Haverhill

Paul J. Jessel, Collection System Supervisor
Water/Wastewater Division
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April 30, 2004

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

Massachusetts Department of Environmental Protection
Northeast Regional Office
One Winter Street, 5Th Floor
Boston, MA 02108-4747

Subject: City of Haverhill NPDES Permit # MA0101621
Combine Sewer Overflow Annual Report

Dear DEP & EPA:

In accordance with the City of Haverhill's NPDES Permit # MA0101621 we are providing this status report by April 30, 2004, as required by item 3 page 10 of 16. Please note the items in *itali**c*** are taken directly from the NPDES permit followed by a response.

i. 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.

EPA and DEP have 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 "SWMM Model Calibration and Evaluation of Existing Conditions" report prepared by CDM dated July1998. The following table was prepared based on output form this SWMM model and includes estimates of CSO activation (including number of events, duration, and volume discharge) during calendar year 2003.

Rain data is collected at the City of Haverhill Wastewater Treatment Plant using a RainWise, Inc. rain gage. The rain is measured in 15-minutes intervals to within 0.01 inches. This data is input into the SWMM model, which produces CSO activation, duration, and CSO volumes. Note there were no predicted discharges from many of the CSOs listed in the table. See **Appendix A**: CSO SUMMARY CALANDER YEAR 2003

ii. *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.)*

Rain data is collected at the City of Haverhill Wastewater Treatment Plant using a RainWise, Inc. rain gage. The rain is measured in 15-minutes intervals to within 0.01 inches. In order to keep track of each storm, peak and average intensities are recorded and calculated base upon the daily rainfall, rather than from the entire storm duration because the storm durations frequently starts and stops more than once in a day. See **Appendix B** calendar year 2003 rainfall data.

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

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 CSO block testing programs. 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, records results, and notify downstream communities as appropriate. Please note, all block-testing results are submitted to EPA quarterly.

iv. *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.*

The City of Haverhill is currently minimizing CSO discharges to the maximum extent possible and in compliance with the draft, Nine Minimum Controls reported 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 an estimates project cost of $18-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:

- Increasing treatment plant wet-weather capacity to 60 mgd including replacement of primary clarifier sludge and scum collection equipment to provide better equipment reliability.

- Providing structural modifications at the Ferry Street, Middlesex Street, South Main Street, South Prospect Street, and Front Street CSO regulators.

The City has completed design of the first two options and expects to initiate construction in MAY 2004. Currently the City of Haverhill treats 92.1 percent of their combined Stormwater and wastewater flow prior to discharge to either the Merrimack or Little Rivers. Once the above projects are constructed the combine flow treated will increase to approximately 97.3 percent.

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 what 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.

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.*

Public notification programs are intended to ensure that the public and community receives adequate information CSO 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.

Signs have been installed at each CSO location in the City and will be maintained over the coming year. The City's Public Notification Program, (required by the NMC), will consist 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 will rely on a general education programs and the City's official web site http://www.ci.haverhill.ma.us/ to keep the public aware of the possible health risks. This awareness program will be implemented over the coming year.

iii. Review of the sewer system model to determine the threshold rain events, which normally will cause overflows.

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. This spreadsheet will be refined and pertinent results can be provided in the quarterly reports submitted to EPA.

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 establish a website within six (6) months of the effective date of the permit.

The City of Haverhill's official web site is http://www.ci.haverhill.ma.us/. Under a separate contract with CDM the City is undertaking a Citywide Geographical Informational System (GIS). Once completed a more detail description and location map for all CSO's will be placed onto the City's web site. The SWMM model statics for 2003 are presented above, have already been placed on the City web page.

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.

The City has contacted downstream communities and sent the 2003 SWMM model report. When other interested individuals are identified, this notification will be sent to them also.

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 978-465-5947) 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 are 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. The public notification plan shall include a schedule for implementation of enhanced public notice measures.

The City conducted an Internet search for appropriate contact persons to notify during a CSO event. On August 22, 2003, a letter was sent requesting correct contact information. In addition to these letters, follow-up telephone calls were made to further gather this information. Finally, in early March, the City obtained further contact information.

Appendix C represents the list of downstream communities that the City notifies in the event of CSO activation.

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

Sincerely,

Paul J. Jessel
Collection System Supervisor

cc: Robert Ward, Acting Director Water/Wastewater
John Connor, WWTP Facility Manager
Don Freeman, CDM
Division of Fisheries
Shellfish Program
84 82nd Street
Newburyport, MA 01950

APPENDIX A

CSO SUMMARY CALANDER YEAR 2003

STRUCTURE NAME	Full name	NPDES	Events	Vol. MG	Hours
NLSIGTOF	Lower Siphon	013	29.0	50.4	440.3
NMDH04W	Winter Street & Hale	021	9.0	1.8	10.1
NMESOF-D	Middle Siphon	021A	35.0	21.6	133.1
NMLA01	High St Combine Flows		1.0	0.0	0.8
NMMSE3	Little River East	021	21.0	5.6	39.8
NMNS01B	Little River West	021	24.0	1.8	46.5
NUSIGTOF	Upper Siphon	024	28.0	21.5	90.0
SLSB08WR	Ferry Street	036	29.0	3.1	56.6
SLSB10WR	South Main Street	035	20.0	3.0	50.3
SLSB12WR	Middlesex Street	034	15.0	0.3	40.5
SMSB01WR	South Prospect Street	033	11.0	0.2	10.9
SMSB03WR	Bradford Avenue	032	26.0	9.0	90.8
SUSB02WR	Front Street	031	17.0	2.5	24.0
NLRS28WR	Bates Bridge	001			
NUMN04WR	Beach Street	025			
NLRS04WR	Boardman Street	010			
NLWS09WR	Fire Station	016			
NLWS13OF	Main Street - North	019			
NUWS09OF	Railroad Bridge	022			
NUWS02WR	River Street	023			
NMOR01WR	Little River North	021D			
NMES14W	Lafayette Square				
NMBR02W	Broadway Regulator				
NMHI01W	High St Regulator				
	TOTALS		**265.0**	**120.8**	**1033.4**

APPENDIX B

Calendar Year 2003 Rainfall Data

Storm Date	Peak Intensity (in/hr.)	Storm Depth Rain Total (in)	Duration (Hours)	Average Intensity (in/hr.)
January 1, 2003	**0.16**	0.58	7.5	0.019
January 2, 2003	**0.2**	0.25	7.25	0.009
January 3, 2003	**0.12**	0.32	3.5	0.023
January 4, 2003	**0.16**	0.84	13.75	0.015
January 5, 2003	**0.04**	0.04	1	0.010
January 6, 2003	**0.04**	0.01	0.25	0.010
January 8, 2003	**0.04**	0.03	0.75	0.010
January 9, 2003	**0.08**	0.24	4.75	0.013
January 10, 2003	**0.04**	0.01	0.25	0.010
January 17, 2003	**0.04**	0.01	0.25	0.010
February 1, 2003	**0.04**	0.04	1	0.010
February 2, 2003	**0.24**	0.95	13	0.018
February 4, 2003	**0.2**	0.16	2	0.020
February 7, 2003	**0.08**	0.32	7.5	0.011
February 10, 2003	**0.04**	0.05	1.25	0.010
February 11, 2003	**0.04**	0.01	0.25	0.010
February 12, 2003	**0.04**	0.02	0.5	0.010
February 18, 2003	**0.2**	0.3	3.75	0.020
February 22, 2003	**0.16**	0.72	10	0.018
February 23, 2003	**0.2**	0.54	6.25	0.022
March 2, 2003	**0.48**	1.09	8.75	0.031
March 5, 2003	**0.04**	0.05	1.25	0.010
March 7, 2003	**0.08**	0.15	2.75	0.014
March 9, 2003	**0.04**	0.02	0.5	0.010
March 13, 2003	**0.08**	0.18	4	0.011
March 20, 2003	**0.08**	0.16	3	0.013
March 21, 2003	**0.24**	0.38	4.5	0.021
March 26, 2003	**0.16**	0.17	1.75	0.024
March 27, 2003	**0.04**	0.02	0.5	0.010
March 29, 2003	**0.36**	0.85	4.75	0.045

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Storm Date	Peak Intensity (in/hr.)	Storm Depth Rain Total (in)	Duration (Hours)	Average Intensity (in/hr.)
March 30, 2003	**0.36**	0.85	10.5	0.020
March 31, 2003	**0.04**	0.01	0.25	0.010
April 2, 2003	**0.08**	0.1	2.25	0.011
April 3, 2003	**0.04**	0.03	0.75	0.010
April 4, 2003	**0.16**	0.45	8.25	0.014
April 5, 2003	**0.2**	0.61	6.75	0.023
April 8, 2003	**0.04**	0.22	5.5	0.010
April 11, 2003	**0.24**	0.63	5.5	0.029
April 12, 2003	**0.04**	0.13	3.25	0.010
April 16, 2003	**0.16**	0.04	0.25	0.040
April 21, 2003	**0.04**	0.01	0.25	0.010
April 22, 2003	**0.12**	0.35	5	0.018
April 24, 2003	**0.08**	0.06	1.25	0.012
April 26, 2003	**0.2**	1.15	11.25	0.026
April 27, 2003	**0.04**	0.02	0.5	0.010
May 1, 2003	**0.08**	0.05	0.75	0.017
May 2, 2003	**0.01**	0.01	0.25	0.010
May 3, 2003	**0.01**	0.01	0.25	0.010
May 8, 2003	**0.08**	0.16	3.25	0.012
May 9, 2003	**0.12**	0.12	2	0.015
May 11, 2003	**0.32**	0.32	3	0.027
May 12, 2003	**0.44**	0.37	2.5	0.037
May 13, 2003	**0.04**	0.03	0.75	0.010
May 14, 2003	**0.04**	0.02	0.5	0.010
May 21, 2003	**0.08**	0.1	2.25	0.011
May 23, 2003	**0.12**	0.22	3.5	0.016
May 24, 2003	**0.12**	0.14	2.75	0.013
May 25, 2003	**0.16**	0.21	2.75	0.019
May 26, 2003	**0.44**	1.75	11.75	0.037
May 27, 2003	**0.04**	0.01	0.25	0.010

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Calendar Year 2003 Rainfall Data

Storm Date	Peak Intensity (in/hr.)	Storm Depth Rain Total (in)	Duration (Hours)	Average Intensity (in/hr.)
May 28, 2003	**0.56**	0.34	3	0.028
May 29, 2003	**0.04**	0.01	0.25	0.010
May 31, 2003	**0.12**	0.11	2	0.014
June 1, 2003	**0.32**	0.71	7.75	0.023
June 4, 2003	**0.12**	0.04	0.5	0.020
June 5, 2003	**0.32**	0.4	4.5	0.022
June 7, 2003	**0.08**	0.31	6.25	0.012
June 11, 2003	**0.12**	0.07	1	0.018
June 13, 2003	**0.12**	0.15	3.25	0.012
June 14, 2003	**0.2**	0.26	3.25	0.020
June 15, 2003	**0.04**	0.01	0.25	0.010
June 18, 2003	**0.16**	0.23	4.25	0.014
June 21, 2003	**0.12**	0.12	1.75	0.017
June 22, 2003	**0.68**	0.74	5.75	0.032
June 23, 2003	**0.04**	0.08	1.5	0.013
June 30, 2003	**0.08**	0.03	0.5	0.015
July 9, 2003	**0.04**	0.07	1.75	0.010
July 10, 2003	**0.04**	0.01	0.25	0.010
July 11, 2003	**0.36**	0.52	3.5	0.037
July 12, 2003	**0.04**	0.07	0.75	0.023
July 16, 2003	**0.24**	0.07	0.5	0.035
July 18, 2003	**0.08**	0.16	0.25	0.040
July 22, 2003	**0.12**	0.03	0.25	0.030
July 23, 2003	**0.28**	0.24	2	0.030
July 24, 2003	**0.04**	0.04	1	0.010
August 1, 2003	**1.2**	0.96	4	0.060
August 2, 2003	**0.16**	0.21	2.5	0.021
August 3, 2003	**2.2**	1.99	2.25	0.221
August 4, 2003	**0.2**	0.11	1.5	0.018
August 5, 2003	**1.12**	0.5	0.75	0.167

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Storm Date	Peak Intensity (in/hr.)	Storm Depth Rain Total (in)	Duration (Hours)	Average Intensity (in/hr.)
August 7, 2003	**0.04**	0.08	2	0.010
August 8, 2003	**0.48**	0.5	4.75	0.026
August 10, 2003	**0.12**	0.04	0.5	0.020
August 11, 2003	**1**	0.64	2.75	0.058
August 12, 2003	**1.32**	1.42	4.75	0.075
August 13, 2003	**1.32**	0.41	1	0.103
August 14, 2003	**0.04**	0.01	0.25	0.010
August 16, 2003	**0.04**	0.03	0.75	0.010
August 22, 2003	**1.64**	0.42	0.5	0.210
September 2, 2003	**0.04**	0.21	5.25	0.010
September 3, 2003	**0.24**	0.23	1.5	0.038
September 4, 2003	**0.96**	0.91	5	0.046
September 8, 2003	**0.04**	0.01	0.25	0.010
September 14, 2003	**0.04**	0.01	0.25	0.010
September 16, 2003	**0.56**	0.8	4.5	0.044
September 19, 2003	**0.84**	0.57	3	0.048
September 23, 2003	**1.68**	1.08	2	0.135
September 26, 2003	**0.08**	0.05	0.5	0.025
September 27, 2003	**0.04**	0.01	0.25	0.010
September 28, 2003	**0.04**	0.06	1.5	0.010
October 1, 2003	**0.04**	0.02	0.5	0.010
October 4, 2003	**0.32**	0.46	4.75	0.024
October 12, 2003	**0.28**	0.49	3.75	0.033
October 15, 2003	**0.44**	1.34	5.75	0.058
October 21, 2003	**0.08**	0.03	0.5	0.015
October 23, 2003	**0.08**	0.09	2.25	0.011
October 27, 2003	**0.84**	0.83	7.5	0.028
October 28, 2003	**0.04**	0.04	1	0.002
October 29, 2003	**0.68**	1.69	12.5	0.073
November 2, 2003	**0.04**	0.04	1	0.010

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Calendar Year 2003 Rainfall Data

Storm Date	Peak Intensity (in/hr.)	Storm Depth Rain Total (in)	Duration (Hours)	Average Intensity (in/hr.)
November 3, 2003	**0.44**	0.29	2.5	0.029
November 4, 2003	**0.04**	0.01	0.25	0.010
November 5, 2003	**0.2**	0.32	4.25	0.019
November 11, 2003	**0.08**	0.1	1.75	0.014
November 12, 2003	**0.16**	0.14	1.75	0.020
November 13, 2003	**0.04**	0.09	2.25	0.010
November 20, 2003	**0.16**	0.31	4.25	0.018
November 21, 2003	**0.12**	0.22	3	0.018
November 25, 2003	**0.16**	0.08	1.25	0.016
November 28, 2003	**0.12**	0.24	4.75	0.013
November 29, 2003	**0.24**	0.21	2.25	0.023
December 8, 2003	**0.12**	0.16	2.25	0.018
December 11, 2003	**0.36**	0.91	7.25	0.031
December 12, 2003	**0.04**	0.02	0.5	0.010
December 15, 2003	**0.48**	1.81	11.75	0.039
December 16, 2003	**0.04**	0.02	0.5	0.010
December 17, 2003	**0.16**	0.34	5	0.080
December 18, 2003	**0.16**	0.08	1	0.020
December 24, 2003	**0.16**	0.34	4.25	0.020
December 25, 2003	**0.08**	0.05	1	0.013
December 26, 2003	**0.04**	0.01	0.25	0.010
Rain Fall Year Totals		**43.55**		

APPENDIX C

Downstream Communities Contact Information

Title	First Name	Last Name	Address	City	State	Postal Code	Tele #	DEPT	E-mail
Mr.	Robert	Desmaris	62 Friend Street	Amesbury	MA	01913	1-978-388-8127	Engineering	rob@ci.amesbury.ma.us
Mr.	Jeff	Mason		Amesbury	MA	01913	978-388-0853	Water System Manager	masonj@ci.amesbury.ma.us
Mr.	Joe	Trevald	183 Main Street	Groveland	MA	01834	(978) 372-3942	Board of Health	**waiting on e-mail**
Mr.	Glenn	Smith	183 Main Street	Groveland	MA	01834	(978) 372-4144	Water/Sewer	grvlndw-s@juno.com
Ms.	Donna	Leone	4 Summer Street	Haverhill	MA	01830	(978) 374-2325	Board of Health	bdufresne@cityofhaverhill.com
Mr.	Michael	Vets	72 Coffin Avenue	Haverhill	MA	01830	(978) 374-2100	Harbor Master	vze4gyrd@verizon.net
Ms.	Linda	Soucy	10 W Main St	Merrimac	MA	01860	(978) 346-8311	Light & Water	lightdept@merrimac.greennet.net
Chairman	Alba L.	Gouldthorpe	25 High Road	Newbury	MA	01951	(978) 499-3898	Board of Health	boardofhealth@townofnewbury.org
Mr.	Ralph L	Steele	60 Pleasant Street	Newburyport	MA	01950	(978) 462-3746	Harbor Master	rsteele@cityofnewburyport.com
Chairperson	Dr. Susan	Beluk	60 Pleasant Street	Newburyport	MA	01950	(978) 465-4410	Board of Health	mtolman@cityofnewburyport.com
Mr.	David	Roach	84 82 nd Street	Newburyport	MA	01950	(978) 465-3553	Shellfish Division	dave.roach@state.ma.us
Mr.	Jeff	Ingalls	P.O. 5221	Salisbury	MA	01952	(978) 465-4058	Sewer Treatment Plant	wwtp@seacosat.com
Mr.	Horace	Baxter	P.O. Box 5072	Salisbury	MA	01952	(978) 462-3430	Board of Health	bohealth@seacoast.com
Mr.	Paul	Sevigny	381 Main Street	West Newbury	MA	01985	(978) 363-1109	Board of Health	psevigny@town.west-newbury.ma.us