The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner

NH Department of Transportation
Commissioner's Office
Attn: William Cass
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P.O. Box 483
Concord, NH 03302-0483

WATER QUALITY CERTIFICATION

In Fulfillment of

Section 401 of the United States Clean Water Act (33 U.S.C 1341)

WQC # 2002-007

Activity Name	Interstate 93 Improvements: Salem to Manchester
Activity Location	Interstate 93: Salem to Manchester, New Hampshire
Affected Surface waters	Beaver Brook, Dinsmore Brook, Canobie Lake, Cobbetts Pond, Policy Brook, Porcupine Brook, Spicket River, various other named and unnamed tributaries and wetlands
Owner/Applicant	State of New Hampshire Department of Transportation 1 Hazen Drive P.O. Box 483 Concord, NH 03302-0483
Appurtenant Permit(s):	U.S. Army Corps of Engineers No. 199201232 NH Wetlands Bureau Permit No. 2002-2033
DATE OF APPROVAL (subject to Conditions below)	May 2, 2006

A. INTRODUCTION

The State of New Hampshire, acting by the Department of Transportation (NHDOT) (Applicant) and Federal Highway Administration (FHWA) propose the improvement of Interstate 93 (Activity) in southern New Hampshire. The Activity location extends 19.8 miles north from the Massachusetts state line through Salem, Windham, Derry, and Londonderry to the junction of Interstate 93 and Interstate 293 in Manchester. The Activity construction period is not expected to exceed 10 years, and the operation period is indefinite after completion of construction.

The proposed Activity includes, but may not be limited to: new construction of two additional lanes in the northbound and southbound directions; reconstruction and operation of the existing interchanges, Exit 1 through Exit 5; creation and operation of Park and Ride facilities along the Interstate 93 corridor; and operation of new and existing lanes, a total of four lanes in each direction.

This 401 Water Quality Certification (401 Certification) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of NH surface water quality standards, including the provisions of NH RSA 485-A:8 and NH Code of Administrative Rules Env-Ws 1700, for the support of designated uses identified in the standards.

B. 401 CERTIFICATION APPROVAL

Based on the findings and conditions noted below, the New Hampshire Department of Environmental Services (Department) has determined that any discharge associated with the Activity will not violate surface water quality standards, or cause additional degradation in surface waters not presently meeting water quality standards. NHDES hereby issues this 401 Certification subject to the conditions defined in Section E of this 401 Certification, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341).

C. STATEMENT OF FACTS AND LAW

C-1. Section 401 of the United States Clean Water Act (33 U.S.C. 1341) states, in part: "Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title.....No license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."

C-2. Section 401 further states, in part "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section."

C-3. Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 C.F.R. 130.0 – 40 C.F.R. 130.11) require that states identify and list surface waters that are violating state water quality standards. For these water quality-impaired waters, states must establish Total Maximum Daily Loads (TMDLs) for the pollutants causing

the impairments and submit the list of impaired surface waters and TMDLs to EPA for approval.

C-4. RSA 485-A:8 and Env-Ws 1700 (Surface Water Quality Regulations, effective December 3, 1999) together fulfill the requirements of Section 303 of the Clean Water Act that the State of New Hampshire adopt water quality standards consistent with the provisions of the Act.

C-5. Env-Ws 1701.02, entitled "Applicability", states that:

"(a) These rules shall apply to all surface waters.

(b) These rules shall apply to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters."

C-6. Env-Ws 1702.18 defines a discharge as:

"a. The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently, or otherwise; or

b. The placing of a pollutant in a location where the pollutant is likely to enter surface waters."

C-7. Env-Ws 1702.39 defines a pollutant as: "pollutant" as defined in 40 CFR 122.2. This means "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water."

C-8. Env-Ws 1702.46 defines surface waters as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial," and waters of the United States as defined in 40 CFR 122.2."

C-9. Surface waters are navigable waters for the purposes of certification under Section 401 of the Clean Water Act. Surface waters are jurisdictional wetlands for the purposes of wetlands permitting under RSA 482-A.

C-10. The named and unnamed rivers and streams, lakes and ponds, and wetlands, affected by the Activity, are surface waters under Env-Ws 1702.46.

C-11. Env-Ws 1703.01 (c) states that "All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters."

C-12. Env-Ws 1703.14, entitled "Nutrients", states that

"a. Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.

b. Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.

c. Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.

d. There shall be no new or increased discharge of phosphorous into lakes or ponds.

e. There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds."

C-13. Env-Ws 1703.19, entitled "Biological and Aquatic Community Integrity", states that

"a. The surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region; and

b. Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function."

C-14. Env-Ws 1703.21 (a)(1) states that "Unless naturally occurring or allowed under part Env-Ws 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans or aquatic life."

C-15. Env-Ws 1703.21 (b), Table 1703.1 provides numeric water quality criteria for chlorides for the protection of aquatic life, where concentrations of chlorides in surface waters shall not exceed the numeric concentrations, as follows:

a. Freshwater acute criteria = 860 milligrams per liter; and

b. Freshwater chronic criteria = 230 milligrams per liter.

C-16. Env-Ws 1703.07 through 1703.11 contain standards relative to dissolved oxygen, bacteria, benthic deposits, oil and grease, and turbidity.

C-17. Env-Ws 1703.21, Table 1703.1 contains standards for numerous toxic substances, including but not limited to metals such as copper, lead and zinc, and petroleum-based compounds such as polynuclear aromatic hydrocarbons (PAHs).

C-18. Surface waters in which water quality does not comply with water quality standards are considered impaired. When impairment is due to a pollutant, additional discharge of that pollutant to the surface water is not allowed.

C-19. Activities that result in discharges (both directly, and indirectly through groundwater) may not cause or contribute to the violation of water quality standards.

C-20. The Activity reviewed for this 401 Certification requires a federal wetlands permit under the federal Clean Water Act Section 404. The U.S. Army Corps of Engineers provided public notice for the Activity on October 11, 2002.

C-21. The Applicant is responsible for the Activity, including construction and operation.

C-22. The Applicant has published an Environmental Impact Statement (EIS), entitled "Final Environmental Impact Statement: Interstate 93 Improvements Salem to Manchester IM-IR-93-1(1740)0, 10418-C", FHWA-NH-EIS-02-01-F by dated April 2004. The EIS contains Section 4.4.1 that discusses surface water impacts and mitigation measures for water quality protection during construction and operation of the Activity (the preferred alternative).

C-23. The US Department of Transportation, Federal Highway Administration, published a Record of Decision (ROD) entitled "Record of Decision FHWA-NH-EIS-02-01-F, I-93, Salem to Manchester IM-IR-93-1(1740)0,10418-C Salem, Windham, Derry, Londonderry, Manchester, Rockingham and Hillsborough Counties, New Hampshire", dated June 28, 2005. Paragraphs 1.3 and 4.3 summarize the proposed measures to control water quality impacts during construction and operation of the Activity.

D. FINDINGS

D-1. The Activity will result in a discharge and may cause the permanent alteration of, or temporary impacts to surface waters.

D-2. Storm water runoff, including snowmelt, and groundwater flow to surface waters from within the area affected by the Activity during warm and cold-weather conditions are discharges under the definitions of Env-Ws 1702.18.

D-3. The Activity requires water quality certification under Section 401 of the federal Clean Water Act.

D-4. The Department's water quality certification decision relies, in part, on an approved permit from the Department's Wetlands Bureau for the potential construction-related impacts to jurisdictional wetlands. On April 25, 2006, the Wetlands Bureau issued Wetlands and Non-Site Specific Permit No. 2002-2033 for alterations or impacts to jurisdictional wetlands during the Activity.

D-5. Canobie Lake and its tributaries are Class A surface waters under RSA 485-A:8; Beaver Brook, Policy Brook, Spicket River, Cobbetts Pond, and their tributaries, as well as any other waters affected by the Activity, are Class B surface waters. Therefore, Class A and Class B New Hampshire surface water quality standards apply to this Activity. Class A and B waterways are considered suitable for fishing, swimming, and, after adequate treatment, as a water supply.

D-6. During construction, the placing of fill and installation of culverts within the Interstate 93 corridor may temporarily increase turbidity levels downstream from the area affected by the Activity, particularly during wet weather events, and may contribute to long-term sediment retention in and/or transport through the downstream reaches of these waterways.

D-7. Proper installation and maintenance of the stormwater Best Management Practices (BMPs) proposed in the EIS and ROD are necessary to maximize the effectiveness of the proposed BMPs, and improper installation or failure of the proposed BMPs may cause discharge of pollutants to surface waters causing exceedances of water quality standards.

D-8. The Activity includes the creation of impervious surfaces, such as roadways, parking lots, and buildings. The use of roadways by vehicular traffic can cause the deposition of metals including but not limited to copper, lead, and zinc, and petroleum-based compounds including but not limited to gasoline, PAHs, oil and grease on impervious surfaces. Stormwater runoff can mobilize and transport metals and petroleum-based compounds from impervious surfaces. Stormwater runoff from impervious surfaces also commonly contains elevated concentrations of nutrients nitrogen and phosphorus. In the EIS and ROD, the Applicant proposed the construction and operation of stormwater BMPs.

D-9. For all pollutants except chloride, installation and proper maintenance of stormwater BMPs during both construction and operation of the Activity, as proposed in the EIS and ROD, and that achieve the removal efficiencies estimated in the EIS and ROD, are not likely to cause or contribute to violations of water quality standards. Structural BMPs do not exist for the removal of chloride from stormwater, as chloride is non-reactive. Thus, reductions in chloride concentrations in affected surface waters can be achieved either by reducing road salt usage or by rerouting stormwater to surface waters with greater potential for dilution.

D-10. The use of impervious surfaces, including the existing and proposed travel lanes, interchanges, and Park and Ride facilities, during cold-weather months necessitates snow removal and the application of de-icing and/or anti-icing compounds, such as road salt (sodium chloride). Chloride can be mobilized and transported to surface waters through direct and indirect pathways, including (1) sheet flow during stormwater runoff or meltwater events, (2) flow through culverts and highway drainage structures, and (3) groundwater

flow during all seasons. The application of chloride, and subsequent mobilization and transport during runoff events incrementally contributes to elevated chloride concentrations in surface waters affected by the Activity during some periods of the year.

D-11. The Applicant, the Department, and the U.S. Environmental Protection Agency (USEPA) conducted field studies during winter 2002-2003, 2003-2004, and 2004-2005 to document chloride concentrations in various surface waters within the area potentially affected by the Activity. The data indicated that the unnamed tributary to western embayment of Canobie Lake, and various segments of Dinsmore Brook, Policy Brook, and Beaver Brook did not attain the chronic surface water quality standard for chloride (230 milligrams per liter) under existing watershed conditions during various times of the year. Therefore the unnamed tributary to western embayment of Canobie Lake, and various segments of Dinsmore Brook, Policy Brook, an unnamed tributary to Policy Brook, and Beaver Brook are impaired due to the pollutant chloride. The data also indicated that elevated chloride concentrations existed outside of the area affected by the Activity. Therefore chloride in the impaired surface waters originated from multiple sources and loads.

D-12. The development and implementation of TMDLs are required for the unnamed tributary to western embayment of Canobie Lake, and various segments of Dinsmore Brook, Policy Brook, an unnamed tributary to Policy Brook and Beaver Brook. The TMDLs will evaluate the existing and future chloride loads to unnamed tributary to western embayment of Canobie Lake, various segments of Dinsmore Brook, Policy Brook, an unnamed tributary to Policy Brook, and Beaver Brook. The TMDLs will address all sources and loads of chlorides and identify actions for chloride load reduction to attain surface water quality standards. Chloride management for load reduction to surface waters in the area affected by the Activity is a watershed-wide issue that will be addressed and managed on a watershed basis involving all stakeholders that contribute chloride loads in the TMDL watersheds.

D-13. Until completion of TMDLs, no additional chloride loads, beyond those based on existing road salt management practices, to water bodies impaired by chlorides are allowed from either new or existing activities. After completion of TMDLs, reductions in chloride loads from all sources, including the Activity, will be required in accordance with the TMDL implementation plan.

D-14. The development and implementation of TMDLs for chloride will provide reasonable assurance that the Activity will comply with Section 401 of the Clean Water Act, namely with attainment of surface water quality standards for chloride.

D-15. The EIS and ROD include strategies for optimization of road salt application and reduction in salt usage, including alternative salt-brine treatment, new technology and equipment for salt and brine application, improved maintenance decision support and training, and increased public awareness.

The strategies to optimize the use of de-icing and/or anti-icing compounds and to maximize efficiency are expected to reduce the annual salt usage resulting from the Activity relative to historical salt usage with existing winter maintenance practices and procedures.

D-16. The Applicant has demonstrated, through the measures described in D-15, above, the ability to limit road salt application rates to existing application rates while operating one additional lane of the Activity in each direction, for a total of three lanes in each direction.

D-17. Monitoring is necessary for surface waters affected by the Activity during both the construction and operation periods to evaluate water quality affected by the Activity relative to surface water quality standards.

E. WATER QUALITY CERTIFICATION CONDITIONS

E-1. For parameters and surface waters that meet surface water quality standards, neither the construction nor operation of the Activity shall cause or contribute to a violation of surface water quality standards. If the Department determines that surface water quality standards are being violated, the Department may modify this 401 Certification to include additional conditions to ensure compliance with surface water quality standards, when authorized by law, and after notice and opportunity for hearing.

E-2. BMPs installed during construction of the Activity for soil erosion control shall be inspected and maintained by the Applicant during wet and dry weather conditions. Inspection and maintenance shall continue throughout the duration of construction and during the reestablishment of vegetation on the embankments. At least 15 days prior to the beginning of construction activities for each construction contract, the Applicant shall prepare and submit erosion control inspection and maintenance plans and turbidity sampling and analysis plans to the Department for concurrence. The inspection and maintenance plans shall include emergency response provisions for addressing erosion control issues at any time, including non-work hours.

E-3. The conditions included in NHDES Wetlands Bureau Permit 2002-2033, including any amendments, shall become conditions of this 401 Certification upon its issuance.

E-4. The Applicant shall design, implement, and maintain stormwater BMPs for the Activity as proposed in the EIS and ROD. For stormwater BMPs that will be in place during operation of the Activity, the BMP design plans and pollutant load estimates, accompanied by estimates of removal efficiencies for sediments, phosphorus, and nitrogen, shall be submitted to the Department for review and concurrence prior to finalization of the design, and at least 90

days prior to the commencement of construction of each individual construction contract.

E-5. The Applicant shall design and implement a water quality monitoring plan for surface waters affected by the Activity during construction and operation. The plan shall provide for the documentation of seasonal wet and dry weather pre- and post-construction water quality conditions in surface waters directly affected by operation of the Activity, and shall be designed to evaluate the effectiveness of installed BMPs. Parameters to be monitored shall include sediments, phosphorus, nitrogen, and total petroleum hydrocarbons (EPA method 8015B). The plan shall be submitted to the Department for review and approval at least 90 days prior to the beginning of monitoring under the plan.

E-6. The Applicant shall design and implement a monitoring plan for chlorides and specific conductance relative to the Activity. Monitoring for chlorides and specific conductance shall be designed to measure the effectiveness of chloride TMDL implementation, and shall continue until implementation is completed and water quality standards for chloride are attained. Post-construction monitoring for chlorides shall include trend monitoring at up to six representative locations in waters not in TMDL watersheds but likely to be impacted by operation of the Activity. The plan shall be submitted to the Department for review and approval at least 90 days prior to the beginning of monitoring under the plan.

E-7. The Applicant shall participate in TMDL studies by the Department for the surface waters impaired for chlorides, including the unnamed tributary to western embayment of Canobie Lake, and various segments of Dinsmore Brook, Policy Brook, an unnamed tributary to Policy Brook, and Beaver Brook. Participation may include, but is not limited to, funding of TMDL studies, assistance with water quality monitoring to facilitate development of the TMDLs, and outreach, education and technical support during both preparation of studies and implementation of chloride load reductions.

E-8. The TMDL studies shall be designed to assess and quantify sources of chloride loads to watersheds in the area affected by the Activity, and to develop an implementation plan to reduce chloride loads from all sources to surface waters that do not meet water quality standards. The Applicant shall comply with all TMDL implementation requirements.

E-9. After EPA approval of the TMDL reports and publication of the TMDL implementation plan, the Applicant shall implement the chloride load reductions and all other requirements of the implementation plan that apply to the Activity and to other state roads included in the implementation plans.

E-10. The Activity shall not contribute additional chloride loads, beyond those based on existing road salt management practices, to chloride-impaired surface waters. To this end, the Applicant shall implement the elements of adaptive

management approach to salt management practices contained in Section 1.3 of the ROD.

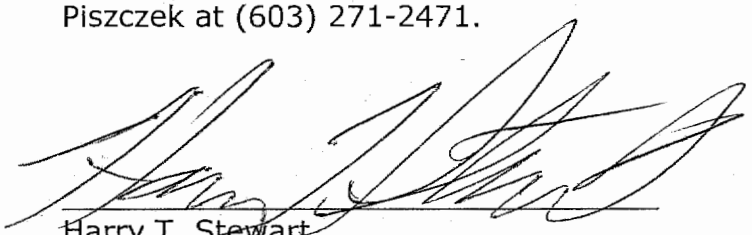
E-11. If TMDLs are not approved by EPA and implementation plans are not completed and established with implementation of chloride load reductions in accordance with the plan, for the Activity and other roads operated by the Applicant in the TMDL watersheds, the Applicant shall incrementally implement 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.

E-12. The terms and conditions of this 401 Certification may be modified and additional terms and conditions added as necessary to ensure compliance with New Hampshire water quality standards, when authorized by law, and after notice and opportunity for hearing.

F. APPEAL

If you are aggrieved by this decision, you may appeal the decision to the Water Council. Any appeal must be filed within 30 days of the date of this decision, and must conform to the requirements of Env-Wc 200. Inquires regarding appeal procedures should be directed to Michael Sclafani, NHDES Council Appeals Clerk, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095; telephone 603-271-6072.

If you have questions regarding this Certification, please contact Paul Piszczek at (603) 271-2471.



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Derry Board of Selectmen and DPW
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