NYC Environmental Protection

Caswell F. Holloway
Commissioner

Paul V. Rush, P.E.
Deputy Commissioner
Bureau of Water Supply
prush@dep.nyc.gov

59-17 Junction Boulevard
Flushing, NY 11373
T: (845) 340-7800
F: (845) 334-7175

April 10, 2019

Li Huang, P.E.
New York City Department of Health and Mental Hygiene
Environmental Sciences & Engineering
42-09 28th Street, 14th Floor CN# 56
Long Island City, NY 11101

Patrick Palmer
New York State Department of Health
Bureau of Water Supply Protection, NYC Watershed Section
Empire State Plaza, Corning Tower, Room 1198
Albany, NY 12237

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 March 2019

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

Enclosed, please find the New York City Water Quality report for the month of **March 2019**. There was no well pumpage to distribution in the Groundwater System this month. Croton water fed into distribution from March 1, 2019 through March 20, 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 October 1, 2018 to March 31, 2019. The six month running percentage of samples collected with fecal coliform concentrations >20 CFU/100 mL was 1.10% 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 reported turbidity value was 1.1 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 0.41 mg/L, 1S03A (Tunnel 2) was 0.64 mg/L, and 1S03B (Tunnel 3) was 0.39 mg/L for the Catskill/Delaware System.

The Croton Filtration Plant was online and continuously feeding the Croton Low Service entry point from March 1 to March 20, 2019 at 5:30 PM. The Croton High Service entry point was online from March 1 to March 20, 2019 at 9:20 AM. The minimum daily free chlorine residual value for Croton entry point readings from sites 1SCL1 (Low Service) was 0.53 mg/L and 1SCH3 (High Service) was 0.38 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 0.02 mg/L.

A total of 1347 distribution samples were tested for free chlorine residual this month. For all distribution sites free chlorine residual ranged from 0.02 mg/L to 0.98 mg/L and averaged 0.52 mg/L for the month.

5. *Trihalomethane Monitoring / HAA5 Monitoring* (Section 141.71(b)(6)):
Requirements met. The results for the first quarter of 2019 were included in the report dated March 11, 2019 (For the February 2019 reporting period).

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 818 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, all samples were negative for total coliform and *E. coli*.

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 529 distribution Operational samples resulted in no samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 248 Pre-Finished samples resulted in no samples testing positive for total coliform. No for *E. coli* were detected

The analyses of 494 Autosampler Pre-finished samples resulted in seven (7) samples testing positive for total coliform. No *E. coli* were detected.

8. *Distribution Turbidity Monitoring:*
For distribution sites turbidity ranged from <0.10 to 4.30 NTU and averaged 0.84 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 (133 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), six (6) units for site 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 (20) 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 (20) TTHM distribution samples were collected ranging from 14 µg/L to 33 µg/L. Five (5) TTHM entry point samples were collected ranging from 11

µg/L to 24 µg/L. Twenty (20) HAA5 distribution samples were collected ranging from 27 µg/L to 44 µg/L. Five (5) HAA5 entry point samples were collected ranging from 24 µg/L to 34 µg/L.

Please note that Excel file "NYC_Monthly_Alldata_201903" (Sheet, EPA552 HAA) include EPA Method 552.3 results from samples collected on January 22, 2019 and February 26, 2019. Results from operational sites collected on January 22, 2019 were not previously included in the monthly report due to a clerical error, while the results from samples collected on February 26, 2019 were not analyzed in time to be included in the February 2019 report.

11. ***Semivolatile and Other Organic Chemicals/parameters:***
EPA Method 525.3 monitoring for 112 compounds of specified and unspecified organic parameters was conducted on March 18, 2019 at the three Catskill/Delaware entry points (1S07, 1S03A, and 1S03B), at the Croton Low Service entry point (1SCL1) and Croton High Service entry point (1SCH3) which represented distribution Catskill/Delaware water, and six (6) distribution points. All semi-volatile organic contaminant samples from distribution sites and entry points were below detection limits.

Quarterly monitoring for EPA Method 551, determination of chlorination disinfection byproducts, chlorinated solvents, and halogenated pesticides/herbicides was conducted at five (5) entry points including the Croton Low Service and High Service (1SCL1 and 1SCH3), and one distribution sampling site (50250) on February 25, 2019. All sites were below detection for 1,2 dibromoethane and 1,2-dibromo-3-chloropropane but, haloacetonitriles, halogenated ketones, chloropicrin and chloral hydrate were detected in the ranges normally seen and were all <1/2 MCL.

12. ***Fluoride Monitoring:***
Daily analyses of entry point samples (133 samples in total), produced monthly average fluoride levels of 0.72 mg/L for sites 1S03 (Tunnel 1), 1S03A (Tunnel 2), and 1S03B (Tunnel 3), and 0.71 mg/L for sites 1SCL1 (Croton Low Service) and 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:***
Entry points were resampled on March 14, 2019 for EPA Method 530 to complete the fourth quarter monitoring for UCMR4 Additional Chemicals. All results were ND, but one site (Tunnel 1 Shaft 7) failed QC, and will be resampled in April. Contract laboratory reports of available data are included as pdfs on the disc of electronic files enclosed with this report.

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

Sincerely,

Salomé Thuel for SS

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

TABLE OF CONTENTS FOR CD FILES

March 2019 Monthly Water Quality Report

Microbiological Reports:	
Summary of Coliform Compliance Samples	*(NYC_Micro_Summary_Compliance_201903.xls)*
Coliform Positive Compliance Samples	*(NYC_Micro_Compliance_Positives_201903.xls)*
Coliform Resample for Positive Compliance Samples	*(NYC_Micro_Compliance_Resamples_201903.xls)*
Summary of Coliform Operational Samples	*(NYC_Micro_Operational_201903.pdf)* *(NYC_Micro_Summary_Operational_201903.xls)*
Coliform Positive Operational Samples	*(NYC_Micro_Operational_201903.pdf)* *(NYC_Micro_Operational_Positives_201903.xls)*
Coliform Resample for Positive Distribution Operational Samples	*(NYC_Micro_Operational_201903.pdf)* *(NYC_Micro_Operational_Resamples_201903.xls)*
Distribution Coliform Monitoring when Source Water Turbidity exceeds 1.49 NTU	*(NYC_EP_Coliform_For_Source_Turb_GT_149_201903.snp)*
All Microbiological Results	*(NYC_Monthly_Alldata_201903.xls\Micro)*
Free Chlorine Residual (FCR) Reports:	
Entry Point FCR On-Line Monitoring Results	*(Entry_Shaft_Cl2_Onln_201903_Fig.pdf)* *(Croton_Entry_Point_Cl2_Onln_201903_Fig.pdf)*
Daily Minimum FCR at Entry Points	*(Entry_Shaft_Cl2_201903_Tbl.pdf)* *(Croton_Entry_Point_Cl2_201903_Tbl.pdf)*
FCR and Heterotrophic Plate Count (HPC) Compliance Samples	*(NYC_Micro_Summary_FCR_&_HPC_Compliance_201903.xls)*
FCR and HPC of Operational Samples	*(NYC_Micro_Summary_FCR_&_HPC_Operational_201903.xls)* *(NYC_Micro_Operational_201903.pdf)*
Summary of FCR of Distribution Samples (Quarterly)	*(NYC_FCR_Quarterly_Summary_2019Q1.xls)*
Summary of FCR of Distribution Samples (Monthly)	*(NYC_FCR_Monthly_Summary_201903.xls)*
FCR of all Distribution Sites	*(NYC_FCR_Monthly_Alldata_201903.xls)*
Turbidity Reports:	
Summary of Turbidity of Distribution Samples	*(NYC_Turbidity_Monthly_Summary_201903.xls)*
Turbidity of all Distribution Sites	*(NYC_Turbidity_Monthly_Alldata_201903.xls)*
Color Reports:	
Color for Entry Point Samples	*(Entry_Point_Color_Monthly_201903.xls)*
Fluoridation Reports:	
Summary of Fluoride Levels of Distribution Samples	*(NYC_Fluoride_Monthly_Summary_201903.xls)*
Fluoride Daily Entry Point Report for Surface Water Systems	*(Entry_Point_Fluoride_Monthly_201903.xls)*
Fluoride of all Distribution Sites	*(NYC_Fluoride_ Monthly_Alldata_201903.xls)*
Volatile Organic Contaminant (VOC) and Disinfection By-products (DBP) Reports:	
Total Trihalomethanes (TTHM) & VOC Monthly Report	*(NYC_TTHM_&_VOC_Rpt_201903.xls)*
Summary of EPA Method 525 Report	*(NYC_SOC_Rpt_201903.xls)*
Summary of EPA Method 551 Quarterly Report	*(NYC_551_Qrtrly_Rpt_2019Q1.xls)*
Haloacetic Acids (HAA5) Monthly Report	*(NYC_HAA5_Monthly_Rpt_201903.xls)*
Unregulated Contaminant Monitoring Rule 4 (UCMR4) Report	*(794046_UCMR4_Resample_20190304.pdf)*
Summary of EPA Organic Method Reports	*(NYC_VOC_HAA5_Rpt_201903.pdf)*
Inorganic (IOC), Specified Organic (SOC), Metals Monitoring:	
All parameters for March 2019	*(NYC_Monthly_Alldata_201903.xls)*

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: 01/17 To: 03/19**

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
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
3-19	31	0	0.00	1.10

D.W. Robinson 4/3/19

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations 4/2/2019

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: March, 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)
3/1/19	0.90	0.90	0.80	0.85	0.80	0.85	E8	<1
3/2/19	0.80	0.90	1.0	0.95	0.95	0.95	E1	E2
3/3/19	0.85	0.95	0.85	0.90	0.90	0.90	E9	E1
3/4/19	0.90	0.90	0.80	0.90	0.80	0.85	E16	E3
3/5/19	0.85	0.85	0.85	0.90	0.90	0.90	E6	E4
3/6/19	1.1	1.0	0.95	0.95	0.95	0.90	E4	E2
3/7/19	0.90	0.95	1.0	1.1	1.0	1.0	E3	E3
3/8/19	1.0	0.95	0.90	0.95	0.90	0.90	E3	E1
3/9/19	1.0	1.0	0.95	0.90	0.90	0.85	E1	E1
3/10/19	0.85	0.85	0.90	0.95	1.0	1.0	E9	E1
3/11/19	1.1	1.1	0.95	0.95	0.95	1.0	E4	E1
3/12/19	1.1	1.0	1.0	0.95	0.95	1.0	E40	E2
3/13/19	1.0	0.95	0.90	0.95	0.90	0.95	E5	<1
3/14/19	1.0	1.0	0.95	1.0	0.90	0.90	E6	E1
3/15/19	0.90	0.90	0.90	1.1	0.95	1.0	E1	E2
3/16/19	0.95	1.0	1.1	1.0	0.95	0.95	<1	E3
3/17/19	1.1	0.95	0.95	1.0	0.95	1.0	E4	<1
3/18/19	1.0	0.85	0.90	0.95	0.95	0.85	E2	<1
3/19/19	0.85	0.90	0.95	1.0	0.95	0.90	E1	<1
3/20/19	0.85	0.90	0.90	0.85	0.90	0.90	E2	<1
3/21/19	0.95	0.90	0.90	0.85	0.85	0.90	E2	<1
3/22/19	0.90	0.95	1.0	0.90	0.95	0.95	E2	<1
3/23/19	0.90	0.95	0.85	0.80	0.95	0.80	E4	<1
3/24/19	0.90	0.90	0.85	0.85	0.80	0.85	E4	<1
3/25/19	0.80	0.90	0.80	0.80	0.80	0.85	E3	<1
3/26/19	0.80	0.80	0.85	0.75	0.80	0.80	E8	<1
3/27/19	0.85	0.80	0.80	0.75	0.85	0.80	E2	<1
3/28/19	0.75	0.80	0.75	0.80	0.75	0.80	E1	<1
3/29/19	0.80	0.80	0.80	0.75	0.80	0.80	<1	E1
3/30/19	0.70	0.80	0.75	0.75	0.75	0.75	<1	<1
3/31/19	0.75	0.70	0.80	0.65	0.70	0.70	<1	<1

.: 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:

DW Robinson 4/3/19

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations 4/2/2019

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 04/02/2019 3:25 pm

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

Date/Time	Site	Analytes Affected	Qualifier

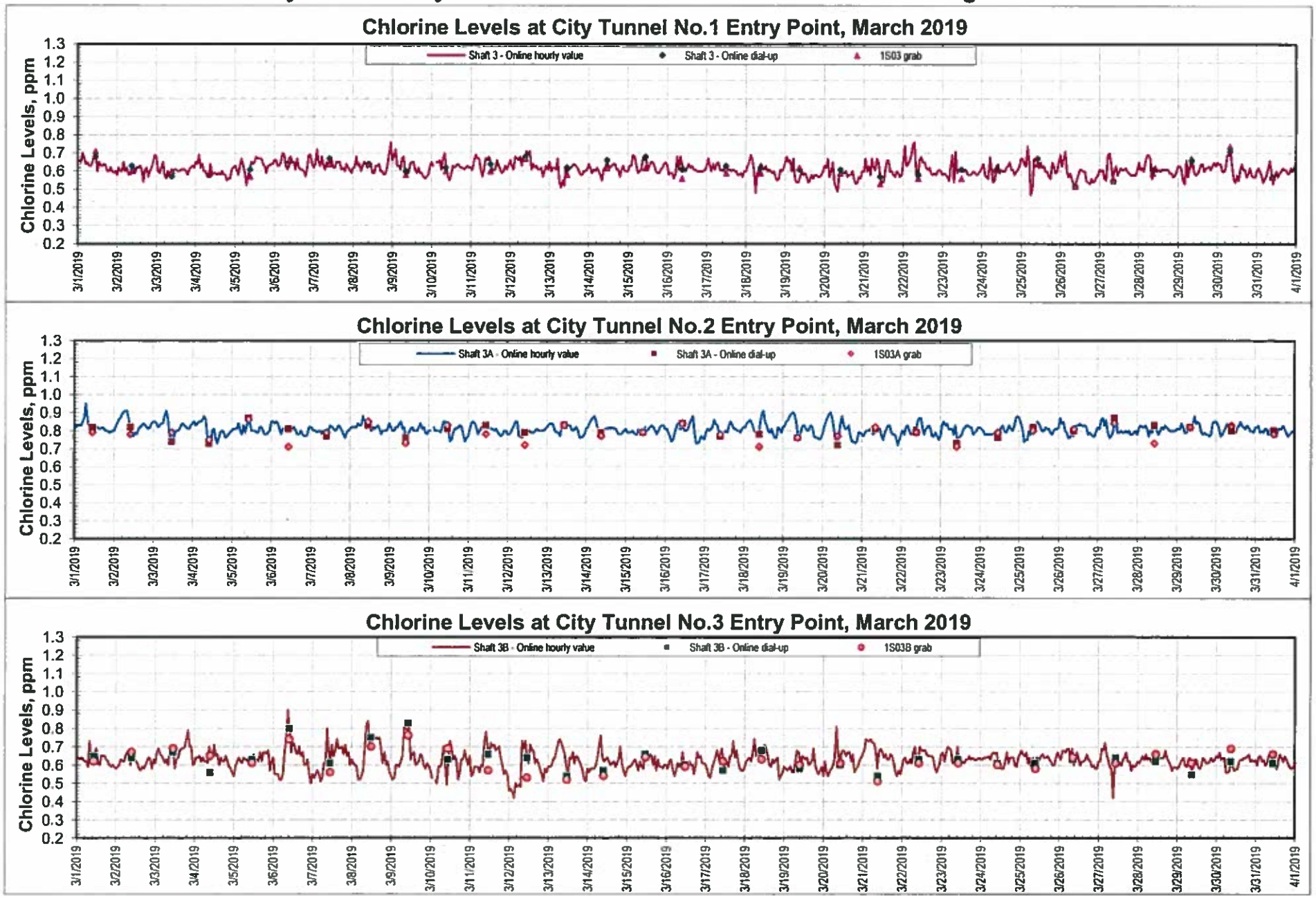
Analytical Methods

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 3/10/19, all online readings, grab and online dial-up readings were recorded in Eastern Daylight Saving Time.

New York City Department of Environmental Protection
Bureau of Water Supply

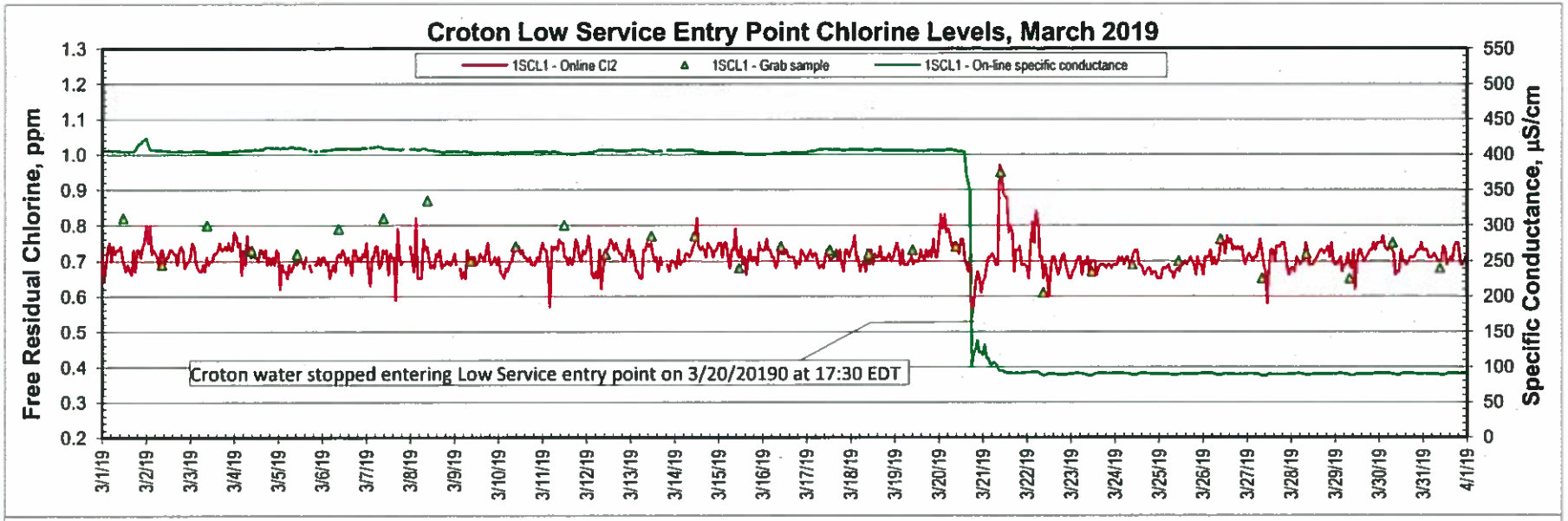
Daily Minimum Chlorine Readings Recorded at Tunnel Entry Shafts for Catskill/Delaware System

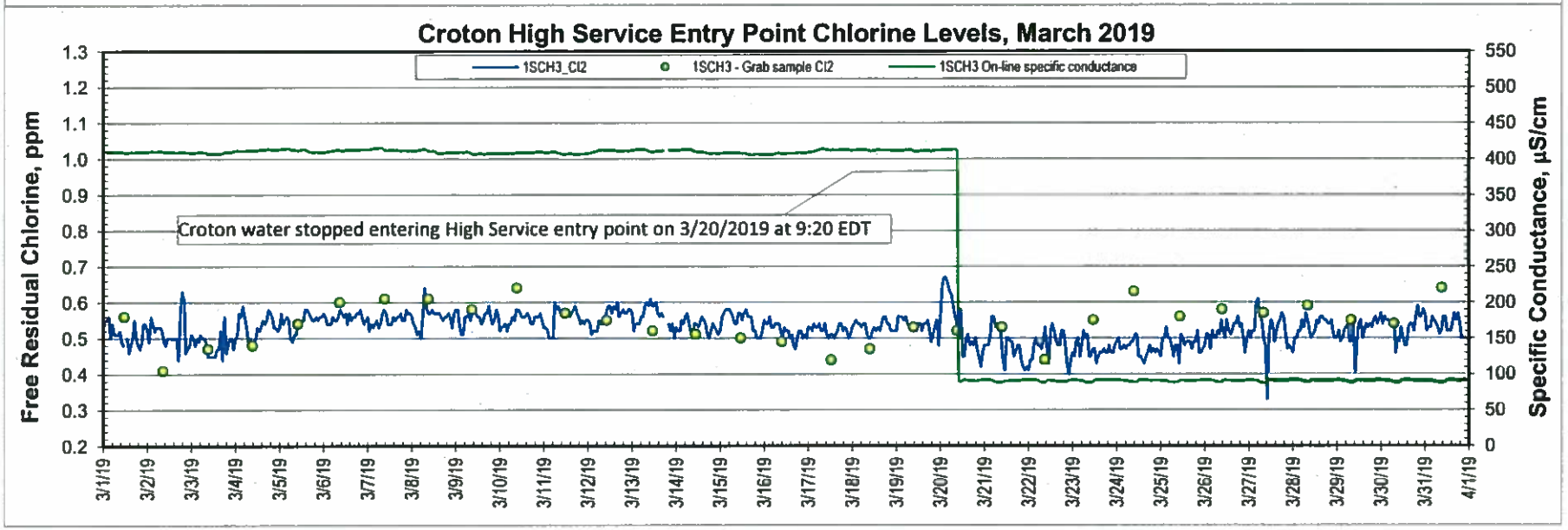
Tunnel No.1 (Catskill) at Shaft 3			Tunnel No.2 (Delaware) at Shaft 3A			Tunnel No.3 (Cat/Del) at Shaft 3B		
Date	MinCl_1DL	Remark 1	Date	MinCl_2DL	Remark 2	Date	MinCl_3DL	Remark 3
03/01/19	0.56		03/01/19	0.77		03/01/19	0.56	
03/02/19	0.53		03/02/19	0.76		03/02/19	0.56	
03/03/19	0.51		03/03/19	0.73		03/03/19	0.56	
03/04/19	0.53		03/04/19	0.71		03/04/19	0.54	
03/05/19	0.52		03/05/19	0.77		03/05/19	0.54	
03/06/19	0.54		03/06/19	0.74		03/06/19	0.48	
03/07/19	0.57		03/07/19	0.76		03/07/19	0.50	
03/08/19	0.57		03/08/19	0.78		03/08/19	0.49	
03/09/19	0.50		03/09/19	0.76		03/09/19	0.51	
03/10/19	0.41		03/10/19	0.73		03/10/19	0.48	
03/11/19	0.54		03/11/19	0.76		03/11/19	0.39	
03/12/19	0.56		03/12/19	0.75		03/12/19	0.42	
03/13/19	0.48		03/13/19	0.76		03/13/19	0.50	
03/14/19	0.54		03/14/19	0.76		03/14/19	0.53	
03/15/19	0.50		03/15/19	0.77		03/15/19	0.54	
03/16/19	0.54		03/16/19	0.71		03/16/19	0.53	
03/17/19	0.56		03/17/19	0.77		03/17/19	0.52	
03/18/19	0.43		03/18/19	0.75		03/18/19	0.52	
03/19/19	0.51		03/19/19	0.74		03/19/19	0.53	
03/20/19	0.49		03/20/19	0.71		03/20/19	0.54	
03/21/19	0.53		03/21/19	0.64		03/21/19	0.53	
03/22/19	0.49		03/22/19	0.75		03/22/19	0.54	
03/23/19	0.51		03/23/19	0.80		03/23/19	0.57	
03/24/19	0.50		03/24/19	0.76		03/24/19	0.58	
03/25/19	0.46		03/25/19	0.73		03/25/19	0.56	
03/26/19	0.50		03/26/19	0.74		03/26/19	0.55	
03/27/19	0.52		03/27/19	0.75		03/27/19	0.42	
03/28/19	0.56		03/28/19	0.75		03/28/19	0.57	
03/29/19	0.52		03/29/19	0.75		03/29/19	0.47	
03/30/19	0.53		03/30/19	0.76		03/30/19	0.54	
03/31/19	0.52		03/31/19	0.75		03/31/19	0.57	

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. Since 3/10/19, all online readings, grab and online dial-up readings were recorded in Eastern Daylight Saving Time.

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
03/01/19	0.60		03/01/19	0.44	
03/02/19	0.64		03/02/19	0.38	
03/03/19	0.60		03/03/19	0.43	
03/04/19	0.56		03/04/19	0.48	
03/05/19	0.60		03/05/19	0.46	
03/06/19	0.56		03/06/19	0.52	
03/07/19	0.58		03/07/19	0.48	
03/08/19	0.60		03/08/19	0.48	
03/09/19	0.62		03/09/19	0.48	
03/10/19	0.62		03/10/19	0.51	
03/11/19	0.53		03/11/19	0.49	
03/12/19	0.57		03/12/19	0.50	
03/13/19	0.55		03/13/19	0.50	
03/14/19	0.60		03/14/19	0.49	
03/15/19	0.64		03/15/19	0.50	
03/16/19	0.64		03/16/19	0.45	
03/17/19	0.63		03/17/19	0.49	
03/18/19	0.63		03/18/19	0.49	
03/19/19	0.64		03/19/19	0.48	
03/20/19	0.56		03/20/19	0.48	
03/21/19		No Croton water.	03/21/19		No Croton water.
03/22/19			03/22/19		
03/23/19			03/23/19		
03/24/19			03/24/19		
03/25/19			03/25/19		
03/26/19			03/26/19		
03/27/19			03/27/19		
03/28/19			03/28/19		
03/29/19			03/29/19		
03/30/19			03/30/19		
03/31/19			03/31/19		

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

March 2019

All Distribution Sites			
Samples	Min	Max	Average
1347	0.02	0.98	0.52

Hach DPD Method (analyte is not ELAP certified)

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	RESIDUAL CHLORINE	COMMENT
6071	3/1/19	18800	Reg Stop	0.98	Max
8097	3/21/19	3ISL4	Reg Stop	0.02	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

3/1/2019 to 3/31/2019

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	135	135	0	0	0.0%
Brooklyn	70	200	200	0	0	0.0%
Manhattan	57	172	172	0	0	0.0%
Queens ***	79	230	230	0	0	0.0%
Staten Island	28	81	81	0	0	0.0%
Ground Water Supply ***	-	-	-	-	-	-
Total	280	818	818	0	0	0.0%

* 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: 04/04/19

Director: [signature] Date: 4/5/19

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
3/1/2019 to 3/31/2019

Date	Time	Site Number	Boro	Location	Coliform *	E. coli *	Chlorine Residual (mg/L) **	Remarks
				No positive sample this month				

* 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 Agarwal Date: 04/04/19

Director: [signature] Date: 4/5/19

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

3/1/2019 to 3/31/2019

Date	Time	Site Number	Boro	Location	Coliform *	E. coli *	Chlorine Residual (mg/L) **	Remarks
				No positive sample this month				

* 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 Aggarwal Date: 04/04/19

Director: [signature] Date: 4/5/19

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

3/1/2019 to 3/31/2019

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	135	135	92	0	0	--	0	0.0%
Brooklyn	70	200	200	135	0	0	--	0	0.0%
Manhattan	57	172	172	121	6	0	--	0	0.0%
Queens †	79	230	230	157	6	0	--	0	0.0%
Staten Island	28	81	81	55	3	0	--	0	0.0%
Ground Water Supply †	-	-	-	-	-	-	--	-	-
Total	280	818	818	560	15	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: Rupe Agarwal Date: 04/04/19

Director: [signature] Date: 4/5/19

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

March 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."

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

March 2019

All Distribution Sites			
Samples	Min	Max	Average
1347	<0.10	4.30	0.84

Analytical Method SM 2130 B

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	TURBIDITY	COMMENT
8486	3/25/19	51250	Reg Stop	4.30	Max
6183	3/2/19	1SCH3	Reg Stop	<0.10	Min
6196	3/2/19	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

March 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	29	30	31
Catskill/Delaware 1S03 (Tunnel 1)	6	6	7	7	6	6	7	6	7	5	6	6	6	6	6	6	7	7	6	6	6	6	6	7	6	7	7	7	6	7	6
Catskill/Delaware 1S03A (Tunnel 2)	6	6	7	7	7	6	7	6	7	5	8	7	7	7	6	6	7	7	7	6	7	7	5	7	7	7	7	7	7	6	6
Catskill/Delaware 1S03B (Tunnel 3)	6	6	7	7	7	6	7	6	6	6	7	6	7	7	6	6	7	6	6	6	7	6	6	6	6	7	6	7	6	7	6
Croton System 1SCL1 [a]	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	-	-	-	-	-	-	-	-	-	-	-
Croton System 1SCH3 [a]	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	-	-	-	-	-	-	-	-	-	-	-

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 offline as of 3/21/2019.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	5	7	6
Catskill/Delaware 1S03A (Tunnel 2)	31	5	8	7
Catskill/Delaware 1S03B (Tunnel 3)	31	6	7	6
Croton System 1SCL1 [a]	20	3	4	4
Croton System 1SCH3 [a]	20	3	4	4

Supervisor _____ Date 04/08/19

Director _____ Date 4/8/19

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

March 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	29	30	31
Catskill/Delaware 1S03 (Tunnel 1)	0.74	0.72	0.70	0.70	0.71	0.73	0.71	0.72	0.72	0.69	0.68	0.69	0.71	0.70	0.68	0.71	0.72	0.72	0.70	0.73	0.74	0.75	0.74	0.71	0.71	0.70	0.72	0.75	0.74	0.74	0.75
Catskill/Delaware 1S03A (Tunnel 2)	0.73	0.72	0.70	0.71	0.72	0.74	0.71	0.71	0.72	0.70	0.70	0.72	0.71	0.73	0.72	0.73	0.72	0.72	0.71	0.73	0.72	0.75	0.75	0.72	0.72	0.72	0.73	0.75	0.74	0.73	0.75
Catskill/Delaware 1S03B (Tunnel 3)	0.73	0.72	0.70	0.71	0.71	0.73	0.71	0.72	0.72	0.69	0.68	0.70	0.71	0.71	0.69	0.75	0.72	0.72	0.70	0.73	0.73	0.76	0.75	0.72	0.71	0.71	0.73	0.75	0.74	0.74	0.75
Croton System 1SCL1 [a]	0.75	0.71	0.68	0.69	0.70	0.74	0.74	0.75	0.69	0.71	0.73	0.71	0.70	0.72	0.72	0.75	0.68	0.71	0.71	0.71	-	-	-	-	-	-	-	-	-	-	-
Croton System 1SCH3 [a]	0.76	0.7	0.67	0.68	0.71	0.74	0.71	0.73	0.71	0.69	0.72	0.74	0.71	0.74	0.68	0.79	0.69	0.72	0.69	0.72	-	-	-	-	-	-	-	-	-	-	-

Analytical Method SM 4500 F C (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 offline as of 3/21/2019.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	0.68	0.75	0.72
Catskill/Delaware 1S03A (Tunnel 2)	31	0.70	0.75	0.72
Catskill/Delaware 1S03B (Tunnel 3)	31	0.68	0.76	0.72
Croton System 1SCL1 [a]	20	0.68	0.75	0.71
Croton System 1SCH3 [a]	20	0.67	0.79	0.71

Supervisor _____ Date 04/08/19

Director _____ Date 4/8/19