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December 31, 2008

Office of Community Development
Homer Municipal Building
19 Moore Street
Belmont, Massachusetts 02478

Attn: Mr. Glenn Clancy, Director

Subject: Belmont, Massachusetts
Illicit Connection Identification & Elimination Program
2008 Storm Water Sampling and Analysis Program

Dear Mr. Clancy:

This report outlines Fay, Spofford & Thorndike's (FST's) 2008 storm water sampling and analysis program. Many of the areas investigated in 2008 have previously undergone significant rehabilitation of the sanitary sewer and storm drain systems to address illicit connections. The purpose of this phase of sampling was to evaluate the effectiveness of the rehabilitation and to identify outstanding illicit connections.

Study Area

2008 work was conducted in areas tributary to Unity Ave (Outfall 1), Huron Ave (Outfall 2) and Winn's Brook (Outfall 10). Outfalls Areas 1 and 2 are shown in Figure 1 and Outfall Area 10 in Figure 2. Outfall numbers are as designated in the "Dry Weather Stormwater Discharge Sampling & Analysis Program", June 30, 1999.

Previous Rehabilitation

Sampling in these areas conducted in 1999-2001 resulted in CCTV inspection of approximately 22,400 feet of sanitary sewer and 19,200 feet of storm drain, as well as the dye testing of 230 houses. Subsequent rehabilitation to eliminate illicit connections was administered in two construction contracts:

- Sewer and Storm Drain Improvements – April 2004
- Sewer and Storm Drain Rehabilitation – September 2006

Rehabilitation work completed is shown in Figures 1 and 2, including:

- 37,000' pipe lining
- 560' pipe replacement
- 90 service lateral replacements
- 50 sealed service lateral connections

Dry Weather Sampling Methodology

Key storm drain manholes in each Outfall Area were selected for dry weather sampling (after at least 72 hours in which there was no precipitation and no snowmelt). Samples were analyzed for E. Coli, and all storm drain connections above the threshold limit of 235 colonies per 100 ml were targeted for further investigation. Large target areas were delineated into smaller sub-areas and further dry weather sampling was conducted at the outlet of each sub-area. Areas that were dry (i.e., no sample collected) or with sample results below the threshold limit were eliminated from further investigation.

2008 Sampling Results

Initially, four (4) key manholes were selected in Outfall Area 1, eleven (11) in Outfall Area 2 and seventeen (17) in Outfall Area 10. Following the methodology described above, 133 samples were ultimately collected: eight (8) in Outfall Area 1, thirty-seven (37) in Outfall Area 2 and eighty-eight (88) in Outfall Area 10. A summary of sampling results is presented in Table 1 and illustrated in Figures 1 and 2. Table 1 summarizes samples by location and sample date. The highest sample result is highlighted and corresponds to the value shown on the figures. As a visual aid, the sample results are displayed in the figures using a simple color categorization system (see figure legend). A copy of the certified laboratory results for all samples is included the Appendix.

Outfall Area 1: All but one (1) sample collected in Outfall Area 1 was above 5,000 E. Coli colonies per 100 ml. Further inspection of the data indicates a correlation between upstream samples and the overall condition of the system. In other words, upstream samples containing high E. Coli are potentially influencing samples collected downstream. Specifically, the data indicates contamination coming from upstream of DMH 03D038 (Sample OF1E3D) to the intersection of Fairview Avenue and Payson Road and extending north to Benton Road (DMH 04D010).

Outfall Area 2: The sample results show that the core area of Dalton Road between Bacon Road and Shaw Road has significant contamination, despite extensive rehabilitation completed in this area. Areas to the north of Dalton Road, including Washington Street and Sharpe Road also displayed evidence of contamination. While collecting the final sample from manhole 19D002 at the intersection of Washington and School Streets, evidence of an illicit direct connection was observed (washing machine).

Outfall Area 10: The sampling successfully identified several smaller pockets of contamination in this very extensive outfall area. Similar to the Dalton Road area, the Westlund/Waterhouse/Hoitt Road area still has significant contamination despite extensive rehabilitation previously completed. Other areas showing contamination are Sherman Street by the Winn's Brook School, Claflin Street by the Macy's Parking Lot, Monroe Street between Claflin and Pleasant Streets, and the easement between Cowdin and Chilton Streets. Notably, animal feces were observed in the drain manhole where the sample was collected once on Sherman Street (34D009) and twice at the Cowdin Street location (44D015).

Samples collected at manhole 42D016 on Cross Street are considered influenced by upstream contamination. Adjacent storm drain sections on Albert Avenue and Brighton Street had both a low (100) and a high (7000) sample result and are therefore inconclusive.

Recommendations for Illicit Connection Identification

Recommendations for illicit connection investigations are graphically shown in Figures 3 – 6 for each of the areas discussed above. The recommendations are tailored based on previous work conducted as discussed below. It is recommended that investigations focus on areas with a clear indication of an illicit connection(s); in general, areas exhibiting sample results greater than 5,000 E. Coli colonies per 100 mL. In areas below this threshold, shown in orange on Figures 1 and 2, quarterly sampling is recommended to establish a more complete database for future evaluation.

Areas Previously Rehabilitated: In both the Dalton Road and Westlund Road areas, approximately 96% of the houses were dye tested in 2001-2002. As described in the January 2003 Preliminary Design Report, the dye testing identified 13 direct and 36 indirect illicit connections. However, subsequent CCTV inspection did not validate these findings and concluded mainline sewer breaks to be the primary source. Presently, 100% of the mainline sewers have been lined and are eliminated as an illicit connection source, indicating that service laterals are likely the contributing factor. FST recommends that houses previously determined to have direct or indirect connections be retested and an internal inspection be conducted. The purpose of the inspection is to locate potential illicit basement connections isolated from the main plumbing stack that were not identified by the initial dye testing. Depending on those results, inspections and dye testing may need to be expanded to include houses previously cleared.

Areas Not Previously Rehabilitated: In areas where no previous investigations or rehabilitation has been conducted, a more comprehensive approach is recommended. Sewer and storm drain sections are recommended to undergo CCTV inspection. All of the houses/buildings in these areas are recommended for internal inspection and dye testing.

The recommended scope to work shown in Figures 3-6 includes approximately 6,300 feet of CCTV inspection and 170 house inspections/dye tests. The estimated cost to implement this work is **$80,000**.

Conclusion

The Town of Belmont launched its illicit connection identification and elimination program in 1999. Over nearly a decade, Belmont has maintained a major financial investment in the program and has achieved tremendous results. Presently, we believe most of the major main line illicit connections have been successfully eliminated. However, the results of the 2008 storm water sampling and analysis program indicate that illicit connections still persist in isolated areas. FST believes most remaining illicit connections to be service lateral related or direct connections.

We are available to meet with you to discuss the findings of this report at any time upon your request.

Very truly yours,
FAY, SPOFFORD & THORNDIKE, LLC.
By

Justin D. Gould, P.E.
Senior Principal Engineer

cc: Mr. Peter J. Castanino, Town of Belmont
Mr. Kevin Brander, MADEP
Mr. Ralph Jones, The Cadmus Group, Inc.

BELMONT, MASSACHUSETTS
DRY WEATHER STORM WATER SAMPLING RESULTS
TABLE 1

MH No.	Location	Sample No.*	E. Coli. Colonies per 100 ml - Date Sampled								
			7/8/08	7/9/08	7/14/08	7/18/08	10/21/08	11/3/08	11/4/08	11/5/08	11/20/08
OUTFALL 1	Outfall Area 1 - Oxford Cir	OF1E/OF1E2/OF1E3			260		5,600	>30,000			
01D032	Park Rd at Unity Ave	OF1E2A/OF1E3A					5,950	>30,000			
10D026	Fairview Ave at School St	OF1E3C						14,400			
03D038	Fairview Ave between Stults Rd and Lewis Rd	OF1E3D						>30,000			
03D008	Payson Rd at Fairview Ave	OF1E2B					>15,000	No Sample/ Trickle			
OUTFALL 2	Outfall Area 2 - Huron Ave/Grove St	OF2E/OF2E2/OF2E3/OF2E4/OF2E5			2,100		11,050	>30,000		16,900	21,700
19D002	Washington St at School St	17/17A/17C					7,850	>30,000			>30,000
19D004	Jackson Rd at Washington St	17A1/17C1						2,300			100
09D108	From Sharpe Rd at Washington St	10/10A					>15,000	>30,000			
09D108	From Washington at Sharpe Rd	11/11A					3,900	26,600			
09D046	Shaw Rd at Dalton Rd	18/18A					5,600	15,100			
09D054	Shaw Rd at Herbert Rd	18A1						2,600			
09D046	Shaw Rd at Dalton Rd	19/19A					>15,000	>30,000			
10D005	Elm St at Foster Rd	12A/12B/12C						2900		<100	200
10D046	Elm ST at Dalton Rd	12A1						210			
09D009	Grosvenor Rd at Dalton Rd	3A/3B						>30,000		>30,000	
09D011	Sargent Rd at Grosvenor Rd	3B1								>30,000	
09D011	Grosvenor Rd at Sargent Rd	3B2								30,000	
09D009	Dalton Rd at Grosvenor Rd	4A/4B						530		3600	
09D003	Betts Rd at Dalton Rd	5B								>30,000	
09D003	Betts Rd at Dalton Rd	6B								>30,000	
09D074	Audrey Rd at Betts Rd	6B1								3,500	
09D041	Livermore Rd at Dalton Rd	7B								>30,000	
09D029	Shaw Rd at Livermore Rd	7B1								10,100	
09D042	Livermore Rd at Dalton Rd	8B								>30,000	
09D064	Livermore Rd from Easement across from Hartley Rd	8B1								<100	
09D009	Dalton Rd at Grosvenor Rd	OF2E3A						>30,000			

* Sample Numbers are in order of Date Sampled

BELMONT, MASSACHUSETTS
DRY WEATHER STORM WATER SAMPLING RESULTS
TABLE 1

MH No.	Location	Sample No.*	E. Coli. Colonies per 100 ml - Date Sampled								
			7/8/08	7/9/08	7/14/08	7/18/08	10/21/08	11/3/08	11/4/08	11/5/08	11/20/08
OUTFALL 10	Outfall Area 10 - Little Pond	OF10E/OF10E2/2-OF10E3/OF10E4/OF10E5/OF10E6	2,040	1,200	750	970			8,600	19,500	5,000
37D036	Intersection of Hoitt Rd and Brighton St	1/1A/1B	2,740		700				3,800		
41D046	Brighton Rd. at Cross St	1A1/1B1			610				7,000		
44D047	Albert Ave at Brighton St	1A2/1B2			100				<100		
44D047	Albert Ave at Brighton St	1A3/1B3			90				<100		
45D009	Albert Ave	1A4			100						
45D009	Albert Ave	1A5			80						
38D006	Intersection of Statler Rd. and Newcastle Rd.	2	2,000								
37D055	Intersection of Westland Rd. and Waterhouse Rd.; flow from Westland Rd.	3/3A/3B/3C	2,440		10				>30,000		>30,000
37D055	Intersection of Westland Rd. and Waterhouse Rd.; flow from Waterhouse Rd.	4/4A/4B/4C	830		No Sample/ Trickle				>30,000		>30,000
37D042	Hoitt Rd. at Waterhouse Rd	4A1/4B1/4C1			160				>30,000		6,200
37D042	Hoitt Rd. at Waterhouse Rd	4A2/4B2/4C2			120				700		<100
37D028	Sherman St	5/5B/5C	2,550		No Sample				>30,000		>30,000
37D013	Intersection of Hoitt Rd and Dean St	6/6A	370		50						
37D009	Dean St at Hoitt Rd	6A1			10						
34D009	Intersection of Sherman St and Dean St	7/7B	580								
42D019	MH-42D019	8	220						2,100		
42D016	Cross St between Munroe St and Broad St	9/9A/9B/9C		1,500		>3,000			3,400		7,200
43D014	Munroe St. at Cross St.	9A1/9B1/9C1				>3,000			1,800		1,000
43D014	Munroe St. at Cross St.	9A2/9B2/9C2				470			<100		600
43D020	Intersection of Munroe and Claflin	9A3/9B3/9C3				>3,000			100		6,900
47D008	Pleasant St. at Munroe St.	9A4/9B4				2,280			100		
44D042	Frost St	9A8							800		
44D024	Middlecott St. at Hurley	9A5/9B5				1,400			3,200		
44D015	Cowdin St. coming from Brighton St.	9A6/9B6/9C6				560			>30,000		2,000
44D005	Chilton St. close to Brighton St.	9A7/9B7				>3,000			>30,000		
43D002	Intersection of Chilton St and Dean St	10/10A/10B		460		610			300		
43D001	Claflin St. at Dean St - Catch Basin	10A1				230					
43D022	Claflin St MH-43D022	10A2/10B2				1,150			400		
34D082	Intersection of Claflin St and Winn St	11		30							
34D082	Intersection of Claflin St and Winn St	12		160							
CB	Dead end of Claflin St from Alexander Ave; middle catch basin	13/13A/13B/13C		2,710		2,850				5,500	3,000
34D093	Claflin St. at Alexander Ave	13A1/13B1				<10				100	
34D087	Claflin St. at Alexander Ave	13A2/13B2/13C2				1,000				>30,000	3,000
34D091	Claflin St. from Channing St	13A3/13B3/13C3				70				300	<100
48D024	Clifton St at Fletcher Rd	14		30							
48D011	Prospect St at Clifton St	15		20							
48D011	Prospect St at Clifton St	16		230							
54D025	Belmont Hill School parking lot	17		70							

* Sample Numbers are in order of Date Sampled

APPENDIX
CERTIFIED LABORATORY RESULTS

Thorstensen Laboratory, Inc.
66 LITTLETON ROAD, WESTFORD, MA 01886
(978) 692-8395 FAX (978) 692-0023 1-800-649-TEST

Report Number: A 111528
Client:

Report Date: 7/10/08
Sample Taken At:

RECEIVED
JUL 14 '08
F.S.&T.

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Belmont, MA

Sample Taken By: Client

On: 7/8/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results	
	Fecal Coliform	E.Coli
OF10F	7100	--
OF10E	--	2040
Sample 1	--	2740
Sample 2	--	2000
Sample 3	--	2440
Sample 4	--	800
Sample 4dup	--	830
Sample 5	--	2550
Sample 6	--	370
Sample 7	--	580
Sample 8	--	220
Blank	0	0
Method of Analysis:	SM9222D	SM9213D

Detection limit : 10 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 111546
Client:

Report Date: 7/11/08
Sample Taken At:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Belmont, MA

Sample Taken By: Client

On: 7/9/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
OF10E2	1200
Sample 9	1500
Sample 10	460
Sample 11	30
Sample 12	160
Sample 13	2710
Sample 14	30
Sample 16	20
Sample 17 ← 16	230
Sample 17	60
Sample 17 Dup	70
Blank	0
Method of Analysis:	SM9213D

Detection limit : 10 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 111583
Client:

Report Date: 7/15/08
Sample Taken At:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Belmont, MA

Sample Taken By: Client

On: 7/14/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results	
	Fecal Coliform	E.Coli
OF10E3	--	750
1A	--	700
1A1	--	610
1A2	--	100
1A3	--	90
OF2F	>6000	--
OF2E	--	2100
OF1F	680	--
OF1F Dup	760	--
OF1E	--	250
0F1E Dup	--	260
1A4	--	100
1A5	--	80
3A	--	10
4A1	--	160
4A2	--	120
6A	--	50
6A1	--	10
Blank	0	0
Method of Analysis:	SM9222D	SM9213D

Detection limit : 10 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 111644
Client:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Report Date: 7/21/08
Sample Taken At:

Belmont, MA

Sample Taken By: Client

On: 7/18/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
OF10E3	970
9A	>3000
9A1	>3000
9A2	470
9A3	>3000
9A4	2280
9A5	1400
9A6	560
9A7	>3000
10A	610
10A dup	588
10A1	230
10A2	1150
13A	2850
13A1	<10
13A2	1000
13A3	60
13A3 dup	70
Blank	0

Detection limit : 10 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 112380
Client:

Report Date: 10/23/08
Sample Taken At:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

JB-209A

Belmont, MA

Sample Taken By: Client

On: 10/21/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results	
	Fecal Coliform	E.Coli
OF2E2	11,050	--
OF2F2	--	7,850
Sample 17	--	3,900
Sample 10	--	>15,000
Sample 11	--	3,900
Sample 18	--	5,600
Sample 19	--	>15,000
OF1E2	--	5,600
OF1F2	5,800	--
OF1E2A	--	5,950
OF1E2B	--	>15,000
Blank	0	0
Method of Analysis:	SM9222D	SM9213D

Detection limit : 50 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886

978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 112476
Client:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Report Date: 11/5/08
Sample Taken At:

JB-209A

Belmont, MA

Sample Taken By: Client

On: 11/3/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
0F1E3	>30,000
0F1E3A	>30,000
0F1E3C	14,400
0F1E3D	>30,000
0F2E3	>30,000
12A	2,900
12A1	210
4A	530
3A	>30,000
0F2E3A	>30,000
17A	>30,000
17A1	2,300
10A	>30,000
11A	26,600
18A	15,100
19A	>30,000
18A1	2,600
Blank	0
Method of Analysis:	SM9213D

Detection limit : 100 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 112488
Client:

Report Date: 11/6/08
Sample Taken At:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

JB-209A

Belmont, MA

Sample Taken By: Client

On: 11/4/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
0F10E4	8600
Sample 1B	3800
Sample 1B1	7000
Sample 1B2	<100
Sample 1B3	<100
Sample 9B	3400
Sample 9B1	1800
Sample 9B2	<100
Sample 9B3	100
Sample 9B4	100
Sample 9B8	800
Sample 9B5	3200
Sample 9B6	>30,000
Sample 9B7	>30,000
Sample 3B	>30,000
Sample 4B	>30,000
Sample 4B1	>30,000
Sample 4B2	700
Sample 5B	>30,000
Sample 7B	2100
Sample 10B	300
Sample 10B2	400
Blank	0
Method of Analysis:	SM9213D

Detection limit : 100 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 112498
Client:

Report Date: 11/7/08
Sample Taken At:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

JB-209A

Belmont, MA

Sample Taken By: Client

On: 11/5/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
0F10E5	19500
Sample 13B	5500
Sample 13B 1	100
Sample 13B 2	>30,000
Sample 13B 3	300
0F2E4	16900
Sample 3B	>30,000
Sample4B	3600
Sample3B 1	>30,000
Sample3B 2	30000
Sample 5B	>30,000
Sample 6B	>30,000
Sample 6B 1	3500
Sample 7B	>30,000
Sample 8B	>30,000
Sample 7B1	10100
Sample 8B 1	<100
Sample 12B	<100
Blank	0
Method of Analysis:	SM9213D

Detection limit : 100 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.

Thorstensen Laboratory, Inc.

66 Littleton Road, Westford MA 01886 978-692-8395 1-800-649-TEST FAX 978-692-0023

Report Number: A 112599
Client:

Attn: Justin Gould
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Report Date: 11/22/08
Sample Taken At:

JB-209A

Belmont, MA

Sample Taken By: Client

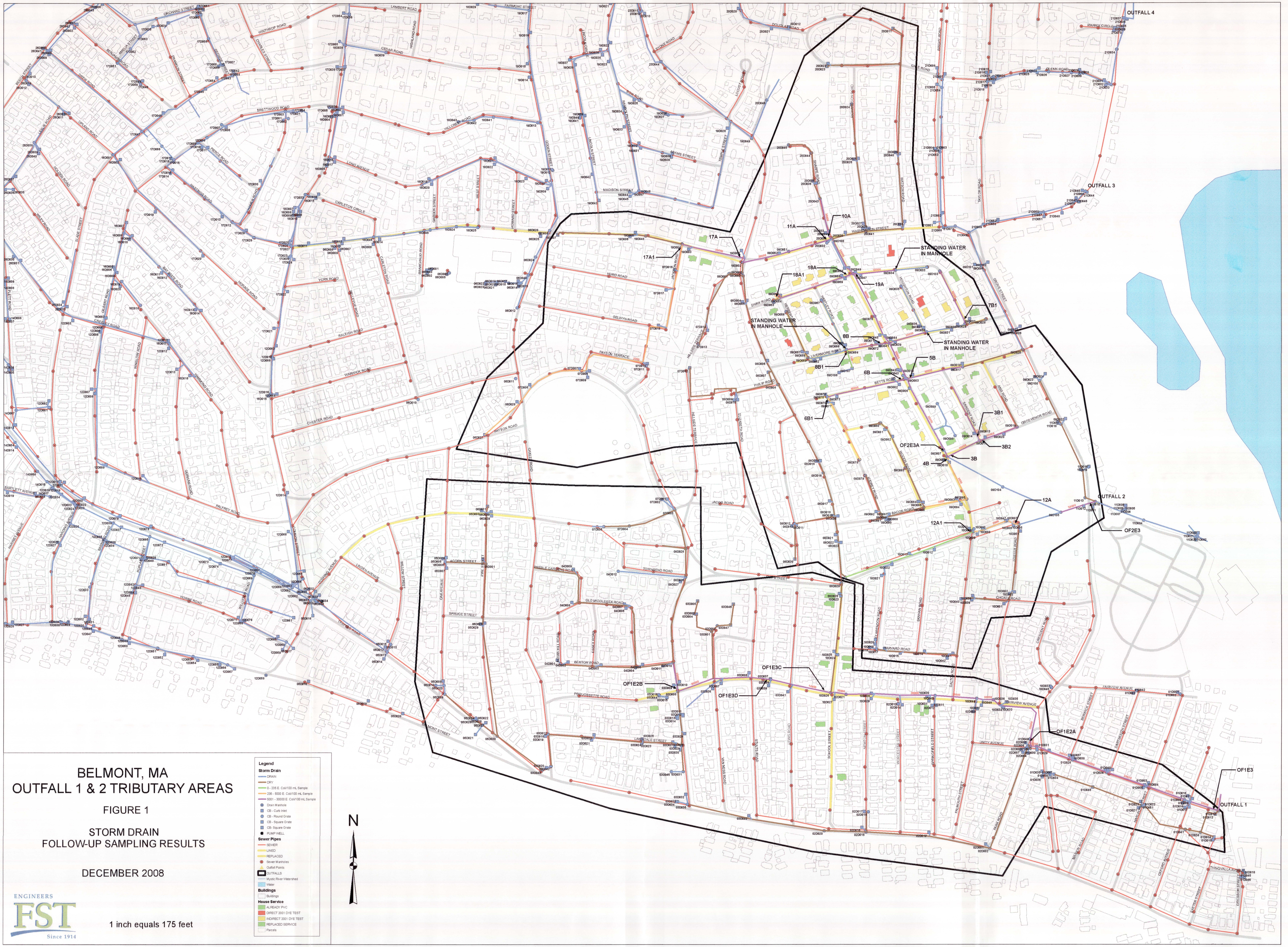
On: 11/20/08

CERTIFICATE OF ANALYSIS

Test Parameter	Results
	E.Coli
0F10E6	5000
Sample 3C	>30,000
Sample 4C	>30,000
Sample 4C1	6200
Sample 4C2	<100
Sample 5C	>30,000
Sample 13C	3000
Sample 13C2	3000
Sample 13C3	<100
Sample 9C	7200
Sample 9C1	1000
Sample 9C2	600
Sample 9C3	6900
0F2E5	21,700
Sample 12C	200
Sample17C1	100
Sample 17C	>30,000
Sampl 9C6	2000
Blank	0

Detection limit : 100 per 100ml

Michael P. Carlson, for
Thorstensen Laboratory, Inc.



BELMONT, MA
OUTFALL 1 & 2 TRIBUTARY AREAS

FIGURE 1

STORM DRAIN
FOLLOW-UP SAMPLING RESULTS

DECEMBER 2008

ENGINEERS FST Since 1914

1 inch equals 175 feet

BELMONT, MA
WINN'S BROOK TRIBUTARY AREA

FIGURE 2

STORM DRAIN
FOLLOW-UP SAMPLING RESULTS
OUTFALL 10

DECEMBER 2008

ENGINEERS
FST
Since 1914

1 inch equals 175 feet

N

Legend

Storm Drain
- DRAIN
- DRY
- 0 - 235 E. Coli/100 mL Sample
- 236 - 5000 E. Coli/100 mL Sample
- 5001 - 30000 E. Coli/100 mL Sample
- Drain Manhole
- CB - Curb Inlet
- CB - Round Grate
- CB - Square Grate
- CB- Square Grate
- PUMP WELL

Sewer Pipes
- SEWER
- LINED
- REPLACED
- Sewer Manholes
- Outfall Points
- Winn's Brook Tributary Area
- Mystic River Watershed
- Water

Buildings
- Buildings

House Service
- ALREADY PVC
- DIRECT 2001 DYE TEST
- INDIRECT 2001 DYE TEST
- REPLACED SERVICE
- Parcels
- Winn's Brook Culvert

OUTFALL 15
OUTFALL 11
OUTFALL 10
OF10E5

BELMONT, MA
FAIRVIEW AVE TRIBUTARY AREA

FIGURE 3

RECOMMENDED HOUSE INSPECTION/
DYED-WATER TESTING AND
CCTV INSPECTION
OUTFALL 1

DECEMBER 2008

1 inch equals 100 feet

ENGINEERS FST Since 1914

Recommended CCTV

ELM STREET
OLD MIDDLESEX ROAD
INDIAN HILL ROAD
ESSEX ROAD
BENTON ROAD
PEQUOSSETTE ROAD
OAKLEY ROAD
LAWNDALE STREET
TRAPELO ROAD
VAN NESS ROAD
FAIRVIEW AVENUE
HARVARD ROAD
CLARENDON ROAD
STULTS ROAD
LEWIS ROAD
SCHOOL STREET
NEWTON STREET
PAYSON ROAD

OF1E3D
OF1E3B
OF1E3C

N

Legend

Storm Drain
- DRAIN
- DRY
- 0 - 235 E. Coli/100 mL Sample
- 236 - 5000 E. Coli/100 mL Sample
- 5001 - 30000 E. Coli/100 mL Sample
- Drain Manhole
- CB - Curb Inlet
- CB - Round Grate
- CB - Square Grate
- CB- Square Grate
- PUMP WELL

Sewer Pipes
- SEWER
- LINED
- REPLACED
- Sewer Manholes
- Outfall Points
- Buildings

Recommended Work 2009
- DYE TEST/HOUSE INSPECTION
- Parcels
- Mystic River Watershed
- Water

Recommended CCTV

BELMONT, MA
DALTON RD TRIBUTARY AREA

FIGURE 4

RECOMMENDED HOUSE INSPECTION/
DYED-WATER TESTING AND
CCTV INSPECTION
OUTFALL 2

DECEMBER 2008

1 inch equals 200 feet

ENGINEERS FST Since 1914

Legend

Storm Drain
- DRAIN
- DRY
- 0 - 235 E. Coli/100 mL Sample
- 236 - 5000 E. Coli/100 mL Sample
- 5001 - 30000 E. Coli/100 mL Sample
- Drain Manhole
- CB - Curb Inlet
- CB - Round Grate
- CB - Square Grate
- CB- Square Grate
- PUMP WELL

Sewer Pipes
- SEWER
- LINED
- REPLACED
- Sewer Manholes
- Outfall Points
- Buildings

Recommended Work 2009
- DYE TEST/HOUSE INSPECTION
- Parcels
- Mystic River Watershed
- Water

N

Recommended CCTV

Recommended CCTV

BELMONT, MA
WINN'S BROOK TRIBUTARY AREA

FIGURE 5

RECOMMENDED HOUSE INSPECTION/
DYED-WATER TESTING AND
CCTV INSPECTION
OUTFALL 10

DECEMBER 2008

1 inch equals 150 feet

ENGINEERS FST Since 1914

Legend

Storm Drain
- DRAIN
- DRY
- 0 - 235 E Coli/100 mL Sample
- 236 - 5000 Coli/100 mL Sample
- 5001 - 30000 Coli/100 mL Sample
- Drain Manhole
- CB - Curb Inlet
- CB - Round Grate
- CB - Square Grate
- CB- Square Grate
- PUMP WELL

Sewer Pipes
- SEWER
- LINED
- REPLACED
- Sewer Manholes
- Outfall Points
- Buildings

Recommended Work 2009
- DYE TEST/HOUSE INSPECTION
- Parcels
- Mystic River Watershed
- Water

OUTFALL 11

OUTFALL 10

BELMONT, MA
WINN'S BROOK TRIBUTARY AREA

FIGURE 6

RECOMMENDED HOUSE INSPECTION/
DYED-WATER TESTING AND
CCTV INSPECTION
OUTFALL 10

DECEMBER 2008

1 inch equals 100 feet

ENGINEERS FST Since 1914

Previously CCTV'D Under 2008 PMP

Recommended CCTV

Legend

Storm Drain
- DRAIN
- DRY
- 0 - 235 E. Coli/100 mL Sample
- 236 - 5000 Coli/100 mL Sample
- 5001 - 30000 Coli/100 mL Sample
- Drain Manhole
- CB - Curb Inlet
- CB - Round Grate
- CB - Square Grate
- CB- Square Grate
- PUMP WELL

Sewer Pipes
- SEWER
- LINED
- REPLACED
- Sewer Manholes
- Outfall Points
- Buildings

Recommended Work 2009
- DYE TEST/HOUSE INSPECTION
- Parcels
- Mystic River Watershed
- Water

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SOMERSET STREET
WELLINGTON LANE
PLEASANT STREET
LEONARD STREET
WINN STREET
FARNHAM STREET
ALEXANDER AVENUE
CLAFLIN STREET
CROSS STREET
FARM ROAD
CHANNING ROAD
CONCORD AVENUE
SUNNYSIDE PLACE
MOORE STREET