be presented for public comment.

Submitted By: Peter E. Stamnas

State of New Hampshire and New Hampshire Department of Transportation
Federal Identification Numbers for TIFIA Loan Agreement

Federal Employer Identification Number:

02-6000618 (State of New Hampshire)

Data Universal Numbering System:

066760232 (State of New Hampshire)

808591697 (New Hampshire Department of Transportation)

System for Award Management:

8A2S8 (New Hampshire Department of Transportation)

Exhibit F-4
(Exhibit J Form of Borrower's Officer's Certificate)

USER NAME PASSWORD

LOG IN

Forgot Username? Forgot Password?

Create an Account

Entity Dashboard

Entity Overview

Entity Record
Core Data
Assertions
Reps & Certs
POCs
Reports
Service Contract Report
BioPreferred Report
Exclusions
Active Exclusions
Inactive Exclusions
Excluded Family Members

RETURN TO SEARCH

TRANSPORTATION, NEW HAMPSHIRE DEPARTMENT OF
DUNS: 808591697 CAGE Code: 8A2S8
Status: Active

7 HAZEN DRIVE
CONCORD, NH, 03301-6502,
UNITED STATES

Expiration Date: 12/07/2016
Purpose of Registration: Federal Assistance Awards Only

Entity Overview

Entity Information

Name: TRANSPORTATION, NEW HAMPSHIRE DEPARTMENT OF
Business Type: US State Government
POC Name: Walker Nielsen
Registration Status: Active
Activation Date: 12/08/2015
Expiration Date: 12/07/2016

Exclusions

Active Exclusion Records? No

Exhibit G
(Exhibit J Form of Borrower's Officer's Certificate)

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 260:32-a entitled "Adjustment of Road Toll; Publication", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE XXI
MOTOR VEHICLES

CHAPTER 260
ADMINISTRATION OF MOTOR VEHICLE LAWS

Road Tolls

Section 260:32-a

[RSA 260:32-a repealed by 2014, 17:5, I, effective as provided by 2014, 17:6.]

260:32-a Adjustment of Road Toll; Publication. –

The rate for the levy of the road toll under RSA 260:32 shall be adjusted as follows:

[Publisher's note: The reference in paragraph I to RSA 260:30 should be to RSA 260:32.]

I. The rate for the levy of the road toll under RSA 260:30 shall be adjusted, effective July 1, 2014, by multiplying the effective rate during the prior 12-month period by a fraction, the numerator being the annual average CPI for the year 2013 and the denominator being the annual average CPI for the year 2003.

II. The road toll adjustment required in paragraph I shall be calculated by the state treasurer and forwarded to the governor, president of the senate, speaker of the house of representatives, and the commissioner of the department of safety at least 30 days before the effective date of any road toll adjustment. The commissioner of the department of safety shall publish statewide the adjusted road toll rate. The state treasurer shall make the CPI and adjusted road toll calculations to 3 decimal places.

III. In this section, "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers, all items, not seasonally adjusted, for the Boston, Brocton, Nashua; MA-NH-ME-CT area.

Source. 2014, 17:3, eff. July 1, 2014.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 260:32-b entitled "Expenditure of Certain Road Toll Revenue", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE XXI
MOTOR VEHICLES

CHAPTER 260
ADMINISTRATION OF MOTOR VEHICLE LAWS

Road Tolls

Section 260:32-b

[RSA 260:32-b repealed by 2014, 17:5, II, effective as provided by 2014, 17:6.]

260:32-b Expenditure of Certain Road Toll Revenue. –

I. For the fiscal year ending June 30, 2015, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) $12,000,000 shall be expended for the district rehabilitation program with said funds to be distributed equally among the 6 state highway districts.

(b) $13,200,000 shall be expended for the district resurfacing program with said funds to be distributed equally among the 6 state highway districts.

(c) All remaining funds shall be for the purpose of state bridge aid for municipal bridges under RSA 234.

II. For the fiscal year ending June 30, 2016, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) Up to $8,300,000 shall be appropriated to the department of transportation bureau of highway maintenance.

(d) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

III. For the fiscal year ending June 30, 2017, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) Up to $8,300,000 shall be appropriated the department of transportation bureau of highway maintenance.

(d) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

IV. For the fiscal year ending June 30, 2018 and each fiscal year thereafter, expenditure of revenues collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I on said revenues, shall be made for the following purposes in the following order of priority:

(a) Debt service payments for bonds issued pursuant to RSA 6:13-d.

(b) In addition to sums otherwise appropriated, $6,800,000 for state bridge aid for municipal bridges under RSA 234.

(c) All remaining funds deposited into the highway and bridge betterment account under RSA 235:23-a.

Source. 2014, 17:3, eff. July 1, 2014. 2015, 276:210, eff. July 1, 2015.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 6:13-d entitled "Authority to Borrow; Certain Transportation Projects", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 6
STATE TREASURER AND STATE ACCOUNTS

State Treasurer

Section 6:13-d

[RSA 6:13-d is repealed by 2014, 17:5, III effective as provided by 2014, 17:6.]

6:13-d Authority to Borrow; Certain Transportation Projects. –

I. The state treasurer, as may be requested from time to time by the commissioner of the department of transportation, is hereby authorized to borrow upon the credit of the state not exceeding the sum of $200,000,000 and shall issue general obligation or revenue bonds, or both, in the name and on behalf of the state of New Hampshire in accordance with the provisions of RSA 6-A, to provide funds for the widening of Interstate 93 from Salem, New Hampshire to Manchester, New Hampshire. In addition, authorization is hereby granted to enter into the federal credit program known as the Transportation Infrastructure Finance and Innovation Act (TIFIA), 23 U.S.C. sections 601-609, including appropriate covenants and conditions necessary to secure favorable credit terms, including, without limitation, a pledge of revenue collected from adjustments under RSA 260:32-a for rates that exceed $.18 per gallon, less required "Apportionment A" distributions under RSA 235:23, I, on said revenues and to be used for the purposes set forth in RSA 260:32-b, II(a), III(a), and IV(a).

II. Payment of principal and interest on the bonds issued under paragraph I shall be paid when due from the highway funds collected and appropriated in accordance with RSA 260:32-a for rates that exceed $.18 per gallon and expended in accordance with RSA 260:32-b.

Source. 2014, 17:4, eff. July 1, 2015. 2015, 276:211, eff. July 1, 2015.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 21-L:2 entitled "Establishment; General Functions", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 21-L
DEPARTMENT OF TRANSPORTATION

General Provisions

Section 21-L:2

21-L:2 Establishment; General Functions. –

I. There is established the department of transportation, an agency of the state under the executive direction of a commissioner of transportation.

II. The department of transportation, through its officials, shall be responsible for the following general functions:

(a) Planning, developing, and maintaining a state transportation network which will provide for safe and convenient movement of people and goods throughout the state by means of a system of highways, railroads, air service, mass transit, and other practicable modes of transportation, in order to support state growth and economic development and promote the general welfare of the citizens of the state.

(b) Performing any regulation of transportation activities required by law which is not within the jurisdiction of another state agency.

Source. 1985, 402:1. 2005, 291:10, eff. July 25, 2005.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 21-L:3 entitled "Commissioner; Directors; Compensation", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 21-L
DEPARTMENT OF TRANSPORTATION

General Provisions

Section 21-L:3

21-L:3 Commissioner; Directors; Compensation. –

I. The commissioner of the department shall be appointed by the governor, with the consent of the council, and shall serve a term of 4 years. The commissioner shall be qualified to hold that position by reason of education and experience.

II. The commissioner shall nominate each division director for appointment by the governor, with the consent of the council. Division directors shall serve a term of 4 years. Directors shall be qualified to hold their respective positions by reason of education and experience.

III. The salary of the commissioner and each division director shall be as specified in RSA 94:1-a.

Source. 1985, 402:1, eff. July 1, 1985.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 21-L:4 entitled "Duties of Commissioner", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 21-L
DEPARTMENT OF TRANSPORTATION

General Provisions

Section 21-L:4

21-L:4 Duties of Commissioner. – In addition to the powers, duties, and functions otherwise vested by law in the commissioner of the department of transportation, he shall:

I. Represent the public interest in the administration of the functions of the department and be responsible to the governor, the general court, and the public for such administration.

II. Consult regularly with regional planning commissions established pursuant to RSA 36:45-53 with regard to department planning activities.

III. Provide for a support unit within his office which shall include the function of monitoring projects and conducting audits of department activities to insure compliance with state and federal contracts, laws, and program objectives.

IV. Require the director of the division of finance, in consultation with the commissioner of administrative services and the state treasurer, to provide for a system of accounts and reports which will insure the integrity and lawful use of all revenues collected by the department, the use of which is restricted by state or federal law.

V. Adopt rules, under RSA 541-A, necessary to assure the continuation or granting of federal funds or other assistance not otherwise provided for by law.

VI. Approve rates for and regulate every corporation, company, association, joint stock association, partnership and person, their lessees, trustees or receivers appointed by any court, except municipal corporations operating within their corporate limits, owning or operating any toll bridge or toll road.

Source. 1985, 402:1. 1986, 136:2. 2007, 263:82, eff. July 1, 2007.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 21-L:5 entitled "Assistant Commissioner", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 21-L
DEPARTMENT OF TRANSPORTATION

General Provisions

Section 21-L:5

21-L:5 Assistant Commissioner. –

I. The commissioner of transportation shall nominate an assistant commissioner for appointment by the governor, with the consent of the council. The assistant commissioner shall serve a term of 4 years. The assistant commissioner shall be a registered professional engineer and shall be otherwise qualified to hold that position by reason of education and experience. The assistant commissioner shall also be known as the chief engineer of the department.

II. The assistant commissioner shall perform such duties as are assigned by the commissioner. The assistant commissioner shall assume the duties of the commissioner in the event that the commissioner is unable for any reason to perform such duties.

III. The salary of the assistant commissioner shall be as specified in RSA 94:1-a.

Source. 1985, 402:1, eff. July 1, 1985.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 21-L:5-a entitled "Deputy Commissioner", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 21-L
DEPARTMENT OF TRANSPORTATION

General Provisions

Section 21-L:5-a

21-L:5-a Deputy Commissioner. –

I. The commissioner of transportation shall nominate a deputy commissioner for appointment by the governor, with the consent of the council. The deputy commissioner shall serve a term of 4 years. The deputy commissioner shall be qualified to hold that position by reason of education and experience.

II. The deputy commissioner shall perform such duties as are assigned by the commissioner or assistant commissioner and, in accordance with applicable laws, shall be responsible for the following functions:

(a) Long and short range department level planning in areas of strategic, financial, and human capital programs.

(b) Policies, practices, and procedures to ensure compliance with laws and high standards of continuous quality improvement.

(c) Evaluations and audits of financial, human capital, environmental, and safety practices and internal audits.

(d) Policy development.

(e) Adjudicative hearings procedures.

(f) Public information.

(g) Liaison with the department of information technology.

III. The position shall be unclassified, and the salary of the deputy commissioner shall be as specified in RSA 94:1-a.

Source. 2007, 263:80. 2008, 335:5, eff. Sept. 5, 2008.

State of New Hampshire

Office of Secretary of State

I, David M Scanlan, Deputy Secretary of State of the State of New Hampshire do hereby certify that the following and hereto attached is a true copy of RSA 6-A entitled "State Bonds", as on file in this office and held in the custody of the Secretary of State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Seal of the State, at Concord NH, this sixth day of May, 2016.

Deputy Secretary of State

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 6-A
STATE BONDS

Section 6-A:1

6-A:1 State Bonds. – This chapter shall apply to all bonds of the state authorized by the legislature at its January, 1967, session and enacted after the passage hereof or at any subsequent session, unless otherwise provided in the authorizing acts.

Source. 1967, 88:1, eff. April 27, 1967.

Section 6-A:2

6-A:2 Denominations; Form and Maturities. – The bonds shall be issued by the state treasurer when authorized by the governor and council. They may be issued at one time or in a series from time to time. The maturity dates of each series shall be determined by the governor and council, but in no case shall they be later than 20 years from the date of issue. The bonds may be redeemable before maturity at the option of the governor and council at such price or prices and under such terms and conditions as may be fixed by the governor and council prior to the issue of the bonds. The bonds shall be in such form and denominations as the governor and council shall determine and, subject to RSA 6:14 and 6:15, may be nonregisterable or registerable as to principal only or registerable as to both principal and interest. Subject to the provisions of RSA 93-A, they shall be signed by the treasurer and countersigned by the governor. They shall be deemed a pledge of the faith and credit of the state.

Source. 1967, 88:1. 1981, 98:2. 2003, 319:151, eff. July 1, 2003; 319:152, eff. June 30, 2005.

Section 6-A:3

6-A:3 Accounts. – [Repealed 1997, 95:2, eff. Aug. 2, 1997.]

Section 6-A:4

6-A:4 Short Term Notes. – Pending the issue of bonds, the state treasurer, when authorized by the governor and council, may borrow money on short term notes in anticipation of the bonds. At no time shall the amount due on such short term notes exceed the amount of the appropriation for the same purposes. Each such note shall mature within 5 years from its date, provided that notes issued for a shorter period may be refunded from time to time by the issue of other such notes maturing within 5 years from the date of the original loan being refunded. The notes may also be refunded by the issue of bonds hereunder or may be paid from any cash in the treasury. The notes shall be deemed a pledge of the faith and credit of the state. Any premium received on the sale of notes shall be applied to the

payment of the costs of issuing the notes or credited to the general fund, as the state treasurer shall determine.

Source. 1967, 88:1. 2008, 120:14, eff. Aug. 2, 2008.

Section 6-A:5

6-A:5 Advances From the Treasury. – Pending the issue of bonds or notes hereunder or in lieu of the issue of notes hereunder, the state treasurer may use any cash in the treasury for the purposes for which the bonds were authorized. Such advances shall be repaid without interest from the proceeds of bonds or notes issued hereunder.

Source. 1967, 88:1, eff. April 27, 1967.

Section 6-A:6

6-A:6 Sale of Bonds. – Bonds issued hereunder shall be sold by the state treasurer with the approval of the governor and council in such manner as the governor and council deem to be most advantageous to the state.

Source. 1967, 88:1. 1971, 353:3, eff. Aug. 24, 1971.

Section 6-A:7

6-A:7 Proceeds. – The proceeds from the sale of bonds and notes hereunder, except accrued interest, and from any advances under RSA 6-A:5 shall be held by the state treasurer and paid out by the treasurer upon warrants drawn by the governor for the purposes for which the bonds were authorized. The governor, with the advice and consent of the council, shall draw a warrant for the payments from such funds of all sums expended or due for such purposes.

Source. 1967, 88:1. 2008, 120:15, eff. Aug. 2, 2008.

Section 6-A:8

6-A:8 Consolidation. – The bonds authorized by one or more acts of the legislature may be combined by the state treasurer, and with the approval of the governor and council, upon their issue into one or more consolidated issues. The particular bonds of such consolidated issue issued under each authority may but need not be designated by number or otherwise.

Source. 1967, 88:1, eff. April 27, 1967.

Section 6-A:9

6-A:9 Expiration of Office. – Any bonds or notes issued pursuant to this chapter, if properly executed by the officers of the state in office on the date of the signing or on the date of imprinting of the facsimile signature, as the case may be, shall be valid and binding according to their terms notwithstanding that before delivery thereof and payment therefor any or all such officers shall have for any reason ceased to hold office.

Source. 1967, 88:1, eff. April 27, 1967.

Section 6-A:10

6-A:10 Refunding Bonds. – The governor and council may authorize the issuance of refunding bonds in order to pay, at maturity or upon earlier redemption or acceleration, all or part of any issue of bonds then outstanding that were issued by the state or with a direct state guarantee; provided, however, that unless the governor and council specifically provide otherwise no such bonds shall be issued unless the treasurer determines that the present value, discounted at such rate as the treasurer deems appropriate, of the principal and interest payments on the refunding bonds is less than the present value, discounted at the same rate, of the principal and interest payments on the bonds to be refunded. The proceeds of such refunding bonds may be used to pay the principal of the refunded bonds, any redemption premium thereon, all or part of the interest coming due on or prior to the date or dates on which the refunded bonds are paid, and the costs of issuing and marketing the refunding bonds. The issue of refunding bonds shall be subject to the same requirements and provisions of law as would then be applicable to the issue of the bonds being refunded, except as provided in this section. The proceeds of refunding bonds, exclusive of any amounts used to pay costs of issuing and marketing the refunding bonds, shall be held in a separate fund and in trust until they are applied to pay bonds. While such proceeds are held in trust they may be invested in accordance with RSA 6:7 and RSA 6:8 and the income derived from such investment may be expended by the treasurer to pay the principal of, redemption premium if any, and interest on the refunded bonds until they are paid.

Source. 1981, 98:3. 1987, 54:2. 1996, 257:6, eff. June 10, 1996.

Section 6-A:11

6-A:11 Revenue Bonds. – The governor and council may authorize the state treasurer to issue revenue bonds in accordance with this section. Revenue bonds may be authorized whenever the proceeds of such bonds are to be used for revenue-producing facilities or to refund bonds, the principal of which was used for revenue-producing facilities, and the revenues from such facilities are expected to be sufficient to pay the principal, premium, if any, and interest on such bonds. As used in this section, revenue-producing facilities means any facility from the operation of which revenues are to be derived by the state. The proceedings authorizing the issuance of revenue bonds shall contain a description of the facilities financed or to be financed and the revenue generated or expected to be generated by said facility. The principal of, premium, if any, and interest on revenue bonds issued pursuant to this section shall be paid solely from the revenue generated by the facility constructed. In authorizing the issuance of such bonds, the governor and council are hereby empowered to pledge and dedicate the revenue from such facility to be used first to pay the principal of, premium, if any, and interest on said bonds as the same become due and the state treasurer shall keep such revenue in a separate account for such purpose and is hereby authorized to expend the same for such purpose. Revenue bonds issued pursuant to this section shall not be considered a pledge of the faith and credit of the state and shall not be deemed debt of the state in determining its borrowing capacity under any applicable law. All provisions of RSA 6-A not inconsistent with the provision of this section shall be applicable to revenue bonds issued hereunder.

Source. 1985, 332:18, eff. June 14, 1985.

Section 6-A:12

6-A:12 Bonds Sold at Discount or Premium. – For the purpose of determining the amount of bonds issued by the state pursuant to this chapter or any other law, the amount of any issue of bonds shall be equal to the net proceeds thereof, determined by adding to the face amount of the bond issue the premium, if any, related to bonds of that issue and then subtracting the discount, if any, related to bonds of that issue, provided that the state treasurer may apply all or a portion of any premium received on the sale of any such bonds, without appropriation, to the costs of issuing such bonds or to the credit of the general fund, in which case the amount of any premium so applied shall not be included in the net proceeds of the issue. The amount of bonds of any such issue considered outstanding at any time, for the purpose of computing any statutory debt limit, shall be determined by multiplying the face amount of the bonds of that issue then outstanding by a fraction, the numerator of which is the net proceeds of the issue as determined above, and the denominator of which is the face amount of the issue. For the purpose of determining the amount of bond proceeds expended by the state for purposes specified by any law, such proceeds shall be equal to the expenditure of the net proceeds of the issue, as determined above.

Source. 1989, 182:1. 2008, 120:16, eff. Aug. 2, 2008.

Section 6-A:13

6-A:13 Cost of Debt Issuance; Application of Premium. – The state treasurer may incur bond issuance costs which may be offset with any bond premiums, if applicable, for bonds sold under this chapter as determined by the state treasurer. Any remaining premium shall be included in the calculation of net proceeds of an issue or credited to the general fund as determined by the state treasurer pursuant to RSA 6-A:12. In order to provide funds to pay the cost of issuing bonds, the governor, upon request of the state treasurer, shall draw a warrant for such payments out of any money in the treasury not otherwise appropriated from each fund as appropriate.

Source. 1993, 305:1. 1999, 137:4. 2008, 120:17, eff. Aug. 2, 2008.

Section 6-A:14

6-A:14 Build America Bonds; Refundable Credit Payments. – If the state treasurer issues any *bonds of the state under this chapter or under RSA 237-A as "Build America Bonds," as defined in* section 54AA of the Internal Revenue Code of 1986, and elects to receive on behalf of the state the credit provided in section 6431 of the Internal Revenue Code of 1986, the state treasurer shall allocate such credit, when received, to the appropriate accounts pertaining to said bonds of the state, as determined by the state treasurer.

Source. 2009, 144:201, eff. July 1, 2009.

EXHIBIT K

FORM OF CERTIFICATE OF SUBSTANTIAL COMPLETION

[Letterhead of Borrower]

[Date]

TIFIA Joint Program Office (HITJ)
Federal Highway Administration
Room E64-426
1200 New Jersey Avenue, SE
Washington, D.C. 20590
Attention: Director

Project: I-93 Improvements Salem to Manchester Project

(TIFIA-2016-1004A)

Dear Director:

This Notice is provided pursuant to Section 16(g)(i)(A) (*Substantial Completion*) of that certain TIFIA Loan Agreement (the "TIFIA Loan Agreement"), dated as of May ___, 2016, by and between State of New Hampshire (the "**Borrower**") acting by and through the New Hampshire State Treasurer and the New Hampshire Department of Transportation and the United States Department of Transportation, acting by and through the Federal Highway Administrator (the "**TIFIA Lender**").

Unless otherwise defined herein, all capitalized terms in this Notice have the meanings assigned to those terms in the TIFIA Loan Agreement.

I, the undersigned, in my capacity as the Borrower's Authorized Representative and not in my individual capacity, do hereby certify to the TIFIA Lender that Substantial Completion, as defined in the TIFIA Loan Agreement, has been achieved on [_____], 20[__].

STATE OF NEW HAMPSHIRE, acting by and through the New Hampshire Department of Transportation

By: _____
Name: _____
Title: Borrower's Authorized Representative

EXHIBIT L

PRINCIPAL PROJECT CONTRACTS

EXHIBIT L
Principal Project Contracts (Construction Contracts Only)

Project Number	Legal Name of Contract	Brief Location/ Description	Legal Contract Party 1	Legal Contract Party 2	Contract Award Date
13933H	Salem to Manchester BI-A000(128), 13933H	I-93 Exit 3 Area, construct Mainline and Ramp, NH 111, NH 111A and Ramps	NHDOT	Weaver Bros. Construction Co.	12/04/13
13933I	Salem to Manchester BI-A000(129), 13933I	Exit 3 Area, SB I-93 & NH Route 111	NHDOT	R.S. Audley, Inc.	10/17/12
14633B	Salem to Manchester AC-A004(115), 14633B	I-93 NB & SB Mainline, Weigh Station to Kendall Pond Rd	NHDOT	R.S. Audley, Inc.	02/10/16
14633H	Salem to Manchester AC-A004(376), 14633H	I-93 NB/SB reconstruction, Exit 5 to I-293 Split	NHDOT	Alvin J. Coleman & Sons Inc.	05/04/16
14633Z	Salem to Manchester A004(126), 14633Z	Corridor Smart Work Zones	NHDOT	Worksafe Traffic Control Industries, Inc.	07/22/15

EXHIBIT M

PERFORMANCE SECURITY INSTRUMENTS

Exhibit M
Performance Security Instruments

Project Number	Legal Name of Contract (when executed)	Brief Location/ Description	Contract Award Date	Surety	Surety Provider
10418F	Salem to Manchester IM-0931(205), 10418F	South Road Wetland Mitigation	02/16/11	$0 *	Berkley Regional Insurance Company
10418G	Salem to Manchester A000(325), 10418G	I-93 Park & Ride at Exit 2 and bus station facility	03/21/07	$ 6,418,378.20	Travelers Casualty and Surety Company of America
10418I	Salem to Manchester A000(210), 10418I	Park & Ride Construction at Exit 5	10/11/06	$ 7,438,749.90	Travelers Casualty and Surety Company of America
10418L	Salem to Manchester A000(271), 10418L	Bus Procurement and Operating Costs	07/01/07	N/A**	N/A**
10418M	Londonderry X-A000(263), 10418M	Construct Bus terminal at Exit 4 on I-93	10/21/05	$ 1,548,000.00	Acadia Insurance Co.
10418N	Londonderry X-A000(264), 10418N	Bus Maintenance Facility at Exit 5	08/22/07	$ 7,429,000.00	Travelers Casualty and Surety Company of America
10418U	Salem to Manchester A002(362), 10418U	Building Demolitions	06/20/12	$ 62,850.00	Merchants Bonding Company (Mutual)
10418Z	Salem to Manchester A000(021), 10418Z	Phase 1 Intelligent Traffic Systems (ITS)	11/19/09	$ 3,811,112.00	The Hanover Insurance Co.
13933B	Salem - Manchester A000(122), 13933B	I-93 Cross Street Bridge Replacement	11/15/06	$ 6,650,644.60	Merchants Bonding Company (Mutual)
13933C	Salem - Manchester A000(123), 13933C	Exit 1 Ramps and Bridges	08/22/07	$ 22,245,777.16	Hartford Fire Insurance Co.
13933D	Salem to Manchester BI-A000(124), 13933D	Exit 1 Area, Mainline I-93 NB & SB	12/21/10	$ 30,568,352.00	Travelers Casualty and Surety Company of America
13933E	Salem to Manchester BI-A000(125), 13933E	Exit 2 Interchange & NB/SB I-93 (Pelham Rd)	07/11/12	$ 40,908,383.67	Travelers Casualty and Surety Company of America
13933F	Salem to Manchester A000(126), 13933F	Brookdale Road Bridge Replacement over I-93	07/14/10	$ 4,338,718.55	Western Surety Company
13933G	Salem to Manchester A000(127), 13933G	Exit 3 NB I-93	05/06/09	$ 25,969,102.80	Travelers Casualty and Surety Company of America
13933H	Salem to Manchester BI-A000(128), 13933H	I-93 Exit 3 Area, construct Mainline and Ramp, NH 111, NH 111A and Ramps	12/04/13	$ 32,237,736.54	Travelers Casualty and Surety Company of America
13933I	Salem to Manchester BI-A000(129), 13933I	Exit 3 Area, SB I-93 & NH Route 111	10/17/12	$ 32,997,604.58	Western Surety Company
13933K	Salem to Manchester A000(131), 13933K	Exit 3 Ramps and Bridges	10/08/08	$ 24,976,202.00	Travelers Casualty and Surety Company of America
13933N	Salem to Manchester BI-A001(243), 13933N	SB I-93 Bridges over NH 111 and 111A	01/11/12	$ 11,475,922.80	Liberty Mutual Insurance Company

Project Number	Legal Name of Contract (when executed)	Brief Location/ Description	Contract Award Date	Surety	Surety Provider
13933Z	Salem to Manchester BI-A001(196), 13933Z	Corridor wide Smart Work Zone (ITS)	10/12/11	$ 1,239,750.00	The Guarantee Company of North America USA
14633B	Salem to Manchester AC-A004(115), 14633B	I-93 NB & SB Mainline, Weigh Station to Kendall Pond Rd	02/10/16	$ 49,419,914.55	Western Surety Company
14633E	Salem to Manchester A000(503), 14633E	Exit 5 Ramps, bridge work and I-93 NB/SB	06/18/08	$ 14,884,149.94	Berkley Regional Insurance Company
14633F	Salem to Manchester BI-A000(501), 14633F	Exit 5 NB off ramp & NB/SB I-93	02/16/11	$ 36,722,729.23	Berkley Regional Insurance Company
14633H	Salem to Manchester AC-A004(376), 14633H	I-93 NB/SB reconstruction, Exit 5 to I-293 Split	05/04/16	$ 45,922,044.90	Berkley Insurance Company
14633Z	Salem to Manchester A004(126), 14633Z	Corridor Smart Work Zones	07/22/15	$ 1,620,210.75	The Guarantee Company of North America USA

* 14633F and 10418F were released as one contract, and therefore have one total surety of $36,722,729.23.

** 10418L is bus procurement, so there is no associated surety or contract award date.

EXHIBIT N

CONSTRUCTION AGREEMENTS

EXHIBIT N
Construction Contracts

Project Number	Legal Name of Contract	Brief Location/ Description	Legal Contract Party 1	Legal Contract Party 2	Contract Award Date
10418F	Salem to Manchester IM-0931(205), 10418F	South Road Wetland Mitigation	NHDOT	Severino Trucking Co, Inc.	02/16/11
10418G	Salem to Manchester A000(325), 10418G	Park & Ride at Exit 2	NHDOT	Continental Paving, Inc.	03/21/07
10418I	Salem to Manchester A000(210), 10418I	Park & Ride at Exit 5	NHDOT	R.S. Audley, Inc.	10/11/06
10418L	Salem to Manchester A000(271), 10418L	Bus Procurement and Operating Costs	NHDOT	Boston Express	07/01/07
10418M	Salem to Manchester X-A000(263), 10418M	Bus terminal at Exit 4	NHDOT	Gougen Construction	10/21/05
10418N	Salem to Manchester X-A000(264), 10418N	Bus Maintenance Facility at Exit 5	NHDOT	North Branch Construction Inc.	08/22/07
10418U	Salem to Manchester A002(362), 10418U	Building Demolitions	NHDOT	All-Ways Wrecking	06/20/12
10418Z	Salem to Manchester A000(021), 10418Z	Phase 1 Intelligent Traffic Systems (ITS)	NHDOT	Green Mountain Communications/Jacobs Engineering Group, Inc.	11/19/09
13933B	Salem - Manchester A000(122), 13933B	Cross Street Bridge Replacement	NHDOT	R.S. Audley, Inc.	11/15/06
13933C	Salem - Manchester A000(123), 13933C	Exit 1 Ramps and Bridges	NHDOT	SPS New England, Inc.	08/22/07
13933D	Salem to Manchester BI-A000(124), 13933D	Exit 1 Area, Mainline I-93 NB & SB	NHDOT	Middlesex Corporation	12/21/10
13933E	Salem to Manchester BI-A000(125), 13933E	Exit 2 Interchange & NB/SB I-93	NHDOT	George R. Cairns & Sons, Inc.	07/11/12
13933F	Salem to Manchester A000(126), 13933F	Brookdale Road Bridge	NHDOT	R.S. Audley, Inc.	07/14/10
13933G	Salem to Manchester A000(127), 13933G	Exit 3 NB I-93	NHDOT	George R. Cairns & Sons, Inc.	05/06/09
13933H	Salem to Manchester BI-A000(128), 13933H	NH 111 & 111A and Ramp Tie-Ins	NHDOT	Weaver Bros. Construction Co.	12/04/13
13933I	Salem to Manchester BI-A000(129), 13933I	Exit 3, SB I-93 & NH Route 111	NHDOT	R.S. Audley, Inc.	10/17/12
13933K	Salem to Manchester A000(131), 13933K	Exit 3 Ramps and Bridges	NHDOT	Middlesex Corporation	10/08/08

Project Number	Legal Name of Contract	Brief Location/ Description	Legal Contract Party 1	Legal Contract Party 2	Contract Award Date
13933N	Salem to Manchester A001(243), 13933N	SB I-93 Bridges over NH 111 and 111A	NHDOT	E.D. Swett Inc.	01/11/12
13933Z	Salem to Manchester A001(196), 13933Z	Corridor wide Smart Work Zone (ITS)	NHDOT	Worksafe Traffic Conrol Industries, Inc.	10/12/11
14633B	Salem to Manchester AC-A004(115), 14633B	I-93 NB & SB Weigh Station to Kendall Pond Rd	NHDOT	R.S. Audley, Inc.	02/10/16
14633E	Salem to Manchester A000(503), 14633E	Exit 5 Ramps and I-93 NB/SB	NHDOT	Severino Trucking Co, Inc.	06/18/08
14633F	Salem to Manchester BI-A000(501), 14633F	Exit 5 NB off ramp & NB/SB I-93	NHDOT	Severino Trucking Co, Inc.	02/16/11
14633H	Salem to Manchester AC-A004(376), 14633H	I-93 NB/SB Exit 5 to I-293 Split	NHDOT	Alvin J. Coleman & Sons Inc.	05/04/16
14633Z	Salem to Manchester A004(126), 14633Z	Corridor wide Smart Work Zones	NHDOT	Worksafe Traffic Control Industries, Inc.	07/22/15

* Legal Party #1 for these agreements is the State of New Hampshire Department of Transportation (NHDOT)

** N/A - This indicates that there is no legal contract at this time as the project is in the design phase and has not been awarded to a contractor.