



**THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF TRANSPORTATION  
MASSACHUSETTS HIGHWAY DEPARTMENT**

**EOT**

DEVAL L. PATRICK  
GOVERNOR

TIMOTHY P. MURRAY  
LIEUTENANT GOVERNOR

JAMES A. ALOISI JR.  
SECRETARY

LUISA PAIEWONSKY  
COMMISSIONER

April 30, 2009

Ann Herrick - CIP  
U.S. Environmental Protection Agency - Region 1  
1 Congress Street, Suite 1100  
Boston, MA 02114-2023

RE: NPDES Phase II Small MS4 General Permit  
EPA Permit Number MA043025  
MassHighway Permit Year 5 Annual Report

Dear Ms. Murphy,

Please find enclosed the Permit Year 6 Annual Report, signed by Commissioner Luisa Paiewonsky. The annual report summarizes MassHighway activities between April 2008 and March 2009 towards meeting the measurable goals outlined in the NPDES Phase II Notice of Intent (NOI) submitted to your office in July 2003 with the most recent revision on December 26, 2006. Please feel free to contact Mr. Henry Barbaro, Supervisor of Wetlands & Water Resources, at (617) 973-7419 if you have any questions or require further information.

Sincerely,

Kevin Walsh  
Director  
Environmental Services

Enclosures: NPDES Phase II Small MS4 General Permit Annual Report – Year 6

Cc: Fred Civian  
Massachusetts Department of Environmental Protection  
One Winter Street - 5th Floor  
Boston, MA 02108





**Municipality/Organization:** Massachusetts Highway Department

**EPA NPDES Permit Number:** MA043025

**MaDEP Transmittal Number:** W-040919

**Annual Report Number  
& Reporting Period:**

**No. 6: April 2008-March 2009**

## NPDES Phase II Small MS4 General Permit Annual Report

### Part I. General Information

**Contact Person:** Mr. Henry Barbaro

**Title:** Supervisor of Wetlands & Water Resources

**Telephone #:** (617) 973-7419

**Email:** henry.barbaro@mhd.state.ma.us

### Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Signature:**

**Printed Name:** Luisa M. Paiewonsky

**Title:** MassHighway Commissioner

**Date:**

4/30/09

## **Part II. Self-Assessment**

MassHighway has completed the required self-assessment and continues to determine that the MS4 is in full compliance with the permit conditions. On April 2, 2007, MassHighway received full authorization to discharge stormwater from MassHighway owned and operated MS4s in urbanized areas of Massachusetts. EPA requested that MassHighway continue to update/revise the SWMP in a letter dated August 18, 2006 and October 10, 2006. MassHighway submitted a revised SWMP to address the EPA comments on January 11, 2008. MassHighway has not received any further comments from EPA regarding the revised SWMP submission.

### Part III. Summary of Minimum Control Measures

#### 1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
1A	MassHighway Training Assistance Program (MTAP)	MTAP	Facilitate one training program related to storm water and /or snow and ice control as a means of reducing source pollution. Document attendance numbers.	<p>Eleven Snow &amp; Ice Control classes were conducted in 2008 with a total of 423 personnel in attendance.</p> <p>Trainings dates were September 3, 4, 15, 19, 23, 29 and October 7, 15, 17, 22, and 24.</p> <p>Topics covered were benefits of anti-icing, using chemical effectively, storm scenario exercises, and the environmental impact of winter operations.</p>	Snow & Ice training with topics similar to 2008 topics.
1B	Baystate Roads	Baystate Roads	Provide one training program for MassHighway employees and one for municipal DPW snowplow drivers related to snow and ice control as a means of reducing source pollution. Document attendance numbers.	<p>Seven Snow &amp; Ice Training sessions were held in 2008 with a total of 395 personnel in attendance.</p> <p>Training dates were September 3, 17, 25 and October 1, 9, 21, 27.</p> <p>Topics covered were benefits of anti-icing, using chemicals effectively, storm scenario exercises, and the environmental impact of winter operations.</p>	Snow & Ice training with topics similar to 2008 topics.
IC-1	MassHighway Web Site	IT/Environmental	Add Environmental Section web page to web site.	Measurable goal completed in Permit Year 1.	Measurable goal complete.
IC-2	MassHighway Web Site	IT/ Environmental	Include link for contacting Highway Department via email. Review emails and direct to appropriate department.	The MassHighway web site includes a link for contacting the Highway Department via email. Emails received are reviewed and directed to the appropriate department.	Measurable goal complete.
IC-3	MassHighway Web Site	IT/ Environmental	Evaluate web page annually and revise as necessary.	The Environmental web page has been reviewed and updated. Annual Report 5 was added and the permit authorizations from EPA and DEP.	Evaluate web page and revise as necessary. Annual Report 6 will be added to the web page.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
1D-1	<b>Remove</b>  Storm Water Training Workshop	Environmental/ MTAP	Conduct training for MassHighway personnel every two years. Summarize date of meeting, topics covered, and #of attendees in annual report. Also include # of Snow& Ice training classes, and # of “tailgate” meetings.	This BMP is duplicative since storm water training is addressed through the BMP 1A program above. The BMP 1D-1 is replaced by the additional commitments made in BMP 1A in the January 2008 SWMP.	BMP Removed
1D-2	<b>Remove</b>  Storm Water Training Workshop	Environmental/ Baystate Roads	Conduct storm water training workshop for municipal DPW personnel every two years. Summarize training programs similarly to above.	This BMP is duplicative since storm water training is addressed through the BMP 1B program above. The BMP 1D-2 is replaced by the additional commitments made in BMP 1B in the January 2008 SWMP.	BMP Removed
1E	Educational Seminars for CIM members	Construction Section	Provide educational seminars for CIM members on CGP Permit coverage and environmental compliance in Permit Year 1.	Measurable goal complete in Permit Year 1.	Measurable goal complete.
1F	MassHighway/ Municipal Tie-In Review Process	Environmental/ Districts	Develop communication mechanism re: MassHighway drainage that discharges to a local MS4. Develop review process for addressing those concerns. Notify other MS4s of process.	BMP Revised – see 1F below	Deleted

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
1F <b>Revised</b> (Revised in Jan 08 SWMP)	Post Contact Names for Municipal Drainage Concerns on MassHighway Web Site	Environmental/ Districts/ GIS	<p>1) Distribute a flyer with contact names to municipalities during May 2007 Baystate Roads NPDES Phase II General Permit seminar.</p> <p>2) Post DHD contact name for each district on website for municipalities to contact and maintain link.</p> <p>3) GIS group will develop a program to provide easy to use access and allow the public to identify a selected area and review the MassHighway owned roads and outfalls. MassHighway will then review alternatives for alerting towns and the public to the availability of this information.</p>	<p>1) Completed in Year 5.</p> <p>2) DHD contact names have been added to web site at <a href="http://www.mhd.state.ma.us/default.asp?pgid=content/mgmt_team&amp;sid=about">http://www.mhd.state.ma.us/default.asp?pgid=content/mgmt_team&amp;sid=about</a></p> <p>3) MassHighway shared drainage outfall inventory information with Charles River Watershed Association, DCR, and Townsend.</p>	<p>3) MassHighway is continuing to develop an Asset Management system. Part of the system will include determining how best to share infrastructure information with the general public.</p>
1G	River and Stream Signs	Traffic Operations	Maintain signs identifying rivers and streams crossed by MassHighway roads, until crossing of all named rivers and streams are signposted.	MassHighway has installed 42 signs identifying river and stream crossings in Permit Year 6. The locations were identified by MassRiverways Program and installed by MassHighway personnel. A list of the locations is included in Appendix A of this report.	MassHighway will continue to install signs in areas identified by MassRiverways Program and anticipates installing approximately 20 signs in the next 6 months.
1H	Anti-litter/ Dumping Messages on Variable Message Boards	Operations	Maintain anti-litter message in the message mix on permanent Variable Message Boards (VMBs).	Anti-litter messages were included in the message mix on permanent Variable Message Boards.	Continue to include anti-litter messages on VMBs.
1I	Anti-litter/ Dumping Literature at Visitors Centers	Operations	Work with EOEEA’s Think Blue Campaign to identify appropriate brochures for use in Visitor’s Centers. Distribute literature to appropriate visitor centers and track number of brochures distributed annually.	A meeting was conducted between MassHighway (Environment) and members of the Think Blue Campaign. The meeting discussed ideas about future collaborations. This effort has been delayed by the Think Blue Campaign.	MassHighway will work with the Think Blue Campaign or develop its own program. We will develop brochures with a transportation focus.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
1J	New England DOT Meetings	Environmental	Coordinate with New England DOTs to discuss on-going issues and programs being faced by the DOTs including wetland mitigation, storm water and erosion controls.	Henry Barbaro has joined the AASHTO storm water committee and communicates with other DOTs across the country through the committee. MassHighway has communicated as the need arose.	MassHighway will communicate with the other DOTs as the need develops and participate in the AASHTO storm water committee.
1K	Storm Water Coordinator	Environmental	Fund a full-time stormwater coordinator position each year.	A full-time stormwater coordinator, Robert Bennett, was hired in the Spring of 2008 and has completed many tasks under this role throughout the year.	Fund full time coordinator, increase responsibilities and outreach.

## 2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
2A	Project Related Public Notification and Public Participation Requirements	Environmental	Continue compliance with federal and state public notification and public participation requirements including but not limited to Wetlands Protection Act, Clean Water Act 401 Water Quality Certification, Army Corps of Engineers 404 Permit, and MEPA/NEPA.	MassHighway continues to comply with federal and state public notification and public participation requirements. MassHighway conducted 70 design public hearings in this permit year (see Appendix B).	MassHighway will continue to comply with federal and state public notification and public participation requirements.
2B	Adopt-a-Highway	Adopt-a-Highway	Continue to support program.	MassHighway continues to support this program. Six Adopt-A-Highway signs were posted. Two on Route 495 and one each on Rts. 93, 95, 16, and 114.	MassHighway will continue to support this program. MassHighway will maintain the current level of sponsors and increase volunteer participation.
2C	Project Clean	Project Clean	Continue to support Project Clean.	Revised – see 2C below	Deleted.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
2C <i>Revised</i>	<i>511 Massachusetts Traveler Information System</i>	<i>Operations</i>	<i>Maintain 511 System</i>	<i>The 511 program received many calls during the permit year. The calls included reports of issues such as debris on the roadways.</i>	<i>The 511 program expects increased call volume and incidents of debris due to increased seasonal travel, outdoor activity, and knowledge of 511 services over the next six months.</i>
2D-1	MassHighway Web Site	IT/ Environmental	Post Storm Water Management Plan (SWMP) to web site.	The most recent SWMP submitted to EPA in January 2008 is posted on MassHighway’s web site.	Post NOI and SWMP submitted for new general permit (when issued) within 60 days of submittal.
2D-2	MassHighway Web Site	IT/ Environmental	Post annual reports to the web site.	Measurable goal complete. Annual reports for Permit Year 1-5 are posted on the Environmental Section’s web page.	Permit Year #6’s annual report will be posted to the Environmental Section web page for public access within 30 days of submittal to EPA and DEP.
2E	Complete AASHTO’s Center for Environmental Excellence on “Strategies & Approaches to Complying with NPDES Phase II Survey”	Environmental	Complete survey.	Completed survey in Permit Year 3.	Measurable goal complete.

### 3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
3A-1	Rest Area Leases	Environmental/ Right-of-Way	Develop electronic drainage requirements language for incorporation in Rest Area lease agreements where rest area is being redeveloped.	Submission of drainage information is a standard condition on all new rest area leases.	Measurable goal complete.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
3A -2	Rest Area Leases	Right-of-Way	Summarize new rest area leases issued each year in the annual report.	No new rest area leases were issued during Permit Year 5.	If new rest area leases are issued, they will be summarized in the annual report.
3B-1	Drainage Inventory	Environmental/ Construction/ Planning/ IT Section	Develop and implement specification for securing drainage information from future construction and redevelopment projects.	Draft of drainage specification has been developed. MassHighway has continued to meet internally with the Asset Management director to develop a method for inventorying MassHighway assets and the tracking of associated maintenance. The completion of the drainage specification has been temporarily put on hold to make sure that it will be in line with the overall strategy for asset management once developed.	Continue to develop and finalize system. Once Asset Management system is developed, finalize specification and begin to include in contracts.
3B-2	Drainage Inventory	Environmental/ IT/ Districts	Map drainage discharges within urbanized areas. By the end of the permit term complete inventory of urbanized areas and include summary of resource areas with outfalls. Review methods to make outfall inventory available to the public for ease of access.	Outfall inventory was completed in Permit Year 5. MassHighway has relied on requests through the web site or through District offices for Town's or other entities which request inventory related information. We have received a number of requests and have been able to respond relatively quickly.	Continue to share inventory with public and within the Department.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
3C-1	Drainage Connection Policy	Environmental	<p>1.) Issue Drainage Connection Policy.</p> <p>2) Post copy of policy on MassHighway web site.</p> <p>3) Enforce the provision through referrals to the Attorney General office.</p> <p>4) Summarize actions taken in the annual report.</p>	<p>1.) Policy issued and posted on June 26, 2006 by the Chief Engineer – measurable goal complete.</p> <p>2.) Policy posted at <a href="http://www.mhd.state.ma.us/default.asp?pgid=content/environ/envpublications02&amp;sid=about">http://www.mhd.state.ma.us/default.asp?pgid=content/environ/envpublications02&amp;sid=about</a></p> <p>3.) No referrals to the AG office were necessary.</p> <p>4) See Appendix C for details on letters sent to residences/ businesses with potential illicit connections this permit term.</p>	<p>Continue to enforce provisions of drainage connection policy.</p> <p>The Executive Office of Transportation Legal and Environmental Services will take steps to make the Draingae Tie-In Policy a formal MassHighway SOP.</p>
3C-2	Drainage Tie-In Standard Operation Procedure (SOP)	Environmental/ Legal	Issue a revised Drainage Tie-In SOP. Annual reports will summarize drainage tie-in permits applications and permits issued.	<p>Internal draft of Drainage Tie-In SOP draft was revised to reflect format of new Access Permit. Draft is finalized and being reviewed by permit engineers.</p> <p>Appendix D summarizes the status of drainage tie-in permits applied for and received as of this permit year.</p>	Finalize Drainage Tie-In SOP. Submit to Chief Engineer for signature and issuance to Department.
3D	Illicit Connection Review	Environmental/ Districts	Review twenty discharges each permit year for potential illicit connections.	BMP Revised	BMP Revised

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
3D Revised	Illicit Connection Review	Environmental/ Districts	Develop prioritized list for IDDE and include in Permit Year 5 Annual Report. Release RFR for development and implementation of IDDE program for watersheds on prioritized list. Field review complaints/ potential IDDEs identified by District personnel, during the drainage inventory, in response to municipal email requesting suspect areas and/ or from public throughout the year.	<p>The IDDE RFR has not been released yet. MassHighway has been awaiting the new draft general permit from EPA to understand the illicit discharge requirements which will be included before issuing the RFR.</p> <p>Districts reviewed potential illicit connections. Appendix C includes more detail.</p>	<p>Revise RFR to include new general permit requirements for IDDE. Release RFR. Award contract and finalize IDDE protocol.</p> <p>Perform comprehensive dry weather review of 10% of urbanized area roads this summer.</p> <p>Field review complaints/ potential IDDEs identified by District personnel, during the IDDE work, in response to municipal email requesting suspect areas and/ or from public throughout the year. Provide summary of IDDE activity in annual report.</p>
3E	Resident Engineer Illicit Connection Training	Construction	Provide training on illicit connection policy, illicit connection identification and protocol for reporting during annual Resident Engineer training seminars. Summarize # of attendees in annual report.	Action completed in Permit Year 4.	No action required.
3F	Maintenance Staff Illicit Connection Training	Environmental	Provide training on illicit connection policy, illicit connection identification and protocol for reporting during annual training seminars for maintenance personnel.	Action completed in Permit Year 4.	No action required.

#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4A	MassHighway Department Project Development & Design Guide	Environmental/ Construction/ Projects	Drainage systems for MassHighway roadways will be designed in accordance with Chapter 8 of the MHD Highway Design Guide and companion manuals.	All MassHighway projects will continue to be designed in compliance with the erosion and sediment control requirements in the design guide.	All MassHighway projects will continue to be designed in compliance with the erosion and sediment control requirements in the design guide.
4B	MA DEP Stormwater Management Policy	Environmental/ Construction/ Projects	New construction and redevelopment activities will comply with Massachusetts DEP's Stormwater Management Policy and Performance Standards under the Wetlands Protection Act and Clean Water Act Section 401.	MassHighway designs continue to comply with the Stormwater Management Policy when projects are subject to the WPA or within urbanized areas.	MassHighway designs will continue to comply with the Stormwater Management Policy when projects are subject to the WPA or within urbanized areas.
4C	NPDES Construction General Permit	Construction	1) File NOIs for new projects which disturb more than one acre. 2) Summarize NOIs issued to MassHighway in annual report.	36 NOIs were filed during Permit Year 6. The permits are listed in Appendix H.	Continue to file NOIs for new projects which disturb more than an acre.
4D	Other State Environmental Regulations or Policy	Environmental/ Construction/ Projects	Projects will continue to be designed and constructed in accordance with all applicable state and federal environmental regulations or policy (e.g. Wetlands Protection Act, 404).	The Environmental Section reviews all projects at the 25% design stage to determine what environmental permits are required. The District Environmental Engineer or equivalent District construction staff person attends all pre-construction meetings with the selected contractor to review permit requirements for the project.	The process of design review and pre-construction coordination will continue.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4E	MassHighway Storm Water Handbook	Environmental/ Construction/ Projects	Design projects in urbanized areas in compliance with Handbook	MassHighway requires that all new construction and redevelopment activities undertaken by MassHighway, or by others that are funded in whole or in part by MassHighway, comply with the Handbook.	MassHighway will require that all new construction and redevelopment activities undertaken by MassHighway, or by others that are funded in whole or in part by MassHighway, comply with the Handbook.
4F	Standard Specification for Highway and Bridges	Environmental/ Construction/ Projects	Continue to include erosion and pollution prevention controls in construction contracts.	<p>Inclusion of such controls is standard practice for construction contracts issued by MassHighway.</p> <p>A revised contract item/ specification is now included in each contract which requires a detailed Storm Water Pollution Prevention Plan (SWPPP)/ Erosion Control Plan (ECP) for all projects (except minor - such as signage, grass mowing, etc.). Having the contractor develop the SWPPP and ECP (rather than the designer) has been accepted by the Conservation Commissions and, where DEP issues a Water Quality Certificate, no objection has been raised on a project-by-project basis.</p>	Such controls will continue to be included in construction contracts issued by MassHighway.
4G	<i>MassHighway Research Needs Program)</i>	<i>Environmental/ Construction</i>	<i>Continue funding the MassHighway Research Needs Program.</i>	<i>Moved to MCM 6 since focus of research program is now for source control instead of construction</i>	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4H	Pre-Construction Meeting Review of NPDES Construction GP requirements	District Environmental Staff/ Construction	District Environmental Staff Review NPDES requirements at the applicable pre-construction meetings. These meetings include outlining the requirements of the Construction General Permit and identify the roles and responsibilities of MassHighway and the Contractor.	MassHighway reviews the NPDES Construction GP requirements with Contractors at the pre-construction meeting. Environmental engineer attends all pre-construction meetings which involve environmental permits, not limited to NPDES. Therefore, erosion control discussed at all pre-con meetings.	MassHighway will continue to review the NPDES Construction GP requirements with Contractors at the pre-construction meeting.
4I	Contract Bid Item and Special Provision for Storm Water Pollution Prevention Plans (SWPPPs)	Construction Section/ Contracts	Prepare a Contract Bid Item and Special Provision for inclusion in construction contracts to be advertised for bids which exceed the one-acre disturbance threshold.	Measurable goal complete.  A revised contract item/ specification is now included in each contract which requires a detailed Storm Water Pollution Prevention Plan (SWPPP)/ Erosion Control Plan (ECP) for all projects (except minor - such as signage, grass mowing, etc.). Having the contractor develop the SWPPP and ECP (rather than the designer) has been accepted by the Conservation Commissions and, where DEP issues a Water Quality Certificate, no objection has been raised on a project-by-project basis.	Measurable goal complete.
4J	Field Guide on Erosion Prevention and Sediment Control	Construction Section/ Chief Engineer	Prepare field guide and issue to Resident Engineers	State Guide development is 90% complete. Internal reviews are pending. New material as well as compost and mulch will be included.	Complete guide and internal reviews.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4K	Storm Water Pollution Prevention Plan (SWPPP) Guidance Manual for Contractors	Construction Section/ Districts	Prepare a SWPPP Guidance for Contractors document on MassHighway construction projects. Implement use of the document on all appropriate MassHighway projects. Once contractors begin to use the document, it may be revised if necessary to address input received internally and from agencies. Ultimately the document will be converted into a computer program.	Measurable goal complete in Permit Year 4. SWPPP bid item to include an Erosion Control Plan is now included in all contracts.	Continue use by Contractors on MassHighway projects.
4L-1	Training	Construction Section	Conduct annual Erosion Prevention and Sediment Control Training for MassHighway Construction Personnel. Summarize # of attendees and topics covered.	Construction Division Districts 1, 3, and 5 trained 134 staff members this year. Districts 2 and 4 trainings will occur in May 2009. The trainings included a review of basic erosion control measures, diesel retrofit awareness and air quality issues, Asian long-horned beetle infestation, and hazardous waste management. Below is a list of seminar dates and # attending: District 1 2/19/09 37 District 2 to be held in May District 3 3/25/09 48 District 4 to be held in May District 5 2/11/09 49	MassHighway will continue training on topics similar to those discussed in the past. Hold District 2 and 4 training.
4L-2	Non-Traditional Erosion Control Specifications	Landscaping Section	Develop specifications for non-traditional erosion controls and evaluate research being conducted by other state DOTs that can be accepted by MassHighway Research and Materials Section. As new technologies are developed, review and develop specifications for additional erosion controls.	MassHighway has developed two new specifications:  1) Seeded compost for slope restoration. Developed in September 2007.  2) Fiber / compost filled tubes for sediment capture in lieu of hay bales. Developed in March 2009.	Field application of these new specifications will begin as appropriate situations arise.  Publication of MassHighway research on compost use.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4M	Erosion and Sediment Control Field Tests	Construction Section/ Districts/ Landscaping	Perform field tests of new erosion and sediment control materials on MassHighway projects. Prepare and circulate an internal memo on the effectiveness of the new measure.	<p>Worked performed at Waltham Winter Street project is ongoing. Project has used fiber rolls with flocculent in high silt environment. This technique appears to be effective and will be included in the Field Guide.</p> <p>Work performed at Route 28/Dedham Westwood Roadway and Bridge is ongoing. Soil-Sement® (a type of trackifier) is being utilized for soil stabilization at bridge construction adjacent to the river.</p>	Include fiber roll technique in the Field Guide. Develop internal memo regarding effectiveness of Soil-Sement® once project is complete.
4N	Construction Bulletins	Construction Section	Issue annual construction bulletins to each District regarding storm water issues.	Annual bulletin was issued in October 2008. The bulletin included winter stabilization and review of permits for expiration dates.	Issue bulletin in Fall of 2009 regarding storm water issues.
4O	Solicit Construction Activity Feedback from Public	Construction Section/ IT	Maintain MassHighway web site to include contact information for ongoing construction activities. Respond to concerns submitted in a timely manner.	MassHighway maintained their website to include contact information for ongoing construction activities. MassHighway responded to concerns submitted in a timely manner.	MassHighway will continue to maintain their website to include contact information for ongoing construction activities. MassHighway will respond to concerns submitted in a timely manner.
4P	Construction Runoff Control Enforcement	Construction Section/ Districts	Non-compliance with the CGP and SWPPP as well as non-compliance with any applicable environmental permits will be addressed through the District Construction personnel and District Highway Director and can include monetary penalties, where included in contracts, and deductions or delays in payment, when warranted.	Quality assurance inspections were completed on active construction projects by the Boston Construction office and by the District Environmental staff. MassHighway provided notice to contractors on two contracts that the payment would be withheld. Issue was resolved.	Continue to address non-compliance through monetary penalties or deductions or delays in payment, when warranted.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
4Q	Standard Practices Memo	Construction Section	MassHighway will prepare and issue a Standard Practices memo to Construction Engineers on the protocol for Illicit Discharge Detection and Elimination during construction projects.	A separate SOP for construction was not developed. During Permit Year 4, the District Construction offices were provide with the procedures to follow on discovery of any illicit discharges during construction and provided training to the REs. MassHighway determined a separate SOP was not warranted	No further action warranted.
4R	Contractor Inspector Training	Construction Section	Modify NPDES SWPPP item to include half day training requirement. Provide training programs.	MassHighway is currently developing training programs and soliciting for consultant contract to perform training.	Require contractors to attend half day training when SWPPP item applies to contract.

### 5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5A-1	MassHighway Storm Water Handbook	Environmental	Secure DEP ratification for MassHighway Storm Water Handbook.	Measurable goal complete for original Handbook. MassHighway has been discussing revision with DEP.	MassHighway will work with DEP to secure ratification of the revised Handbook once completed.
5A-2	Revise Ch. 4 of the MassHighway Storm Water Handbook	Environmental	Revise Chapter 4 within 9 months of DEP's SW Policy Handbook update being released. Reissue MassHighway Handbook to Designers within 1 year of DEP's document being released.	MassHighway has begun to revise Chapter 1-5 of the Stormwater Handbook to address SW Policy changes and TMDL requirements.	Reissue Handbook with changes.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5A-3	Revise Ch. 5 of the MassHighway Storm Water Handbook	Environmental	Revise Chapter 5 within 9 months of DEP's SW Policy Handbook update being released. Reissue MassHighway Handbook to Designers within 1 year of DEP's document being released.	MassHighway has begun to revise Chapter 1-5 of the Stormwater Handbook to address SW Policy changes and TMDL requirements.	Reissue Handbook with changes.
5B	MassHighway Roadway Maintenance Program	Maintenance	Continue to implement MassHighway maintenance program as outlined in the maintenance schedule and in accordance with TMDL watersheds specific agreements.	MassHighway maintained their roads in compliance with the maintenance schedule included in the SWMP and TMDL watershed specific agreements. A summary of this year's maintenance for each district is included in Appendix E.	MassHighway will continue to conduct maintenance on its roadways as outlined in the maintenance schedule and in accordance with TMDL watersheds specific agreements.
5C	Technology Acceptance and Reciprocity Partnership (TARP)	TARP	Continue to work with DEP to develop review protocol for innovative stormwater BMPs. Summarize meeting(s) attended and agenda in annual report.	The TARP partnership is no longer in place. MassHighway staff participated in proprietary system sub-committee meetings sponsored by MA DEP as part of the SW Policy update. The meetings included developing protocols for analyzing field and lab tests of the systems.	No activities planned.
5D	Southeast Expressway BMP Effectiveness Project	Environmental	Conduct a study of the effectiveness of water quality inlets (WQIs) and catch basins at removing suspended sediments from highway runoff.	Study completed previously. The 14-month sediment removal efficiency was 35 % for one WQI and 28% for the second WQI. The efficiency for individual storms for deep sumped hooded catch basins was 39%.	No further action planned.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5E	Highway Runoff Contaminant Model	Env. Div. Consultant	Develop and calibrate contaminant loading model.	<p>A draft report was recently completed and is undergoing internal review. This report documents concentrations of selective dissolved major ions, total nitrogen and phosphorus, selective total-recoverable metals, suspended sediment, and semi-volatile compounds measured in flow-weighted composites of stormwater collected from common highway-drainage conveyance structures for eight highways in Massachusetts during a two-year monitoring period. The report discusses the relation between populations of concentration data for the respective constituents among the 12 highway-monitoring stations and to annual average daily traffic volumes. The report also presents methods used to estimate event-mean concentrations for deicing elements from continuous records of flow and specific conductance, and to calculate planning-level estimates for various constituents affiliated with suspended sediment. The data presented in this report are integrated in the Highway-Runoff Database (HRDB Version 1.0.0a) which serves as a preprocessor for the Stochastic Empirical Loading and Dilution Model (SELDM) currently being developed for the Federal Highway Administration.</p>	<p>USGS will submit the draft report for review by MassHighway and others.</p> <p>Analyses of initial data indicate that the quality of highway runoff from the southern coastal area, including Cape Cod, was significantly different than the quality of highway runoff collected elsewhere in the state of Massachusetts. As a result, supplemental data is being collected on Interstate 195 in Marion and on Route 6 in Harwich thorough September 2009.</p> <p>USGS plans to issue a draft model to use this pollutant data in the summer of 2009. Once the SELDM model is issued and the highway runoff data collection is completed, MassHighway will begin to use the model to review highway runoff in critical watersheds.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5F	BMP Maintenance Manual	Environmental/ Maintenance	Develop BMP Maintenance Manual to be used as a field guide by maintenance personnel Provide training on the BMP Maintenance Manual..	Remove. Changes to BMP 5B narrative include the manual used as guidance by maintenance staff while performing drainage system maintenance.	No further action.
5G	Right of Way Parcel Evaluation	Environmental	Develop and implement a program of evaluating parcels which are candidates for disposal by MassHighway for their potential in siting storm water BMPs.	Environmental reviewed 17 canvasses for the permit year. Two of them were denied for sale because of their value for stormwater treatment of highway runoff. Of the canvasses that resulted in a sale, stormwater treatment guidelines were provided for five parcels.	Environmental will continue to review canvasses as they are presented. The emphasis will remain on keeping parcels of land that are highly suitable for stormwater treatment (as well as wetland replication). In instances where a sale would be more beneficial, any chance to offer information or guidance on stormwater treatment will be mentioned within the commentary.
5H-1	Post Construction Runoff Enforcement-Illicit Discharge Prohibition Policy	Commissioner/ Legal/ Environmental	1) Develop policy for addressing unauthorized connections to the MassHighway’s drainage system. 2) Enforce the provisions through referrals to the Attorney General. 3) Summarize actions taken in annual report.	Illicit Discharge Policy was issued in June 2006.  Failure to comply with the Dept. request will necessitate further action by the Department either through the State Attorney General’s office or the District. Appendix C includes more detail.	Enforce Illicit Discharge Prohibition Policy.  Follow up on potential illicit discharges where enforcement letters have been sent.
5H-2	Post Construction Runoff Enforcement- Drainage Tie-In Policy	Commissioner/ Legal/ Environmental/ Districts	Develop permitting process for adjacent properties which would like to tie into MassHighway drainage system. Implement program and summarize actions taken under program in annual report.	Internal draft of Drainage Tie-In SOP draft was revised to reflect format of new Access Permit. Draft is finalized and being reviewed by permit engineers.  Appendix D summarizes the status of drainage tie-in permits applied for and received as of this permit year.	Finalize Drainage Tie-In SOP. Submit to Chief Engineer for signature and issuance to Department.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5H-3	Post Construction Runoff Enforcement- Offsite Pollution to MassHighway Drainage System	Commissioner/ Legal/ Environmental	Runoff not meeting the NPDES MS4 requirements which is reaching the MassHighway MS4 and is not covered under 5H-1 or 5H-2 may be considered trespassing and referred to the AG’s office by MassHighway counsel at the DHD’s discretion.	<p>Each district reported that no offsite runoff enforcement met this requirement.</p> <p>District 3- Lake Nipmuc Outfall (Route 16 in Mendon): Upland runoff into MHD CBs is contributing to sand bar formation at the outfall base within the lake. MassHighway took action by improving the design of the CBs leading to the outfall. This was at the request of DEP after complaints of the sand bar from the local watershed committee.</p>	MassHighway will continue to take action when these requirements are not met.
5I	Rest Area Redevelopment to Meet Stormwater Management Handbook Standards	Environmental/ Right of Way	Add language to new lease agreements requiring lessees, who redevelop or build new buildings on rest area property leased from MassHighway, to meet the standards within the Storm Water Management Handbook and the SWMP requirements.	Measurable goal complete.	No action required.
5J	Transportation Evaluation Criteria	Planning/ MPOs	Continue to include environmental considerations in the funding prioritization evaluation.	MPOs continued to include the environmental component in their evaluation procedures.	Continue to include environmental component in evaluation procedure.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
5K	Federal Enhancement Funding	Planning	Explore opportunities for using Federal enhancement funding for environmental restoration and pollution abatement projects. Participate in quarterly committee meetings.	<p>MassHighway is exploring the potential for projects with regional Planning agencies to develop projects using federal enhancement funding for stormwater.</p> <p>MassHighway has offered to partner with the Lowell Regional Wastewater Utility (LRWWU) to design and implement two stormwater management areas along Route 110 in Lowell. The project would include the design of a shallow conveyance from Route 110 into an undeveloped setback areas owned by the LRWWU. A LID bio-retention system would be designed for this setback area to retain and filter stormwater from two segments of Route 110 owned by MassHighway.</p> <p>MassHighway offered to commit to long-term maintenance of this system including management of vegetation, removal of sediment and litter debris from curb inlets leading to the system and removal of excess surface sediment from the pretreatment forebays.</p> <p>MassHighway has also committed to assist in the project design and provide traffic support during project construction.</p>	<p>MassHighway will continue to explore the potential for projects with regional Planning agencies to develop projects using federal enhancement funding for stormwater. MassHighway will summarize project in annual report. MassHighway will begin to participate in quarterly committee meetings.</p> <p>LRWWU has not received the 319 funding grant it applied for and the project has not moved forward.</p>

## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6A-1	Source Control - 511 Massachusetts Traveler Information System	Project Clean/ Operations	Maintain the existing 511 System.	MassHighway continues to support this system.	MassHighway will continue to support this system.
6A-2	Source Control – Adopt-a-Highway	Adopt-a-Highway/ Operations	Continue to support this program by maintaining signs in areas where the program is active. Summarize number of road miles cleaned.	MassHighway continues to support this program. Approximately 70 miles were cleaned each quarter during this permit year, totaling approximately 280 miles.	MassHighway will continue to support this program.
6A-3	Source Control - Deicing Programs and Reduced Salt Areas	Environmental/ Districts	Continue to support De-icing and Reduced Salt Areas Programs.	MassHighway will continue to support the De-icing and Reduced Salt Areas Programs.  See Appendix F for more information on well replacements and Salt Remediation Program (BMP 6G).	The Salt Material usage committee will be reconvened in Spring 2009. The committee will continue to review reduced salt zones and explore alternative BMPs within these areas.
6A-4	Source Control – Motorist Assistance Program (formerly HELP)	MAP Program/ Operations	Continue to provide 22 Highway Emergency Locator Program (HELP) vans and/or tow trucks.	MassHighway has continued to provide 22 roving service patrols or tow trucks in Permit Year 6 in the areas of Boston, Worcester, and Springfield. This service not only assists disabled motorists also reduces traffic congestion.	MassHighway will continue to provide roving service patrols or tow trucks for the next four years.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6A-5	Source Control - VMP	Environmental	<p>1) Develop a generic Vegetation Management Plan (VMP) which outlines methods of minimizing the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers.</p> <p>2) Prepare a Yearly Operational Plan (YOP) by April of each year. 3) Post YOP on web site within 30 days. 4) Summarize actions taken in previous year in annual report.</p>	<p>1) MassHighway completed The Five-Year 2009-2013 Vegetation Management Plan and posted it on the web.</p> <p>2) 2009 YOP is underway, but not yet completed as of April 17, 2009.</p> <p>3) 2009 YOP will be posted to the MassHighway web site within 30 days of completion</p> <p>4) No Spray program occurred in 2008. Herbicide Alternatives Research has been published and posted on the web. The study looked at the use of alternatives to herbicides and the efficacy of the type of herbicides used by MassHighway on roadside vegetation. The report found that because of the cost of materials and need for repeated seasonal applications, all of the alternative practices reviewed would cost more than the use of conventional herbicides. The alternative practices will be useful and the cost will be justified in situations where the use of conventional herbicides is undesired or prohibited.</p>	<p>MassHighway will complete its 2009 YOP and post it on the web within 30 days of completion.</p>
6A-6	Source Control - HOV	Planning	<p>Continue participation in ridesharing activities through the duration of the permit term.</p>	<p>MassHighway continues to support this program</p>	<p>MassHighway will continue to support this program.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6A-7	Source Control - Alternative Transportation	Planning	Provide technical assistance and funding for bicycling and walking, including on-road and off-road improvements, at the local level.	Fiscal Year 2008 Bicycle and Walking Budget for MassHighway: \$5,650,329.  \$392,000 was used for bicycle and walking infrastructure improvements as part of the Safe Route to School Program Budget.	Fiscal Year 2009 Bicycle and Walking Budget for MassHighway: \$10,861,547.  \$658,000 will be used for bicycle and walking infrastructure improvements as part of the Safe Route to School Program Budget.
6A-8	Source Control- Highway Safety	Highway Design	1) Incorporate safety measures into all new highway designs. 2) Provide signage to warn of vehicle hazards including tipping hazards and steep grades. 3) Install VMS on selected roadways to improve driver awareness. 4) Include evolving safety technologies as part of future highway design projects as they are developed.	Safety measures are included in all new highway designs including appropriate signage and evolving technologies. MassHighway installs and maintains vehicle message signs on select roads to improve driver awareness to potential safety hazards.	MassHighway will continue to support this program.
6A-9	Source Control - TURA	Environmental	1) Maintain an active PPTF throughout the permit term. 2) Provide summary of actions taken on each pollution prevention initiative included in the SWMP in the annual report.	Active PPTF was maintained. No water conservation activities in 2008.  Actions on Toxics Use Reduction: <ul style="list-style-type: none"> <li>• Initiated testing of vegetable-based hydraulic oil in heavy equipment/plow trucks</li> <li>• Initiated testing of closed-loop crankcase oil draining system</li> <li>• Evaluated and recommended preventative maintenance procedure for rapidly corroding hydraulic fittings due to salt exposure</li> </ul>	MassHighway will continue to support this program.
6B-1	Employee Training	MTAP/ Baystate Roads	Continue to support MTAP and Baystate Roads program.	MassHighway continues to support these programs. Specific programs sponsored by these programs are discussed in BMP 1D-1 and 1D-2.	MassHighway will continue to support these programs.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6B-2	Employee Training	Environmental	Provide annual training to at least 300 maintenance facility personnel regarding good housekeeping/ spill prevention.	<p>Trainings were provided during the winter of 2008/2009 for 335 maintenance facility personnel. Training included discussion of the following topics:</p> <ul style="list-style-type: none"> <li>• Hazardous Waste</li> <li>• Hazardous Materials</li> <li>• Universal Waste</li> <li>• Asbestos</li> <li>• Solid Waste</li> <li>• Roadside Issues</li> <li>• Tanks</li> <li>• Wetlands</li> <li>• Recordkeeping</li> <li>• Inspections</li> <li>• Water Quality</li> <li>• SOPs</li> <li>• Emergency Response</li> <li>• Spill Prevention/Response</li> <li>• Materials Management</li> <li>• Stormwater Pollution Prevention</li> <li>• Stormwater Phase 2</li> <li>• Hazardous Materials Management</li> <li>• Hazardous Waste Management</li> <li>• Universal Waste Management</li> <li>• Vapor Recovery System</li> </ul> <p>Inspection</p> <ul style="list-style-type: none"> <li>• IDDE</li> <li>• OWS</li> </ul> <p><i>(continued below)</i></p>	MassHighway will again provide annual training to maintenance facility personnel regarding good housekeeping practices and spill prevention.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6B-2 cont'd				<p><b>District 1:</b> On November 20, 2008, training was provided for 48 district maintenance personnel.</p> <p><b>District 2:</b> On February 17<sup>th</sup>, 2009, trainings were provided for 58 district maintenance personnel.</p> <p><b>District 3:</b> On October 30<sup>th</sup>, November 13<sup>th</sup> and 20<sup>th</sup>, and December 2<sup>nd</sup>, trainings were provided for 55 district maintenance personnel.</p> <p><b>District 4:</b> On November 18<sup>th</sup> and 19<sup>th</sup> and on December 2<sup>nd</sup>, and 4<sup>th</sup>, of 2008, trainings were provided for 91 district maintenance personnel.</p> <p><b>District 5:</b> On November 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup>, of 2008, trainings were provided for 83 district maintenance personnel.</p>	
6B-3	Employee Training	Highway Operations	Provide annual training to at least 200 supervisors and drivers annually on the latest on snow and ice removal.	Snow and Ice Trainings were held for each of the 5 districts. Over 300 state personnel attended. Fifteen sessions were held between October 1 <sup>st</sup> and December 1 <sup>st</sup> of 2008. Topics covered included correct use of materials, proper timing, environmental impact of materials, and reduced salt zones.	MassHighway will again provide annual training on the latest techniques, equipment and material available for snow and ice removal at a similar level to Permit Year 6.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6B-4	Employee Training	Highway Operations	Ensure all equipment and vehicle operators have received training on the proper operation of the equipment and vehicles they operate.	Training were held throughout the year on topics as follows: <ul style="list-style-type: none"> <li>• Right to Know (January)</li> <li>• Workzone Safety Training (March)</li> <li>• Attenuator Truck Training (March)</li> <li>• Sweeper Training (March-April)</li> <li>• Small Power Equipment Maintenance (April)</li> <li>• Chainsaw Safety (April)</li> <li>• Over/Under the Guardrail &amp; Herbicide Vegetation Removal (May)</li> <li>• Environmental Training &amp; Herbicide Vegetation Removal (June)</li> <li>• Snow &amp; Ice Training (September)</li> <li>• Incident Command (year round)</li> <li>• Operation of Lift Truck equipment</li> <li>• Operation of trailer and truck mounted impact attenuators</li> </ul>	MassHighway will provide Vector Truck training, Tree Truck training, and all refresher courses pertaining to the 2008 list.
6C-1	Maintenance	Districts	Continue to implement maintenance schedule outlined in Appendix E of the SWMP.	MassHighway continued to maintain the highway system through catch basin cleaning contracts, street sweeping and regular drainage system maintenance. See Appendix E of the annual report for a summary of compliance.	MassHighway will continue to maintain the highway system through catch basin cleaning contracts, street sweeping and regular drainage system maintenance in compliance with Appendix E of the SWMP.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6C-2	Maintenance	Districts	<p>1) MassHighway reviewed each of the maintenance and material storage yards and creates a site specific facility handbook that provides information on necessary steps to environmental compliance. 2) Post EMS Manual on MassHighway website for public information. 3) Post generic Facility Handbook on website for public information.</p>	<p>Site specific facility handbooks were created in 1995. The EMS Manual and the Facility Environmental Handbook were both posted on the MassHighway web site.</p> <p>In Permit Year 6, a draft of the updated EMS Manual was completed. An update of the Facilities Environmental Handbook was also completed.</p>	<p>MassHighway will continue to maintain environmental compliance at their maintenance facilities by complying with each facility’s Environmental Facility Handbook.</p> <p>Distribute the updated EMS Manual for review by the Environmental Department. Distribute the updated Facilities Environmental Handbook.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6C-3	Maintenance Record and Data Management Work Management System	Environmental	1) Develop work management system. 2) Populate program with infrastructure information as available. 3) Implement system and begin to record maintenance activities in these watersheds.	MassHighway has issued a contract to Cartegraph to provide Asset Management system. MassHighway has had many meetings throughout the year to discuss the inclusion of the outfall inventory into the asset management system once the contract was issued.	<p>MassHighway will implement the Cartegraph software with the development of an implementation plan for Phase 1. Implementation plan development will include a review of MassHighway’s business process requirements for asset and work management, including reviews of organizational structure, strategic business and implementation objectives, internal and external influencing factors, workflow analysis, and asset management policies, plans, processes, and procedures. Phase 1 will include the 17,000 stormwater outfalls mapped during BMP 3B-2 drainage inventory and other assets. Phase 1 will also evaluate the applicability of using Cartegraph to track Snow and Ice operations, to track permits, and for call management. After Phase I, the framework and implementation models developed will be used to expand Cartegraph implementation to other assets such as guardrail, pavement markings, drainage system mapping, and others.</p> <p>MassHighway will continue discussion regarding how to populate the drainage system information in the most efficient manner.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6D	Waste Disposal	Districts	1) Street sweeping waste will be reused in appropriate slope stabilization and road work projects in compliance with SOP, when appropriate. 2) Street Sweeping material which can not be reused will be disposed of at landfills as daily cover. 3) Waste material from drainage structures and storm water BMPs removed during maintenance will be disposed of according to “Reuse and Disposal of Contaminated Soil at Massachusetts Landfills” DEP Policy #COMM-97-001.	MassHighway and its contractors continue to properly dispose of waste. MassHighway did not have an appropriate opportunity to reuse street sweeping waste.  District 1 reported that it removed and disposed of 3,234 cubic yards (2,156 tons) of sweeping materials.	MassHighway and its contractors will continue to properly dispose of waste.  District 1 anticipates that it will collect and dispose of 1,600 cubic yards of street sweepings in the next 6 months.
6E - Revised	Good Housekeeping/ Pollution Prevention Program Evaluation	Environmental	Evaluate existing Maintenance Programs to determine additional or revised activities, which would increase effectiveness and usefulness of the programs.	BMP 6E Good Housekeeping/ Pollution Prevention Program Evaluation has been removed (and the subsequent BMPs renumbered) since the addition of BMP 6F through 6Q provide a better use of resources with an increased impact on meeting the good housekeeping and pollution prevention minimum control measure.	
6E	Catch Basin Accumulation Project	Environmental/ Maintenance/ Districts	1) Provide annual report on progress each December and include summary in annual report. 2) Complete a study of debris accumulation in catch basins. 3) Based on the results of the study, revise the existing cleaning schedule and SOP for catch basin cleaning.	MassHighway has completed year 2 of the study and has decided to not move forward with Year 3 due to the inconsistencies of the data accumulated. MassHighway’s consultant is preparing a draft final report summarizing the findings.	Finalize report and include in next annual report.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6F	Policy and Program Review	Environmental	MassHighway will continue to at least biannually evaluate its snow and ice control policies and operational programs in order to make adjustments based on data and experience, and to respond to changing conditions.	MassHighway evaluated and reviewed the program, policies, and procedures in April and throughout the summer. MassHighway increased the use of Roadway Weather Information System (RWIS), utilized pre-wetting on all salt spreaders to reduce “bounce and scatter”, utilized a RT3 friction meter to evaluate proper timing for salt application. MassHighway continues to refine the use of anti-icing techniques.	Continue to evaluate program and implement changes as determined beneficial. Increase use of “Closed Loop Ground Speed Controller.”
6G	Salt Remediation Program	Environmental. Maintenance/ Districts	Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.	<p>Funding provided through new ISA - \$475 million through June 2011.</p> <p>Liquid deicing was used prior to storms. There was expanded use of magnesium chloride in low-salt zones. The Andover runoff study and the Dedham-Westwood aquifer study have begun.</p> <p>The Public Well Supply Matrix included in the January 2008 SWMP is included as Appendix F of this annual report to summarize the current status of each public well included in the Salt Remediation Program.</p>	<p>The use of liquid deicing will continue to expand.</p> <p>The Andover runoff study and Dedham-Westwood aquifer study will continue.</p> <p>Monitoring of public water supply wells will continue.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6H	Clean Well Initiative	Environmental	Provide a continued level of funding that will allow MassHighway to complete up to 20 replacement wells per year.	<p>MassHighway replaced a total of nine wells this year based on need. The wells were located at Moretz in Otis, Krokos in Ware; Ash, Carozza, DeSouza, Shapiro, and Vallis in Boxford; and Baessler in Topsfield.</p> <p>Continue sampling and analysis of private wells. Treatment systems installed at Fallon residence in Franklin, Papirio in Belchertown and Vallis in Boxford. Drainage system installed at Carozza residence in Boxford.</p> <p>An updated version of the Public Well Supply Matrix is included as Appendix F of this annual report to summarize the current status of each public well included in the Clean Well Initiative Program.</p>	Continue sampling and analysis of private wells and replacement well activities.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6I	Salt Management and Storage	Operations	<p>MassHighway will continue to replace or repair inadequate salt storage sheds, as well as cover sand piles and/or move them out of wetland buffer zones.</p> <p><b>Review sheds:</b> Increased capacity of some sheds may be justified because salt storage needs have grown over time and/or because the shed is in a sensitive area and the salt loading operations call for better containment. In sensitive areas, consideration should be given to the use of Gambrel style sheds that provide for the entire operation to be conducted under cover to minimize salt spillage outside of the shed.</p> <p>MassHighway will continue to prioritize the identification and selection of parcels being considered for new salt storage facilities, considering operational needs and the environmental setting.</p> <p><i>Cont'd</i></p>	<p>All Districts repaired various salt sheds throughout the state. MassHighway repaired numerous salt sheds throughout the year.</p>	<p>MassHighway will inspect fabric sheds for repair needs. MassHighway will maintain the facility repair contract(s) to provide for necessary repairs.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6I cont'd			<p><b>Review Sand Piles:</b> MassHighway will strive to locate sand piles outside wetland buffer zones whenever space allows. However, when this is not possible the department will work towards storing sand piles under cover, especially during the non-winter months. This could be accomplished by storing sand within sheds or, more likely, using a heavy-gauge polyethylene tarp. The tarp could be peeled back once, before winter operations, and then covered again at the end of the season.</p> <p><b>Personnel:</b> In October 2006, MassHighway hired a Director of Snow &amp; Ice Operations, with over 20 years of experience in winter operations, to improve salt management and supervision of deicing operations.</p>	<p>When notified of issues with sand piles, MassHighway has purchased and used covers for them.</p> <p>Director has continued to improve salt management and supervision of deicing operations.</p>	<p>Continue to monitor existing sand piles.</p> <p>Director will continue to oversee salt management and supervision of deicing operations.</p>
6J	Salt Storage Best Management Practices/ Pollution Prevention	Environmental	Continue to implement salt storage in compliance with DEP Guidelines on Deicing Chemical Storage. Continue to follow MassHighway SOP for the Management of Sand and Deicing Chemicals at MassHighway Facilities. Continue to follow Facility Environmental Handbook guidelines at maintenance facilities.	MassHighway continues to train personnel utilizing this SOP and works diligently each year to remind and train all snow and ice personnel on the importance of “Good Housekeeping.” The Environmental group has been involved as part of the training.	We will continue to work with our personnel and hired contractors to follow all SOPs relative to salt handling, storage and proper application. We will continue to emphasize the importance of salt stewardship on the road as well as at the depot.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
6K	Equipment Improvements	Environmental	MassHighway will continue to expand the use of anti-icing as a standard tool for snow and ice control.	MassHighway increased the use of anti-icing by 15% this year.  MassHighway utilized 73 tanker trucks with spray bars this season.	MassHighway has a proactive approach to snow and ice control and will increase the use of anti-icing in the future. MH intends to do this not necessarily by increasing the number of trucks utilized, rather by proper utilization of this technology.
6L	Enhanced Weather Forecasting Information	Environmental	Continue to provide sufficient funding to use weather forecasting contractor to provide up-to-date and local weather information during snow and ice season.	MassHighway has a 5 year contract with DTN (through Quixote Corporation) for our weather reporting. It is funded at approximately \$29,000 each year DTN and MassHighway hold monthly conference calls to discuss how well the forecasting is working.	Continue with current contract.
6M	Road Weather Information System	Environmental	MassHighway will ensure that these stations will be maintained so as to remain fully functional.	All sites have been maintained. MassHighway receives weekly status reports from the contractor in charge of the RWIS systems (Quixote) and communicates every month with them	Two new systems will be added this summer.
6N	Alternative Technologies	Environmental	MassHighway will continue to maximize the use of Premix and liquid calcium chloride, as alternative deicers, to reduce the quantity of granular sodium chloride, and should closely monitor reduced salt zones during storms to ensure the proper timing of salt applications and to minimize the potential for overuse of deicing chemicals.	MassHighway will continue to train and work with the districts to ensure all involved in a reduce salt zone are aware of the cause and effect of de-icing chemicals. One percent of this permit year's total use of deicer was derived from alternative technologies.	We will continue to use Pre-Mix and other alternative deicers in conjunction with Reduced Salt Zones.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
60	Research	Operations	<p>MassHighway has joined Clear Roads program and will continue to explore moving forward on other projects. Summarize research performed.</p>	<p>MassHighway continues to be active member in the Clear Roads program. During this permit year, 5-6 funded research projects were ongoing. They ranged from correct chemical testing protocols to effective use of anti-icing chemicals.</p> <p>Research on new methods of removing snow focused on becoming more efficient with snow and ice operations. This was accomplished by better application methods, correct timing of snow and ice removal, and using proper chemicals.</p> <p>Clear Roads has also undertaken a Cost Benefit study to evaluate the real cost of efficiency. It looks at the advantage of new technology and gives tools to justify the use of new technologies.</p>	<p>MassHighway will participate in the annual meeting scheduled for late July in Wisconsin.</p>
<i>Addn</i>	<p><i>MassHighway Research Needs Program (Previously indicated as BMP 4G but focus of research program is now for source control instead of construction)</i></p>	<p><i>Environmental/Construction</i></p>		<p><i>Contract for study on Critical Operational Factors that Affect Road Salt Usage and the Effectiveness and Efficiency of Salt Spreading Operations and Equipment has been executed and awarded. The funding is \$300,000. The initial stages of the contract have been met. Work is to continue throughout the summer. Winter operations will be scheduled to commence in December of 2009.</i></p>	<p><i>MassHighway will begin mapping Public Drinking Water Supply Zone II area for use in the program.</i></p>

**7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>**

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
7A	Wetland Protection Act (WPA) Compliance	Environmental	1) All MassHighway projects will comply with the WPA and MESA. 2) When potential impacts are identified, MassHighway will work with the appropriate agencies to design the project to minimize the impacts.	Continue to comply with MESA as required by the WPA.	Continue to comply with MESA as required by the WPA.
7B	401 Water Quality Certification	Environmental	Massachusetts’s 401 Water Quality certification requirements, which include review of the project by MA Natural Heritage program and US Fish and Wildlife if endangered species habitat is mapped in the project vicinity, will be complied with whenever they are applicable.	Continue to comply with MA 401 Water Quality Certification Regulations.	Continue to comply with MA 401 Water Quality Certification Regulations.
7C	CE Checklist	Environmental	Complete a Categorical Exclusion Checklist for all MassHighway projects that utilize federal funds.	114 Categorical Exclusion (CE) checklists were completed and approved for all federally-aided projects advertised for construction by MassHighway during Permit Year 6.	Complete and approve 68 Categorical Checklists for the current federally-aided construction advertising program. Complete this checklist at 25% design stage for other project that receives federal funds.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
7D	Environmental Site Data Form	Environmental/ Construction	Develop an environmental site data form for review by designers with Environmental staff at 25% Design. Implement on all projects.	MassHighway has prepared this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form includes review of discharges for potential impact to ORWs, sensitive areas, endangered species, impaired waters, and waterbodies with approved TMDLs. A draft form has been developed and is being reviewed internally.	Finalize form and begin to implement at 25% Design stage.
7E	TMDL Recommendation Summary Table Update	Environmental	The TMDL Recommendation Summary Table of the annual report will be updated annually to reflect which reports have been finalized in the previous permit year and include progress on any related measurable goals.	Appendix G includes the updated table with description of measures to meet TMDL recommendations. MassHighway staff members and Commissioner met with DEP Commissioner in April 2008 to discuss how MassHighway can be more involved in the development of TMDLs which include implementation measures for MassHighway.	Continue to review draft and new TMDL reports and implement TMDL recommended activities when possible.
7F – 7Q	TMDL Specific Recommendations	See NOI		Comply with TMDL recommendations in Appendix G.	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6	Planned Activities – 2009
7R	TMDL Watershed Review	Environmental	Develop prioritized list of TMDL watersheds to assess based on pollutants and MassHighway contributing areas. Assess 20% of watersheds with TMDLs each year once the USGS Contaminant Model is completed (scheduled for December 2008). Summarize assessment and outcome, including implementation schedules for BMPs if determined necessary, in each annual report.	<p>MassHighway is in the process of finalizing an RFR for this work. MassHighway has committed 1.3 million dollars for the contract.</p> <p>MassHighway’s consultant is creating a list of waterbodies with Stormwater Impaired TMDL, as recently defined by DEP as part of their Regulated Impervious Area (RIA) draft permit, that have MassHighway outfalls, according to the outfall inventory, or MassHighway road layer (if not in urbanized area).</p>	<p>Finalize RFR. Issue RFR and award to consultant. Develop priorities list of TMDL watersheds based on contributing areas. Receive completed USGS model by summer 2009.</p> <p>Once the TMDL watersheds are defined, the consultant will create specific watershed maps and review them with MassHighway staff to identify possibilities for BMP installation. The BMPs identified will be summarized in a table. BMPs will be based on the phosphorus infiltration guidance given to us by DEP at our Middlesex Turnpike meeting and as outlined in DEP’s draft RIA permit.</p>
7S	Salt Remediation Program	Environmental	Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.	Overall ISA 38721 Salt Remediation Program budget is \$4.75 million through June 2011.	Continue to address new and existing salt complaints.
8A	Cultural Resources Review	Cultural Resources Department	Review all projects for impacts to historic properties at the 25% design phase. If a potential impact is found, the Department works with the designer (MassHighway or consultant) and Massachusetts Historical Commission to alter the design to mitigate or prevent adverse effects.	Measurable goal met. There have been no instances during the past year where storm water impacts have adversely affected any National Register-listed or eligible parties.	Continue to review projects for impacts to historic properties at the 25% Design Stage

## 7b. WLA Assessment

Projects within a watershed with an approved TMDL are most likely subject to the Wetlands Protection Act (WPA). MassHighway projects which are subject to the WPA strive to meet the WPA's Stormwater Policy to the greatest extent possible. Meeting the requirements of the Stormwater Policy should provide sufficient water quantity and quality controls to reduce pollutant loading to the impaired waterbodies. The attached table tracks the projects within approved TMDL watersheds and summarizes the controls implemented to meet the TMDL requirements.

New design and construction projects which are proposed within a TMDL watershed will continue to incorporate measures to meet the TMDL requirements. The following projects are under design this year and are working to incorporate appropriate controls to meet Final TMDLs:

**Middlesex Turnpike, Burlington/ Bedford:** MassHighway has been working with its consultant on the Middlesex Turnpike project in Bedford and Burlington to incorporate BMPs to meet the Shawsheen Bacteria TMDL. MassHighway met with DEP to discuss what controls should be included in the project and DEP indicated that an IDDE certification should be included for the portion of the drainage system which will not be newly constructed. Submittal of the completed certification will meet the bacteria TMDL requirements.

**Route 128 Add-A-Lane, Dedham:** MassHighway has also been working with the Dedham Conservation Commission and MassHighway project consultants to include appropriate controls for the Route 128 Add-a-Lane project within the Charles River watershed so that the project meets the Charles River Phosphorus TMDL. MassHighway is trying to include controls to meet the 65% phosphorus reduction required by the Charles River TMDL within the limited ROW available without impacting the road substructure with the infiltration structures. The design is currently on-going.

**Route 9 Resurfacing, West Brookfield:** MassHighway included cleaning drainage structures and pipes, stone for pipe ends (help prevent outfall erosion) and hardening the shoulders with dense graded crushed stone (again, assists in preventing erosion) for compliance with the Chicopee Basin Phosphorus TMDL. The project is 93% complete.

**Aldrich Street Bridge Reconstruction, Granby:** MassHighway has incorporated BMPs into the Aldrich Street bridge reconstruction over Batchelor Brook. Project included installation of stone swale to reduce erosion from stormwater discharges from the road to comply with Connecticut Basin Phosphorus TMDL.

**Meadow Street Reconstruction, Hadley:** MassHighway incorporated BMPs into the Meadow Street reconstruction over Swamp Brook. Swamp Brook flows into the Mill River which flows into Lake Warner which is part of the Connecticut Basin watershed. BMPs installed included 2 deep sump CB's and a 45 foot long grass swale for compliance with the Connecticut Basin TMDL for Phosphorus.

**Dudley Road Reconstruction, Orange/ Athol:** As a part of the Route 101 (Dudley Road) Reconstruction, MassHighway is installing BMPs to address the Bourn-Hadley Pond which is an impaired waterbody in the Millers River Basin Phosphorus TMDL. BMPs include deep sump CB's, water quality swales at new discharge locations; and removal and disposal of drainage system sediments.

**Route 2 Safety Improvements, Phillipston/Athol/Orange:** As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No. 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol), Brazell Pond (Athol); Bourn-Hadley Pond; Greenwood Pond 2 and Lake Rohunta (Orange/Athol). These impaired waterbodies are each included in the Millers River Basin Phosphorus TMDL. BMPs include Deep Sump CB's, Detention Basins, stone and grass swales, removal and disposal of drainage system sediments, annual street sweeping, and cleaning paved waterways.

**Reconstruction of Glen Allen Street (Rte 202) from Maple Street Intersection to Rindge, NH State Line, Winchendon:** MassHighway currently has a project under design for this stretch of road which includes the following BMPs to address the Millers River Basin Phosphorus TMDL: stone for pipe ends (help prevent outfall erosion), energy dissipaters at other select discharge points (consisting of stone lined sumps and pads at drainage outfalls), stone stabilization slopes, and deep sump catch basins. The project drains to Whitney Pond.

**Route 202 Reconstruction and Resurfacing:** MassHighway is including BMPs to address the impaired waterbody of Depot Pond and the requirements in the Millers River Basin Phosphorus TMDL. The BMPs include deep sump catchbasins; removal and disposal of drainage system sediments, and annual street sweeping.

**Bridge # W-39-018 carrying Route 202 (Glen Allen Street) over the Millers River (between Whites Mill Pond and Whitney Pond):** As part of reconstruction of this bridge, MassHighway installed to address the impaired waters of Whites Mill Pond. BMPs included installing deep sump catch basins and 2 leaching catch basins; and the removal and disposal of drainage system sediments.

**Airport Drive, Worcester:** MassHighway District 3 recently completed roadway reconstruction project on Airport Drive. Runoff from this area enters waterways south of Smith Pond and north of Curtis Pond which are both part of the Northern Blackstone Phosphorus TMDL. This project included a significant amount of drainage infrastructure work including three detention ponds (42,200 sq. ft. total area); 30 deep sump catchbasins with hoods; 1,500 linear feet of stone line drainage swales; and 1,000 linear feet of grass lined drainage swales.

As part of the court decision in the Conservation Law Foundation, Inc. et al. versus Deval Patrick (MassHighway), MassHighway has been exploring three sites that were identified as possibly exceeding water quality standards due to the highway runoff received at the stream crossing. The three sites are:

1. Interstate 495 in Bellingham crossing the Charles River
2. Interstate 495 in Milford crossing the Charles River
3. Interstate 190 – Lancaster crossing the North Nashua River

MassHighway's consultants have visited the sites to identify the watersheds and existing BMPs and are currently reviewing the need for additional BMPs to provide water quality treatment so that an exceedance no longer occurs. Attached in Appendix I are pages summarizing the progress to date in determining the need for additional BMPs at these sites.

#### **Part IV. Summary of Information Collected and Analyzed**

A draft report regarding data collected to support the Highway Runoff Contaminant Model was recently completed by USGS and is undergoing internal review by MassHighway. This draft report documents concentrations of selective dissolved major ions, total nitrogen and phosphorus, selective total-recoverable metals, suspended sediment, and semi-volatile compounds measured in flow-weighted composites of stormwater collected from common highway-drainage conveyance structures for eight highways in Massachusetts during a two-year monitoring period. The draft report discusses the relation between populations of concentration data for the respective constituents among the 12 highway-monitoring stations and to annual average daily traffic volumes. The report also presents methods used to estimate event-mean concentrations for deicing elements from continuous records of flow and specific conductance, and to calculate planning-level estimates for various constituents affiliated with suspended sediment. The data presented in this report will be integrated in the Highway-Runoff Database (HRDB Version 1.0.0a) which serves as a preprocessor for the Stochastic Empirical Loading and Dilution Model (SELDM) currently being developed for the Federal Highway Administration.

#### **Part V. Program Outputs & Accomplishments (OPTIONAL)**



MassHighway's accomplishments during the sixth permit year are summarized in Part 1- 4 of this annual report.

**Appendix A: River and Stream Signs Installed in Permit Year 6**

**River and Stream Crossing Signs Installed by MassHighway during Permit Year 6**

<b>Road</b>	<b>River</b>	<b>Town</b>
Route 8	East Branch Housatonic River	Hinsdale
Route 8	East Branch Housatonic River	Dalton
Route 8	Yokum Brook	Becket
Route 8	West Branch Farmington River	Otis
Route 8	West Branch Farmington River	New Boston
Route 8	West Branch Farmington River	Sandisfield
Route 20	East Brook	Brimfield
Route 116	South River	Ashfield
Route 116	South River	Conway
Route 5/Route 10	Running Gutter Brook	West Hatfield
Route 103	Cole River	Swansea
Route 7	Konkapot River	Sheffield
Route 7A	Konkapot River	Sheffield
South Road	Tiasquam River	Chilmark/West Tisbury
Edgartown Road	Mill Brook	West Tisbury
State Road	Mill Brook	West Tisbury
Route 25	Agawam River	Wareham
Route 25	Wankinco River	Wareham
Route 2	Otter River	Gardner
Route 28	Shawsheen River	Andover

**Appendix B: Design Public Hearings Table**

**List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009**

<b>City/Town</b>	<b>Date</b>	<b>Description</b>
<b>Apr-2008</b>		
Westford	4/15/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed intersection improvement project at Route 110 (Littleton Road) and Powers Road in Westford, MA.
Nantucket	4/17/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Nobadeer Farm Road Bike Path project in Nantucket, MA
Oak Bluffs	4/29/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Lake Ave and Oak Bluffs Ave resurfacing project in Oak Bluffs, MA.
Winchendon	4/29/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Multi-Use Trail Construction of the North Central Pathway – Phase V project in Winchendon, MA.
Dedham	4/30/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Washington Street project, from the Boston city line to Washington Circle, in Dedham, MA.
<b>May-2008</b>		
Wellesley	5/1/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Rockland Street Bridge Rehabilitation project in Wellesley, MA.
Hubbardston	5/5/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Resurfacing of Route 62 (Old Turnpike Road) in Hubbardston, MA.
Lawrence	5/5/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Hampshire Street over the Spicket River bridge replacement project in Lawrence, MA
Chesterfield	5/6/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of East Street in Chesterfield, MA.
New Bedford	5/7/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of Hawthorn Street project in New Bedford, MA.
Dennis	5/8/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed signal and intersection improvement project along Route 28 @ Route 134 in Dennis, MA.

## List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009

City/Town	Date	Description
Boston	5/13/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction and Improvement of Museum Road and Forsyth Way project in Boston, MA.
Middleborough	5/14/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Route 44 Traffic Signals and Roadway Improvements project at four locations in Middleborough, MA.
Boston	5/20/2008	A Public Hearing will be held by the Executive Office of Transportation and Public Works to discuss the promulgation of regulations and guidelines pursuant to Section 10 of Chapter 86 of the Acts of 2008.
Gardner	5/28/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed project to replace the bridge on Mill Street over Baker Brook in Gardner, MA.
Whately	5/28/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed replacement of Bridge No. W-33-009, at Haydenville Road over West Brook in Whately, MA.
Mansfield	5/29/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Route 140 and I-495 (Southbound) on-ramp construction in Mansfield, MA.
<b>Jun-2008</b>		
Amherst	6/16/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of Route 116 project in Amherst, MA.
Boston/Winthrop	6/16/2008	Belle Isle Inlet at Saratoga Street (Route 145) in the City of Boston and Main Street in the Town of Winthrop, MA.
Barnstable	6/18/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Landscape and Roadside Improvements to Route 132 from Route 6 to Bearses Way project in Barnstable, MA.
Norwood	6/18/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Pleasant Street and Morse Street Intersection Improvements and Signalization project in Norwood, MA.
Salisbury	6/19/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Salisbury Rail Trail project in the Town of Salisbury, Massachusetts.
Dartmouth	6/24/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Dartmouth Street project in Dartmouth and New Bedford, MA.
Boston	6/25/2008	Review of draft regulations on the use of Flaggers and Police Details on public works projects.

## List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009

City/Town	Date	Description
Boston/Hyde Park	6/26/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed River Street Bridge Replacement project in the Hyde Park Neighborhood of Boston, Massachusetts.
Lawrence	6/26/2008	A Public Information Meeting will be held by MassHighway to discuss the Reconstruction of Canal Street, including the replacement of Canal Street bridge over Spicket River in Lawrence, MA.
<b>Jul-2008</b>		
Pittsfield	7/9/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Intersection Improvements at West Street and Center Street in Pittsfield, MA.
Hanover	7/15/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of Route 116 project in Amherst, MA.
Lexington	7/17/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Route 2A (Marrett Road) over Route 128/I-95 Bridge Replacement project in the Town of Lexington, Massachusetts.
Salem	7/24/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of Bridge Street project in Salem, MA.
Belmont	7/28/2008	Corridor Improvements project in Belmont, Waltham, and Watertown, MA.
<b>Aug-2008</b>		
Springfield	8/7/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Streetscape, Sidewalk and Roadway Improvements in the North End and Brightwood Area of Springfield, MA.
Agawam	8/13/2008	conjunction with MassHighway, to discuss the need for repairs to the Morgan/Sullivan Bridge (Route
Barnstable/Hyannis	8/13/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Signal & Intersection Improvements On Route 28 at 3 Locations Project in Barnstable, MA.
West Brookfield	8/21/2008	A Design Public informational meeting will be held by MassHighway to discuss the proposed replacement of the Long Hill Road Bridge over the CSX Railroad in West Brookfield, MA.
Maynard	8/27/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Bridge Replacement, Route 27 (Waltham St.) over the Assabet River project in Maynard, MA.

## List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009

City/Town	Date	Description
<b>Sep-2008</b>		
Boston	9/15/2008	A Public Hearing will be held by the Executive Office of Transportation and Public Works on a draft of the regulations proposed to be promulgated pursuant to Section 10 of Chapter 86 of the Acts of 2008.
Brimfield/Palmer	9/16/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed King's Bridge replacement project in Brimfield-Palmer, MA.
Gardner	9/17/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Travers Street bridge replacement project in Gardner, MA.
Milford	9/17/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Signal & Intersection Improvements In Several Locations Along Route 16 in Milford, MA.
Millis	9/30/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed replacement of the Pleasant Street Bridge over the Charles River in Millis, MA. (Project File #601667)
<b>Nov-2008</b>		
Amesbury	10/1/2008	A Public Information Meeting will be held by MassHighway to discuss the rehabilitation of the Derek S. Hines Memorial Bridge which carries Main Street over the Merrimack River in Amesbury, MA.
Attleboro	10/20/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Replacement of North Main Street Bridge project in the City of Attleboro, MA.
Marlborough	10/21/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Reconstruction of Farm Road in Marlborough, MA.
Northampton	10/21/2008	A Design Public Hearing will be held by MassHighway (Project File No. 603729) to discuss the proposed River Road over Mill River bridge replacement project in the City of Northampton, MA.
Southbridge	10/22/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Route 169 ( N. Woodstock Rd) Rehabilitation in Southbridge, MA.
Royalston	10/23/2008	A Design Public Hearing will be held by MassHighway (project # 604220) to discuss the proposed Pavement Reclamation of Route 32 project in Royalston, MA.
Acton	10/29/2008	A Design Public Hearing will be held by MassHighway (Project File No. 604532) to discuss the proposed Bruce Freeman Rail Trail (BFRT), Phase 2A project, in the Towns of Acton, Carlisle and Westford, Massachusetts.

## List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009

City/Town	Date	Description
Falmouth	10/29/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Chapoquoit Road over West Falmouth Harbor bridge replacement project in the Town of Falmouth, MA.
<b>Nov-2008</b>		
Medford	11/5/2008	A Design Public Hearing will be held by MassHighway (Project File No. 605122) to discuss the proposed Reconstruction of Clippership Drive in Medford, MA.
Belchertown	11/19/2008	A Design Public Hearing will be held by MassHighway (Project File No. 604433) to discuss the proposed Route 181 Reconstruction and Minor Widening project in Belchertown, MA.
Brockton	11/19/2008	A Design Public Hearing will be held by MassHighway (project #600365) to discuss the proposed resurfacing and related work on a section of Route 27 (Pleasant Street and Crescent Street).
<b>Dec-2008</b>		
Cheshire	12/2/2008	A Design Public Hearing will be held by MassHighway (project# 604166) to discuss the proposed replacement of the Harbor Road Bridge over the Hoosic River project in Cheshire, MA.
North Easton	12/2/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed reconstruction project at Rte. 106 and Rte. 123 (Five Corners) in Easton, MA.
Nantucket	12/16/2008	A Design Public Hearing will be held by MassHighway (project #604286) to discuss the Cliff Road Bicycle Path construction project in Nantucket, MA.
Amesbury	12/17/2008	A Design Public Hearing will be held by MassHighway to discuss the proposed Route 110 Improvement project in Amesbury and Salisbury, MA.
<b>Jan-2009</b>		
West Springfield	1/6/2009	A Design Public Hearing will be held by MassHighway (Project File No. 604737) to discuss the proposed Reconstruction of Westfield Street (Route 20) Project in West Springfield, MA.
Tewksbury	1/12/2009	A Design Public Hearing will be held by MassHighway to discuss the proposed Improvements at the Intersection of East Street and Livingston Street in Tewksbury, MA.

## List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009

City/Town	Date	Description
Marlborough	1/14/2009	A Design Public Hearing will be held by MassHighway (project #604811) to discuss the proposed Reconstruction of East Main Street project in Marlborough, MA.
Worcester	1/21/2009	A Design Public Hearing will be held by MassHighway (Project File No. 604473) to discuss the proposed North Main Street Gateway Area Improvements in Worcester, MA.
<b>Feb-2009</b>		
Newburyport	2/17/2009	A Design Public Hearing will be held by MassHighway (project #605022) to discuss the proposed expansion of the Park and Ride facility on Route 113 in the City of Newburyport.
South Weymouth	2/25/2009	the Widening of Route 18 in Weymouth and Abington, MA.
<b>Mar-2009</b>		
Holden	3/3/2009	A Design Public Hearing will be held by MassHighway (project #604675) to discuss the proposed replacement of the River Street Bridge over Quinapoxet River (Bridge No. H-18-020(1FY)) in Holden, Massachusetts.
Freetown	3/4/2009	A Public Meeting will be held by MassHighway to present the Environmental Assessment/Final Environmental Impact Report/Draft Individual Section 4(f) Evaluation for the Route 24 Access Improvements Project - Interchange 8-1/2 in Freetown and Fall River, MA.
Easthampton	3/11/2009	A Design Public Hearing will be held by MassHighway (Project #602486) to discuss the proposed Intersection Improvement Project @ Pomeroy Meadow Road, Loudville Road, Glendale Street, and West Street in Easthampton.
Otis	3/16/2009	A Design Public Hearing will be held by MassHighway (Project #604263) to discuss the proposed replacement of Bridge No. O-05-005, at Reservoir Road over the West Branch of the Farmington River in Otis, MA.
West Brookfield	3/19/2009	A Design Public Hearing will be held by MassHighway (Project File No. 601796) to discuss the proposed replacement of the Long Hill Road Bridge over the CSX Railroad in West Brookfield, MA.
North Adams	3/29/2009	A Design Public Hearing will be held by MassHighway (Project #605072) to discuss the proposed Downtown Streetscape Improvements in North Adams, MA.

**List of public hearings posted on the MHD web site from 4/1/2008 to 3/31/2009**

<b>City/Town</b>	<b>Date</b>	<b>Description</b>
Holyoke	3/31/2009	A Design Public Hearing will be held by MassHighway (Project #602925) to discuss the proposed Pleasant Street Rehabilitation Project in Holyoke, MA.
Shrewsbury	3/31/2009	involving Route 9 (Belmont Street) over Lake Quinsigamond in Shrewsbury/Worcester, MA.

**Appendix C: Permits Issued/Denied/In Process as of Permit Year 6**

District #	Permit #	Date Issued	Town	Road	Direct and Indirect Flow	Issue	Storm Water Only?
1			Becket	Rte. 8	Indirect	Overland flow from property encroaching onto State Highway. Businesses connected an 8 inch pipe into a new manhole with controlled flow and upgrade 12 inch pipe crossing to 18 inch pipe. <b>Permit Issued.</b>	
1			Blandford	Rte. 23	Indirect	Overland flow from property encroaching onto State Highway. Homeowner constructed new DI, on line and connected sub-drain pipe into new DI thereby eliminating overland flow. <b>Permit Issued.</b>	Exempt non-sw discharge
1			Williamstown	Rte. 2	Direct	Overland flow from a 2 in. PVC pipe from a sump pump, encroaching on State Highway. District 1 sent a letter from the Dept. stating that pipe must be removed from releasing water onto the State Highway, Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become the business's responsibility. <b>Owner removed the pipe.</b>	No
1			Lee	Rte. 20	Direct	Overland flow from a 2 in. PVC pipe from a cellar drain encroaching on State Highway. A letter from the Dept. stating that the pipe must be removed from releasing water onto the State Highway. Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become the homeowner responsibility. <b>Owner removed the pipe.</b>	No
1			Ashfield	Rte. 116		Underground 3 in. PVC pipe tied into an existing catch basin from homeowners' property. <b>A letter from the Department is being processed.</b> The letter states that this is an illicit connection and that they are in violation of Chapter 81, Section 21 of Massachusetts General Laws. The connection should be removed and that it is the landowner responsibility to apply for and receive a MassHighway tie in permit	Unknown
1			Great Barrington	105 Stockbridge Road; Rte. 102		Property releasing water from a cellar pump with a 3 in. PVC pipe onto the State Highway. <b>A letter from the Dept. is being processed.</b> The letter states that pipe must be removed from releasing water onto the State Highway. Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become their responsibility.	No

District #	Permit #	Date Issued	Town	Road	Direct and Indirect Flow	Issue	Storm Water Only?
2	2-2007-0189	4.3.08	Wilbraham	Rte 20	Indirect	Detention basin overflow	
2	2-2007-0603	12.30.07	Chicopee	under I-391	Indirect	Drain pipe within State Highway Lay Out (SHLO) to rip rap protected slope to City's Canal	
2	2-2007-0478	10.4.07	Belchertown	Rte 9	Indirect	Rip rap overflow from OCS	
2	2-2006-0575	10.22.07	Northampton	Rte 5/10	Direct	Flow via OCS & SWTC to CB, but all 10-yr plus overflow from detention basin and 50% flow reduction beyond 10-yr event	
2	Letter sent	1.30.07	Ware	Rte 9	Indirect	<b>Letter sent to residence</b> regarding need to apply for permit. Flow & sediment affecting SHLO, unpaved wrong grading (Cons Comm copied).	
2	Letter sent	1.30.07	Northampton	Rte 5/10	Indirect	<b>Letter sent to residence</b> regarding direct discharge via 3" plastic pipe directed onto SHLO.	
2	Letter sent	3.27.07	Palmer	Rte 67	Indirect	<b>Letter sent to residence</b> regarding flow & sediment from driveway clogging MassHighway drain inlet (Cons Comm copied).	
2	Letter sent	8.13.07	Holyoke	I-91NB	Indirect	<b>Letter sent to business</b> regarding direct discharge from 18" pipe at lay out line with potential downstream concerns at I-91 cross culvert, from excess flow (Cons Comm copied).	
2	Letter sent	8.16.07	Orange	Rte 122	Indirect	<b>Letter sent to residence</b> regarding direct discharge from 4" pipe from direction of abutter house and into drain inlet (Town Administrator copied).	
2	Letter sent	12.27.07	Holyoke	Rte 5	Indirect	<b>Letter sent to residence</b> regarding sediment from edges of steep driveway clogging CB (Cons Comm copied).	
2	Letter sent	12.24.07	Agawam	Rte 159	Indirect	<b>Letter sent to Six Flags</b> regarding parking lot surface drainage entering NB shoulder and traveled way then into CB via paved water way (PWW) to driveway.	

District #	Permit #	Date Issued	Town	Road	Direct and Indirect Flow	Issue	Storm Water Only?
5	5-2008-0059	N/A	Walpole	Walpole Mall Rte 1	Direct	Existing direct discharge. Mall is working to amend and include improved BMPs. <b>Re-permitted</b>	Yes
5	5-2007-0591	N/A	Taunton	Rt 140		Not Issued – Still In Process. Legible plans are still needed. No reply from the owner.	
5	5-0043-2007	N/A	Stoughton	Rte 138		Part of MEPA mitigation plan that is at 25% Design. Not Issued – Still In Process	
5	5-2008-0136	N/A	Harwich	Rte 28	Indirect	Request for tie-in from overflow during 100 year storm. The request was denied. Detention basins were created which may overflow onto MHD property during the 100 year storm. Permit issued for possible indirect flow.	Yes

**Appendix D: Potential Illicit Discharges/Connections as of Permit Year 6**

Potential Illicit Connections/Discharge as of Permit Year 6

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Dracut	Oily sheen present	Drainage Inventory Consultant (ENSR)	Southern side of Rt. 110 (Merrimac Ave), halfway between Stuart Street and York Street	Yes	<p>The site survey and investigation of the questionable MassHighway outfall was performed on May 8th, 2007 during dry weather conditions. The drainage feature consisted of a 15” cast iron projecting pipe and a catch basin in the shoulder of the eastbound lane. There were no apparent connections or discharges noted at the site at the time of the inspection.</p> <p>Since the consultant’s staff did not observe flow, sampling activities were not conducted and no further investigation is warranted.</p>
Dracut	Oily sheen present	Drainage Inventory Consultant (ENSR)	Southern side of Rt. 110, across the road from York Street	Yes	<p>The site survey and investigation of the questionable MassHighway outfall on May 8th, 2007. The drainage feature consisted of a 15” PVC projecting pipe, three catch basins in the shoulder of the westbound lane, and three manholes. During the inspection, there was a discharge observed at the site. The sample results demonstrate a high level of specific conductance, which could potentially be explained by the de-icing of Route 110 by road salt. Considering the volume of late-spring snow events, it is not unlikely that some amount of road salt would be discovered in highway runoff. All other parameters analyzed were non-detects.</p> <p>Based on the sample results and the visual review of the area, we feel that the dry weather discharge is most likely from groundwater intrusion into the drainage system and no further action is warranted.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Dracut	Oily sheen present	Drainage Inventory Consultant (ENSR)	Southern side of Rt. 110, across the road from Steward Street	Yes	<p>The site survey and investigation of the questionable MassHighway outfall was performed on May 8th, 2007. The drainage feature consisted of a 15” cast iron projecting pipe, four catch basins in the shoulder of the westbound lane, two catch basins in the shoulder of the eastbound lane, and two manholes. During their review, there was a discharge observed at the site. The sample results demonstrate a high level of specific conductance, which could potentially be explained by the de-icing of Route 110 by road salt. Considering the volume of late-spring snow events, it is not unlikely that some amount of road salt would be discovered in highway runoff. All other parameters analyzed were non-detects.</p> <p>Based on the sample results and the visual review of the area, we feel that the dry weather discharge is most likely from groundwater intrusion into the drainage system and no further action is warranted.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Haverhill	White foam present	Drainage Inventory Consultant (ENSR)	I-495 South on-ramp at Exit 48 (Rt. 125 Connector)	Yes	<p>The site survey and investigation of the questionable MassHighway outfall in Haverhill was performed on May 9th, 2007. The outfall was on the eastern side of the ramp, down a steep embankment. The drainage feature consisted of a reinforced concrete headwall with an 18” opening and two catch basins. There was a discharge observed at the site at the time of the inspection. The outfall in question was discharging directly into a larger water feature at the bottom of the embankment. There was a cloudy, white precipitate observed directly below the outfall. The sample results demonstrate a high level of specific conductance, which could potentially be explained by the de-icing of the on-ramps to I-495 by road salt. Considering the volume of late-spring snow events, it is not unlikely that some amount of road salt would be discovered in highway runoff. The pH level (6.2) was also outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). All other parameters analyzed were non-detects.</p> <p>District 4 staff will follow-up with a site visit and perform a more thorough inspection of the entire contributing drainage system. Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Billerica	Oily sheen and garbage present	Drainage Inventory Consultant (ENSR)	Boston Rd (3A), if driving northbound, on left hand side	Yes	<p>The site survey and investigation of the questionable MassHighway outfall in Billerica on Rt. 3A (Boston Road) was performed on May 8th, 2007 during dry weather conditions. The drainage feature consisted of a culvert, a paved waterway on both sides of Route 3A, and a drainage manhole in the middle of the road. This outfall was brought to our attention as a possible illicit discharge during ENSR’s drainage inventory. The staff noted an oily sheen and garbage present at the outfall. There were no apparent connections or discharges noted at the site at the time of the inspection.</p> <p>There was also no flow from the discharge; therefore sampling activities were not conducted. No further action required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Rowley	Catch basin with two hoses hooked into it	Drainage Inventory Consultant (ENSR)	Main Street (Rt. 1A) Catch Basin location	Yes	<p>Reviewed on May 9, 2007, staff noted several garden-type hoses hooked into a catch basin. A black 1” flexible hose protruded from the foundation of the residence at 215 Main Street. . There was no discharge observed at the time of the inspection. Since there was no discharge observed, the field crew was not able to pursue sampling activities. The outfall for this catch basin could not be located; however the catch basin was dry. There was visual evidence to suggest that the hose had been flowing in the past.</p> <p>District 4 Permit Engineer will visit the site and send a certified letter to 215 Main Street as required by the Drainage Connection Policy requiring the homeowner to take appropriate action. Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Winchester	Inventory staff noted a large gauge electric cable and a 1” black pipe projecting from the outfall	Drainage Inventory Consultant (ENSR)	Cambridge St.(Rt. 3), sw side of Robinson Circle, directly behind the residence at #14; discharging into Upper Mystic Lake	Yes	<p>The site survey and investigation of the questionable MassHighway outfall was performed on May 8th, 2007. The drainage feature consisted of a 15” clay projecting pipe and a series of catch basins across Rt. 3. During the review, the cable and pipe were still present and there was a discharge from the outfall. The hose/ wire observed was assumed to be an intake pump, however this was not confirmed with the homeowner. Upon following the catch basins across Rt. 3, the field crew identified a small brook that was running across/ under Fernway St., and down a large hill. It was assumed that the flow observed from the outfall was in fact a stream that had been diverted underground; however the crew took a sample of the outfall for analysis.</p> <p>The sample results demonstrate a high level of specific conductance, which could potentially be explained by the de-icing of Route 3 and local roads by road salt. Considering the volume of late-spring snow events, it is not unlikely that some amount of road salt would be discovered in highway runoff. The sample also returned elevated fecal coliform levels. The pH level (8.8) was also outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). All other parameters analyzed were non-detects.</p> <p>Site was visited again on March 30, 2009 by District 4 staff. MassHighway staff was not able to tell if there is an easement on to the private property where the discharge pipe is located or if the discharge pipe is owned by the Town of Winchester. MassHighway is reviewing site plans for that section of road. If the discharge pipe is owned by MassHighway then District 4 will follow up with a letter to the property owner requiring removal of the irrigation piping. If the pipe is owned by Winchester, District 4 will notify the town of the issue.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Manchester	Culvert with suspected drainage tied in	Drainage Inventory Consultant (ENSR)	Bridge Street (Rt. 127)	Yes	<p>The site survey and investigation of the questionable MassHighway outfall was performed on May 9th, 2007 during dry weather conditions. The drainage feature consisted of a catch basin in the shoulder of Rt. 127 directly connected to an outfall pipe that discharges into the creek. There are identical features on the north and south side of Rt. 127. There were no apparent connections or discharges noted at the site at the time of the inspection.</p> <p>Since the consultant’s staff did not observe flow, sampling activities were not conducted and no further investigation is warranted.</p>
Chelsea	Route 1 behind Home Depot, MyRWA Outfall 1342	Mystic River Watershed Assoc.	Constructed wetland, Northern end of HD parking lot	Yes	<p>The drainage feature consisted of a concrete headwall that discharges into the wetland, two catch basins on the Route 1 on/off-ramps, and a manhole on the southern side of the northbound Rt. 1 off-ramp for Route 16. This outfall was brought to MassHighway’s attention as a possible illicit discharge by the Mystic River Watershed Association (MyRWA). This outfall had exceeded the proposed secondary contact standards for Enterococcus spp. There were no apparent connections or discharges noted at the site at the time of the inspection.</p> <p>Since the consultant’s staff did not observe flow, sampling activities were not conducted.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Revere	Route 1 discharging to Mill Creek, MyRWA Outfall 1338	Mystic River Watershed Assoc.	Off Northeast Expressway (Rt. 1) near Fenno St. (below Route 1)	Yes	<p>The site survey and investigation was performed on May 8th, 2007 during dry-weather conditions. The drainage feature consisted of a broken 15” corrugated metal pipe, a concrete headwall, a manhole, and two catch basins in the shoulder of the southbound lane of Route 1. According to MyWRA, this outfall had exceeded the proposed secondary contact standards for <i>Enterococcus spp.</i> There was a discharge observed at the site at the time of the inspection.</p> <p>The sample results demonstrate a high level of specific conductance, which could potentially be explained by the de-icing of Route 1 by road salt. The suspended solids identified could also be attributed to the presence of road salt/ sand. Considering the volume of late-spring snow events, it is not unlikely that some amount of road salt would be discovered in highway runoff. Fecal coliform results were non-detect, signifying a continuing decrease in bacteria concentrations at this outfall.</p> <p>The District crews will review the upstream drainage system in more detail to rule out the possibility of illicit connections. A site visit is being scheduled. Robert Bennett, MassHighway stormwater coordinator, will follow up with District 4 to determine a site visit schedule by the end of May 2009.</p>
Saugus	Pipes attached to a house	Drainage Inventory Consultant (ENSR)	Salem Turnpike (Rt. 107) at Ballard Street	Yes	<p>The site survey and investigation was performed on May 8th, 2007 during dry weather conditions. The drainage feature consisted of a projecting concrete pipe, a catch basin on the western side of Rt. 107, and a drainage manhole on the Porter’s Seafood Property. It appeared that a portion of the outfall pipe had broken and cracked off.</p> <p>Since the consultant’s staff did not observe flow, sampling activities were not conducted and no further investigation was determined needed.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Brookline	Roger requested MH determine if they own. Discharge #566, 567 and 568 per Mr. Frymire	Roger Frymire, email dated 12/27/06	Jamaicaway, near Willow Pond	No	The Jamaicaaway abuts the pond to the east and Willow Pond Road to the north. Both of these roads are owned by DCR. MassHighway’s drainage inventory in this area, which relied upon inventory performed by the Town of Brookline along Route 9, indicated that the drainage from Route 9 discharges approximately 0.4 miles to the north of Willow Pond. Therefore, the discharge in question is most likely owned by DCR. Letter sent by MassHighway to Roger Frymire dated June 20, 2007 with this information.
Watertown	East end of California Street @ Rt. 16, Discharge #573 per Mr. Frymire	Roger Frymire, email dated 12/27/06	Outfall of note just to ID ownership	No	Environmental consultant (ENSR) reviewed the bridge drainage during recent field work activities and ascertained that that the bridge does not drain to the outfall at the east end of California Street. Based on the physical location of the outfall and the ownership of California Street, this outfall is likely owned/ maintained by the Town of Watertown. Letter sent by MassHighway to Roger Frymire dated June 20, 2007 with this information.
Newton	Cheesecake Brook, possible tie-ins. Roger requesting MH determined ownership.	Roger Frymire, email dated 12/27/06	Appears to be from MassPike.	No	There are no MassHighway roads in this area and it appears that the discharge is from MassPike. Letter sent to from MassHighway Roger Frymire dated June 20, 2007 with this information.
Lanesboro	Brown stain in ice at discharge and petroleum odor during discharge inventory. No evidence of oil in review of surface runoff leading to discharge.	Larry Salvatore (MHD)	On Route 8, across from D.R. Billings Construction Co.	Yes	Review by District 1 and DEP identified no illicit connection.

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Lee	MassHighway identified #2 fuel oil in catch basins during routine work	Contractor	Route 20, vicinity of 135 Housatonic St.	Yes	Lee Fire Department responded and padded storm drain. MassHighway contracted with Clean Harbors to clean out structures and pipes were flushed and collected with vacuum truck. Lee Fire Dept checked adjacent residences but no one indicated any oil releases. No source identified. Booms also placed at discharge point. DEP Release Form completed and submitted.
Lee		District 1		Yes	Overland flow from a 2 in. PVC pipe from a cellar drain encroaching on State Highway. A letter from the Dept. stating that the pipe must be removed from releasing water onto the State Highway. Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become the homeowner responsibility. Owner removed the pipe.
Great Barrington		District 1	105 Stockbridge Road; Rte. 102	Yes	Property releasing water from a cellar pump with a 3 in. PVC pipe onto the State Highway. A letter from the Dept. is being processed. The letter states that pipe must be removed from releasing water onto the State Highway. Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become their responsibility. Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.
Williamstown		District 1		Yes	Overland flow from a 2 in. PVC pipe from a sump pump, encroaching on State Highway. District 1 sent a letter from the Dept. stating that pipe must be removed from releasing water onto the State Highway. Failure to comply with the Dept. request will necessitate the removal and all costs incurred will become the business's responsibility. Owner removed the pipe.

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Ashfield		District 1		Yes	<p>Underground 3 in. PVC pipe tied into an existing catch basin from homeowners' property. A letter from the Department is being processed. The letter states that this is an illicit connection and that they are in violation of Chapter 81, Section 21 of Massachusetts General Laws. The connection should be removed and that it is the landowner responsibility to apply for and receive a MassHighway tie in permit.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Ware		District 2	Route 9	Yes	<p>Letter sent to residence regarding need to apply for permit on 1/30/07. Flow &amp; sediment affecting SHLO, unpaved wrong grading (Cons Comm copied).</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Northampton		District 2	Route 5/10	Yes	<p>Letter dated 1/30/07 sent to residence regarding direct discharge via 3" plastic pipe directed onto SHLO.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Palmer		District 2	Route 67	Yes	<p>Letter dated 3/27/07 sent to residence regarding flow &amp; sediment from driveway clogging MassHighway drain inlet (Cons Comm copied).</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Holyoke		District 2	I-91NB	Yes	<p>Letter dated 8/13/07 sent to business regarding direct discharge from 18” pipe at lay out line with potential downstream concerns at I-91 cross culvert, from excess flow (Cons Comm copied).</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Orange		District 2	Rte 122	Yes	<p>Letter dated 8/16/07 sent to residence regarding direct discharge from 4” pipe from direction of abutter house and into drain inlet (Town Administrator copied).</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Holyoke		District 2	Rte 5	Yes	<p>Letter dated 12/27/07 sent to residence regarding sediment from edges of steep driveway clogging CB (Cons Comm copied).</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Agawam		District 2	Route 159	Yes	<p>Letter dated 12/24/07 sent to Six Flags regarding parking lot surface drainage entering NB shoulder and traveled way then into CB via paved water way (PWW) to driveway.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Taunton	Potential illicit drainage tie-in	District 4	Route 123 (West Main Street) in front of house 283	Yes	<p>Letter sent to homeowner on September 17, 2007 giving homeowner 90 days to either discontinue the tie-in or apply for a permit to tie-in to the MassHighway drainage system. If homeowner does not respond within the time frame, the matter will be referred to the State Attorney General's office.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>
Norton		District 5	283 West Main Street	Yes	<p>MassHighway sent an enforcement letter to the homeowner indicating that the illegal tie-in needed to be removed or the homeowner needed to apply for a permit. Owner sent letter dated 10/27/07 requesting a permit to tie-in to state drainage. MassHighway will send permit application and invite owner to meeting with District 5 to discuss tie-in.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Belmont/ Arlington	Elevated bacteria levels	MyRWA	Route 2 discharge at Spy Pond	Yes	<p>The Mystic River Watershed Association performed water quality testing of an outfall from Route 2 to Spy Pond in 2007. The results from this event suggested a potentially harmful bacterial level in the stormwater discharge. On February 5th, 2008, MassHighway, Arlington, Belmont and MyRWA met to discuss the issues and develop a plan of action. MassHighway offered to perform a review of their stormwater system as a first step towards identifying the bacteria source(s). MassHighway and its environmental consultant (AECOM Environment) spent the spring and summer identifying the drainage system from scanned construction plans and performing field reviews. On December 9, 2008, MassHighway and AECOM Environment performed an initial illicit discharge investigation. This was considered dry weather sampling as the last precipitation event greater than 0.1 inches occurred on December 1<sup>st</sup>.</p> <p>This preliminary investigation did not reveal a single source for the contamination but instead identified four potential bacterial inputs from Belmont, Arlington and MHD stormwater systems. A memo summarizing the work performed to date is included at the end of this appendix. MassHighway has contact Belmont, Arlington and MyRWA to follow up on the potential inputs and plans to perform additional sampling this spring.</p>
Agawam	Potential CSO Cast iron, 8” diameter, headwall.	Drainage Inventory Consultant (ENSR)	River Road	Yes	<p>MassHighway’s consultant surveyed the outfall on May 30th, 2008 during dry weather conditions. There were no apparent connections or discharges noted at the site at the time of the inspection. Since flow was not observed, sampling activities were not conducted. The river level was low, fully exposing the pipes in question. There was no evidence of suds, sheen, or other indicators to suggest an illicit discharge. Further investigation of this particular outfall is not required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Agawam	Potential CSO	Drainage Inventory Consultant (ENSR)	River Road	Yes	<p>MassHighway’s consultant surveyed the outfall on May 30th, 2008 during dry weather conditions. There were no apparent connections or discharges noted at the site at the time of the inspection. Since flow was not observed, sampling activities were not conducted. The river level was low, fully exposing the pipes in question. There was no evidence of suds, sheen, or other indicators to suggest an illicit discharge.</p> <p>Further investigation of this particular outfall is not required.</p>
Hatfield	Possible illicit discharge	Drainage Inventory Consultant (ENSR)	Under the Route 5/Route 10 Bridge	Yes	<p>The site survey was performed on May 30<sup>th</sup>, 2008. The drainage feature consisted of a 24” concrete pipe and two catch basins located on two corners of the bridge. During the review, there was a steady discharge that was clear, cold, and did not exhibit any discernable odors. A sample of the discharge was collected. The outfall was discharging directly into a large wetland area. The flow appeared to be coming from the drainage system. The surrounding area was very densely populated.</p> <p>The sample results demonstrate a reportable concentration of specific conductance, but below specified action levels. The sample also returned elevated fecal coliform levels. The pH level (6.4) was just outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). All other parameters analyzed were non-detects.</p> <p>After a visual review of the area, the consultant’s staff felt confident that this steady flow was coming from groundwater intrusion within the drainage system. No further action necessary.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Oxford	Consistent flow and algal build-up potential illicit connection	Drainage Inventory Consultant (ENSR)	Southern Side of Route 20 Down a Steep Embankment	Yes	<p>The site survey was performed on May 30<sup>th</sup>, 2008. The drainage feature consisted of a reinforced concrete headwall with a 24” opening. There was a discharge observed at the site. The discharge was cool, had a yellowish/ orange color and had a musty odor. A sample of the discharge was collected.</p> <p>The outfall in question was discharging directly into the French River. There was iron-like staining on the rocks below. There was filamentous, green algal growth observed, similar to the material observed at the time of the last site visit (08/13/2007). The sample results demonstrate a reportable concentration of specific conductance, but well below specified action levels. The sample also returned elevated fecal coliform levels. The pH level (6.3) was just outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). Nitrogen as ammonia was also detected in this sample (0.675 mg/L). All other parameters analyzed were non-detects. There are many businesses in the immediate area of the outfall (including a landscape supply shop).</p> <p>District 3 staff will follow-up with a site visit and perform a more thorough inspection of the entire contributing drainage system. Robert Bennett, MassHighway stormwater coordinator, will investigate a schedule for follow up with District 3 by the end of May 2009.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Worcester	Oily scum on the water surface and an orange discharge	Drainage Inventory Consultant (ENSR)	Southern Side of the Southwest Cutoff Down a Steep Embankment	Yes	<p>The site survey and investigation was performed on May 30<sup>th</sup>, 2008. The drainage feature consisted of a reinforced concrete headwall with an 18” opening. There was a discharge observed at the site. The discharge was a trickle; there was orange staining of the soil, and a petroleum-like odor. A sample of the discharge was collected.</p> <p>The outfall in question was discharging directly into a small stream in a wetland area. The surrounding area was industrialized. There was an oily sheen observed on the soil and water, similar to the material observed at the time of the last site visit (08/13/2007). The sample results demonstrate a reportable concentration of specific conductance, but well below specified action levels. The sample also returned elevated fecal coliform levels. The pH level (5.9) was also outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). Nitrogen as Ammonia was also detected in this sample (0.449 mg/L). Total suspended solids were elevated in this sample. Surfactants were not detected in the sample. There is a heavy commercial/ industrial presence in the immediate area surrounding the outfall.</p> <p>District 3 staff will follow-up with a site visit and perform a more thorough inspection of the entire contributing drainage system. Robert Bennett, MassHighway stormwater coordinator, will investigate a schedule for follow up with District 3 by the end of May 2009.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Northborough	Chlorine odor	Drainage Inventory Consultant (ENSR)	Northern Side of Route 20 (Main St.) Down an Embankment Under the Bridge	Yes	<p>The site survey and investigation was performed on June 3rd, 2008. The drainage feature consisted of a reinforced concrete headwall and a pipe with a 12” opening. At that time, the staff noted flow discharging from the pipe with a chlorine odor. The discharge was clear, cold, and did not have any discernable odor. A sample of the discharge was collected.</p> <p>The outfall in question was approximately three feet above the stream level and discharging directly into the Assabet River. There was a chlorine odor noticed by the staff at the time of sample collection; however this may have been due to a heavy industrial presence in the area. The sample results demonstrate a reportable level of specific conductance, but well below specified action levels. All other parameters analyzed were either non-detects or within specified criteria.</p> <p>Based on the sample results and the visual review of the area, we feel that the dry weather discharge is most likely from groundwater intrusion into the drainage system. No further action is required.</p>
Northborough	Outfall for two 6” PVC pipes – questioned source	Drainage Inventory Consultant (ENSR)	Re-vegetated Swale on the South Side of Route 20 (West Main Street)	Yes	<p>The site survey was performed on June 3rd, 2008. The drainage feature consisted of a catch basin in the shoulder of Rt. 20 and two 6” PVC pipes that emptied into the swale. There were no apparent connections or discharges noted at the site. Since ENSR staff did not observe flow, sampling activities were not conducted. The swale appeared healthy and densely vegetated. There was no evidence of suds, sheen, or other indicators to suggest an illicit discharge.</p> <p>Further investigation of this particular outfall is not required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Marlborough	Dry weather flow	Drainage Inventory Consultant (ENSR)	Southern Side of Rt. 20 (Boston Post Road East) Down an Embankment	Yes	<p>The site survey and investigation was performed on June 3rd, 2008. The drainage feature consisted of a reinforced concrete headwall with an 18” opening, a manhole, and several catch basins on both sides of Rt. 20. During the review, there was a discharge observed at the site. The discharge was clear, cold, and did not have any discernable odor. A sample of the discharge was collected. The outfall in question was discharging directly into Broad Meadow Brook approximately three feet above the stream level. The surrounding area was commercial/ industrial.</p> <p>The sample results demonstrate a reportable concentration of specific conductance, but well below specified action levels. The sample also returned high fecal coliform levels. All other parameters analyzed were either non-detects or within specified criteria. There is a dense commercial presence in the immediate area surrounding the outfall.</p> <p>District 3 staff will follow-up with a site visit and perform a more thorough inspection of the entire contributing drainage system. Robert Bennett, MassHighway stormwater coordinator, will investigate a schedule for follow up with District 3 by the end of May 2009.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Marlborough	Foam at the outfall.	Drainage Inventory Consultant (ENSR)	Southern Side of Rt. 20 (Boston Post Road East) Down an Embankment Alongside a Bridge	Yes	<p>The site survey and investigation was performed on June 3rd, 2008. The drainage feature consisted of a reinforced concrete headwall, several catch basins, and a pipe with a 12” opening. There was a discharge observed at the site. The discharge was clear, cold, and did not have any discernable odor. A sample of the discharge was collected. The outfall was approximately one foot above the stream level and discharging directly into Mawry Brook. The staff observed water in both catch basins presumed to be feeding the outfall. The area surrounding the outfall was heavily wooded.</p> <p>The sample results demonstrate a reportable concentration of specific conductance, but well below specified action levels. The sample also returned elevated fecal coliform levels, however minimal. All other parameters analyzed were non-detects. Based on the sample results and the visual review of the area, we feel that the dry weather discharge is most likely from groundwater intrusion into the drainage system and that no further action is warranted.</p>
Marlborough	Dry weather flow	Drainage Inventory Consultant (ENSR)	Grassy Bank on the South Side of the Rt. 85 Connector (Hudson St.)	Yes	<p>The site survey was performed on June 3rd, 2008. The drainage feature consisted of a catch basin in the shoulder of Rt. 85 and a 24” reinforced concrete pipe with a flared end. The outfall was brought to our attention as a possible illicit discharge during ENSR’s drainage inventory. There were no apparent connections or discharges noted at the site at the time of the inspection. Since ENSR staff did not observe flow, sampling activities were not conducted. The drainage ditch/ streambed was mostly dry and the surrounding area was densely vegetated.</p> <p>There was no evidence of suds, sheen, or other indicators to suggest an illicit discharge. No further action is required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Fitchburg	More than one flowing illicit discharges	Drainage Inventory Consultant (ENSR)	Route 2A (Westminster Street) across the road from Industrial Road.	Yes	<p>The site survey was performed on May 30<sup>th</sup>, 2008. The drainage feature consisted of three 12” cast iron pipes and a drainage wetland across Rt. 2A. There were no visible pipes connecting the wetland to the outfall, but they may have been submerged or buried. During the review, there was a discharge observed at the site. The discharge was clear, cool, and did not exhibit any discernable odors. A sample of the discharge was collected.</p> <p>The sample results demonstrate a reportable level of specific conductance, but well below specified action levels. The pH level (5.7) was also outside the recommended thresholds (typical stormwater discharge pH values range from 6.5 -8.5). A reportable concentration of fecal coliform bacteria was also identified, however it was minimal. Total suspended solids are also well below any specified guidance criteria. All other parameters analyzed were non-detects.</p> <p>Based on the sample results and the visual review of the area, we feel that the dry weather discharge most likely originates from the wetland/ drainage area to the north of the outfall and that no further action is warranted.</p>
Paxton	Severe erosion and several illicit discharges	Drainage Inventory Consultant (ENSR)	Western Side of Rt. 122 (Pleasant St.) Halfway between the driveways of two private residences	Yes	<p>The site survey was performed on May 30<sup>th</sup>, 2008 during dry weather conditions. The drainage feature consisted of a headwall that appears to have collapsed. There were no apparent connections or discharges noted at the site at the time of the inspection. Since the consultant’s staff did not observe flow, sampling activities were not conducted.</p> <p>Further investigation of this particular outfall is not required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Walpole	Possible illicit discharge	Drainage Inventory Consultant (ENSR)	Western Side of Route 1A (Main St.) down an embankment	Yes	<p>The site survey and investigation was performed on June 3rd, 2008. The drainage feature consisted of a reinforced concrete pipe with a 15” opening and several catch basins on both sides of Rt. 1A. There was a discharge observed at the site. The discharge was clear, cold, and did not have any discernable odor. A sample of the discharge was collected.</p> <p>The outfall in question was approximately one foot above the stream level and discharging directly into the Neponset River. There was some orange staining on the rocks below the discharge. The surrounding area was industrialized. The sample results demonstrate a reportable level of specific conductance, but well below specified action levels. Total suspended solids are also well below any specified guidance criteria. All other parameters analyzed were either non-detects or within specified criteria.</p> <p>Based on the sample results and the visual review of the area, we feel that the dry weather discharge is most likely from groundwater intrusion into the drainage system. No further action is required.</p>

Town	Reason Suspected as Potential Illicit Discharge	Identification Source	Location	MassHighway Owns Discharge?	Notes Regarding Review of IDDE
Sandwich	Dry weather flow	Drainage Inventory Consultant (ENSR)	259 Nye Street Adjacent to Route 6-A (Cranberry Highway)	Yes	<p>The site survey was performed on May 14<sup>th</sup>, 2008. The drainage feature consisted of a reinforced concrete headwall with a 12” opening and two catch basins located on RT-6A. The discharge was clear, cool, and did not exhibit any discernable odors. A sample of the discharge was collected.</p> <p>The outfall in question was discharging directly into an unnamed stream/ wetland area behind the residence. The adjacent stream appeared to be clean and relatively trash free. Flow was observed and heard flowing through the catch basins on RT 6-A but a source could not be identified. The sample results demonstrate a reportable level of specific conductance, but well below specified action levels. All other parameters analyzed were either non-detects or within specified criteria.</p> <p>Based on the sample results and the visual review of the area, MassHighway decided that the dry weather discharge is most likely from groundwater intrusion into the drainage system and that no further action is warranted.</p>
Haverhill	Dry weather flow	District Four – Maintenance notified by neighbor complaining of water eroding adjacent property.	Route 110 @ #203 Amesbury Road	No	<p>4” white PVC pipe discharging onto SHLO, discharging water sheet flows onto roadway (concern for icy conditions during winter months). A letter from the Department is being processed. The letter states that this is an illicit connection and that they are in violation of Chapter 81, Section 21 of Massachusetts General Laws. The connection should be removed and that it is the landowner responsibility to apply for and receive a MassHighway tie in permit.</p> <p>Robert Bennett, MassHighway stormwater coordinator, will investigate the connection status by end of May 2009. If potential illicit connection has not been addressed, action will be taken within the next three months.</p>

**To: Spy Pond File**  
**From: Robert Bennett**  
**Subject: Spy Pond Bacteria Investigation**

**Date: February 20, 2009**

The Mystic River Watershed Association performed water quality testing of an outfall from Route 2 to Spy Pond in 2007. The results from this event suggested a potentially harmful bacterial level in the stormwater discharge. On February 5th, 2008, we all met to discuss the issues and develop a plan of action. MassHighway offered to perform a review of their stormwater system as a first step towards identifying the bacteria source(s). MassHighway and its environmental consultant (AECOM Environment) spent the spring and summer identifying the drainage system from scanned construction plans and performing field reviews. On December 9, 2008, MassHighway and AECOM Environment performed an initial illicit discharge investigation. This was considered dry weather sampling as the last precipitation event greater than 0.1 inches had occurred on December 1<sup>st</sup>.

The attached map details the observations and conditions noted during the sampling event - the lines in blue are systems where dry weather flow was observed and the yellow boxes note the bacterial levels found at each sampling location. This preliminary investigation did not reveal a single source for the contamination but instead identified four potential bacterial inputs from Belmont, Arlington and MHD stormwater systems. The remainder of this email discusses each of the bacterial inputs and proposes follow up action.

#### **Belmont**

Station #6 represents flow from the Pleasant Street connection to MassHighway's system. Bacterial levels in this discharge exceeded the primary contact water quality standard of 235 colonies/100 ml. MHD recommends that the Town of Belmont further investigates this system to determine and/or eliminate the source of bacteria.

Station #7 represents flow from the Clifton Street connection. The bacteria counts at this location were the highest observed in the system and exceed the primary and secondary contact water quality standard (1260 col/100 ml). MHD was not able to field locate the downstream connection of this system and therefore could not verify that this flow discharges into the MHD system draining to Spy Pond. MHD recommends that the Town of Belmont investigates this discharge to determine the downstream connection and identify/eliminate the source of bacteria.

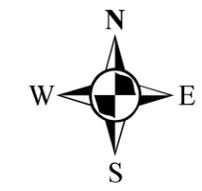
#### **MHD/Arlington**

A high bacterial count was noted at Station #2 on the Route 2 Frontage Road, however, upstream sampling at Station #3 only showed 2 colonies/100 ml. In the Arlington's IDDE activities, had they identified any illicit connection in this area? MHD recommends that the Town of Arlington review their drainage system in the Spring Street neighborhood

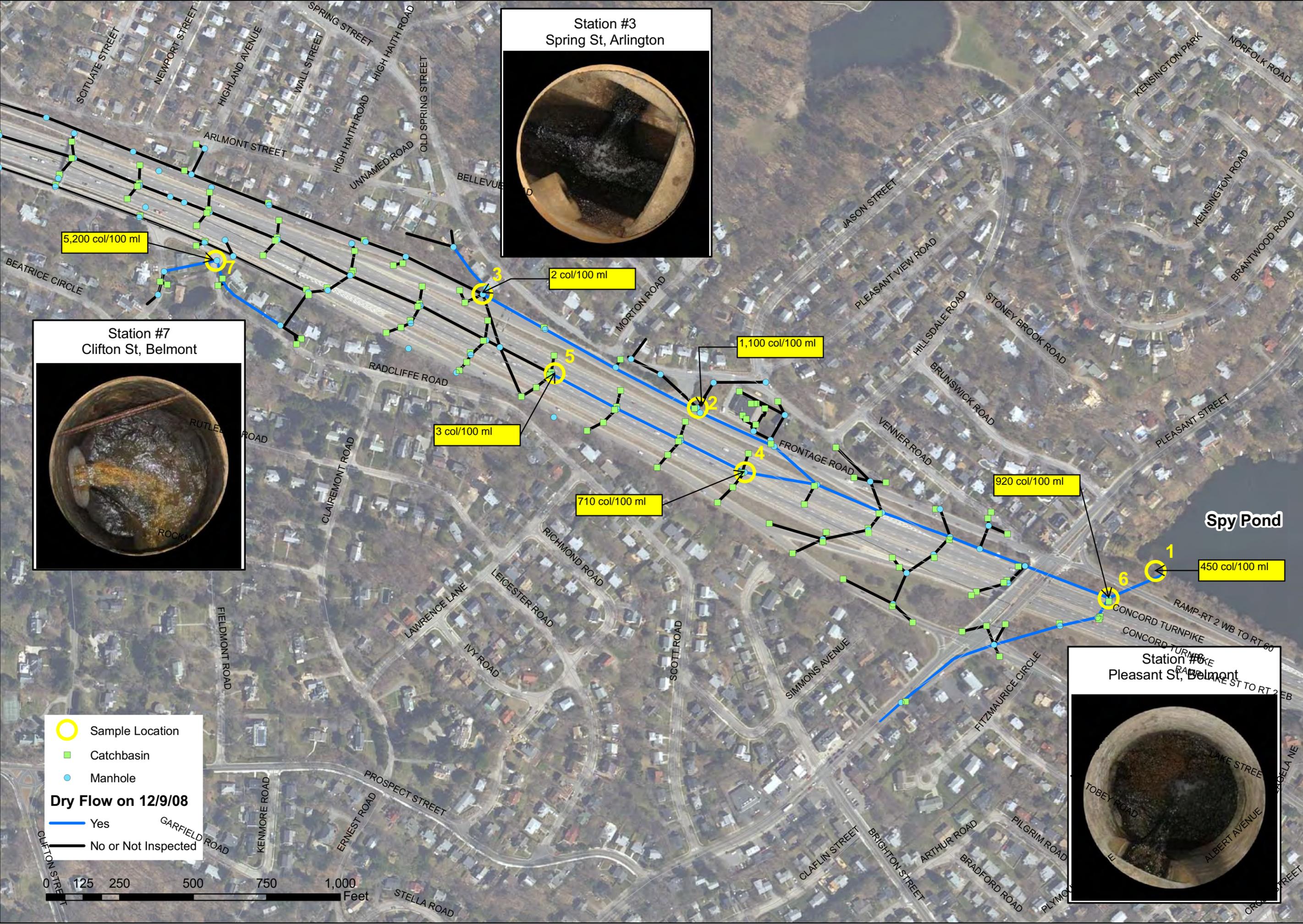
and investigate the system for possible illicit discharges. MHD will also further investigate the stormwater system along the Frontage Road in the spring to determine if there is an illicit connection between the two stations and notify the Town of Arlington of the results.

**MHD**

High bacterial levels were also noted in the Route 2 trunkline at Station #4. The system layout did not coincide with MHD file plans and conditions in the stormwater features prevented further field investigation upstream of Station #5. MHD will perform routine maintenance of the catchbasins along the Route 2 median and re-visit the trunkline to obtain an accurate layout of the stormwater system and potentially determine the source of the flow this spring.



MassHighway Drainage System  
Along Route 2 to 54 Inch Outfall at Spy Pond  
Arlington, Massachusetts



- Sample Location
  - Catchbasin
  - Manhole
- Dry Flow on 12/9/08**
- Yes
  - No or Not Inspected

0 125 250 500 750 1,000 Feet

Spy Pond

**Appendix E: Maintenance Schedule Summary**

**Summary of Compliance with Maintenance Matrix - Statewide Permit Year 6**

							Permit Year 6 Statewide	
Drainage Asset	Area/ Note	Activity Schedule					Was Schedule Met?	Comments
		Mow	Sweep	Inspect	Clean	Repair		
Roads	Maintenance Facilities/ Material Storage Yards	Annually	ANI	Annually	--	ANI	Yes	Some districts use HazMat coordinators to inspect monthly and then repair as needed.
	Roads/ Weigh Stations/ Rest Areas	Annually	Annually	Annually	--	ANI	Yes	Some districts perform maintenance on an as needed basis.
<b>STORMWATER BMPS</b>								
Catch Basins	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	
	Roads/ Weigh Stations/ Rest Areas	--	--	Annually	ANI	ANI	Yes	
Extended Detention Basins	Maintenance Facilities/ Material Storage Yards	Annually	--	Annually (after snow melt)	ANI	ANI	Yes	
	Roads/ Weigh Stations/ Rest Areas	Annually	--	Annually	ANI	ANI	Yes	In one district, schedule met for roads only.
Water Quality Swales (including dry swales, bio-filter swales, and wet swales)	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	
	Roads/ Weigh Stations/ Rest Areas	--	--	Annually	ANI	ANI	Yes	
Sediment Forebays	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	
	Roads/ Weigh Stations/ Rest Areas	Twice per year	--	Annually	ANI	ANI	Yes	
Channel Systems		Annually	--	--	Annually	ANI	Yes	
Outlet Sediment Traps		--	--	Annually	ANI	--	Yes	
Vegetated Filters Strip		Annually	--	Annually	ANI	ANI	Yes	
Wet Pond		--	--	Annually	ANI	ANI	Yes	
Enhanced Wet Pond		--	--	Annually	ANI	ANI	Yes	
Constructed Storm Water Wetlands		--	--	Annually	ANI	ANI	Yes	
Recharge Basin		--	--	Twice per year	ANI	ANI	Yes	
Leaching Catch Basins		--	--	Annually	ANI	ANI	Yes	
Subsurface Recharge Systems		--	--	Twice annually	ANI	ANI	N/A	None known
Recharge Trenches and Beds		--	--	Annually	ANI	ANI	N/A	None known
Recharge Dry Wells and Galleys		--	--	Annually	ANI	ANI	N/A	None known
Filter Systems		Regular Raking	--	Annually	Annually	ANI	N/A	None known
Sand Filters		--	--	Annually	ANI	ANI	N/A	None known
Organic Filters		--	--	Annually	ANI	ANI	N/A	None known
Water Quality Inlet		--	--	Annually	Annually	ANI	Yes	
Flow Splitters		--	--	Annually	ANI	ANI	N/A	None known
Impoundment Structures		--	--	Annually	ANI	ANI	N/A	None known
Check Dams		--	--	Annually	ANI	ANI	Yes	Some districts inspect as needed.
<b>OTHER</b>								
Oil/ Water Separators	Self-test alarm, if so equipped	--	--	Weekly	--	--	Yes	Some districts do repairs/maintenance as needed or do monthly instead of weekly inspections (per DEP permit).
Holding Tanks - UST	Gauge tank to determine if greater than 75% full.	--	--	Weekly	--	--	Yes	Some districts do repairs/maintenance as needed or do monthly instead of weekly inspections (per DEP permit).
Holding Tanks - AST	Gauge tank to determine if greater than 75% full.	--	--	Monitor and set appropriate schedule	--	--	Yes	as needed

**Summary of Compliance with Maintenance Matrix - Statewide Permit Year 6**

Drainage Asset	Area/ Note	Activity Schedule					Permit Year 6 Statewide	
		Mow	Sweep	Inspect	Clean	Repair	Was Schedule Met?	Comments
Septic System	Record water meter readings and report to DHC.	--	--	Annually	--	--	Yes	One district reports that DEP required water meter reading for only 12 months after system installation. Systems were installed in 2000.
NPDES Construction Site - Site Inspections		--	--	Weekly	--	--	Yes	
NPDES Construction Site - Repair of erosion controls		--	--	Weekly	ANI	--	Yes	
NPDES Construction Site - Cleaning of storm water structures		--	--	Weekly	ANI	--	Yes	
<b>District 3 Specific Maintenance Requirements</b>								
Roads	Quinsigamond and Flint Pond Watershed	Annually	Annually	Annually	--	ANI	Yes	
	Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	Annually	Annually	Annually	--	ANI	Yes	
Catch Basins	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
Extended Detention Basins	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	Annually	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	Annually	--	6 months	ANI	ANI	Yes	
Water Quality Swales (including dry swales, bio-filter swales, and wet swales)	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
Sediment Forebays	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
<b>ANI - As Needed per Inspection</b>								
<b>N/A - Not Applicable</b>								

**Appendix F: Public Well Supply Matrix**

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Clarksburg	Golden Eagle Restaurant	John Morris, President 1935 Mohawk Trail Clarksburg, MA 01247	correspondence dated 5/10/06- Enviro rec'd 5/12/06	from owner: 1/8/07; Na = 1260, Cl = 2291, Ca = 320	Sent 30 day notice 12/11/06. Sent PWDF, ROE, data, etc. to UMASS 1/18/07 to begin investigation and schedule site visit. Initial site visit scheduled for 2/5/2007. MassHighway has issued a release agreement for installation of a test boring. Need to coordinate with DEP. Golden Eagle counsel requested additional information. Response was provided via 1/08 letter.
Sandra Smith	Upton	Wildwood Lounge Route 140 64 West Main Street Upton, MA 508.529.7782	4/11/2001- referred to MDEP	2/6/08 sample: Na = 26, Cl = 4	Investigation Complete. Classified as a public water supply and all actions need to be coordinated w/ MaDEP. MassHighway Counsel finalized a settlement agreement with owner in September 2005. DEP issued permit for siting of test well on July 14, 2006. First well replacement attempt failed due to hydraulic connection to Lake Wildwood, which would have required small PWS to meet Surface Water Treatment rule. Second attempt constructed in January 2007. This well was connected in November 2007. We will need to conduct additional micro-particulate analysis per MaDEP requirements.
Andover	Andover	Jack Petkus, Director Department of Public Works 397 Lowell Street Andover, Ma 01810-4416 Telephone (978) 623-8750	2/22/2000	April 3, 2008, Na = 45, Cl = 92 raw water	Poly style storage was constructed in 2001 where there previously was no outside storage from 1998 through 2001. Based on monthly sampling, Town requested a reduced salt zone along I-93 and I-495 and relocation of the salt storage shed via July 2004 correspondence. Section of I-495 and 93 has been designated as a reduced salt zone. Reduced salt zone first implemented in 2005-2006 winter season.
Cambridge	Cambridge Reservoir	Chip Norton, Watershed Manager Cambridge Water Dept. 250 Fresh Pond Parkway Cambridge, MA 02138 (671) 349-4781	Regular monitoring began 1987	June 2006, Finish water Na= 71, Cl = 121	Reservoir is adjacent to 128 in Towns of Lexington, Lincoln, Waltham, and Weston. There is a designated reduced salt zone for this area covering 24.6 linear miles and 177.8 lane miles in the vicinity covering sections of Route 2, 2A and 128.

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Dedham/ Westwood	Dedham/Westwood	Nan Crossland Executive Director Dedham-Westwood Water Dept. 50 Elm Street, Dedham, MA 02027-9137 Telephone (781) 329-7090	File alluded to 3/7/88 correspondence from DWWD requesting MHD refrain from using salt along sections of Rt 128. 12/19/97 telecon b/w Sam Pollock and Mark Hollowell of Anderson-Nichols regarding DEP req'd monthly monitoring and concerns for White Lodge Well #5	2/5/2008-Well #5 Na = 92, Ca = 23, Cl = 155	Concern is over one Municipal Well located to the North of I-95/128 near University Avenue. The well is located in Fowl Meadow Aquifer that recharges White Lodge Well No. 5. Correspondence written in March 2004 indicating that we would monitor salt application. MassHighway with UMass has installed monitoring wells and stormwater outfall monitors to evaluate NaCl sources to Fowl Meadow. MassHighway and UMass have been conducting monthly sampling of well network.
North Chelmsford	North Chelmsford	Bruce J. Harper Superintendent North Chelmsford Water District 64 Washington Street PO Box 655 North Chelmsford, MA 01863-0655 Telephone (978) 251-3931	mid 1980s	10/07, Well No. 1 Na = 297 Cl = 445, Well No. 2 Na = 62 Cl = 93, Well No. 3 Na = 173 Cl = 185, Well No. 4 Na = 215, Cl = 300	There is a reduced salt zone in East and North Chelmsford for 153 lane miles consisting of section of Route 3, 3A, 4 and Lowell Connector. High arch gambrel salt shed is under design. Anticipate 100% plans will be ready summer 2008.
Eastman-Gelatin Corp.	Peabody	Paul Carter, Services Mgr. 227 Washington St. Peabody, MA 01960 (978) 573-3757	~1965	3/08 Bleachery Pumphouse Cl = NM, Pump House 11A Cl = 198, Pump House 12A Cl = 253, Pump House 2 Cl = NM, Pump House 2A Cl = 128, Pump House 4A Cl = 142, Pump House 5A Cl = 150	Eastman-Gelatin industrial wells in close proximity to I-95. This area is within a reduced salt zone. Monthly data is collected by Eastman-Gelatin.

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Wilmington DPW	Wilmington	Michael Wood 121 Glen Road Wilmington, MA 01887 (617) 291-8916	4/29/2005	1/05 Sargent Water Treatment Plant ~100 mg Na/L. 3/04 Browns Crossing Wellfield = 118 mg Na/L, Salem Street Well = 56 mg Na/L, Barrows Wellfield = 127 mg Na/L, & Sargent Water Treatment Plant = 103 mg Na/L	Contacted by DEP, Jim Persky about potential sodium issue in 2 wells located near I-93. Performed initial site visit w/ UMass on 6/28/05. Additional data provided and UMass will copy and evaluate for data collection/mass balance. MassHighway received draft sampling plan for review January 2007, which was forwarded to Wilmington DPW for their consideration. Wilmington has not expressed further interest in participating in the program.
Manchester	Manchester	Robert Moroney 10 Central Street Manchester-By-The Sea, MA 01944 (978) 526-1242	8/15/2003	info provided verbally by Bob Moroney on 2/15/05 indicated Lincoln Well at 32-34 mg Na/L & Treatment Plant at 14-17 mg Na/L. 7/29/03; Lincoln St Well Na = 37, Gravelly Pond WTP Na = 18	No additional response from Town. Bob Maroney indicated he would need to check budget to support sample collection and analysis. Contacted by Lisa Press (Con Comm agent) on 2/2/05 to discuss sampling program and that a citizens group has volunteered to provide funding for the monthly sampling. Town did not follow up with funding and coordination for proposed sampling locations.
Hanover	Hanover	Alen Alan, Water Supervisor Hanover Water Dept. 40 Pond Street Hanover, MA 02339 (781) 826-3189	Being sampled for baseline data because of potential roadway project	2/7/08, Pond Street well Raw water Na = 66, Cl = 101	MassHighway is collecting baseline sodium and chloride data in preparation of construction of additional travel lanes along Route 53. If after the widening the sodium chloride levels increase significantly in the municipal wells then MassHighway will evaluate remedial options.
Kingston	Kingston	Mary Lou Joyce, Office Administrator Board of Water Commissioners 22 Elm Street Kingston, MA 02364	Being sampled for baseline data because of potential roadway project	2/12/08 Trackle Pond Na = 26, Cl = 40; Grassy Hole Na = 9, Cl = 14; Winthrope St Na = 221, Cl = 313	Potential source may be application along new Route 44 after it opens in late 2004. MassHighway is collecting baseline sodium and chloride data in preparation for the opening of the new section of Route 44. If there is a significant increase of sodium and chloride after construction then MassHighway will evaluate remedial options. It should be noted that the Winthrope Street well is near town roads and is not near the Rt 44 relocation.

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Middleboro	Middleboro	Richard E. Tinkham, Water Superintendent Dept. of Public Works 48 Wareham Street Middleboro, MA (508) 946-2482	8/15/1989 & 2/91	3/4/08 Miller Na = 29 Cl = 50, Rock 1 Na = 54 Cl = 125, Rock 2 Na = 50 Cl = 109 Plympton Na = 47 Cl = 82	3/20/06 mtg between District 5 and Env. Personnel to discuss town wells and operational improvements. 3/29/06 letter forwarded to water district. MassHighway continues to implement reduced salt zone in the area for 40 lane miles of Route 28 and 495.
Norwell	Norwell	Jack McInnis, Superintendent Norwell Water Dept. 345 Main Street Norwell, MA 02061 (781) 659- 8076	Being sampled for baseline data because of potential roadway project	2/12/08 South St. treated Na = 76 Cl = 119, South St. Sta 1 Na = 96 Cl = 142, South St. Sta 6 Na = 51 Cl = 81	Potential sources are the MassHighway Maintenance facility and salt applications on Route 53 and 3. MassHighway is collecting baseline sodium and chloride data in preparation of construction of additional travel lanes along Route 53.
Onset	Onset	Bill Gay, Superintendent Onset Fire District 15 Sand Pond Road Onset, MA 02558 (508) 295-0603	Result of reduced salt zone along section of Route 25 and court action for Mann cranberry bog	2/5/08, Red Brook Sta 3 Na = 20 Cl = 29, Sta 4 Na = 18 Cl = 27, Sta 5 Na = 12 Cl = 8, Sta 6 Na = 8 Cl = 12	
Plymouth	Plymouth	Paul Wohler, Superintendent Plymouth Water Department Town Hall 11 Lincoln Street Plymouth, MA 02360 508-830-4155	Being sampled for baseline data because of roadway project	1/30/08, N. Plymouth well raw Na = 28, Cl = 46; Darby Pond raw Na = 14, Cl = 18; Federal Furnace raw Na = 7, Cl = 8	Potential source may be application along new Route 44 after it opens in late 2004. MassHighway is collecting baseline sodium and chloride data in preparation for the opening of the new section of Route 44. If there is a significant increase of sodium a remedy will be identified such as a reduced salt zone and increased use of liquid de-icers.
Yarmouth	Yarmouth	Rick Tierney Superintendent Willow Street West Yarmouth, MA 02673 (508) 771-7921		2/1/08, Town Hall Sink Tap Na = 23, Cl = 34; Higgins Crowell Rd, Sta 1 Na = 101 Cl = 163, Sta 2 Na = 103 Cl = 168, Sta 3 NM	Source of salt is MassHighway salt application along Route 6 in Yarmouth and salt storage area at Willow Street. Remediation included improved salt storage and handling practices at the maintenance facility, and installation and operation of a scavenger well.

**Appendix G: TMDL Review Table**

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Assabet River	Assabet River	Phosphorus	Yes	No	--	--
Bare Hill Pond	Bare Hill Pond	Nuisance Aquatic Plants Phosphorus	Yes	No	--	--
Cape Cod	Frost Fish Creek (BMP 7F)	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage discharging to Muddy Creek and install best management structures and/or operational practices to the maximum extent practicable with a goal of meeting the water quality standard for bacteria in SA waters. Given this a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from small MS4s (Phase II), Part i D(1-4), as it pertains to approved TMDLs." MassDEP has not deferred to the Route 28 reconstruction project since we do not have any information about the extent or the time schedule for it. MassDEP also suggests that the MassHighway Dept. work with the Town of Chatham to work out a reasonable schedule for these activities.	Because of funding constraints and the condition of the existing roadway, there is no plan to resurface Route 28 within the boundaries of Muddy or Frost Fish Creeks within the next 5 years. District 5 personnel has met with the Town of Chatham and identified their concerns, and some measures may be taken to reduce and/or treat runoff to the creeks if time and funding permits. The District hopes to implement these measure within the next 2 years prior to resurfacing.
Cape Cod	Muddy Creek (BMP 7G)	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage discharging to Muddy Creek and install best management structures and/or operational practices to the maximum extent practicable with a goal of meeting the water quality standard for bacteria in SA waters. Given this a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from small MS4s (Phase II), Part i D(1-4), as it pertains to approved TMDLs." MassDEP has not deferred to the Route 28 reconstruction project since we do not have any information about the extent or the time schedule for it. MassDEP also suggests that the MassHighway Dept. work with the Town of Chatham to work out a reasonable schedule for these activities.	Because of funding constraints and the condition of the existing roadway, there is no plan to resurface Route 28 within the boundaries of Muddy or Frost Fish Creeks within the next 5 years. District 5 personnel have met with the Town of Chatham and identified their concerns, and some measures may be taken to reduce and/or treat runoff to the creeks if time and funding permits. The District hopes to implement these measure within the next 2 years prior to resurfacing.
Cape Cod	Little Pond Embayment System	Total Nitrogen	Yes	No		
	Oyster Pond Embayment System	Total Nitrogen	Yes	No		
	Centerville River - East Bay System	Total Nitrogen	Yes	No	--	--
Charles River	Beaver Brook Bogastow Brook Charles River Cheese Cake Brook Fuller Brook Muddy River Rock Meadow Brook Rosemary Brook Sawmill Brook South Meadow Brook Stop River Unnamed tributaries	Pathogens	Yes	Yes	A comment was submitted saying that MassHighway continues to evade storm water standards and would like MHD to be specially mentioned in the TMDL's.	The TMDL response to comments indicates that MHD is included in the Storm Water Phase II Program and is responsible for completing the six minimum controls mandated by that program.

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Chatham - Muddy Creek	Lower and Upper Muddy Creek					
Chicopee Basin (BMP 7H)	Browning Pond, Oakham	Phosphorus	Yes	No	TMDL suggests MassHighway should regulate road sanding, salting, regular sweeping, and installation of BMPs for these ponds.	--
	<b>Long Pond, Springfield</b> <b>Sugden Reservoir, Spencer</b> <b>Mona Lake, Springfield</b> <b>Minechoag Pond, Ludlow</b> <b>Wickaboag Pond, West Brookfield</b>	Phosphorus	Yes	Yes		<p>MassHighway reviews proposed projects within this watershed for opportunities to include additional BMPs if MassHighway determines they will help address the pollutant loading issue. MassHighway included cleaning drainage structures and pipes, stone for pipe ends (help prevent outfall erosion) and hardening the shoulders with dense graded crushed stone (again, assists in preventing erosion) for the Route 9 Resurfacing Project in West Brookfield which is 93% complete.</p> <p>MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.</p>
	<b>Spectacle Pond, Wilbraham</b>	Phosphorus	Yes	Yes		<p>During design of a project within the Chicopee basin in Permit Year 4, MassHighway included the design of a deep sump catch basins and a 37 foot wide and 150 foot long infiltration trench to address pollution from the road to Spectacle Pond since it was impaired. Annual sweeping of the road.</p>

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Connecticut Basin (BMP 71)	<b>Aldrich Lake East, Granby</b>	Phosphorus	Yes	No	--	MassHighway has incorporated BMPs into the Aldrich Street bridge reconstruction over Batchelor Brook. Project included installation of stone swale and two vegetated swales to reduce erosion from stormwater discharges from the road.
	<b>Aldrich Lake West, Granby</b>					Aldrich Lake is within a Low Salt Application Area for MassHighway.
	<b>Leverett Pond, Leverett Lake Wyola, Shutesbury Loon Pond, Springfield</b>	Phosphorus	Yes	Yes	TMDL suggests MassHighway and towns should develop Storm Water Management Plans for Phase II NPDES and initiate additional BMPs in critical areas. MassHighway should regulate road sanding, salting, regular sweeping, and installation of BMPs for these two ponds. TMDL mentions that Rt. 20 is within the watershed of the Loon Pond and Rt. 47 is within the watershed of Lake Warner.	<p>--</p> <p>MassHighway has received authorization from EPA to discharge storm water under the general permit for Loon Pond area. Lake Warner, Hadley is outside of urbanized area and is therefore not subject to the general permit. MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.</p>
	<b>Lake Warner, Hadley</b>					<p>MassHighway has incorporated additional BMPs into the Parker Street Reconstruction project to address the Loon Pond impairment. BMP's include the installation of a sedimentation chamber and a plunge pool at Loon Pond, two deep sump catch basins, a dewatering chamber utilized during construction and the removal and disposal of drainage system sediments during construction.</p> <p>MassHighway incorporated BMPs into the Meadow Street reconstruction over Swamp Brook. Swamp Brook flows into the Mill River which flows into Lake Warner. BMPs installed included 2 deep sump CB's and a 45 foot long grass swale.</p> <p>In this watershed, treated timber bridge components and steel bridge components containing deteriorated lead paint were removed as a source control measure.</p>

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
French Basin 71)	(BMP <b>Buffumville Lake, Charlton</b> <b>Cedar Meadow Pond, Leicester</b> Dresser Hill Pond, Charlton <b>Dutton Pond, Leicester</b> <b>Gore Pond, Charlton/Dudley</b> <b>Granite Reservoir, Charlton</b> <b>Greenville Pond, Leicester</b> Hudson Pond, Oxford Jones Pond, Charlton/Spencer <b>Larner Pond, Dudley</b> <b>Lowes Pond, Oxford</b> <b>McKinstry Pond, Oxford</b> Mosquito (Tobins) Pond, Dudley <b>New Pond, Dudley</b> Peter Pond, Dudley <b>Pierpoint Meadow Pond, Dudley/Charlton</b> <b>Pikes Pond, Charlton</b> Robinson Pond, Oxford <b>Rochdale Pond, Leicester</b> <b>Shepherd Pond, Dudley</b> <b>Texas Pond, Oxford</b> Wallis Pond, Dudley	Phosphorus	Yes	Yes	TMDL suggests: 1. MassHighway conduct loading study and develop methodology to calculate loadings from highways.  2. MassHighway and local towns should initiate twice yearly sweeping and catch basin inspection and cleaning program along MassHighway I-395, and other roadways.  3. MS4s should install additional BMPs as needed to address pollutant loadings identified above.  4. MassHighway and the towns of Charlton, Leicester and Oxford should prepare Storm Water Management Plans for Phase II. (implementation activity specific to these impaired waterbodies)  5. MassHighway should regulate road sanding, salting, regular sweeping, and installation of BMPs (implementation activity specific to these impaired waterbodies).	USGS is currently performing a loading study for MassHighway.  MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6C-4). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set.  MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.  MassHighway has received full authorization to discharge under the general permit and continues to respond to EPA suggestions in finalizing their Storm Water Management Plans.  MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Great, Green & Bournes Pond	Great Pond Perch Pond Green Pond Bournes Pond	Total Nitrogen	Yes	No	--	--
Indian Lake (BMP 7K)	Indian Lake, Worcester	Phosphorus	Yes	Yes	TMDL suggests that MassHighway do the following:  1. Reduce impervious surfaces, institute increased street sweeping and catch basin cleaning; install detention basins, etc.  2. Comply with a new Phase II Stormwater discharge permit. In addition, the Regional DEP office in Worcester has submitted a written request to the Regional office of MassHighway to give the roads in the Mill Brook drainage area (including parts of Indian Lake Watershed) priority for increased Best Management Practices such as sweeping and catch basin cleaning.	MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue.
Kickemuit River	Kickemuit Reservoir Upper Kickemuit River Kickemuit River	Bacteria, Phosphorus	Yes	Yes	MassHighway will need to comply with MS4 regulations, Phase II Stormwater Management Plans submitted and general permits as required which include six minimum measures and prioritization of outfalls for BMP construction. MassHighway needs educational programs on pollution prevention and good housekeeping practices.	MassHighway has received full authorization to discharge under the general permit. The NOI submitted with the application for coverage includes many educational programs on pollution prevention and good housekeeping practices. MassHighway and EPA continue to work together to finalize the programs included in the Storm Water Management Plan.
Lake Boon (Boons Pond)	Lake Boon, Hudson/ Stow	Phosphorus	Yes	No	--	--
Lake Quinsigamond and Flint Pond (BMP 7P)	Flint Pond, Grafton/Worcester/ Shrewsbury Lake Quinsigamond, Worcester/ Shrewsbury	Phosphorus	Yes	Yes	1. MassHighway should begin the Storm Water Management Plans required under Phase II to reduce discharge of pollutants to the "maximum extent practicable."  2. MassHighway will also be required to apply for the EPA Phase II General Stormwater NPDES Permit by March 10 of 2003.  3. The regional office of MassHighway has offered to target high priority watersheds in the region of higher frequency of BMPs and maintenance.  4. Visually inspect the roads monthly and sweep as needed. At a minimum, roads must be swept at least twice a year as soon after snowmelt as possible or by April 1st of each year and again in the fall.  5. Inspect catch basins at least twice a year and any other settling or detention basins once a year to measure depth of solids. If solids are one half or more of design volume for solids, then completely remove all solids.	MassHighway has received authorization from EPA to discharge storm water under the general permit for discharges in this watershed.  MassHighway District 3 will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. District 3 has agreed to increased maintenance schedule within this watershed. Several catch basin were installed in Shrewsbury along Rt. 9 and Quinsigamond Ave for improved sediment capture and reduced pollutant loading.  In a letter written to DEP and dated June 19, 2002, District 3 committed to an increased schedule of inspection of catch basins every six months, with cleaning as determined necessary in inspections, and annual sweeping of road in this watershed.  See response above (#4) regarding maintenance schedule commitments. The letter committed to inspection and cleaning, if necessary of all sumped drainage structures twice a year and more often if necessary; inspection/ cleaning of drainage outlet locations where sediment build up is evident; and inspection and repair of damaged and/or clogged drainage conveyances.

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Lake Quinsigamond and Flint Pond (cont'd)		Phosphorus	Yes	Yes	<p>6. Inspect and maintain all structural components of stormwater system on a yearly basis.</p> <p>7. Develop methodology to calculate loadings from highways.</p> <p>8. Conduct pilot project to assess loadings and test BMPs on highways</p> <p>9. Initiate twice yearly sweeping and catch basin inspection and cleaning program along I-290 and other roadways. Install additional BMPs as needed to address pollutant loadings identified above.</p>	<p>See response above (#5).</p> <p>USGS is currently performing a loading study for MassHighway.</p> <p>USGS is currently performing a loading study for MassHighway.</p> <p>See response above (#4) regarding CBs. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue.</p>
Leesville Pond (BMP 7L)	Leesville Pond, Auburn/ Worcester	Phosphorus	Yes	Yes	<p>TMDL suggests that:</p> <p>1. MassHighway should conduct loading study and develop methodology to calculate loadings from highways.</p> <p>2. MassHighway and towns of Auburn, Leicester, Paxton, and Millbury and City of Worcester should initiate twice yearly sweeping and catch basin inspection of catch basins every six months, with cleaning as determined necessary in cleaning program along I-290 and other roadways and install additional BMPs as needed to address pollutant loadings identified above.</p> <p>3. MassHighway and towns of Auburn, Leicester, Paxton, and Millbury should prepare Storm Water Management Plan for Phase II.</p> <p>4. MassHighway and town or city Dept of Public Works should reduce impervious surfaces, institute street sweeping program, catch basin cleaning, install detention basin etc.</p>	<p>USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term.</p> <p>MassHighway District 3 has committed to an increased schedule of inspection and annual sweeping of roads in this watershed. District 3 has committed to inspection and cleaning, if necessary, of all sumped drainage structures twice a year and more often if necessary; inspection/ cleaning of drainage outlet locations where sediment build up is evident; and inspection and repair of damaged and/or clogged drainage conveyances. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue.</p> <p>MassHighway has received authorization from EPA to discharge storm water under the general permit for discharges in this watershed.</p> <p>see above measures</p>
Little Harbor	Little Harbor, Cohasset	Fecal Coliform	Yes	No	--	--

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Lower Charles River Basin	Charles River	Total Phosphorus	Yes	Yes	TMDL suggests MassHighway: 1. Collect source monitoring data and additional drainage area information to better target source areas for controls and evaluate the effectiveness of on-going control practices.  2. Enhance existing stormwater management programs to optimize reductions in nutrient loadings with initial emphasis on source controls and pollution prevention practices.	MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan. MassHighway will identify problem areas during illicit discharge detection inventory work.  MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
Millers River Basin (BMP 7M)	<b>Bents Pond</b>  <b>Bourn-Hadley Pond</b>  <b>Brazell Pond</b>  <b>Lake Ellis</b>	Phosphorus	Yes	Yes	TMDL suggests that MassHighway should better manage road sanding, salting, regular sweeping, and installation of BMPs (specific to these impaired waterbodies).	MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.  As a part of the Route 101 (Dudley Road) Reconstruction, MassHighway is installing BMPs to address the impaired waterbody. BMPs include deep sump CB's, water quality swales at new discharge locations; and removal and disposal of drainage system sediments. As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No. 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol), Brazell Pond (Athol); Bourn-Hadley Pond; Greenwood Pond 2 and Lake Rohunta (Orange/Athol). BMPs include Deep Sump CB's, detention basins, stone and grass swales, removal and disposal of drainage system sediments, annual street sweeping, and cleaning paved waterways.  As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No. 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol), Brazell Pond (Athol); Bourn-Hadley Pond; Greenwood Pond 2 and Lake Rohunta (Orange/Athol). BMP's include Deep Sump CB's, Detention Basins, stone and grass swales, removal and disposal of drainage system sediments, annual street sweeping, and cleaning paved waterways.  As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No. 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol). BMP's include Deep Sump CB's, Detention Basins, stone and grass swales; removal and disposal of drainage system sediments and annual street sweeping.

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Millers River Basin (BMP 7M) cont'd	<b>Greenwood Pond</b>	Phosphorus	Yes	No		As a part of the Route 2A (South Main Street) Reconstruction and Safety Improvements, MassHighway is installing BMPs to address impairment in Lake Ellis. BMPs include the installation of deep sump CBs and the removal and disposal of drainage system sediments.
	Lake Monomonac <b>Ramsdall Pond Reservoir No. 1</b>					The low salt area begins at the intersection of Rte 32 and 2A, and extends easterly.  As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol), Brazell Pond (Athol); Bourn-Hadley Pond; Greenwood Pond 2 and Lake Rohunta (Orange/Athol). BMP's include Deep Sump CB's, Detention Basins, stone and grass swales, removal and disposal of drainage system sediments and annual street sweeping.
	Wallace Pond <b>Whitney Pond</b>					Added stone to ditches and cleaned drainage structures and pipes this year.  As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol). BMP's include Deep Sump CB's, Detention Basins, stone and grass swales; removal and disposal of drainage system sediments and annual street sweeping.
	Beaver Flowage Pond Cowee Pond Davenport Pond <b>Lake Denison Depot Pond</b>	Phosphorus	Yes	No	--	Under Design: Winchendon - Reconstruction of GlenAllen Street (Rte 202) from Maple Street Intersection to Rindge, NH State Line; BMPs includes the following: stone for pipe ends (help prevent outfall erosion); energy dissipaters at other select discharge points (consisting of stone lined sumps and pads at drainage outfalls); stone stabilization slopes and deep sump catch basins.  --  As part of proposed reconstruction and resurfacing of Route 202, MassHighway is including BMPs to address the impaired waterbody. The BMPs include deep sump CB's; removal and disposal of drainage system sediments and annual street sweeping.
	<b>Hilchey Pond</b> Lower Naukeag Lake Minott Pond South Minott Pond <b>Parker Pond Reservoir No. 2</b>					As a part of the Route 2 Safety Improvements, MassHighway is installing BMPs to address the impaired waterbodies of Reservoir No. 1 (Athol) and No 2 (Phillipston), Lake Ellis (Athol) and Ward Pond (Athol). BMP's include Deep Sump CB's, Detention Basins, stone and grass swales; removal and disposal of drainage system sediments and annual street sweeping.



**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Northern Blackstone (BMP 7N)	<b>Auburn Pond, Auburn</b> <b>Curtis Pond North, Worcester</b> <b>Curtis Pond South, Worcester</b> <b>Dorothy Pond, Millbury</b> <b>Eddy Pond, Auburn</b> <b>Pondville Pond, Auburn</b> <b>Smiths Pond, Leicester</b> <b>Southwick Pond, Leicester</b> <b>Stoneville Pond, Auburn</b>	Phosphorus	Yes	Yes	TMDL suggests that MassHighway should regulate road sanding, salting, regular sweeping, and installation of BMPs (for these impaired waterbodies).	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway District 3 recently completed roadway reconstruction project located in the City of Worcester on Airport Drive. Runoff from this area enters waterways south of Smith Pond and north of Curtis Pond, in the City of Worcester. This project included a significant amount of drainage infrastructure work including three detention ponds (42,200 sq. ft. total area); 30 deep sump CBs with hoods; 1,500 linear feet of stone line drainage swales; and 1,000 linear feet of grass lined drainage swales.
	<b>Brierly Pond, Millbury</b> Green Hill Pond, Worcester <b>Howe Reservoir, Millbury</b> <b>Jordan Pond, Shrewsbury</b> <b>Mill Pond, Shrewsbury</b> Newton Pond, Shrewsbury <b>Shirley Street Pond, Shrewsbury</b>	Phosphorus	Yes	No	--	--
Palmer River	Palmer River - West Branch Palmer River - East Branch Runney Marsh brook Beaver Dam Brook Bad Luck Brook Fullers Brook Clear Run Torrey Creek Old Swamp Brook Rocky Run	Bacteria	Yes	No - but major roads and highways are listed as potential sources of runoff with bacterial contamination.	--	
Phinneys Harbor Embayment System	Phinneys Harbor  Back River Eel Pond	Total Nitrogen	Yes	No	--	--
Pleasant Bay System	Pleasant Bay Crows Pond Frost Fish Creek Ryder Cove Muddy Creek	Total Nitrogen	Yes	No	--	--
Popponesset Bay	Mashpee River Shoestring Bay Popponesset Bay	Total Nitrogen	Yes	No	--	--

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

Overall Basin	Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)	Pollutant of Concern	WLA Included?	Are BMP recommendations re: MassHighway Included?	If yes, what are the recommendations?	How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?
Quaboag	Quaboag Pond  Quacumquasit Pond	Total Phosphorus	Yes	Yes	The TMDL suggests that MassHighway:  1. Regulate road sanding, salting, regular sweeping, and installation of BMPs.  2. Perform roadway sweeping and catch basin inspection/cleaning twice a year.  3. MH along with the town of Spencer, control nonpoint source pollution targeting for State Routes 9, 31 and 49 by requiring roadway sweeping and catch basin inspection/cleaning twice a year or other approved BMPs.  4. MH and the town of Spencer must maintain or improve all existing BMPs or the permittee may install infiltration or other BMPs and document a total reduction of 29% of the total phosphorus loading to receiving waters to control the stormwater discharges within the watershed. To do this, MH and the town of Spencer must either conduct roadway sweeping in the spring and fall combined with annual catch basin inspection and cleanout to restore 80% or more of the solids storage volume anytime the available solids storage volume is less than 50%.	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.  MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6C-4). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set.  MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6C-4). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set.  MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan. MassHighway will also use the USGS model once completed to review the inputs from the highway discharges.
Salisbury Pond (BMP 70)	Salisbury Pond, Worcester	Phosphorus	Yes	Yes	TMDL indicates that:  1. MassHighway should develop methodology to calculate loadings from highways and conduct pilot projects to assess loadings and test BMPs on highways.  2. MassHighway and town or city Dept. Public Works should reduce impervious surfaces, institute more frequent street sweeping and catch basin cleaning, install detention basins, dredge and maintain storm water detention basins, etc.  3. MassHighway will also be required to apply for the EPA Phase II General Stormwater NPDES Permit by March 10 of 2003.	USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term.  MassHighway has committed to DEP in its January 23, 2002 letter that streets will be swept at least once a year (usually in spring) and more often if necessary. All sumped drainage structure will be inspected and cleaned, if necessary, twice a year and more often if necessary. MassHighway will inspect/ clean drainage outlet locations where sediment build-up is evident. MassHighway will inspect and repair damaged and/ or clogged drainage conveyances.  MassHighway has received authorization from EPA to discharge storm water under the general permit for discharges in this watershed.

**Summary of MA Final TMDL Reports (as of March 2009) and Recommendations Which Pertain to MassHighway**

<b>Overall Basin</b>	<b>Specific Impaired Waterbodies included in TMDL (bold identified as SW Impaired)</b>	<b>Pollutant of Concern</b>	<b>WLA Included?</b>	<b>Are BMP recommendations re: MassHighway Included?</b>	<b>If yes, what are the recommendations?</b>	<b>How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?</b>
Shawsheen River Basin	Shawsheen River	Bacteria	Yes	No	--	--
Three Bays System	Cotuit Bay North Bay Prince Cove Seapuit River West Bay	Total Nitrogen	Yes	No	--	--
Waquoit Bay	Quashnet River Hamblin Pond Little River Jehu Pond Great River	Total Nitrogen	Yes	No	--	--
West Falmouth Harbor Embayment System	Harbor Head  West Falmouth Harbor	Total Nitrogen	Yes	No	--	--

**Appendix H: Active MassHighway Construction NOIs in Permit Year**

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10BO33</a>	December 17, 2004	December 24, 2004	INTERSECTION RECONSTRUCTION	GROTON	Yes	
<a href="#">MAR10BU68</a>	July 08, 2005	July 29, 2005	UXBRIDGE-ROUTE 16	UXBRIDGE	Yes	
<a href="#">MAR10BW86</a>	September 07, 2005	September 14, 2005	AIRPORT DRIVE RECONSTRUCTION	WORCESTER	Yes	
<a href="#">MAR10CN55</a>	May 12, 2008	May 19, 2008	Interstate 495 Southbound	Milford	Yes	P. J. Keating Co.
<a href="#">MAR10CN87</a>	May 22, 2008	May 29, 2008	I-495	Worcester	Yes	P. J. Keating Co.
<a href="#">MAR10CP11</a>	July 15, 2008	July 22, 2008	Route 12	Auburn	Yes	Ludlow Construction Co.
<a href="#">MAR10CQ67</a>	August 01, 2008	August 08, 2008	Route 68	Rutland	Yes	Mass. Broken Stone Co.
<a href="#">MAR10CR26</a>	August 27, 2008	September 03, 2008	Franklin Street	Framingham	Yes	Pavao Construction
<a href="#">MAR10D074</a>	January 13, 2009	January 20, 2009	I-495 NB	Worcester	Yes	P. J. Keating Co.
<a href="#">MAR10BB23</a>	October 14, 2003	October 21, 2003	RT 3 NORTH TRANSP IMPROV PROJ	WESTFORD	Yes	
<a href="#">MAR10B869</a>	February 23, 2004	March 01, 2004	CAMBRIDGEPORT ROADWAYS IMPROVE	CAMBRIDGE	Yes	
<a href="#">MAR10BC51</a>	March 15, 2004	March 22, 2004		LANCASTER	Yes	

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10BC66</a>	March 18, 2004	March 25, 2004	RTE 146/Hurley Square Improvement	WORCESTER	Yes	
<a href="#">MAR10BC68</a>	March 19, 2004	March 26, 2004	RTE 146/RTE 20 IMPROVEMENTS	MILLBURY	Yes	
<a href="#">MAR10C428</a>	May 25, 2006	June 01, 2006	ROUTE I-195 RESURFACING	FALL RIVER, WESTPORT	Yes	P. J. Keating Co.
<a href="#">MAR10CB27</a>	January 24, 2007	January 31, 2007	RECONSTRUCTION ROUTE 18	WEYMOUTH	Yes	
<a href="#">MAR10CB69</a>	February 21, 2007	February 28, 2007	BRIDGE REPLACEMENT OVER PARKER	NEWBURY	Yes	
<a href="#">MAR10CC46</a>	March 19, 2007	March 26, 2007	LYNNFIELD-PEABODY NOISE BARRIE	LYNNFIELD PEABODY	Yes	
<a href="#">MAR10CH18</a>	August 30, 2007	September 06, 2007	BRUCE FREEMAN BIKE PATH	CHELMSFORDLO WELLWESTFOR	Yes	
<a href="#">MAR10CK34</a>	January 08, 2008	January 15, 2008	PEABODY BIKE PATH	PEABODY	Yes	
<a href="#">MAR10CM26</a>	March 26, 2008	April 02, 2008	Rte 125 Reconstruction	North Andover	Yes	
<a href="#">MAR10CN44</a>	May 08, 2008	May 15, 2008	I-95 Roadway Reconstruction	Weston/Newton/Wellesley	Yes	D. W. White Construction
<a href="#">MAR10CQ84</a>	August 11, 2008	August 18, 2008	Rte 125 Signal/Intersection Project	Andover	Yes	T. Tropeano

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10CR40</a>	September 04, 2008	September 11, 2008	Route 28 Bridge Replacement	Methuen	Yes	S & R Contracting Corp
<a href="#">MAR10CR61</a>	September 11, 2008	September 18, 2008	Woburn I-95 Resurfacing	Woburn	Yes	Aggregate Industries
<a href="#">MAR10CS77</a>	October 17, 2008	October 24, 2008	I-95 Add-A-Lane Project	Randolph to Westwood	Yes	McCourt Construction
<a href="#">MAR10CT22</a>	October 22, 2008	October 29, 2008	Clipper Ship Rail Trail	Newburyport	Yes	S & R Contracting Corp
<a href="#">MAR10BJ51</a>	October 15, 2003	October 22, 2003	ROUTE 140 RELOCATION	FRANKLIN	Yes	
<a href="#">MAR10BE89</a>	June 11, 2004	June 18, 2004	RTE 2A RECONSTRUCTION	ARLINGTON	Yes	
<a href="#">MAR10BF22</a>	June 16, 2004	June 23, 2004	RECONSTRUCTION OF ROUTE 62	NORTH READING	Yes	
<a href="#">MAR10BF59</a>	August 04, 2004	August 11, 2004	BRIDGE STREET OVER B&M RAILROAD	TEMPLETON	Yes	
<a href="#">MAR10BN00</a>	October 22, 2004	October 29, 2004	PARK & RIDE / MAINT DEPOT	BOURNE	Yes	
<a href="#">MAR10BN50</a>	November 08, 2004	November 15, 2004	BOURNE FIRE STATION NO.3	BOURNE	Yes	
<a href="#">MAR10BN72</a>	November 17, 2004	November 24, 2004	SAGAMORE ROTARY GRADE SEPARATE	BOURNE	Yes	

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10B082</a>	January 04, 2005	January 11, 2005	THATCHER ST BRIDGE REPLACEMENT	ATTLEBORO	Yes	
<a href="#">MAR10BP76</a>	February 10, 2005	February 18, 2005	INTERCHANGE CONST-BROSNIHAN SQ	WORCESTER	Yes	
<a href="#">MAR10BQ83</a>	March 15, 2005	March 22, 2005	SEASIDE RAIL BIKE TRAIL	PLYMOUTH	Yes	
<a href="#">MAR10BR72</a>	April 07, 2005	April 14, 2005	MHD BENEDICT ROAD 38030	PITTSFIELD	Yes	
<a href="#">MAR10BS68</a>	May 02, 2005	May 09, 2005	ROUTE 9 ROADWAY RECONSTRUCTION	HADLEY	Yes	
<a href="#">MAR10BT52</a>	May 26, 2005	June 02, 2005	ROUTE 116 RESURFACING	ASHFIELD	Yes	
<a href="#">MAR10BU76</a>	July 12, 2005	July 19, 2005	RECONSTRUCTION OF HOSPITAL ROAD	MONSON	Yes	
<a href="#">MAR10BU99</a>	July 18, 2005	July 25, 2005	ROUTE 20 BRIDGE REPLACEMENT	PALMER	Yes	
<a href="#">MAR10BW71</a>	September 01, 2005	September 08, 2005	ROADWAY RECONSTRUCTION	WILMINGTON	Yes	
<a href="#">MAR10BX31</a>	September 23, 2005	September 30, 2005	UNION STREET RECONSTRUCTION	FRANKLIN	Yes	
<a href="#">MAR10BZ09</a>	November 17, 2005	November 24, 2005	TWO BRIDGE REPLACEMENTS ON A	ERVING	Yes	

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10BZ24</a>	November 22, 2005	November 29, 2005	PARKER STREET RECONSTRUCTION	SPRINGFIELD	Yes	
<a href="#">MAR10C072</a>	January 26, 2006	February 02, 2006	BRIDGE ST BYPASS CONSTRUCTION	SALEM	Yes	
<a href="#">MAR10C255</a>	April 07, 2006	April 14, 2006	COMMERCIAL STREET RECONSTRUCTIO	HOLYOKE	Yes	
<a href="#">MAR10C315</a>	April 24, 2006	May 01, 2006	CONCORD ROAD	BILLERICA	Yes	
<a href="#">MAR10C371</a>	May 09, 2006	May 16, 2006	CONSTRUCTION OF FRANKLIN COUNTY	DEERFIELD-MONTAGUE	Yes	
<a href="#">MAR10C398</a>	May 15, 2006	May 22, 2006	CANTON ROADWAY RECONSTRUCTION	CANTON	Yes	
<a href="#">MAR10C560</a>	July 06, 2006	July 13, 2006	OLD CENTER/Common AREA	NORTH ANDOVER	Yes	
<a href="#">MAR10C734</a>	August 29, 2006	September 05, 2006	MHD ROUTE 3 IMPROVEMENT PROJ	DUXBURY AND MARSHFIELD	Yes	
<a href="#">MAR10C735</a>	August 29, 2006	September 05, 2006	MEDWAY - ROAD RECONSTRUCTION	MEDWAY	Yes	
<a href="#">MAR10C739</a>	August 29, 2006	September 05, 2006	ROADWAY RECONSTRUCTION PROJ	RAYNHAM	Yes	
<a href="#">MAR10C736</a>	August 29, 2006	September 05, 2006	ROADWAY RECONSTRUCTION	WORCESTER	Yes	

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10C738</a>	August 29, 2006	September 05, 2006	ROADWAY IMPROVEMENT PROJECT	HANOVER	Yes	
<a href="#">MAR10C779</a>	October 05, 2006	October 12, 2006	RECONSTRUCTION OF MAIN ROAD	GILL	Yes	
<a href="#">MAR10C867</a>	October 12, 2006	October 19, 2006	ROUTE 3 BRIDGE RECONSTRUCTION	ROCKLAND	Yes	
<a href="#">MAR10C881</a>	October 16, 2006	October 23, 2006	REPLACEMENT OF TWO BRIDGES	ATTLEBORO	Yes	
<a href="#">MAR10C945</a>	November 07, 2006	November 14, 2006	ROADWAY RECONSTRUCTION	DEDHAM / WESTWOOD	Yes	
<a href="#">MAR10CB02</a>	January 10, 2007	January 17, 2007	BOSTON ST BRIDGE REPLACEMENT	LYNN-SAUGUS	Yes	
<a href="#">MAR10CD40</a>	April 23, 2007	April 30, 2007	ROADWAY RECONSTRUCT AND WORK ON	ATHOL	Yes	
<a href="#">MAR10CD49</a>	April 26, 2007	May 03, 2007	CONSTRUCTION OF COMMERCE WAY	ATTLEBORO	Yes	
<a href="#">MAR10CD52</a>	April 27, 2007	May 04, 2007	ROTARY RECONSTRUCTION PROJECT	WORCESTER	Yes	
<a href="#">MAR10CD53</a>	April 27, 2007	May 04, 2007	BOSTON STREET BRIDGE	LYNN-SAUGUS	Yes	
<a href="#">MAR10CD54</a>	April 30, 2007	May 07, 2007	ROUTE 132 IMPROVEMENT PROJECT	BARNSTABLE	Yes	

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10CE99</a>	June 12, 2007	June 19, 2007	BRIGHTMAN ST BRIDGE REPLACE.	FALL RIVER AND SOMERSET	Yes	
<a href="#">MAR10CK60</a>	February 05, 2008	February 12, 2008	ROADWAY RECONSTRUCTION	GREENFIELD	Yes	
<a href="#">MAR10CK61</a>	February 07, 2008	February 14, 2008	RECONSTRUCTION OF ROUTE 66	NORTHAMPTON	Yes	
<a href="#">MAR10CK71</a>	February 19, 2008	February 26, 2008	CONSTRUCTION OF THE MANHAN TRAIL	NORTHAMPTON	Yes	
<a href="#">MAR10CK67</a>	March 10, 2008	March 17, 2008	ROADWAY RECONSTRUCTION OF LEVERETT,	SHUTESBURY	Yes	
<a href="#">MAR10CP22</a>	March 14, 2008	March 21, 2008	INTERSECTION RECONSTRUCTION RTE 20	WILBRAHAM	Yes	
<a href="#">MAR10CP37</a>	April 03, 2008	April 10, 2008	ROADWAY RECONSTRUCTION & RELATED	WESTHAMPTON	Yes	All States Asphalt
<a href="#">MAR10CM70</a>	April 11, 2008	April 18, 2008	Meridian St Reconstruction	Fall River	Yes	P. J. Keating Co.
<a href="#">MAR10CP42</a>	April 14, 2008	April 21, 2008	ROADWAY RESURFACING, RECONSTRUCTION	TEMPLETON	Yes	E. H. Perkins Construction, Inc.
<a href="#">MAR10CM74</a>	April 22, 2008	April 29, 2008	Interstate 495 Reconstruction	Raynham-Middleboro	Yes	Aggregate Industries
<a href="#">MAR10CM92</a>	April 22, 2008	April 29, 2008	Intersection Reconstruction	Orleans	Yes	Pavao Construction

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10CP70</a>	May 13, 2008	May 20, 2008	ROUTE 47 BRIDGE S-18-007 HADLEY ST	SOUTH HADLEY	Yes	Northern Construction
<a href="#">MAR10CP85</a>	May 27, 2008	June 03, 2008	ROADWAY RESURFACING & RECONSTRUCTION	PELHAM/ BELCHERTOWN	Yes	Palmer Paving
<a href="#">MAR10CP91</a>	May 29, 2008	June 05, 2008	SOUTHWICK RAIL TRAIL CONSTRUCTION	SOUTHWICK	Yes	The Lane Construction Co.
<a href="#">MAR10CP90</a>	May 29, 2008	June 05, 2008	BRIDGE REPLACEMENT(O- 03-21) STEEL	ORANGE	Yes	E. T. & L. Corporation
<a href="#">MAR10CP89</a>	May 29, 2008	June 05, 2008	INTERSECTION RECONSTRUCTION AT PAGE	SPRINGFIELD	Yes	A. Pereira Construcation, Co.
<a href="#">MAR10CP64</a>	June 11, 2008	July 20, 2008	ROADWAY RECONSTRUCTION 53234	DALTON	Yes	Maxymillian Inc.
<a href="#">MAR10CO39</a>	June 16, 2008	June 23, 2008	Mattapoissett Bikepath Ph 1A	Mattapoissett	Yes	Green Acres Landscape & Construction Co.
<a href="#">MAR10CO40</a>	June 16, 2008	June 23, 2008	Swan River Rd Reconstruction	Dennis	Yes	Lawrence Lynch Corp.
<a href="#">MAR10CO41</a>	June 16, 2008	June 23, 2008	Route 27 Reconstruction	Kingston	Yes	Lawrence Lynch Corp.
<a href="#">MAR10CR97</a>	September 22, 2008	September 29, 2008	Newport Ave Bridge	Attleboro	Yes	P. Gioloso & Sons, Inc.
<a href="#">MAR10CS07</a>	September 23, 2008	September 30, 2008	GULF ROAD BRIDGE	DARTMOUTH	Yes	S & R Contracting Corp.

<u>Tracking Number</u>	<u>NOI Submitted Date</u>	<u>Date of Coverage</u>	<u>Project/ Site Name</u>	<u>Project City</u>	<u>SWPPP created (Yes/No)</u>	<u>SWPPP created by:</u>
<a href="#">MAR10CS12</a>	September 23, 2008	September 30, 2008	EDGEHILL RD RECONSTRUCTION	BOURNE	Yes	E. T. & L. Corp.
<a href="#">MAR10CS39</a>	September 30, 2008	October 07, 2008	INTERSTATE 195 RESURFACING	SOMERSET	Yes	P.J. Keating Co.
<a href="#">MAR10CS47</a>	October 01, 2008	October 08, 2008	NEW BEDFORD BRIDGE REPLACEMENT	NEW BEDFORD	Yes	Aetna Bridge
<a href="#">MAR10CS96</a>	October 15, 2008	October 22, 2008	RESURFACING RELATED WORK ON A	BRIMFIELD	Yes	Palmer Paving
<a href="#">MAR10CS97</a>	October 15, 2008	October 22, 2008	RECONSTRUCTION OF STATE STREET	SPRINGFIELD	Yes	Palmer Paving
<a href="#">MAR10CS99</a>	October 15, 2008	October 22, 2008	SOUTH MAIN STREET,ROUTE 510	BERNARDSTON	Yes	All States Asphalt, Inc.
<a href="#">MAR10CT19</a>	October 21, 2008	October 28, 2008	EARLE STREET RECONSTRUCTION	Northampton	Yes	Gagliarducci Construction, Inc.

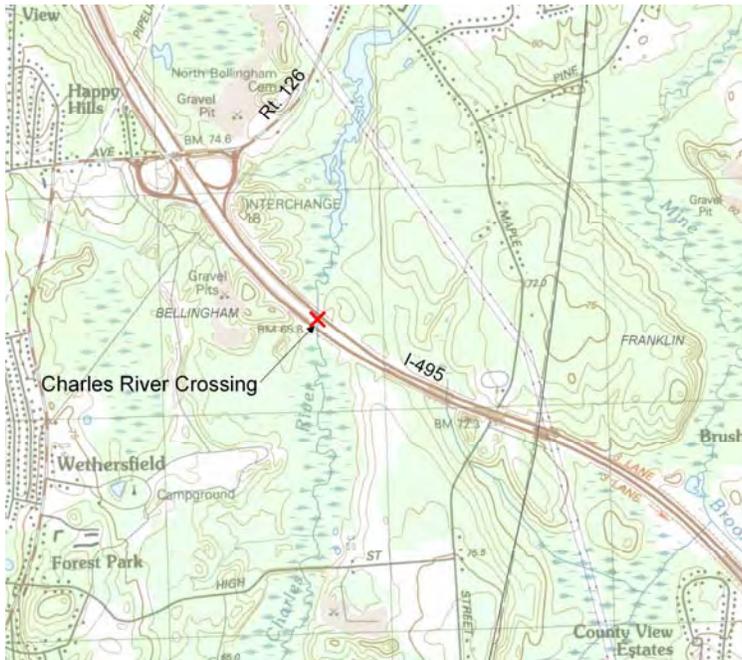
**Appendix I: Potential Water Quality Exceedance Sites Status Sheets**

## Interstate 495 - Bellingham

In response to a civil action suit brought upon by the Conservation Law Foundation (CLF), Massachusetts Highway Department (MassHighway) is focusing stormwater analysis and improvements on three sites identified as contributors to water quality (copper, lead and zinc) exceedances experienced by the Charles and Nashua Rivers. This sheet describes Interstate 495 Bellingham site.



Vladimir Novotny presented an expert report entitled Pollution and Receiving Water Quality Impairment by Massachusetts Highway Systems in October, 2007, which CLF used to develop their case against MassHighway. In this report, Dr. Novotny estimates the probability of exceeding the water quality standards at this site over a 3-year period due to pollutant loads from Mass Highway roadways: **2.4% for copper, 0.0% for lead, and 1.8% for zinc**. Any probability over 0.2% indicates an exceedance and, therefore, violation. The exceedance calculations were based on rough watershed areas, estimated MassHighway contributing road areas, estimated pollutant runoff loads based on a limited data set from USGS, estimated background concentrations, and the assumption that no runoff treatment occurs.



Mass Highway's consultant AECOM has reviewed Dr. Novotny's model and compiled updated input parameters based on more detailed knowledge of the road segments and stormwater systems. AECOM performed a site visit noting flow patterns, stormwater infrastructure, and existing mitigation measures. The roadway area contributing to the Bellingham crossing is nearly half the estimated size estimated by Dr. Novotny causing less predicted runoff, less load, and a lower time of concentration.

	Contributing Roadway Area (ac)	Hydraulic Length (ft)	Existing Treatment Included
Novotny Estimated Parameters	10.5	10,397	none
Revised Parameters	5.9	2,000	vegetated swale

During AECOM's site visit, the median to the east of the stream crossing was identified as an existing treatment mechanism due to its vegetation and detention capabilities. Almost 50% of the watershed is conveyed through this swale, retaining a volume equivalent of 2.3-inches over the watershed and providing an estimated 15% removal of copper and lead and 20% removal of zinc for the excess discharge.

Mass Highway did not have access to Dr. Novotny's full model and therefore could not comparatively re-run the model with these new parameters and pollutant removals.



Therefore, MassHighway and AECOM have been waiting for the USGS's updated highway runoff model, scheduled to be released in the Summer 2009 which includes runoff data calibrated to MassHighway roads, a BMP module, and decision support model.

Mass Highways next steps for this site include the following to achieve construction by December 2010:

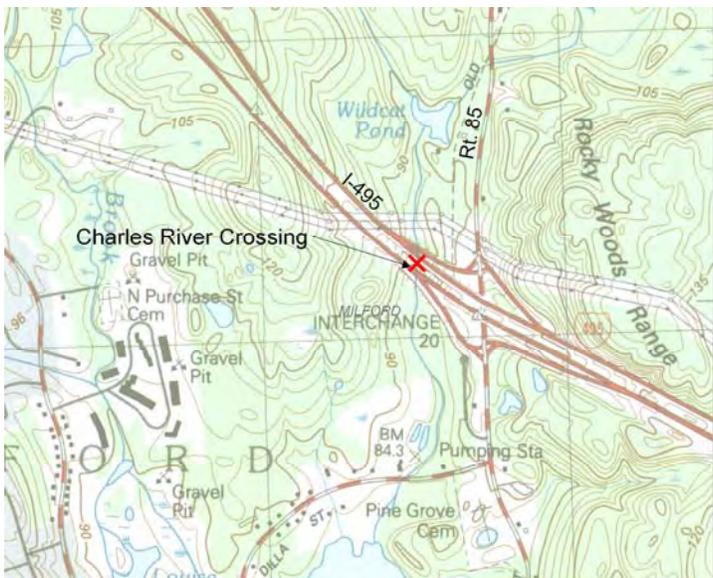
- August 2009 – Run USGS highway runoff model to determine current level of Mass Highway impact on exceedances. Determine how much (if any) further mitigation is necessary.
- September 2009 – Conceptually design improvements to meet mitigation goals
- September 2009 – Survey area for topography and wetlands
- November 2009 – Begin permitting process with draft design
- March 2010 – Prepare final design and bid documents
- April/May 2010 – Solicit and choose contractor
- June - December 2010 – Construction

## Interstate 495 - Milford

In response to a civil action suit brought upon by the Conservation Law Foundation (CLF), Massachusetts Highway Department (MassHighway) is focusing stormwater analysis and improvements on three sites identified as contributors to water quality (copper, lead and zinc) exceedances experienced by the Charles and Nashua Rivers. This sheet describes the Interstate 495 Milford site.



Vladimir Novotny presented an expert report entitled Pollution and Receiving Water Quality Impairment by Massachusetts Highway Systems in October, 2007, which CLF used to develop their case against MassHighway. In this report, Dr. Novotny estimates the probability of exceeding the water quality standards at this site over a 3-year period due to pollutant loads from Mass Highway roadways: **1.9% for copper, 0.2% for lead, and 1.6% for zinc**. Any probability over 0.2% indicates an exceedance and, therefore, violation. The exceedance calculations were based on rough watershed areas, estimated MassHighway contributing road areas, estimated pollutant runoff loads based on a limited data set from USGS, estimated background concentrations, and the assumption that no runoff treatment occurs.



Mass Highway's consultant AECOM has reviewed Dr. Novotny's model and compiled updated input parameters based on more detailed knowledge of the road segments and stormwater systems. AECOM performed a site visit noting flow patterns, stormwater infrastructure, and existing mitigation measures. AECOM observed that runoff from the highway and median collects between the on ramps where an inlet structure diverts lower flows south, eventually to Cedar Swamp Pond. Only when water builds up to a depth of approximately

	Contributing Roadway Area (ac)	Hydraulic Length (ft)	Existing Treatment Included
Novotny Estimated Parameters	6.0	3,038	none
Revised Parameters	18.3	3,800	runoff diverted

two feet does it overflow to the Charles River. This detention area collects the entire watershed which includes over three times the estimated road area estimated by Dr. Novotny. Based on AECOM's calculations, a 4-inch storm event (approximately 10-year, 24-hour storm event) would be necessary to cause overflow to the Charles River.

Mass Highway did not have access to Dr. Novotny's full model and therefore could not comparatively re-run the model with these new parameters and water diversions. Therefore, MassHighway and AECOM have been waiting for the USGS's updated highway runoff model, scheduled to be released in the Summer 2009 which includes runoff data calibrated to MassHighway roads, a BMP module, and decision



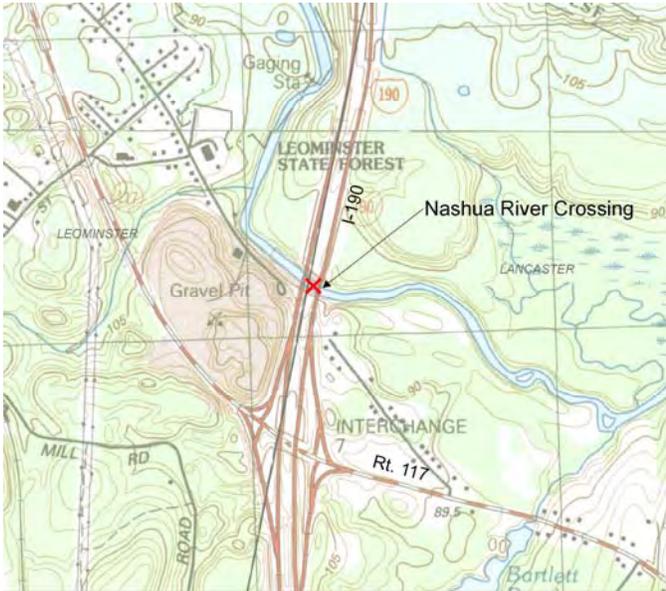
support model. Based on the stormwater infrastructure configuration observed during the site visit, MassHighway suspects that their roads are not contributing to the water quality impairments.

Mass Highways next steps for this site include the following to achieve construction by December 2010:

- August 2009 – Run USGS highway runoff model to determine current level of Mass Highway impact on exceedances. Determine how much (if any) further mitigation is necessary.
- September 2009 – Survey area for topography, stormwater structures and wetlands to confirm flow patterns
- September 2009 – Determine necessity to design and construct mitigation

## Interstate 190 - Lancaster

In response to a civil action suit brought upon by the Conservation Law Foundation (CLF), Massachusetts Highway Department (MassHighway) is focusing stormwater analysis and improvements on three sites identified as contributors to water quality (copper, lead and zinc) exceedances experienced by the Charles and Nashua Rivers. This sheet describes the Interstate 190, Lancaster site.



Vladimir Novotny presented an expert report entitled Pollution and Receiving Water Quality Impairment by Massachusetts Highway Systems in October, 2007, which CLF used to develop their case against MassHighway. In this report, Dr. Novotny estimates the probability of exceeding the water quality standards at this site over a 3-year period due to pollutant loads from Mass Highway roadways: **0.7% for copper, 0.0% for lead, and 0.7% for zinc**. Any probability over 0.2% indicates an exceedance and, therefore, violation. The exceedance calculations were based on rough watershed areas, estimated MassHighway contributing road areas, estimated pollutant runoff loads based on a limited data set from USGS, estimated background concentrations, and the assumption that no runoff treatment occurs.

Mass Highway's consultant AECOM has reviewed Dr. Novotny's model and compiled updated input parameters based on more detailed knowledge of the road segments and stormwater systems. AECOM performed a site visit noting flow patterns, stormwater infrastructure, and existing mitigation measures. AECOM observed that runoff from portions of the highway and median collect at two different locations where runoff is retained and recharged. Almost the entire watershed is conveyed through these basins providing an estimated 85% removal of copper, lead and zinc. Both basins have piped overflows set two to three feet above the basin bottoms to the Nashua River. The roadway area contributing to this detention area less than the estimated size estimated by Dr. Novotny.

	Contributing Roadway Area (ac)	Hydraulic Length (ft)	Existing Treatment Included
Novotny Estimated Parameters	16.6	12,752	none
Revised Parameters	11.5	3,000	2 recharge basins

Mass Highway did not have access to Dr. Novotny's full model and therefore could not comparatively re-run the model with these new parameters and treatment basins. Therefore, MassHighway and AECOM have been waiting for the USGS's updated highway runoff model, scheduled to be released in the Summer 2009, which includes runoff data calibrated to MassHighway roads, a BMP module, and decision support model. Mass Highways next steps for this site include the following to achieve construction by December 2010:

- August 2009 – Run USGS highway runoff model to determine current level of Mass Highway impact on exceedances. Determine how much (if any) further mitigation is necessary.



- September 2009 – Conceptually design improvements to meet mitigation goals
- September 2009 – Survey area for topography and wetlands
- November 2009 – Begin permitting process with draft design
- March 2010 – Prepare final design and bid documents
- April/May 2010 – Solicit and choose contractor
- June - December 2010 – Construction