



# Haverhill

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April 29, 2008

Environmental Protection Agency  
Water Technical Unit (SEW)  
PO Box 8127  
Boston, Massachusetts 02114

Massachusetts Department of Environmental Protection  
Northeast Regional Office  
Bureau of resource Protection  
205B Lowell Street  
Wilmington, MA 01887

Subject: City of Haverhill, MA NPDES Permit # **MA 0101621**  
Combined Sewer Overflow Annual Report

Dear EPA & DEP:

In accordance with the City of Haverhill's NPDES Permit we are providing this status report for the 2007 calendar year. Please note that throughout this report the items in *italic* are the requirements taken directly from the NPDES permit followed by the response.

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*Activation frequency and discharge volume for each CSO during the pervious calendar year. The report shall include this information for each of the CSO discharge outfalls listed on attachment E.*

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EPA and DEP previously approved the City of Haverhill's SWMM computer model for simulating CSO activations. For details of the model, the reader should consult the report titled "SWMM Model Calibration and Evaluation of Existing Conditions" prepared by Camp Dresser & McKee (CDM) dated July 1998.

On September 6, 2007, the City of Haverhill raised CSO weir LITTLE RIVER SOUTH NPDES NUMBER 21E from elevation 9.5-feet to elevation 10.3-feet. The SWMM model was run to simulate conditions before the weir was raised, after the weir was raised and for the entire year if the weir was raised. The SWMM Model predicted a 5 million gallon (MG) reduction by raising this weir.

**APPENDIX A: CSO SUMMARY CALANDER YEAR 2007** was prepared based on output from this SWMM model and includes estimates of CSO activations (including number of events,

duration and volume discharge) during the 2007 calendar year. Note there were no predicted discharges from many of the CSOs listed in **Appendix A**.

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*a. Precipitation during the previous year for each day, including total rainfall (express in inches), peak intensity (highest 15 minute sample multiplied by four to convert to inches per hour), and average intensity (the total rainfall for the storm event divided by the duration of the storm, expressed in inches per hour.)*

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Rain data is collected at the City of Haverhill Wastewater Treatment Plant using a RainWise, Inc., rain gage. The rain is measured in 15-minute intervals to within 0.01 inches. In order to keep track of each storm, peak and average intensities are recorded and calculated base on the daily rainfall, rather than from the entire storm duration. Most storm durations frequently start and stop more than once in a day. See **APPENDIX B: CALENDAR YEAR 2007 RAINFALL DATA**.

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*b. A certification, which states that the previous calendar's year's monthly inspections were conducted, results recorded, and records maintained.*

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I certify that the City of Haverhill inspects and maintains pertinent records from all CSOs at least monthly. As presented to EPA in the quarterly reports, the City of Haverhill actively maintains the CSO block testing program. This program consists of placing a small wooden block on each CSO weir attached to a cable. After every significant rainfall event, Collection System Division personnel visually check each block, record results, and notify downstream communities as appropriate. Please note, all block-testing results were submitted to EPA quarterly until the Administrative Order 02-06 was completed on June 2006. Block check results can be observed in **APPENDIX C: CALENDAR YEAR 2007 CSO BLOCK CHECK RESULTS**.

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*c. A summary of modifications to the approved NMC programs which have been evaluated, and a description of those, which will be implemented during the upcoming year.*

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The City of Haverhill is currently minimizing CSO discharges to the maximum extent possible and in compliance with the Draft Nine Minimum Controls submitted to EPA in September 1996. Because the remaining discharges do have a minor impact on water quality in the Merrimack River and virtually no impact on Little River, the City is, implementing options for CSO control with a project costs of \$16.5 Million. CSO abatement alternatives were evaluated to assess the benefit versus cost-effectiveness of reducing discharges further. CSO reduction alternatives considered in the Long-Term Control Plan are as follows:

The city of Haverhill is committed to moving forward with programs that will clearly have a positive impact on water quality and use of the Merrimack and Little Rivers. This has already been demonstrated by our commitment to fund the design and construction of the WWTP expansion program and Bradford-side CSO modifications.

A clear plan for environmental restoration of the river is needed through targeted investments. This plan must be based on a full understanding of all the issues facing the river. This way the

right investments can be made and the public at large can see the real benefit of these investments.

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*In the first annual report submitted in accordance with this permit, the permittee shall submit a public notification plan to describe the measures actively being taken to meet NMC #9 (see NMC #9 in part I.C.1a.i.8), and an evaluation of future measures to enhance the public notification program, including the following;*

- i. Outfall sign visible from both water and land.*
  - ii. Sign/Notices are where people may be using CSO-impacted waters for recreation such as swimming, boating, fishing, and places where the public may gain access to the water (e.g. boat put-in areas). The notice would include information on health risk posed by CSO and links for additional information on CSOs and water quality.*
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Public notification programs are intended to ensure that the public and community receives adequate information about CSOs including the locations of the outfalls, the magnitude of the discharges, and the affect on the receiving waters. The principal benefit of a notification program is to reduce the potential public health risk in affected areas and to increase public awareness of CSOs.

The City's Public Notification Program, (required by the NMC), consists of public education about CSO discharges and their impacts. "Real-Time" notification of the receiving water impacts or use restrictions during the activation of the CSO discharge is not feasible (due to its transient and intermittent occurrences). Accordingly, the City relies on a general education program and the City's official web site to keep the public aware of the possible health risks. The address below is the City's CSO web site.

[http://www.ci.haverhill.ma.us/departments/water/waste\\_water/collection/index.htm](http://www.ci.haverhill.ma.us/departments/water/waste_water/collection/index.htm)

Signs have been installed at each CSO location in the City and will be maintained over the coming year. See **Appendix D: Work Order 33829** verifying that all CSO signage is posted.

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- iii. Review of the sewer system model to determine the threshold rain events, which normally will cause overflows.*
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CDM has provided the City an Excel spreadsheet to simulate CSO activations and volumes. The City is working with CDM to refine the formula in the spreadsheet to ensure that accurate results are obtained. .

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- iv. Quarterly postings on the permittee's website and links to other relevant web-sites which would give the locations of the CSOs, and associated health risks and estimate of CSO activations and volumes. The permittee shall update the CSO website within two(2) months of the effective date of the permit.*
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The City of Haverhill's CSO official web site is

[http://www.ci.haverhill.ma.us/departments/water/waste\\_water/collection/index.htm](http://www.ci.haverhill.ma.us/departments/water/waste_water/collection/index.htm)

The SWMM model statistics from 2003 to 2007 are shown on the City web page on the following link:

[http://www.ci.haverhill.ma.us/departments/water/waste\\_water/collection/cso1.html](http://www.ci.haverhill.ma.us/departments/water/waste_water/collection/cso1.html)

The City updated its CSO web site on Monday April 14, 2007, and updated all web addresses mention in the report.

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- v. *Annual press release and notification to interested individuals and groups on the progress of the CSO abatement work, also noting contacts for additional information on CSOs and water quality.*
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The City has contacted downstream communities and sent the 2007 SWMM model report. When other interested individuals are identified, this notification will be sent to them also.

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- vi. *Notice to local health agents and other downstream public officials, including drinking water treatment plants (where appropriate), shellfish wardens, harbor masters, and the Massachusetts Division of Marine Fisheries (via FAX at 617-727-3337) or via telephone (978-282-0308 extension 160) within 24 hours of activation of CSOs. The permittee shall also notify the Massachusetts Divisions of Marine Fisheries by the same method if the treatment plant discharges effluent without disinfection. When City of Haverhill staff is unavailable to confirm an actual discharge from a CSO during a significant precipitation event, the permittee shall report the probable occurrence of a CSO discharge in the same manner. Subsequently, the occurrence of the CSO discharge event shall be confirmed or dispelled as staff becomes available. The planned notice distribution contact list shall be provided to EPA and DEP.*
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*The public notification plan shall include a schedule for implementation of enhanced public notice measures.*

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**APPENDIX E: DOWNSTREAM COMMUNITIES** represents the lists the current emails addresses to be notified for Calendar 2008.

If you require additional information, please call me at 978-374-2382.

Sincerely,



Paul J. Jessel  
Collection System Supervisor

cc: Mike Stankovich, DPW Director  
Robert Ward, Deputy DPW Water/Wastewater  
Fred Haffty WWTP Facility Manager  
Don Freeman, CDM  
Jeff Kennedy Massachusetts Division of Marine Fisheries  
[jeff.kennedy@state.ma.us](mailto:jeff.kennedy@state.ma.us)

# APPENDIX A: CSO SUMMARY CALANDER YEAR 2007

## Before Weir was Raised

| STRUCNAME | Full Name               | NPDES # | Events | Volume (MG) | Hours   |
|-----------|-------------------------|---------|--------|-------------|---------|
| NLSIGTOF  | Lower Siphon            | 013     | 4      | 3.69925644  | 9.37    |
| NMDH04W   | Winter Street & Hale St | 021H    | 8      | 1.50988288  | 12.76   |
| NMESOF-D  | Middle Siphon           | 021     | 6      | 4.2453488   | 17.64   |
| NMMSE3    | Little River East       | 021E    | 10     | 3.63821216  | 25.87   |
| NMNS01B   | Little River West       | 021D    | 4      | 0.18852592  | 10.51   |
| NUSIGTOF  | Upper Siphon            | 024     | 4      | 5.307434    | 10.51   |
| NUWS02WR  | River Street            | 023     | 1      | 0.0035156   | 0.38    |
| SLSB08WR  | Ferry Street            | 036     | 3      | 0.27274324  | 2.62    |
| SLSB10WR  | South Main Street       | 035     | 10     | 0.98950676  | 57.76   |
| SLSB12WR  | Middlesex Street        | 034     | 8      | 18.29924404 | 1147.13 |
| SMSB01WR  | South Prospect Street   | 033     | 4      | 0.2158354   | 9.38    |
| SMSB03WR  | Bradford Avenue         | 032     | 12     | 5.30504788  | 37.88   |
| SUSB02WR  | Front Street            | 031     | 5      | 1.27615532  | 15.01   |
| NLRS28WR  | Bates Bridge            | 001     |        |             |         |
| NUMN04WR  | Beach Street            | 025     |        |             |         |
| NLRS04WR  | Boardman Street         | 010     |        |             |         |
| NLWS09WR  | Fire Station            | 016     |        |             |         |
| NLMI12WR  | Mill Street             | ---     |        |             |         |
| NLWS13OF  | Main Street - North     | 019     |        |             |         |
| NUWS09OF  | Railroad Bridge         | 022     |        |             |         |
| NMBR02W   | Broadway Regulator      |         |        |             |         |
| NMHI01W   | High Street Regulator   | 038     |        |             |         |
| Totals:   |                         |         |        | 44.95       |         |

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## After Weir was Raised

| STRUCNAME      | Full Name               | NPDES # | Events | Volume (MG)  | Hours |
|----------------|-------------------------|---------|--------|--------------|-------|
| NLSIGTOF       | Lower Siphon            | 013     | 2      | 0.7751524    | 2.62  |
| NMDH04W        | Winter Street & Hale St | 021H    | 4      | 0.12014376   | 3     |
| NMESOF-D       | Middle Siphon           | 021     | 2      | 0.5697516    | 4.5   |
| NMMSE3         | Little River East       | 021E    | 5      | 0.88238568   | 7.86  |
| NMNS01B        | Little River West       | 021D    | 2      | 0.03607604   | 2.62  |
| NUSIGTOF       | Upper Siphon            | 024     | 2      | 0.724812     | 3     |
| NUWS02WR       | River Street            | 023     | 1      | 0.0035156    | 0.38  |
| SLSB08WR       | Ferry Street            | 036     | 2      | 0.01493756   | 1.5   |
| SLSB10WR       | South Main Street       | 035     | 2      | 0.2183412    | 3.38  |
| SLSB12WR       | Middlesex Street        | 034     | 4      | 6.18297548   | 111   |
| SMSB01WR       | South Prospect Street   | 033     | 2      | 0.02777324   | 2.62  |
| SMSB03WR       | Bradford Avenue         | 032     | 6      | 1.85652852   | 21    |
| SUSB02WR       | Front Street            | 031     | 2      | 0.111826     | 3.38  |
| NLRS28WR       | Bates Bridge            | 001     |        |              |       |
| NUMN04WR       | Beach Street            | 025     |        |              |       |
| NLRS04WR       | Boardman Street         | 010     |        |              |       |
| NLWS09WR       | Fire Station            | 016     |        |              |       |
| NLMI12WR       | Mill Street             | ---     |        |              |       |
| NLWS13OF       | Main Street - North     | 019     |        |              |       |
| NUWS09OF       | Railroad Bridge         | 022     |        |              |       |
| NMBR02W        | Broadway Regulator      |         |        |              |       |
| NMHI01W        | High Street Regulator   | 038     |        |              |       |
| <b>Totals:</b> |                         |         |        | <b>11.52</b> |       |

CSO TOTAL CALENDAR YEAR 2007

56.47 MG

# APPENDIX A: CSO SUMMARY CALANDER YEAR 2007

## If Weir Was Raised For The Entire Year

| STRUCNAME         | Full Name               | NPDES # | Events | Volume (MG)  | Hours  |
|-------------------|-------------------------|---------|--------|--------------|--------|
| NLSIGTOF          | Lower Siphon            | 013     | 6      | 5.56013084   | 12.74  |
| NMDH04W           | Winter Street & Hale St | 021H    | 12     | 1.62957784   | 15.76  |
| NMESOF-D          | Middle Siphon           | 021     | 8      | 4.9189976    | 22.14  |
| NMMSE3            | Little River East       | 021E    | 15     | 4.52174976   | 33.73  |
| NMNS01B           | Little River West       | 021D    | 6      | 0.22021868   | 13.13  |
| NUSIGTOF          | Upper Siphon            | 024     | 6      | 6.0275336    | 13.89  |
| NUWS02WR          | River Street            | 023     | 1      | 0.0035156    | 0.38   |
| SLSB08WR          | Ferry Street            | 036     | 5      | 0.28747136   | 4.12   |
| SLSB10WR          | South Main Street       | 035     | 12     | 1.20747396   | 61.14  |
| SLSB12WR          | Middlesex Street        | 034     | 10     | 18.33701056  | 1150.9 |
| SMSB01WR          | South Prospect Street   | 033     | 6      | 0.24228468   | 11.63  |
| SMSB03WR          | Bradford Avenue         | 032     | 18     | 7.17569864   | 58.88  |
| SUSB02WR          | Front Street            | 031     | 7      | 1.47511584   | 18.39  |
| NLRS28WR          | Bates Bridge            | 001     |        |              |        |
| NUMN04WR          | Beach Street            | 025     |        |              |        |
| NLRS04WR          | Boardman Street         | 010     |        |              |        |
| NLWS09WR          | Fire Station            | 016     |        |              |        |
| NLMI12WR          | Mill Street             | ---     |        |              |        |
| NLWS13OF          | Main Street - North     | 019     |        |              |        |
| NUWS09OF          | Railroad Bridge         | 022     |        |              |        |
| NMBR02W           | Broadway Regulator      |         |        |              |        |
| NMHI01W           | High Street Regulator   | 038     |        |              |        |
| <b>CSO TOTAL:</b> |                         |         |        | <b>51.61</b> |        |



# APPENDIX B: CALENDAR YEAR 2007 RAINFALL DATA.

| Storm Date        | Peak Hour<br>Depth<br>(inches) | Storm<br>Depth<br>(inches) | Duration<br>(hours) | DAILY     |
|-------------------|--------------------------------|----------------------------|---------------------|-----------|
|                   |                                |                            |                     | Average   |
|                   | Intensity                      | Rain                       |                     | Intensity |
|                   | (in/hr.)                       | Total (in)                 |                     | (in/hr.)  |
|                   |                                |                            |                     |           |
| January 6, 2007   | 0.04                           | 0.07                       | 1.75                | 0.01      |
| January 8, 2007   | 0.28                           | 0.99                       | 11.00               | 0.02      |
| January 14, 2007  | 0.08                           | 0.09                       | 2.00                | 0.01      |
| January 15, 2007  | 0.16                           | 0.67                       | 8.00                | 0.02      |
| January 18, 2007  | 0.04                           | 0.01                       | 0.25                | 0.01      |
| January 19, 2007  | 0.12                           | 0.15                       | 3.00                | 0.01      |
| January 28, 2007  | 0.04                           | 0.02                       | 0.50                | 0.01      |
| February 2, 2007  | 0.04                           | 0.06                       | 1.50                | 0.01      |
| February 3, 2007  | 0.16                           | 0.21                       | 2.50                | 0.02      |
| February 16, 2007 | 0.04                           | 0.03                       | 0.75                | 0.01      |
| February 17, 2007 | 0.28                           | 0.48                       | 4.75                | 0.03      |
| February 18, 2007 | 0.04                           | 0.04                       | 1.00                | 0.01      |
| February 23, 2007 | 0.04                           | 0.03                       | 0.75                | 0.03      |
| February 26, 2007 | 0.04                           | 0.02                       | 0.50                | 0.01      |
| March 2, 2007     | 0.40                           | 1.61                       | 10.75               | 0.04      |
| March 3, 2007     | 0.04                           | 0.01                       | 0.25                | 0.01      |
| March 11, 2007    | 0.08                           | 0.22                       | 4.00                | 0.01      |
| March 14, 2007    | 0.04                           | 0.01                       | 0.25                | 0.01      |
| March 15, 2007    | 0.08                           | 0.11                       | 2.25                | 0.00      |
| March 17, 2007    | 0.20                           | 1.29                       | 12.25               | 0.03      |
| March 18, 2007    | 0.04                           | 0.01                       | 0.25                | 0.01      |
| March 20, 2007    | 0.04                           | 0.02                       | 0.50                | 0.01      |
| March 24, 2007    | 0.08                           | 0.14                       | 2.50                | 0.01      |
| March 25, 2007    | 0.12                           | 0.20                       | 3.25                | 0.02      |
| March 26, 2007    | 0.04                           | 0.06                       | 1.50                | 0.01      |
| March 27, 2007    | 0.08                           | 0.11                       | 1.75                | 0.02      |
| April 2, 2007     | 0.12                           | 0.26                       | 5.75                | 0.01      |
| April 3, 2007     | 0.04                           | 0.05                       | 1.25                | 0.01      |
| April 4, 2007     | 0.16                           | 0.58                       | 7.00                | 0.02      |
| April 5, 2007     | 0.24                           | 0.68                       | 6.75                | 0.03      |
| April 12, 2007    | 0.40                           | 0.80                       | 8.50                | 0.02      |
| April 15, 2007    | 0.32                           | 1.63                       | 14.25               | 0.03      |
| April 16, 2007    | 0.48                           | 2.17                       | 11.00               | 0.05      |
| April 17, 2007    | 0.08                           | 0.52                       | 11.50               | 0.01      |
| April 18, 2007    | 0.04                           | 0.17                       | 4.25                | 0.01      |
| April 19, 2007    | 0.04                           | 0.01                       | 0.25                | 0.01      |
| April 25, 2007    | 0.08                           | 0.13                       | 2.75                | 0.01      |
| April 27, 2007    | 0.24                           | 0.69                       | 6.50                | 0.03      |
| April 28, 2007    | 0.04                           | 0.03                       | 0.75                | 0.01      |
| April 29, 2007    | 0.04                           | 0.06                       | 1.50                | 0.01      |
| April 30, 2007    | 0.24                           | 0.16                       | 1.75                | 0.02      |
| May 2, 2007       | 0.08                           | 0.07                       | 1.50                | 0.01      |

# APPENDIX B: CALENDAR YEAR 2007 RAINFALL DATA.

| Storm Date         | Peak Hour<br>Depth<br>(inches) | Storm<br>Depth<br>(inches) | Duration<br>(hours) | DAILY     |
|--------------------|--------------------------------|----------------------------|---------------------|-----------|
|                    |                                |                            |                     | Average   |
|                    | Intensity                      | Rain                       |                     | Intensity |
|                    | (in/hr.)                       | Total (in)                 |                     | (in/hr.)  |
| May 11, 2007       | 0.68                           | 0.44                       | 2.75                | 0.04      |
| May 15, 2007       | 0.08                           | 0.05                       | 1.00                | 0.01      |
| May 16, 2007       | 0.64                           | 1.18                       | 5.75                | 0.05      |
| May 17, 2007       | 0.08                           | 0.02                       | 0.25                | 0.02      |
| May 18, 2007       | 0.20                           | 1.11                       | 15.00               | 0.02      |
| May 19, 2007       | 0.12                           | 0.48                       | 9.75                | 0.01      |
| May 20, 2007       | 0.16                           | 0.30                       | 4.50                | 0.02      |
| June 1, 2007       | 0.04                           | 0.01                       | 0.25                | 0.01      |
| June 2, 2007       | 2.00                           | 1.09                       | 0.75                | 0.36      |
| June 3, 2007       | 0.04                           | 0.02                       | 0.50                | 0.01      |
| June 4, 2007       | 0.80                           | 1.51                       | 15.25               | 0.02      |
| June 5, 2007       | 0.04                           | 0.01                       | 0.25                | 0.01      |
| June 9, 2007       | 0.12                           | 0.06                       | 1.00                | 0.02      |
| June 10, 2007      | 0.04                           | 0.01                       | 0.25                | 0.01      |
| June 20, 2007      | 0.28                           | 0.10                       | 1.00                | 0.03      |
| June 21, 2007      | 0.08                           | 0.02                       | 0.25                | 0.02      |
| June 22, 2007      | 0.16                           | 0.10                       | 1.75                | 0.01      |
| July 1, 2007       | 0.12                           | 0.07                       | 1.00                | 0.02      |
| July 4, 2007       | 0.12                           | 0.19                       | 3.25                | 0.01      |
| July 5, 2007       | 2.40                           | 1.32                       | 3.75                | 0.09      |
| July 6, 2007       | 0.24                           | 0.10                       | 1.25                | 0.02      |
| July 9, 2007       | 0.40                           | 0.17                       | 1.50                | 0.03      |
| July 12, 2007      | 0.56                           | 0.27                       | 0.50                | 0.14      |
| July 15, 2007      | 0.08                           | 0.08                       | 1.50                | 0.01      |
| July 18, 2007      | 0.08                           | 0.08                       | 1.75                | 0.01      |
| July 19, 2007      | 0.24                           | 0.32                       | 3.25                | 0.02      |
| July 20, 2007      | 0.08                           | 0.04                       | 0.75                | 0.01      |
| July 23, 2007      | 0.08                           | 0.07                       | 1.25                | 0.01      |
| July 24, 2007      | 0.04                           | 0.01                       | 0.25                | 0.01      |
| July 28, 2007      | 0.72                           | 0.22                       | 0.75                | 0.07      |
| July 30, 2007      | 0.16                           | 0.09                       | 1.50                | 0.02      |
| August 6, 2007     | 0.64                           | 0.39                       | 1.75                | 0.00      |
| August 8, 2007     | 0.20                           | 0.21                       | 2.75                | 0.02      |
| August 10, 2007    | 0.04                           | 0.01                       | 0.25                | 0.01      |
| August 13, 2007    | 0.32                           | 0.14                       | 0.50                | 0.07      |
| August 18, 2007    | 0.12                           | 0.09                       | 1.25                | 0.02      |
| September 8, 2007  | 0.04                           | 0.02                       | 0.50                | 0.01      |
| September 9, 2007  | 0.68                           | 0.53                       | 3.00                | 0.04      |
| September 10, 2007 | 0.12                           | 0.09                       | 1.00                | 0.02      |
| September 11, 2007 | 0.72                           | 1.32                       | 6.00                | 0.06      |
| September 15, 2007 | 0.16                           | 0.38                       | 4.75                | 0.02      |
| September 27, 2007 | 0.12                           | 0.06                       | 0.75                | 0.02      |
| September 28, 2007 | 0.04                           | 0.01                       | 0.25                | 0.01      |
| October 6, 2007    | 0.24                           | 0.18                       | 1.50                | 0.03      |
| October 7, 2007    | 0.04                           | 0.05                       | 1.25                | 0.01      |
| October 8, 2007    | 0.40                           | 0.72                       | 5.00                | 0.04      |
| October 9, 2007    | 0.32                           | 0.16                       | 1.00                | 0.04      |
| October 10, 2007   | 0.04                           | 0.04                       | 1.00                | 0.01      |
| October 11, 2007   | 0.12                           | 0.21                       | 4.00                | 0.01      |

# APPENDIX B: CALENDAR YEAR 2007 RAINFALL DATA.

| Storm Date        | Peak Hour<br>Depth<br>(inches) | Storm<br>Depth<br>(inches) | Duration<br>(hours) | DAILY     |
|-------------------|--------------------------------|----------------------------|---------------------|-----------|
|                   |                                |                            |                     | Average   |
|                   | Intensity                      | Rain                       |                     | Intensity |
|                   | (in/hr.)                       | Total (in)                 |                     | (in/hr.)  |
| October 12, 2007  | 0.36                           | 0.32                       | 3.50                | 0.02      |
| October 19, 2007  | 0.72                           | 0.98                       | 3.75                | 0.07      |
| October 20, 2007  | 0.56                           | 0.27                       | 2.75                | 0.02      |
| October 23, 2007  | 0.04                           | 0.03                       | 0.75                | 0.01      |
| October 24, 2007  | 0.12                           | 0.13                       | 2.75                | 0.01      |
| October 25, 2007  | 0.04                           | 0.03                       | 0.75                | 0.01      |
| October 27, 2007  | 0.40                           | 0.63                       | 8.75                | 0.02      |
| November 3, 2007  | 0.24                           | 1.07                       | 9.25                | 0.03      |
| November 6, 2007  | 0.32                           | 0.70                       | 7.75                | 0.02      |
| November 7, 2007  | 0.04                           | 0.01                       | 0.25                | 0.01      |
| November 13, 2007 | 0.08                           | 0.15                       | 3.75                | 0.01      |
| November 15, 2007 | 0.24                           | 0.46                       | 3.75                | 0.03      |
| November 16, 2007 | 0.12                           | 0.12                       | 2.00                | 0.02      |
| November 20, 2007 | 0.12                           | 0.12                       | 2.00                | 0.02      |
| November 21, 2007 | 0.04                           | 0.02                       | 0.50                | 0.01      |
| November 22, 2007 | 0.04                           | 0.02                       | 0.50                | 0.01      |
| November 26, 2007 | 0.16                           | 0.50                       | 9.50                | 0.01      |
| November 27, 2007 | 0.04                           | 0.04                       | 1.00                | 0.01      |
| December 3, 2007  | 0.04                           | 0.05                       | 1.25                | 0.01      |
| December 5, 2007  | 0.04                           | 0.05                       | 1.25                | 0.01      |
| December 8, 2007  | 0.04                           | 0.01                       | 0.25                | 0.01      |
| December 11, 2007 | 0.12                           | 0.22                       | 3.75                | 0.01      |
| December 12, 2007 | 0.04                           | 0.01                       | 0.25                | 0.01      |
| December 14, 2007 | 0.08                           | 0.10                       | 2.00                | 0.01      |
| December 16, 2007 | 0.04                           | 0.01                       | 0.25                | 0.01      |
| December 19, 2007 | 0.08                           | 0.10                       | 2.25                | 0.01      |
| December 22, 2007 | 0.08                           | 0.09                       | 1.75                | 0.01      |
| December 23, 2007 | 0.20                           | 0.56                       | 6.00                | 0.02      |
| December 24, 2007 | 0.08                           | 0.03                       | 0.50                | 0.02      |
| December 27, 2007 | 0.12                           | 0.27                       | 5.50                | 0.01      |
| December 28, 2007 | 0.08                           | 0.11                       | 1.00                | 0.03      |
| December 29, 2007 | 0.08                           | 0.18                       | 3.50                | 0.01      |
| December 31, 2007 | 0.28                           | 0.56                       | 3.00                | 0.05      |
|                   |                                |                            |                     |           |

Appendix C: Block Monitoring

| DATE: JANUARY 2007       | 1 | 2 | 3 | 4 | 5    | 6    | 7    | 8    | 9 | 10 | 11 | 12 | 13 | 14   | 15   | 16 | 17 | 18   | 19   | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27   | 28 | 29 | 30 | 31 | TOTALS |
|--------------------------|---|---|---|---|------|------|------|------|---|----|----|----|----|------|------|----|----|------|------|----|----|----|----|----|----|----|------|----|----|----|----|--------|
| Rainfall (Inches)        |   |   |   |   | 0.02 | 0.07 |      | 0.99 |   |    |    |    |    | 0.09 | 0.67 |    |    | 0.01 | 0.15 |    |    |    |    |    |    |    |      |    |    |    |    | 2.02   |
| Peak Daily Intensity     |   |   |   |   |      | 0.08 | 0.28 |      |   |    |    |    |    | 0.08 | 0.16 |    |    | 0.04 | 0.12 |    |    |    |    |    |    |    | 0.02 |    |    |    |    | 0.04   |
| HAVERHILL SIDE CSOs      |   |   |   |   |      |      |      |      |   |    |    |    |    |      |      |    |    |      |      |    |    |    |    |    |    |    |      |    |    |    |    |        |
| BATES                    | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BOARDMAN                 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| LOWER SIPHON             | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION             | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH            | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-IN | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| LITTLE RIVER SOUTH 18-IN | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| ORCHARD STREET           | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| MIDDLE SIPHON            | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| RAILROAD BRIDGE          | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| 266 RIVER STREET         | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET             | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON             | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER  | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL     | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL      | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE          | 0 | 1 | 0 | 0 | 0    | 0    | 0    | 0    | 0 | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1      |

|                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRADFORD SIDE CSOs |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| FRONT STREET       | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BRADFORD AVE       | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SOUTH PROSPECT     | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIDDLESEX STREET   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MAIN ST SOUTH      | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FERRY STREET       | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

BLOCK ON = 0

BLOCK OFF = 1

# Appendix C: Block Monitoring

| DATE: FEBRUARY 2007        | 1 | 2    | 3    | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16   | 17   | 18   | 19 | 20 | 21 | 22 | 23   | 24 | 25 | 26 | 27 | 28 | TOTALS |
|----------------------------|---|------|------|---|---|---|---|---|---|----|----|----|----|----|----|------|------|------|----|----|----|----|------|----|----|----|----|----|--------|
| Rainfall (Inches)          |   | 0.06 | 0.21 |   |   |   |   |   |   |    |    |    |    |    |    | 0.03 | 0.48 | 0.04 |    |    |    |    | 0.03 |    |    |    |    |    | 0.87   |
| Peak Daily Intensity       |   | 0.04 | 0.16 |   |   |   |   |   |   |    |    |    |    |    |    | 0.04 | 0.28 | 0.04 |    |    |    |    | 0.04 |    |    |    |    |    |        |
| HAVERHILL SIDE CSOs        |   |      |      |   |   |   |   |   |   |    |    |    |    |    |    |      |      |      |    |    |    |    |      |    |    |    |    |    |        |
| BATES                      | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| BOARDMAN                   | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| LOWER SIPHON               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH              | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-INCH | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER SOUTH 18-INCH | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 1  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 1      |
| ORCHARD STREET             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 1  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| MIDDLE SIPHON              | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| RAILROAD BRIDGE            | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| 266 RIVER STREET           | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER    | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL       | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL        | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE            | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD SIDE CSOs         |   |      |      |   |   |   |   |   |   |    |    |    |    |    |    |      |      |      |    |    |    |    |      |    |    |    |    |    |        |
| FRONT STREET               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD AVE               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| SOUTH PROSPECT             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| MIDDLESEX STREET           | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST SOUTH              | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |
| FERRY STREET               | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1



# Appendix C: Block Monitoring

| DATE: MARCH 2007         | 1 | 2    | 3    | 4 | 5 | 6 | 7 | 8 | 9 | 10   | 11   | 12   | 13   | 14   | 15 | 16   | 17   | 18   | 19 | 20   | 21 | 22 | 23 | 24   | 25   | 26   | 27   | 28 | 29 | 30 | 31 | TOTALS |
|--------------------------|---|------|------|---|---|---|---|---|---|------|------|------|------|------|----|------|------|------|----|------|----|----|----|------|------|------|------|----|----|----|----|--------|
| Rainfall (inches)        |   | 1.61 | 0.01 |   |   |   |   |   |   |      | 0.22 |      | 0.01 | 0.11 |    | 1.29 | 0.01 |      |    | 0.02 |    |    |    | 0.14 | 0.20 | 0.06 | 0.11 |    |    |    |    | 3.79   |
| Peak Daily Intensity     |   | 0.40 | 0.04 |   |   |   |   |   |   | 0.08 |      | 0.04 | 0.08 |      |    |      | 0.20 | 0.04 |    | 0.04 |    |    |    | 0.08 | 0.12 | 0.04 | 0.08 |    |    |    |    |        |
| HAVERHILL SIDE CSOs      |   |      |      |   |   |   |   |   |   |      |      |      |      |      |    |      |      |      |    |      |    |    |    |      |      |      |      |    |    |    |    |        |
| BATES                    | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| BOARDMAN                 | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| LOWER SIPHON             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH            | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-IN | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER SOUTH 18-IN | 0 | 0    | 0    | 0 | 1 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| ORCHARD STREET           | 0 | 0    | 0    | 0 | 1 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| MIDDLE SIPHON            | 0 | 0    | 0    | 0 | 1 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| RAILROAD BRIDGE          | 0 | 0    | 0    | 0 | 1 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| 266 RIVER STREET         | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER  | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL     | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL      | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE          | 0 | 0    | 0    | 0 | 1 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| BRADFORD SIDE CSOs       |   |      |      |   |   |   |   |   |   |      |      |      |      |      |    |      |      |      |    |      |    |    |    |      |      |      |      |    |    |    |    |        |
| FRONT STREET             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| BRADFORD AVE             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| SOUTH PROSPECT           | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| MIDDLESEX STREET         | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| MAIN ST SOUTH            | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |
| FERRY STREET             | 0 | 0    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0      |

BLOCK ON = 0  
BLOCK OFF = 1

# Appendix C: Block Monitoring

| DATE: APRIL 2007            | 1 | 2    | 3    | 4    | 5    | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 13 | 14 | 15   | 16   | 17   | 18   | 19   | 20 | 21 | 22 | 23 | 24 | 25   | 26 | 27   | 28   | 29   | 30   | TOTALS |
|-----------------------------|---|------|------|------|------|---|---|---|---|----|------|----|----|----|------|------|------|------|------|----|----|----|----|----|------|----|------|------|------|------|--------|
| Rainfall (inches)           |   | 0.26 | 0.05 | 0.58 | 0.68 |   |   |   |   |    | 0.80 |    |    |    | 1.63 | 2.17 | 0.52 | 0.17 | 0.01 |    |    |    |    |    | 0.13 |    | 0.69 | 0.03 | 0.06 | 0.16 | 7.94   |
| Peak Daily Intensity        |   | 0.12 | 0.04 | 0.16 | 0.24 |   |   |   |   |    | 0.40 |    |    |    | 0.32 | 0.48 | 0.08 | 0.04 | 0.04 |    |    |    |    |    | 0.08 |    | 0.24 | 0.04 | 0.04 | 0.24 |        |
| HAVERHILL SIDE CSOs         |   |      |      |      |      |   |   |   |   |    |      |    |    |    |      |      |      |      |      |    |    |    |    |    |      |    |      |      |      |      |        |
| BATES                       | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| BOARDMAN                    | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| LOWER SIPHON                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| FIRE STATION                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| MAIN ST NORTH               | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| LITTLE RIVER NORTH 12-INCH  | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| LITTLE RIVER SOUTH 18-INCH  | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| ORCHARD STREET              | 0 | 0    | 0    | 0    | 0    | 0 | 1 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| MIDDLE SIPHON               | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| RAILROAD BRIDGE             | 0 | 0    | 0    | 0    | 0    | 0 | 1 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| 266 RIVER STREET            | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| BEACH STREET                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| UPPER SIPHON                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| DUNCAN ST. DIV. (WINTER ST) | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| BROADWAY DIVERSIONAL        | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| HIGH ST DIVERSIONAL         | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| WINTER AND HALE             | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| BRADFORD SIDE CSOs          |   |      |      |      |      |   |   |   |   |    |      |    |    |    |      |      |      |      |      |    |    |    |    |    |      |    |      |      |      |      |        |
| FRONT STREET                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| BRADFORD AVE                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| SOUTH PROSPECT              | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| MIDDLESEX STREET            | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| MAIN ST SOUTH               | 0 | 0    | 0    | 0    | 0    | 0 | 1 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |
| FERRY STREET                | 0 | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0      |

BLOCK ON = 0

BLOCK OFF = 1

# Appendix C: Block Monitoring

| DATE: MAY 2007             | 1 | 2    | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 13 | 14 | 15   | 16   | 17   | 18   | 19   | 20   | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | TOTALS |
|----------------------------|---|------|---|---|---|---|---|---|---|----|------|----|----|----|------|------|------|------|------|------|----|----|----|----|----|----|----|----|----|----|----|--------|
| Rainfall (inches)          |   |      |   |   |   |   |   |   |   |    | 0.44 |    |    |    | 0.05 | 1.18 | 0.02 | 1.11 | 0.48 | 0.30 |    |    |    |    |    |    |    |    |    |    |    | 3.65   |
| Peak Daily Intensity       |   | 0.07 |   |   |   |   |   |   |   |    | 0.68 |    |    |    | 0.08 | 0.64 | 0.08 | 0.20 | 0.12 | 0.16 |    |    |    |    |    |    |    |    |    |    |    |        |
| HAVERHILL SIDE CSOs        |   | 0.08 |   |   |   |   |   |   |   |    |      |    |    |    |      |      |      |      |      |      |    |    |    |    |    |    |    |    |    |    |    |        |
| BATES                      | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BOARDMAN                   | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| LOWERSIPHON                | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH              | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-INCH | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER SOUTH 18-INCH | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| ORCHARD STREET             | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MIDDLE SIPHON              | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| RAILROAD BRIDGE            | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| 266 RIVER STREET           | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTERS)  | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL       | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL        | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE            | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD SIDE CSOs         |   |      |   |   |   |   |   |   |   |    |      |    |    |    |      |      |      |      |      |      |    |    |    |    |    |    |    |    |    |    |    |        |
| FRONT STREET               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD AVE               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| SOUTH PROSPECT             | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MIDDLESEX STREET           | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST SOUTH              | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| FERRY STREET               | 0 | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0    | 0  | 0  | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1

## Appendix C: Block Monitoring

[illegible]

# Appendix C: Block Monitoring

| DATE: JUNE 2007            | 1    | 2    | 3    | 4    | 5    | 6 | 7 | 8 | 9    | 10   | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20   | 21   | 22   | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | TOTALS |
|----------------------------|------|------|------|------|------|---|---|---|------|------|----|----|----|----|----|----|----|----|----|------|------|------|----|----|----|----|----|----|----|----|----|--------|
| Rainfall (inches)          | 0.01 | 1.09 | 0.02 | 1.51 | 0.01 |   |   |   | 0.06 | 0.01 |    |    |    |    |    |    |    |    |    | 0.10 | 0.02 | 0.10 |    |    |    |    |    |    |    |    |    | 2.93   |
| Peak Daily Intensity       | 0.04 | 2.00 | 0.04 | 0.80 | 0.04 |   |   |   | 0.12 | 0.04 |    |    |    |    |    |    |    |    |    | 0.28 | 0.08 | 0.16 |    |    |    |    |    |    |    |    |    |        |
| HAVERHILL SIDE CSOs        |      |      |      |      |      |   |   |   |      |      |    |    |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |    |    |        |
| BATES                      | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| BOARDMAN                   | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| LOWER SIPHON               | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION               | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH              | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-INCH | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| LITTLE RIVER SOUTH 18-INCH | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| ORCHARD STREET             | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| MIDDLE SIPHON              | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| RAILROAD BRIDGE            | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1      |
| 266 RIVER STREET           | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET               | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON               | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTERS)  | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL       | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL        | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE            | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD SIDE CSOs         |      |      |      |      |      |   |   |   |      |      |    |    |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |    |    |        |
| FRONT STREET               | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| BRADFORD AVE               | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| SOUTH PROSPECT             | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MIDDLESEX STREET           | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| MAIN ST SOUTH              | 0    | 0    | 0    | 0    | 1    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |
| FERRY STREET               | 0    | 0    | 0    | 0    | 0    | 0 | 0 | 0 | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1

# Appendix C: Block Monitoring

| DATE: JULY 2007           | 1    | 2 | 3 | 4    | 5    | 6    | 7 | 8    | 9    | 10 | 11   | 12   | 13 | 14 | 15   | 16 | 17   | 18   | 19   | 20   | 21 | 22   | 23   | 24   | 25 | 26 | 27   | 28 | 29   | 30 | 31 | TOTALS |
|---------------------------|------|---|---|------|------|------|---|------|------|----|------|------|----|----|------|----|------|------|------|------|----|------|------|------|----|----|------|----|------|----|----|--------|
| Rainfall (inches)         | 0.07 |   |   |      | 1.32 | 0.10 |   |      | 0.17 |    |      | 0.27 |    |    | 0.08 |    |      | 0.08 | 0.32 | 0.04 |    |      | 0.07 | 0.01 |    |    | 0.22 |    | 0.09 |    |    | 3.03   |
| Peak Daily Intensity      | 0.12 |   |   | 0.12 | 2.40 | 0.24 |   | 0.40 |      |    | 0.56 |      |    |    | 0.08 |    | 0.08 | 0.24 | 0.08 |      |    | 0.08 | 0.72 |      |    |    | 0.72 |    | 0.16 |    |    |        |
| HAVERHILL SIDE CSOs       |      |   |   |      |      |      |   |      |      |    |      |      |    |    |      |    |      |      |      |      |    |      |      |      |    |    |      |    |      |    |    |        |
| BATES                     | 0    | 0 | 0 | 0    | 1    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| BOARDMAN                  | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| LOWER SIPHON              | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 1  | 0  | 0    | 0  | 0    | 0  | 0  | 2      |
| FIRE STATION              | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| MAIN ST NORTH             | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-IN  | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| LITTLE RIVER SOUTH 18-IN  | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| ORCHARD STREET            | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 2      |
| MIDDLE SIPHON             | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 2      |
| RAILROAD BRIDGE           | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 1  | 0  | 0    | 0  | 0    | 0  | 0  | 3      |
| 266 RIVER STREET          | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| BEACH STREET              | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| UPPER SIPHON              | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 1  | 0  | 0    | 0  | 0    | 0  | 0  | 3      |
| DUNCAN ST. DIV. (WINTER   | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| BROADWAY DIVERSIONAL      | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL       | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| WINTER AND HALE           | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 1  | 0  | 0    | 0  | 0    | 0  | 0  | 3      |
| BRADFORD SIDE CSOs        |      |   |   |      |      |      |   |      |      |    |      |      |    |    |      |    |      |      |      |      |    |      |      |      |    |    |      |    |      |    |    |        |
| FRONT STREET              | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| BRADFORD AVE              | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |
| SOUTH PROSPECT            | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 2      |
| MIDDLESEX STREET          | 0    | 0 | 0 | 0    | 1    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 1      |
| MAIN ST SOUTH             | 0    | 0 | 0 | 0    | 0    | 1    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 2      |
| FERRY STREET <sup>1</sup> | 0    | 0 | 0 | 0    | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1

<sup>1</sup>Ferry Street gate is closed



# Appendix C: Block Monitoring

| DATE: SEPTEMBER 2007         | 1 | 2 | 3 | 4 | 5 | 6 | 7    | 8    | 9    | 10   | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27   | 28   | 29 | 30 | TOTALS |
|------------------------------|---|---|---|---|---|---|------|------|------|------|----|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|------|------|----|----|--------|
| Rainfall (inches)            |   |   |   |   |   |   |      |      |      |      |    |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |      |      |    |    |        |
| Peak Daily Intensity         |   |   |   |   |   |   | 0.02 | 0.53 | 0.09 | 1.32 |    |    |    | 0.38 |    |    |    |    |    |    |    |    |    |    |    |    | 0.06 | 0.01 |    |    | 2.41   |
| HAVERHILL SIDE CSOs          |   |   |   |   |   |   | 0.04 | 0.68 | 0.12 | 0.72 |    |    |    | 0.16 |    |    |    |    |    |    |    |    |    |    |    |    | 0.12 | 0.04 |    |    |        |
| BATES                        | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| BOARDMAN                     | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| LOWER SIPHON                 | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| FIRE STATION                 | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| MAIN ST NORTH                | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-INCH   | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| LITTLE RIVER SOUTH 18-INCH   | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| ORCHARD STREET               | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| MIDDLE SIPHON                | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| RAILROAD BRIDGE              | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| 266 RIVER STREET             | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| BEACH STREET                 | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| UPPER SIPHON                 | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER ST.) | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL         | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL          | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| WINTER AND HALE              | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| BRADFORD SIDE CSOs           |   |   |   |   |   |   |      |      |      |      |    |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |      |      |    |    |        |
| FRONT STREET                 | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| BRADFORD AVE                 | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| SOUTH PROSPECT               | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| MIDDLESEX STREET             | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| MAIN ST SOUTH                | 0 | 0 | 0 | 0 | 0 | 0 | 1    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |
| FERRY STREET                 | 0 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1

all on

Appendix C: Block Monitoring

| DATE: OCTOBER 2007       | 1 | 2 | 3 | 4 | 5 | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13 | 14 | 15 | 16 | 17 | 18 | 19   | 20   | 21 | 22 | 23   | 24   | 25   | 26 | 27   | 28 | 29 | 30 | 31 | TOTALS |
|--------------------------|---|---|---|---|---|------|------|------|------|------|------|------|----|----|----|----|----|----|------|------|----|----|------|------|------|----|------|----|----|----|----|--------|
| Rainfall (Inches)        |   |   |   |   |   | 0.18 | 0.05 | 0.72 | 0.16 | 0.04 | 0.21 | 0.32 |    |    |    |    |    |    | 0.98 | 0.27 |    |    | 0.03 | 0.13 | 0.03 |    | 0.63 |    |    |    |    | 375    |
| Peak Daily Intensity     |   |   |   |   |   | 0.24 | 0.04 | 0.40 | 0.32 | 0.04 | 0.12 | 0.36 |    |    |    |    |    |    | 0.72 | 0.56 |    |    | 0.04 | 0.12 | 0.04 |    | 0.40 |    |    |    |    |        |
| HAVERHILL SIDE CSOs      |   |   |   |   |   |      |      |      |      |      |      |      |    |    |    |    |    |    |      |      |    |    |      |      |      |    |      |    |    |    |    |        |
| BATES                    | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BOARDMAN                 | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| LOWERSIPHON              | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| FIRE STATION             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| MAIN ST NORTH            | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-IN | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| LITTLE RIVER SOUTH 18-IN | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 1    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 2      |
| ORCHARD STREET           | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 2      |
| MIDDLE SIPHON            | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| RAILROAD BRIDGE          | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 2      |
| 266 RIVER STREET         | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BEACH STREET             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| UPPER SIPHON             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER  | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| BROADWAY DIVERSIONAL     | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL      | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| WINTER AND HALE          | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| BRADFORD SIDE CSOs       |   |   |   |   |   |      |      |      |      |      |      |      |    |    |    |    |    |    |      |      |    |    |      |      |      |    |      |    |    |    |    |        |
| FRONT STREET             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| BRADFORD AVE             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| SOUTH PROSPECT           | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| MIDDLESEX STREET         | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 1  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 1      |
| MAIN ST SOUTH            | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| FERRY STREET             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BLOCK ON = 0             | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |
| BLOCK OFF = 1            | 0 | 0 | 0 | 0 | 0 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0    | 0  | 0  | 0  | 0  | 0      |

all on

# Appendix C: Block Monitoring

| DATE: NOVEMBER 2007       | 1 | 2 | 3    | 4 | 5 | 6    | 7    | 8 | 9 | 10 | 11 | 12   | 13 | 14 | 15   | 16   | 17 | 18 | 19   | 20 | 21   | 22   | 23 | 24 | 25 | 26   | 27   | 28 | 29 | 30 | TOTALS |
|---------------------------|---|---|------|---|---|------|------|---|---|----|----|------|----|----|------|------|----|----|------|----|------|------|----|----|----|------|------|----|----|----|--------|
| Rainfall (inches)         |   |   | 1.07 |   |   | 0.70 | 0.01 |   |   |    |    | 0.15 |    |    | 0.46 | 0.48 |    |    | 0.12 |    | 0.02 | 0.02 |    |    |    | 0.50 | 0.04 |    |    |    | 3.57   |
| Peak Daily Intensity      |   |   | 0.24 |   |   | 0.32 | 0.04 |   |   |    |    | 0.08 |    |    | 0.24 | 0.12 |    |    | 0.12 |    | 0.04 | 0.04 |    |    |    | 0.16 | 0.04 |    |    |    |        |
| HAVERHILL SIDE CSOs       |   |   |      |   |   |      |      |   |   |    |    |      |    |    |      |      |    |    |      |    |      |      |    |    |    |      |      |    |    |    |        |
| BATES                     | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| BOARDMAN                  | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| LOWER SIPHON              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| FIRE STATION              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| MAIN ST NORTH             | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| LITTLE RIVER NORTH 12-INC | 0 | 0 | 0    | 0 | 0 | 0    | 1    | 0 | 0 | 0  | 0  | 0    | 1  | 0  | 0    | 1    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 3      |
| LITTLE RIVER SOUTH 18-INC | 0 | 0 | 0    | 0 | 1 | 0    | 1    | 0 | 0 | 0  | 0  | 0    | 1  | 0  | 0    | 1    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 4      |
| ORCHARD STREET            | 0 | 0 | 0    | 0 | 0 | 0    | 1    | 0 | 0 | 0  | 0  | 0    | 1  | 0  | 0    | 1    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 3      |
| MIDDLE SIPHON             | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| RAILROAD BRIDGE           | 0 | 0 | 0    | 0 | 0 | 0    | 1    | 0 | 0 | 0  | 0  | 0    | 1  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 2      |
| 266 RIVER STREET          | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| BEACH STREET              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| UPPER SIPHON              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| DUNCAN ST. DIV. (WINTER   | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| BROADWAY DIVERSIONAL      | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| HIGH ST DIVERSIONAL       | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| WINTER AND HALE           | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| BRADFORD SIDE CSOs        |   |   |      |   |   |      |      |   |   |    |    |      |    |    |      |      |    |    |      |    |      |      |    |    |    |      |      |    |    |    |        |
| FRONT STREET              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| BRADFORD AVE              | 0 | 0 | 0    | 0 | 1 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 1      |
| SOUTH PROSPECT            | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| MIDDLESEX STREET          | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| MAIN ST SOUTH             | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |
| FERRY STREET              | 0 | 0 | 0    | 0 | 0 | 0    | 0    | 0 | 0 | 0  | 0  | 0    | 0  | 0  | 0    | 0    | 0  | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0  | 0    | 0    | 0  | 0  | 0  | 0      |

BLOCK ON = 0

BLOCK OFF = 1

# Appendix C: Block Monitoring

| DATE: DECEMBER 2007         | 1 | 2 | 3    | 4 | 5    | 6 | 7 | 8    | 9 | 10 | 11   | 12   | 13 | 14   | 15 | 16   | 17 | 18   | 19   | 20 | 21 | 22   | 23   | 24   | 25 | 26 | 27   | 28   | 29   | 30   | 31 | TOTALS |
|-----------------------------|---|---|------|---|------|---|---|------|---|----|------|------|----|------|----|------|----|------|------|----|----|------|------|------|----|----|------|------|------|------|----|--------|
| Rainfall (Inches)           |   |   | 0.64 |   | 0.05 |   |   | 0.01 |   |    | 0.22 | 0.01 |    | 0.10 |    | 0.01 |    |      | 0.10 |    |    | 0.09 | 0.56 | 0.03 |    |    | 0.27 | 0.11 | 0.18 | 0.56 |    | 2.94   |
| Peak Daily Intensity        |   |   | 0.28 |   | 0.04 |   |   | 0.04 |   |    | 0.12 | 0.04 |    | 0.08 |    | 0.04 |    | 0.08 |      |    |    | 0.08 | 0.20 | 0.08 |    |    | 0.12 | 0.08 | 0.08 | 0.28 |    |        |
| HAVERHILL SIDE CSOs         |   |   |      |   |      |   |   |      |   |    |      |      |    |      |    |      |    |      |      |    |    |      |      |      |    |    |      |      |      |      |    |        |
| BATES                       | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| BOARDMAN                    | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| LOWER SIPHON                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| FIRE STATION                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| MAIN ST NORTH               | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| LITTLE RIVER NORTH 12-INCH  | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 1    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| LITTLE RIVER SOUTH 18-INCH  | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 1    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| ORCHARD STREET              | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 1  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| MIDDLE SIPHON               | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| RAILROAD BRIDGE             | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| 266 RIVER STREET            | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| BEACH STREET                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| UPPER SIPHON                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| DUNCAN ST. DIV. (WINTER ST) | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| BROADWAY DIVERSIONAL        | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| HIGH ST DIVERSIONAL         | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| WINTER AND HALE             | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| BRADFORD SIDE CSOs          |   |   |      |   |      |   |   |      |   |    |      |      |    |      |    |      |    |      |      |    |    |      |      |      |    |    |      |      |      |      |    |        |
| FRONT STREET                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| BRADFORD AVE                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| SOUTH PROSPECT              | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| MIDDLESEX STREET            | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| MAIN ST SOUTH               | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |
| FERRY STREET                | 0 | 0 | 0    | 0 | 0    | 0 | 0 | 0    | 0 | 0  | 0    | 0    | 0  | 0    | 0  | 0    | 0  | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0  | 0  | 0    | 0    | 0    | 0    | 0  | 0      |

BLOCK ON = 0  
BLOCK OFF = 1

# APPENDIX D: WORK ORDER 33829

Work Order No. 33829

Close Date 12/13/2007

1/11/2008

10:12:59AM

Page 1

\*33829\*

ANYTHING TO DO WITH CSO

|                       |                     |                 |            |
|-----------------------|---------------------|-----------------|------------|
| Task No.              | CSO                 | Request Date    | 12/11/2007 |
| Tenant                | CITY WIDE           | Request Time    | 07:00:00   |
| Assigned By           | PAR                 | Originator      | PJJ        |
| Assigned To           | DWS                 | Telephone No.   |            |
| Scheduled Start Date  | 12/11/2007 07:00:00 | Extension       |            |
| Scheduled Finish Date | 12/11/2007          | WO Type         | PLANNED    |
| Perform by Warranty   | No                  | Completion Date | 12/11/2007 |
| Priority              | 2.00                | Completion Time | 11:00:00   |
| Expense Class         | LSTA                |                 |            |

| Craft    | Crew Size | Estimated Labor Hours |
|----------|-----------|-----------------------|
| COLL-REG | 2.00      | 4.00                  |

\*\_\*

Equipment No. -  
 Equipment Description  
 Serial No.  
 Cost Center  
 General Ledger Code  
 Department  
 Location SEPERATE  
 Sub-location 1 -  
 Sub-location 2 -  
 Sub-location 3 -  
 Reason for Outage \_\_\_\_\_  
 Safety Notes

User-defined Field 1  
 User-defined Field 2  
 User-defined Field 3  
 User-defined Field 4  
 User-defined Field 5  
 Must Be Down No  
 Down Time  
 Estimated Down Time

## Comments

CHECK PROPER SIGNAGE AT ALL CSO LOCATIONS. SHAW AND TUCCOLO RESPONDED: ALL SIGNS ACCOUNTED FOR. SIGN AT MARGINAL PUMP STATION REMOUNTED ONTO FENCE, BRACKETS FABRICATED.

| Equipment No. | Meter Name | Meter Reading |
|---------------|------------|---------------|
|---------------|------------|---------------|

| Item No. | Equipment No. | Description | Qty Required | Date Used | Qty Used | Total Unit Cost |
|----------|---------------|-------------|--------------|-----------|----------|-----------------|
|----------|---------------|-------------|--------------|-----------|----------|-----------------|

List extra parts and comments here

|  |
|--|
|  |
|  |
|  |

| Employee Code | Equipment No. | Work Date  | First Name | Last Name | Regular Hours | Overtime Hours |
|---------------|---------------|------------|------------|-----------|---------------|----------------|
| DWS           | -             | 11/11/2007 | DAVID      | SHAW      | 4.00          |                |
| JJT           | -             | 11/11/2007 | JAMIE      | TUCCOLO   | 4.00          |                |
|               |               |            |            |           |               |                |
|               |               |            |            |           |               |                |

# APPENDIX E: DOWNSTREAM COMMUNITIES

| First Name | Last Name   | Address            | City         | State | Postal Code | Tele #              | DEPT                          | E-mail                            |
|------------|-------------|--------------------|--------------|-------|-------------|---------------------|-------------------------------|-----------------------------------|
| Robert     | Desmaris    | 62 Friend Street   | Amesbury     | MA    | 01913       | 1-978-388-8127      | Engineering                   | rob@ci.amesbury.ma.us             |
| Jeff       | Mason       |                    | Amesbury     | MA    | 01913       | 978-388-0853        | Water System Manager          | masonj@ci.amesbury.ma.us          |
| Nihar      | Mohanty     | 1 Winter Street    | Boston       | MA    | 02108-4746  | 1-978-694-3237      | Mass DEP                      | nihar.mohanty@state.ma.us         |
| Robert     | O'Hanley    | 183 Main Street    | Groveland    | MA    | 01834       | (978) 372-3942      | Board of Health               | health@grovelandma.com            |
| Thomas     | Cusick      | 183 Main Street    | Groveland    | MA    | 01834       | (978) 556-7200 x219 | Water/Sewer                   | Tcusick@grovelandma.com           |
| Bonnie     | Dufresne    | 4 Summer Street    | Haverhill    | MA    | 01830       | (978) 374-2325      | Board of Health               | bdufresne@cityofhaverhill.com     |
| Michael    | Vets        | 72 Coffin Avenue   | Haverhill    | MA    | 01830       | (978) 374-2100      | Harbor Master                 | vetsm@comcast.net                 |
| Dan        | Folding     | 10 W Main St       | Merrimac     | MA    | 01860       | (978) 346-8311      | Light & Water                 | danfolding@merrimacwater.com      |
| Eileen     | Hurley      | 2 School Street    | Merrimac     | MA    | 01860       | 978-346-4066        | Board of Health               | boh@townofmerrimac.com            |
| Alba L.    | Gouldthorpe | 25 High Road       | Newbury      | MA    | 01951       | (978) 499-3898      | Board of Health               | boardofhealth@townofnewbury.org   |
| John       | Morris      | 60 Pleasant Street | Newburyport  | MA    | 01950       | (978) 465-4410      | Board of Health               | jmorris@cityofnewburyport.com     |
| Jeff       | Kennedy     |                    |              |       |             | 978-465-3553 x320   | North Shore Shellfish Project | shellfish.newburyport@state.ma.us |
| Ralph L.   | Steele      | 60 Pleasant Street | Newburyport  | MA    | 01950       | (978) 462-3746      | Harbor Master                 | rsteale@cityofnewburyport.com     |
| Andrea     | Brouchu     | P.O. Box 5072      | Salisbury    | MA    | 01952       | (978) 462-3430      | Board of Health               | abrouchu@salisburyma.gov          |
| Jeff       | Ingalls     | P.O. 5221          | Salisbury    | MA    | 01952       | (978) 465-4058      | Sewer Treatment Plant         | saliswtp@localnet.com             |
| Donald     | Levesque    | 39 Lafayette Road  | Salisbury    | MA    | 01952       | 978-463-0656        | Director Public Works         | dlevesque@salisburyma.gov         |
| Ray        | Pike        | 5 Beach Road       | Salisbury    | MA    | 01952       | 978 499 0740        | Harbor Master                 | harbormaster@salisburyma.gov      |
| Paul       | Sevigny     | 381 Main Street    | West Newbury | MA    | 01985       | (978) 363-1109      | Board of Health               | psevigny@town.west-newbury.ma.us  |
|            |             |                    |              |       |             |                     | N. Shore Shellfish Project    | shellfish.newburyport@state.ma.us |