NYC Environmental Protection

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Commissioner

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March 11, 2019

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Patrick Palmer
New York State Department of Health
Bureau of Water Supply Protection, NYC Watershed Section
Empire State Plaza, Corning Tower, Room 1198
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Katie Lynch
United States Environmental Protection Agency
Clean Water Division - New York City Water Supply Protection Program
290 Broadway, 24th Floor
New York, New York 10007-1866

RE: Monthly Water Quality Report for February 2019

Dear Ms. Huang, Mr. Palmer and Ms. Lynch:

Enclosed, please find the New York City Water Quality report for the month of **February 2019**. There was no well pumpage to distribution in the Groundwater System this month. Croton water fed into distribution from February 1 through February 28, 2019. In addition to the following list of compliance reports, a disc of electronic files containing compliance and non-compliance data for this month is enclosed with this report.

- Raw Water Fecal Coliform Report
- Raw Water Turbidity Report
- Distribution Microbiological Compliance Reports
  - Summary
  - Positive Samples
  - Resamples
- Chlorine Residual Reports
  - Entry Point Online
  - Entry Point Daily Minimum
  - Heterotrophic Plate Count
  - Monthly Summary
- Distribution Turbidity Reports
  - Distribution Turbidity Report
  - Source Water > 1.49 NTU Table

- Color Entry Point Report
- Fluoride Reports
  - Fluoride Entry Point Report
  - Distribution Fluoride Report
- Quarterly Disinfection By-products Report

The reports are summarized as follows:

FAD REQUIREMENTS

1. *Raw Water Fecal Coliform Concentrations* (Section 141.71(a)(1)):
Requirements met. The Delaware Aqueduct effluent from Kensico Reservoir exhibited fecal coliform concentrations in water prior to disinfection at levels less than or equal to 20 CFU/100 mL in at least 90% of the samples collected in the six-month period from September 1, 2018 to February 28, 2019. The six month running percentage of samples collected with fecal coliform concentrations >20 CFU/100 mL was 2.21% for the Catskill/Delaware System for this time period.

2. *Raw Water Turbidity* (Section 141.71(a)(2)):
Requirements met. The raw water leaving Kensico Reservoir via the Delaware Aqueduct in compliance samples collected at DEL18DT, just prior to disinfection, exhibited turbidity levels less than or equal to 5 NTU on an ongoing basis during the month. The highest turbidity value was listed at 1.0 NTU on the Catskill/Delaware System for the month.

3. *Entry Point Chlorine Residual* (Section 141.71(b)(1)(iii) and 141.72(a)(3)):
Requirements met. As required, continuous monitoring for free chlorine residual was maintained at the distribution entry points throughout the month and at no time did the concentration fall below 0.2 mg/L for more than four hours. The minimum daily free chlorine residual value for entry point readings for the Catskill/Delaware System from sites 1S03 (Tunnel 1) was 0.33 mg/L, 1S03A (Tunnel 2) was 0.69 mg/L, and 1S03B (Tunnel 3) was 0.40 mg/L for the Catskill/Delaware System.

The Croton Filtration Plant was online throughout the month. The minimum daily free chlorine residual value for Croton entry point readings from sites 1SCL1 (Low Service) was 0.44 mg/L and 1SCH3 (High Service) was 0.35 mg/L.

4. *Distribution System Disinfection Residuals* (Section 141.71(b)(1)(iv) and 141.72(a)(4)):
Requirements met. All free chlorine residuals measured at compliance sites within the distribution system during the month were greater than or equal to 0.06 mg/L.

A total of 1219 distribution samples were tested for free chlorine residual this month. For all distribution sites free chlorine residual ranged from 0.06 mg/L to 0.99 mg/L and averaged 0.51 mg/L for the month.

5. *Trihalomethane Monitoring / HAA5 Monitoring* (Section 141.71(b)(6)):
Requirements met. The System's TTHM System-Wide Running Average (RAA) for the first quarter of 2019 was 40 µg/L, and the Locational Running Annual Averages (LRAA) ranged from 32 µg/L to 50 µg/L. These values meet the MCL of 80 µg/L for LRAA and RAA. TTHM quarterly results averaged 27 µg/L.

The System's HAA5 RAA for the first quarter of 2019 was 46 µg/L, and the LRAA ranged from 39 µg/L to 51 µg/L. These values meet the MCL of 60 µg/L for LRAA and RAA. HAA5 quarterly results averaged 41 µg/L.

6. Total Coliform Monitoring (Section 141.71(b)(5)):
Requirements met. The results of monthly coliform monitoring performed in the distribution system are enclosed. A total of 747 compliance samples were tested for total coliform during this period. HPC were all ≤500 CFU/mL, equivalent to a measurable free chlorine residual. Zero percent of the samples had an undetectable free chlorine residual or HPC >500 CFU/mL. This meets the requirements that a free chlorine residual be maintained at representative points in the distribution system, and that no more than 5% of the free chlorine residual samples be undetectable in any two months. During the month, there was one (1) sample that tested positive for total coliform, and all samples were negative for *E. coli*.

- A sample collected on 02/08/2019 from Site 76850 (sample station in front of 111-46 west side of Farmers Blvd., and first sampling station north of Keeseville Ave) was positive for total coliform. Repeat sampling on 2/10/2019 was coliform negative at all locations.

OTHER WATER QUALITY MONITORING

7. *Microbiological Monitoring:*
Coliform monitoring at distribution sites near first service connections, in response to source water having a turbidity >1.49 NTU, was not required this month, but all samples were negative for total coliform.

The analyses of 472 distribution Operational samples resulted in no samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 224 Pre-Finished samples resulted in one (1) sample testing positive for total coliform. No for *E. coli* were detected

The analyses of 428 Autosampler Pre-finished samples resulted in three (3) samples testing positive for total coliform. No *E. coli* were detected.

8. *Distribution Turbidity Monitoring:*
For distribution sites turbidity ranged from <0.10 to 2.33 NTU and averaged 0.64 NTU for the month. This meets the MCL of 5 NTU for the monthly average of all distribution samples.

9. *Color Monitoring:*
The MCL of 15 units for color was met at each Catskill/Delaware and Croton entry point for the month. Daily analyses of entry point samples (140 samples in total), produced monthly average color values of six (6) units for site 1S03 (Tunnel 1), seven (7) units for sites 1S03A (Tunnel 2) and 1S03B (Tunnel 3), and four (4) units for sites 1SCL1 (Croton Low Service) and 1SCH3 (Croton High Service).

10. *Volatile Organic/TTHM/HAA5 Monitoring:*
Monthly Results: Twenty one (21) distribution and five (5) entry point samples were collected for volatile organic contaminant (VOC) analysis. All VOC samples from distribution sites and entry points were below detection. Twenty-one (21) TTHM distribution samples were collected ranging from 17 µg/L to 34 µg/L. Five (5) TTHM entry point samples were collected ranging from 14 µg/L to 20 µg/L. Twenty one (21) HAA5 distribution samples were collected ranging from 29 µg/L to 49 µg/L. Five (5) HAA5 entry point samples were collected ranging from 25 µg/L to 33 µg/L.

11. *Semivolatile and Other Organic Chemicals/parameters:*
Monitoring for Method 505 organohalide pesticides was conducted on January 28, 2019 at three Catskill/Delaware entry points (1S07, 1S03A, and 1S03B), and at the Croton Low Service and High Service entry points (1SCL1 and 1SCH3). All results were below detection.

12. *Fluoride Monitoring:*
Daily analyses of entry point samples (140 samples in total), produced monthly average fluoride levels of 0.70 mg/L for site 1S03 (Tunnel 1), 0.72 mg/L for site 1S03A (Tunnel 2), 0.71mg/L for site 1S03B (Tunnel 3), 0.72 mg/L for site 1SCL1 (Croton Low Service), and 0.74 mg/L for site 1SCH3 (Croton High Service). The fluoride levels at the entry points did not exceed the MCL of 2.2 mg/L at any time during the month.

13. *Unregulated Contaminant Monitoring Rule:*
Fourth quarter monitoring for Additional Chemicals was conducted at two (2) source water, four (4) entry points, and 20 distribution DBP monitoring sites on February 5, 2019. Samples were tested for Bromide (ranged from 9.2 to 29 µg/L), TOC (ranged from 2.4 to 4.0 mg/L), Germanium (ND), Manganese (ranged from 4.3 to 13 µg/L), Method 552.3 for HAA9 (ranged from 41 to 58 mg/L), Method 541 (ND), Method 525.3 (ND), and Method 530 (QC failed and requires resampling). Resampling for Method 530 at entry point sites will be conducted in March. Contract laboratory reports of available data are included as pdfs on the disc of electronic files enclosed with this report.

14. Other Monitoring
Please note revised Excel files "NYC_Monthly_Alldata_201810_rev" (Sheets, IOC_DBP_rev and Limno_&_Legionella_data_rev), "NYC_Monthly_Alldata_201811_rev" (Sheets, HV_TOC_rev and Croton_data_rev), and "NYC_Monthly_Alldata_201812_rev" (Sheets, IOC_Monthly_rev, HV_TOC_rev, and Croton_data_rev) for October through December 2018 are included with this month's report submitted disc of electronic files which include previously missing annotations for some TOC results.

Please feel free to contact me at (845) 340-7701 if you would like to discuss any of this information in greater detail.

Sincerely,

Steven C. Schindler
Director, Water Quality

Enclosure

cc:

Mr. James Flaherty, Inspector General for NYCDEP
Mr. Kenneth Kosinski, NYSDEC
Mr. David Kvinge, Westchester County Water Agency (by email only)
Mr. Huan Li, NYCDOHMH
Mr. Trevor McProud, NYCDOHMH
Mr. Andy Tse, NYSDOH (by email only)
Mr. Steven Zahn, NYSDEC – Region 2

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M. Warne
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RAW WATER FECAL COLIFORM CONCENTRATIONS
(FAD Requirement)

NYCDEP Division of Watershed Water Quality Operations

Catskill/Delaware System Raw Water Fecal Coliform Compliance Report

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water				Period: 12/16 To: 02/19
Date	Number of Fecal Coliform Samples Examined per Month	Number of Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL for Previous Six Months
12-16	31	0	0.00	0.00
1-17	31	0	0.00	0.00
2-17	28	0	0.00	0.00
3-17	31	0	0.00	0.00
4-17	30	0	0.00	0.00
5-17	31	0	0.00	0.00
6-17	30	0	0.00	0.00
7-17	31	0	0.00	0.00
8-17	31	0	0.00	0.00
9-17	30	0	0.00	0.00
10-17	31	0	0.00	0.00
11-17	30	0	0.00	0.00
12-17	31	0	0.00	0.00
1-18	31	0	0.00	0.00
2-18	28	1	3.57	0.55
3-18	31	0	0.00	0.55
4-18	30	0	0.00	0.55
5-18	31	0	0.00	0.55
6-18	30	0	0.00	0.55
7-18	31	0	0.00	0.55
8-18	31	0	0.00	0.00
9-18	30	2	6.67	1.09
10-18	31	2	6.45	2.17
11-18	30	0	0.00	2.19
12-18	31	0	0.00	2.17
1-19	31	0	0.00	2.17
2-19	28	0	0.00	2.21

J.W. Robinson 3/5/19

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations 3/5/2019

All results that fall within the scope of the NELAP program meet that program's requirements unless stated in the qualifiers addendum printed at the end of this

RAW WATER TURBIDITY
(FAD Requirement)

NYCDEP Division of Watershed Water Quality Operations

Water Systems Operation Report - Catskill/Delaware System

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water — **Period: February, 2019**

Date	Turbidity (NTU) 12 AM	4 AM	8 AM	12 PM	4 PM	8 PM	Total Coliform (Colonies per 100 mL)	Fecal Coliform (Colonies per 100 mL)
2/1/19	0.70	0.70	0.75	0.75	0.75	0.75	E7	E4
2/2/19	.	0.75	0.85	0.75	0.70	0.65	E3	E3
2/2/19	0.90	.	.	.	.	.	E3	E3
2/3/19	0.60	0.60	0.70	0.70	0.70	0.70	E12	E3
2/4/19	0.70	0.70	0.65	0.70	0.70	0.65	E20	E1
2/5/19	0.70	0.65	0.70	0.60	0.65	0.65	E9	<1
2/6/19	0.65	0.65	0.70	0.65	0.70	0.70	E7	E1
2/7/19	0.65	0.60	0.65	0.65	0.70	0.70	E10	<1
2/8/19	0.70	0.70	0.70	0.65	0.80	0.60	E6	E1
2/9/19	0.65	0.60	0.60	0.65	0.65	0.65	E5	E4
2/10/19	0.65	0.65	0.70	0.65	0.70	0.60	E18	E1
2/11/19	0.70	0.65	0.80	0.65	0.80	0.60	E9	E1
2/12/19	0.75	0.75	0.80	0.90	1.0	1.0	E9	E2
2/13/19	1.0	0.95	0.85	0.80	0.80	0.80	E14	<1
2/14/19	0.85	0.80	0.75	0.70	0.65	0.70	E9	E1
2/15/19	0.70	0.70	0.70	0.70	0.70	0.70	E5	E1
2/16/19	0.75	0.70	0.65	0.70	0.70	0.70	E5	E8
2/17/19	0.70	0.70	0.70	0.70	0.70	0.70	E5	E7
2/18/19	0.70	0.65	0.70	0.55	0.65	0.75	E8	E7
2/19/19	0.65	0.65	0.70	0.75	0.80	0.70	E8	E8
2/20/19	0.75	0.65	0.75	0.70	0.70	0.75	E12	E3
2/21/19	0.75	0.65	0.75	0.70	0.70	0.65	E14	E3
2/22/19	0.75	0.75	0.75	0.75	0.75	0.65	E12	E9
2/23/19	0.70	0.65	0.70	0.65	0.65	0.70	E6	E9
2/24/19	0.70	0.75	0.80	1.0	0.85	0.85	E13	E4
2/25/19	0.95	0.85	0.80	0.80	0.70	0.75	E7	E6
2/26/19	0.75	0.80	0.75	0.70	0.80	0.85	E10	E4
2/27/19	0.80	0.75	0.80	0.95	0.95	0.80	E4	E8
2/28/19	0.80	0.75	0.80	0.90	0.80	0.80	E6	E1

.: Aqueduct Shutdown, CONF: Confluent Growth (+ indicates positive coliform growth), LE: Lab Error, FE: Field Error,
E: estimated count based on non-ideal plate, >=: plate count may be biased low based on heavy growth, >: observed count replaced with dilution based value

1. Does a raw water turbidity M & R violation exist? ___ Yes X__ No
2. Does the turbidity reading exceed 5 NTU at any time? ___ Yes X_ No
   If yes, check for MCL violation, and notify state by the end of the next business day.
3. Minimum number of microbiological samples required per week: _5___
4. A daily microbiological sample is required every day the raw water turbidity exceeds 1 NTU.

Additional Comments: 12AM sample from 2/2/19 was a drop sample from the downtake (DEL18DTD). This was due to an inadvertent breakage in the sample line.

D.W. Robinson 3/5/19

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations 3/5/2019

All results that fall within the scope of the NELAP program meet that program's requirements unless stated in the qualifiers addendum printed at the end of this report.

Report Printed on 03/05/201910:44 am

NYCDEP Division of Watershed Water Quality Operations

Water Systems Operation Report - Qualifiers and Methods Addendum

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Data Qualifiers and Additional Notes — **Period: February, 2019**

Date/Time	Site	Analytes Affected	Qualifier
2/6/19 11:55	DEL18DT	Turbidity	Samples were not bracketed with a check standard after every 10 samples as required.
2/7/19 03:55	DEL18DT	Turbidity	Samples were not bracketed with a check standard after every 10 samples as required.
2/1/19 11:55	DEL18DT	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/1/19 23:55	DEL18DTD	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/6/19 15:55	DEL18DT	Turbidity	Samples were not bracketed with a check standard after every 10 samples as required.
2/6/19 19:56	DEL18DT	Turbidity	Samples were not bracketed with a check standard after every 10 samples as required.
2/24/19 11:55	DEL18DT	Turbidity	The duplicate analysis was not within the control limits.
2/2/19 07:55	DEL18DT	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/26/19 23:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.
2/1/19 15:55	DEL18DT	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/1/19 19:55	DEL18DT	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/2/19 03:55	DEL18DT	Turbidity	Samples were not bracketed with a std check after every 10 samples as required.
2/6/19 23:55	DEL18DT	Turbidity	Samples were not bracketed with a check standard after every 10 samples as required.
2/26/19 11:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.
2/26/19 15:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.
2/26/19 19:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.
2/27/19 03:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.
2/27/19 07:55	DEL18DT	Turbidity	The temp blank was sitting on bench for a while prior to being measured for temperature. Samples were brought in with ice.

NYCDEP Division of Watershed Water Quality Operations

Water Systems Operation Report - Qualifiers and Methods Addendum

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Data Qualifiers and Additional Notes — **Period: February, 2019**

Date/Time	Site	Analytes Affected	Qualifier

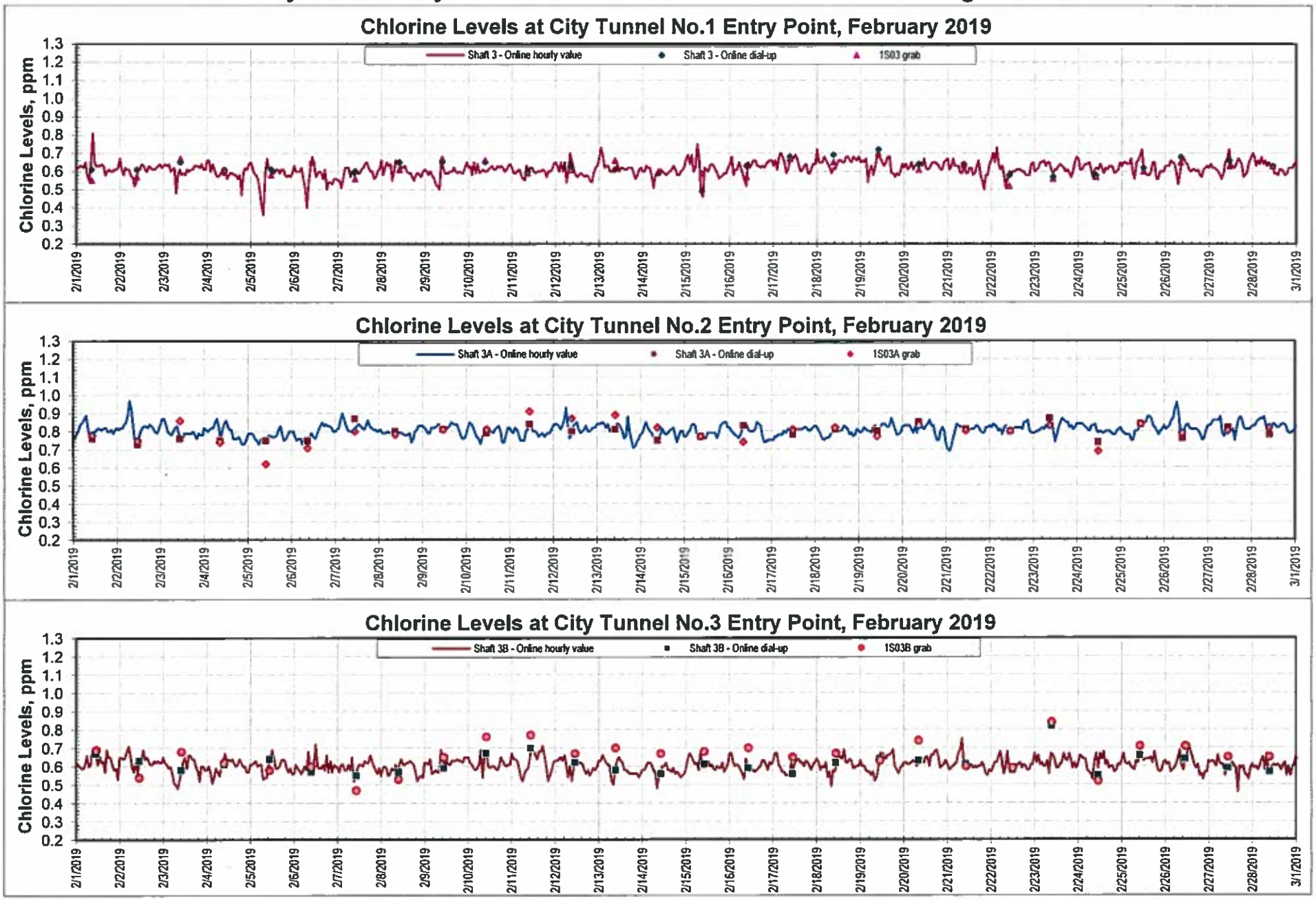
Analytical Methods

Coliform, Fecal	-	SM 9222D (2006)
Coliform, Total	-	SM 9222B (2006)
Turbidity	-	SM 2130B (01)

ENTRY POINT CHLORINE RESIDUAL
(FAD Requirement)

New York City Department of Environmental Protection
Bureau of Water Supply

City Tunnel Entry Point Residual Chlorine Continuous Monitoring Results



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained above 0.2 ppm at all times. Since 11/4/18, all online readings, grab and online dial-up readings were recorded in Eastern Standard Time.

New York City Department of Environmental Protection
Bureau of Water Supply

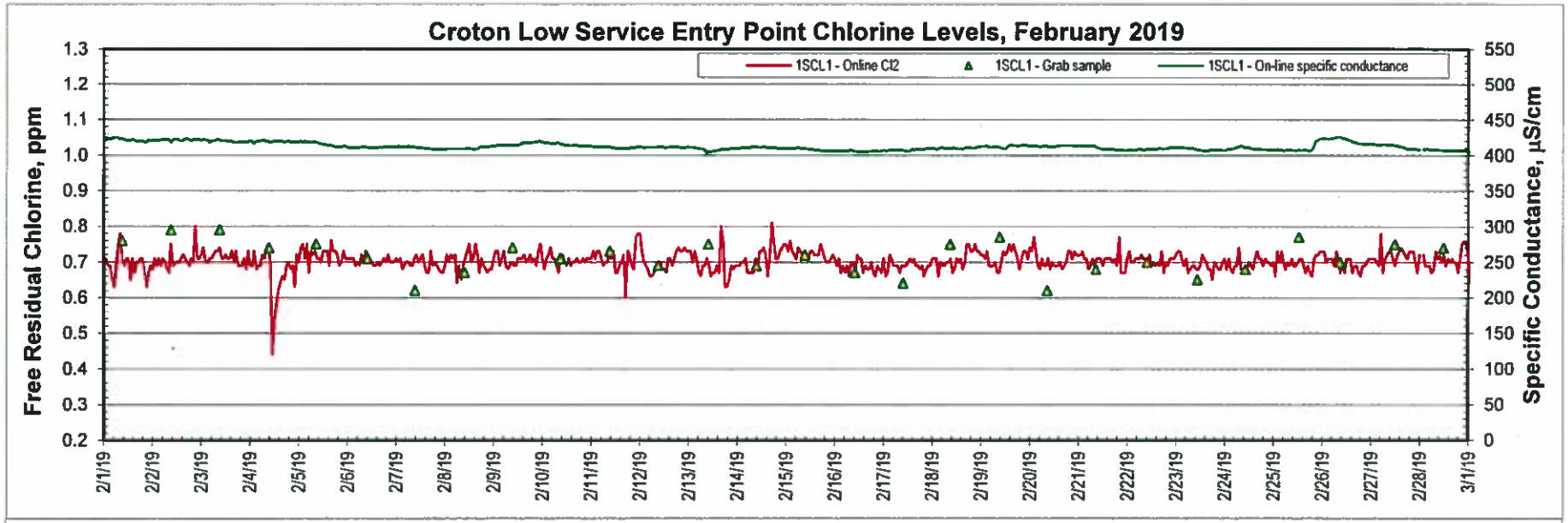
Daily Minimum Chlorine Readings Recorded at Tunnel Entry Shafts for Catskill/Delaware System

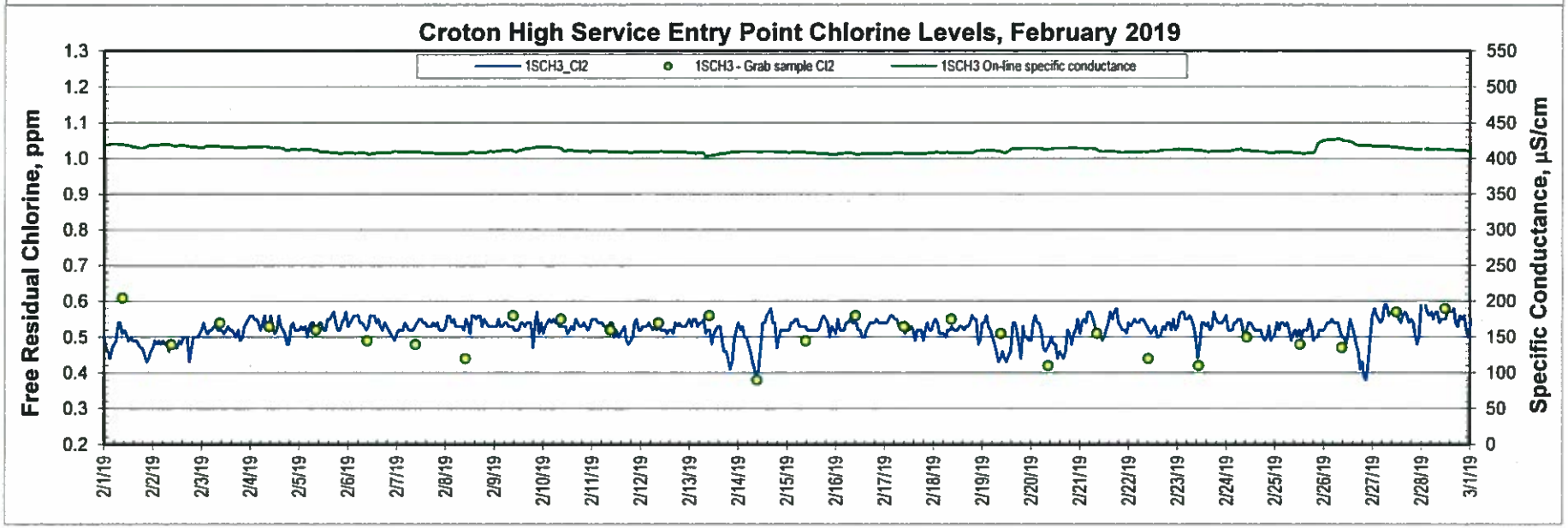
Tunnel No.1 (Catskill) at Shaft 3			Tunnel No.2 (Delaware) at Shaft 3A			Tunnel No.3 (Cat/Del) at Shaft 3B		
Date	MinCl_1DL	Remark 1	Date	MinCl_2DL	Remark 2	Date	MinCl_3DL	Remark 3
02/01/19	0.53		02/01/19	0.71		02/01/19	0.52	
02/02/19	0.52		02/02/19	0.69		02/02/19	0.50	
02/03/19	0.44		02/03/19	0.72		02/03/19	0.47	
02/04/19	0.42		02/04/19	0.71		02/04/19	0.49	
02/05/19	0.33		02/05/19	0.76		02/05/19	0.49	
02/06/19	0.40		02/06/19	0.78		02/06/19	0.47	
02/07/19	0.51		02/07/19	0.79		02/07/19	0.48	
02/08/19	0.48		02/08/19	0.74		02/08/19	0.51	
02/09/19	0.50		02/09/19	0.74		02/09/19	0.48	
02/10/19	0.57		02/10/19	0.72		02/10/19	0.50	
02/11/19	0.53		02/11/19	0.74		02/11/19	0.49	
02/12/19	0.50		02/12/19	0.75		02/12/19	0.50	
02/13/19	0.51		02/13/19	0.70		02/13/19	0.45	
02/14/19	0.49		02/14/19	0.74		02/14/19	0.47	
02/15/19	0.46		02/15/19	0.75		02/15/19	0.56	
02/16/19	0.54		02/16/19	0.73		02/16/19	0.50	
02/17/19	0.58		02/17/19	0.74		02/17/19	0.51	
02/18/19	0.57		02/18/19	0.75		02/18/19	0.46	
02/19/19	0.52		02/19/19	0.78		02/19/19	0.48	
02/20/19	0.59		02/20/19	0.72		02/20/19	0.57	
02/21/19	0.50		02/21/19	0.69		02/21/19	0.54	
02/22/19	0.50		02/22/19	0.77		02/22/19	0.53	
02/23/19	0.55		02/23/19	0.71		02/23/19	0.51	
02/24/19	0.55		02/24/19	0.76		02/24/19	0.53	
02/25/19	0.54		02/25/19	0.74		02/25/19	0.56	
02/26/19	0.53		02/26/19	0.74		02/26/19	0.52	
02/27/19	0.52		02/27/19	0.75		02/27/19	0.40	
02/28/19	0.57		02/28/19	0.76		02/28/19	0.53	

Legend: MinCl_1DL: Shaft 3's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.
MinCl_2DL: Shaft 3A's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.
MinCl_3DL: Shaft 3B's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.

New York City Department of Environmental Protection
Bureau of Water Supply

Croton Distribution Entry Point Residual Chlorine Continuous Monitoring Results





Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained above 0.2 ppm at all times.

New York City Department of Environmental Protection
Bureau of Water Supply

Daily Minimum Chlorine Readings Recorded at Croton Distribution Entry Points

Low Service			High Service		
Date	MinCl_1SCL1	Remark 1	Date	MinCl_1SCH3	Remark 2
02/01/19	0.60		02/01/19	0.42	
02/02/19	0.64		02/02/19	0.42	
02/03/19	0.64		02/03/19	0.48	
02/04/19	0.44		02/04/19	0.48	
02/05/19	0.63		02/05/19	0.48	
02/06/19	0.64		02/06/19	0.48	
02/07/19	0.64		02/07/19	0.50	
02/08/19	0.62		02/08/19	0.50	
02/09/19	0.63		02/09/19	0.41	
02/10/19	0.64		02/10/19	0.50	
02/11/19	0.60		02/11/19	0.47	
02/12/19	0.64		02/12/19	0.50	
02/13/19	0.58		02/13/19	0.39	
02/14/19	0.60		02/14/19	0.39	
02/15/19	0.65		02/15/19	0.50	
02/16/19	0.62		02/16/19	0.50	
02/17/19	0.61		02/17/19	0.48	
02/18/19	0.62		02/18/19	0.48	
02/19/19	0.64		02/19/19	0.41	
02/20/19	0.65		02/20/19	0.43	
02/21/19	0.62		02/21/19	0.49	
02/22/19	0.62		02/22/19	0.49	
02/23/19	0.62		02/23/19	0.44	
02/24/19	0.58		02/24/19	0.48	
02/25/19	0.62		02/25/19	0.47	
02/26/19	0.60		02/26/19	0.35	
02/27/19	0.64		02/27/19	0.47	
02/28/19	0.60		02/28/19	0.50	

Legend: MinCl_1SCL1: 1SCL1's minimum chlorine level measured and recorded at the location via data logger, in ppm.
MinCl_1SCH3: 1SCH3's minimum chlorine level measured and recorded at the location via data logger, in ppm.

Note: Croton water fed to High Service time period was determined by specific conductance greater than 150 uS/cm.

DISTRIBUTION SYSTEM DISINFECTION RESIDUAL

(FAD Requirement)

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Residual Chlorine (mg/L) Distribution Samples

February 2019

All Distribution Sites			
Samples	Min	Max	Average
1219	0.06	0.99	0.51

Hach DPD Method (analyte is not ELAP certified)

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	RESIDUAL CHLORINE	COMMENT
3867	2/7/19	47650	Reg Stop	0.99	Max
4887	2/17/19	47650	Reg Stop	0.99	Max
4557	2/14/19	3ISL4	Reg Stop	0.06	Min

A FCR is to be maintained at representative points in the distribution system and no more than 5% of the samples can be undetectable in any two months.

TOTAL COLIFORM MONITORING
(FAD Requirement)

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Summary of Results for Microbiological Quality
Compliance Samples

2/1/2019 to 2/28/2019

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested	Number of Samples with Positive Coliform *	Number of Samples with Positive E. coli *	Percent of Samples with Positive Coliform **
Bronx	46	122	122	0	0	0.0%
Brooklyn	70	182	182	0	0	0.0%
Manhattan	57	156	156	0	0	0.0%
Queens ***	79	210	210	1	0	0.5%
Staten Island	28	77	77	0	0	0.0%
Ground Water Supply ***	-	-	-	-	-	-
Total	280	747	747	1	0	0.1%

* As determined by Colilert Quanti-Tray-18 Method (SM 9223 B).

** If more than 5.0 % of all monthly TCR compliance samples are positive for total coliform, a Level I Assessment must be conducted.

*** There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Rupa Aggarwal Date: 03/06/19

Director: [signature] Date: 3/7/19

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Results for Microbiological Quality
Positive Compliance Samples
2/1/2019 to 2/28/2019

Date	Time	Site Number	Boro	Location	Coliform *	E. coli *	Chlorine Residual (mg/L) **	Remarks
2/8/2019	10:39	76850	Queens	SS - IFO W/S 111-46 Farmers Blvd, 1st SS N/O Keeseville Ave.	1.0	<1	0.43	To Be Resampled

* As determined by Colilert Quanti-Tray-18 Method (SM 9223 B). Results expressed in "MPN/100 mL."

** As determined by Hach DPD Method (analyte is not ELAP certified).

Supervisor: Rupa Agrawal Date: 03/06/19

Director: [signature] Date: 3/7/19

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Results for Microbiological Quality
Resamples for Positive Compliance Samples

2/1/2019 to 2/28/2019

Date	Time	Site Number		Location	Coliform *	E. coli *	Chlorine Residual (mg/L) **	Remarks
2/10/2019	09:24	76850	Queens	SS - IFO 111-12 W/S Farmers Blvd, 1st SS S/O Jordorn Ave	<1	<1	0.57	Upstream
2/10/2019	09:40	76850	Queens	SS - IFO W/S 111-46 Farmers Blvd, 1st SS N/O Keeseville Ave.	<1	<1	0.52	Original Location
2/10/2019	09:54	76850	Queens	SS - W/S Farmer Blvd, 1st SS W/O 113th Ave	<1	<1	0.48	Downstream

* As determined by Colilert Quanti-Tray-18 Method (SM 9223 B). Results expressed in "MPN/100 mL."
** As determined by Hach DPD Method (analyte is not ELAP certified).

Supervisor: Rupa Agrawal Date: 03/06/19

Director: [signature] Date: 3/7/19

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Results for Microbiological Quality
Free Chlorine Residual and Heterotrophic Plate Count
Compliance Samples

2/1/2019 to 2/28/2019

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested (Free Chlorine Residual)	Number of Samples Tested (Heterotrophic Plate Count)	Number of Samples with Free Chlorine Residual *		Range of Heterotrophic Plate Count (CFU/mL) for Free Chlorine Residual of 0.00 mg/L **	Number of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500	Percent of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500 ***
					< 0.20 mg/L	0.00 mg/L			
Bronx	46	122	122	83	0	0	–	0	0.0%
Brooklyn	70	182	182	123	0	0	–	0	0.0%
Manhattan	57	156	156	108	6	0	–	0	0.0%
Queens †	79	210	210	140	4	0	–	0	0.0%
Staten Island	28	77	77	55	2	0	–	0	0.0%
Ground Water Supply †	-	-	-	-	-	-	--	-	-
Total	280	747	747	509	12	0	--	0	0.0%

* Free chlorine residual is determined by Hach DPD Method (analyte is not ELAP certified).
** Heterotrophic plate count is determined by method SM 9215 B, PCA medium, 35°C, 48hrs. HPC result ≤ 500 CFU/mL is equivalent to a measurable FCR.
*** No more than 5 % of FCR samples shall be undetectable in any 2 consecutive months.

† There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Rupa Aggarwal Date: 03/06/19

Director: Date: 3/7/19

MICROBIOLOGICAL MONITORING

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Coliform Monitoring Results at Sample Sites near the First Service Connection When Source Water Turbidity Exceeds 1.49 NTU

February 2019

Source water		Distribution site near first service connection			
Date Turb>1.49 NTU	System	Sample Date	Sample Site	Coliform *	E.coli *

No official four-hour turbidity readings from Cat-Del source water were greater than 1.5 NTU this month.

* As determined by Colilert Quanti-Tray-18 Method (SM 9223B). Results expressed in "MPN /100mL."

VOLATILE ORGANIC / THM / HAA MONITORING

(FAD Requirement)

REPORT

NYC DEPT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

SUMMARY OF DISINFECTION BY-PRODUCTS ANALYSES (µg/L)

FIRST QUARTER, 2019

Site	Location	Sample Date	TTHM (µg/L) [a]				HAA5 (µg/L) [b]			
			Analysis Date	Result	LRAA	OEL	Analysis Date	Result	LRAA	OEL
15150	SS - IFO 1420 E/S Grand Concourse, 1st SS S/O E 171st St, 20"	2/5/19	2/6/19	28	39	35	2/8/19	42	42	39
18650	SS - N/S Dewey Ave, btw Quincy & Swinton Aves, 12"	2/5/19	2/6/19	22	32	30	2/12/19	35	41	38
23450	SS - N/S Jefferson Avenue, 2nd SS W/O Lewis Avenue, 20"	2/5/19	2/6/19	24	40	35	2/8/19	42	45	41
24350	SS - W/S Brighton 11th Street, 2nd SS S/O Cass Place, 12"	2/5/19	2/7/19	30	44	41	2/8/19	43	50	46
31750	SS - IFO 427 N/S W 26th St, 2nd SS W/O 9th Ave, 12"	2/5/19	2/6/19	29	47	41	2/9/19	41	46	40
31850	SS - IFO 82 S/S Warren St, 2nd SS E/O Greenwich St, 12"	2/5/19	2/6/19	31	46	41	2/9/19	45	51	46
32350	SS - IFO 116 E/S Ave C, 2nd SS N/O E 7th St, 12"	2/5/19	2/6/19	27	43	38	2/9/19	38	45	40
33450	SS - IFO 135 N/S W 112th St, 2nd SS W/O St Nicholas Ave, 12"	2/5/19	2/6/19	18	37	29	2/7/19	32	48	42
33950	SS - N/S E 104th Street, 2nd SS E/O 3rd Avenue, 12"	2/5/19	2/6/19	20	39	31	2/7/19	33	48	41
37950	SS - IFO 325 N/S E 12th Street, 2nd SS E/O 2nd Ave, 12"	2/5/19	2/6/19	33	44	39	2/11/19	39	47	41
38250	SS - IFO 309 N/S E 87th St, 2nd SS W/O 1st Ave, 12"	2/5/19	2/6/19	25	37	31	2/8/19	43	49	44
39650	SS - IFO 229 N/S E 49th St, 2nd SS W/O 2nd Ave, 12"	2/5/19	2/6/19	30	32	32	2/8/19	46	43	44
44350	SS - IFO 21-55 N/S 34th Ave, 1st SS W/O 24th St, 12"	2/5/19	2/7/19	33	50	44	2/8/19	43	50	45
45250	SS - E/S Beach 58th St, 2nd SS N/O Beach Channel Drive, 12"	2/5/19	2/6/19	22	34	32	2/7/19	40	43	42
50250	SS - IFO 937 N/S Victory Blvd, 2nd SS E/O Highland Ave, 20"	2/5/19	2/7/19	25	34	32	2/8/19	39	47	44
50750	SS - E/S Woodhull Ave, 1st SS S/O Albourne Ave, 8"	2/5/19	2/6/19	28	43	37	2/7/19	41	39	40
50850	SS - IFO 512 W/S Arlene St, 1st SS N/O Dawson Ct, 12"	2/5/19	2/6/19	27	36	34	2/7/19	43	45	43
52050	SS - IFO 218 W/S Nicholas Ave, 1st SS S/O Charles Ave, 12"	2/5/19	2/7/19	30	37	35	2/8/19	46	50	48
58650	SS - IFO 510 W/S Main St, 2nd SS S/O Hylan Blvd, 12"	2/5/19	2/6/19	34	44	42	2/7/19	49	43	44
77650	SS - OPP 110-52 E/S 207th St	2/5/19	2/6/19	26	35	33	2/7/19	41	41	39

TTHM			HAA5
	18	QUARTERLY MINIMUM	32
	34	QUARTERLY MAXIMUM	49
	27	QUARTERLY AVERAGE	41
	40	SYSTEM-WIDE RAA	46

[a] : analyzed by EPA Method 524.3

[b] : analyzed by EPA Method 552.3

LRAA: The Locational Running Annual Average (LRAA) is calculated by taking the value of this quarter and the three previous consecutive quarters.

RAA: The System-wide Running Annual Average (RAA) is calculated by taking the average of the Quarterly Average of this quarter and the three previous consecutive quarters.

OEL: The Operational Evalution Level (OEL) is calculated by averaging 2 times this quarter's value and the two previous consecutive quarters.

Both the LRAA and the System-wide RAA is not to exceed 80 µg/L for TTHM and 60 µg/L for HAA5.

DISTRIBUTION TURBIDITY MONITORING

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Turbidity (NTU) Distribution Samples

February 2019

All Distribution Sites			
Samples	Min	Max	Average
1219	<0.10	2.33	0.64

Analytical Method SM 2130 B

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	TURBIDITY	COMMENT
5973	2/28/19	24750	Reg Stop	2.33	Max
3342	2/2/19	1SCL1	Reg Stop	<0.10	Min
3341	2/2/19	1SCH3	Reg Stop	<0.10	Min
3357	2/2/19	3SC26	Reg Stop	<0.10	Min

The monthly average of all distribution samples is not to exceed 5 NTU.

COLOR MONITORING

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Color (U) for Distribution Entry Points

February 2019

DAY	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
Catskill/Delaware 1S03 (Tunnel 1)	7	7	7	7	6	5	6	6	6	6	6	6	6	7	7	6	6	6	6	6	6	6	6	6	7	6	6	7
Catskill/Delaware 1S03A (Tunnel 2)	7	8	7	7	7	5	7	6	7	6	7	7	7	7	7	6	6	6	6	7	6	6	7	7	7	7	6	7
Catskill/Delaware 1S03B (Tunnel 3)	8	7	7	7	6	6	6	6	7	7	7	6	7	7	7	7	6	6	7	7	7	6	7	7	6	7	6	7
Croton System 1SCL1 [(a)]	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	3	4	3
Croton System 1SCH3 [(b)]	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	3	4	3

Analytical Method SM 2120 B. Apparent color.

The average of two consecutive samples from the same site is not to exceed the MCL of 15 color units.

[(a)] Croton System online as of 9/26/18 at 1SCL1.

[(b)] Croton water began feeding to high service on 11/19/18.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	28	5	7	6
Catskill/Delaware 1S03A (Tunnel 2)	28	5	8	7
Catskill/Delaware 1S03B (Tunnel 3)	28	6	8	7
Croton System 1SCL1 [(a)]	28	3	4	4
Croton System 1SCH3 [(b)]	28	3	4	4

Supervisor _____ **Date** 03/07/19

Director _____ **Date** 3/8/19

FLUORIDE MONITORING

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Fluoride (mg/L) for Distribution Entry Points

February 2019

DAY	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
Catskill/Delaware 1S03 (Tunnel 1)	0.73	0.73	0.72	0.72	0.75	0.74	0.76	0.73	0.65	0.67	0.64	0.68	0.69	0.69	0.71	0.73	0.69	0.71	0.70	0.69	0.70	0.62	0.66	0.68	0.69	0.71	0.70	0.71
Catskill/Delaware 1S03A (Tunnel 2)	0.72	0.72	0.72	0.70	0.74	0.76	0.76	0.73	0.74	0.73	0.70	0.72	0.73	0.71	0.71	0.74	0.69	0.73	0.70	0.70	0.71	0.67	0.71	0.70	0.69	0.73	0.70	0.71
Catskill/Delaware 1S03B (Tunnel 3)	0.73	0.73	0.73	0.70	0.74	0.77	0.75	0.73	0.68	0.73	0.65	0.69	0.71	0.69	0.71	0.75	0.69	0.72	0.70	0.70	0.70	0.65	0.71	0.70	0.69	0.73	0.69	0.71
Croton System 1SCL1 [a]	0.74	0.73	0.72	0.70	0.69	0.74	0.74	0.73	0.77	0.71	0.70	0.70	0.71	0.70	0.70	0.75	0.71	0.75	0.70	0.71	0.71	0.72	0.72	0.73	0.73	0.74	0.70	0.73
Croton System 1SCH3 [b]	0.75	0.73	0.74	0.72	0.69	0.78	0.76	0.74	0.77	0.72	0.73	0.75	0.72	0.72	0.73	0.77	0.70	0.76	0.73	0.76	0.73	0.74	0.79	0.74	0.72	0.74	0.70	0.73

Analytical Method SM 4500 FC (97)

The average of two consecutive samples from the same distribution entry point site is not to exceed the MCL of 2.2 ppm.

[a] Croton System online as of 9/26/18 at 1SCL1.

[b] Croton water began feeding to high service on 11/19/18.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	28	0.62	0.76	0.70
Catskill/Delaware 1S03A (Tunnel 2)	28	0.67	0.76	0.72
Catskill/Delaware 1S03B (Tunnel 3)	28	0.65	0.77	0.71
Croton System 1SCL1 [a]	28	0.69	0.77	0.72
Croton System 1SCH3 [b]	28	0.69	0.79	0.74

Supervisor _____ Date 03/07/19

Director _____ Date 3/8/19