



*Vincent Sapienza, P.E.
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

January 10, 2020

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 December 2019

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

Enclosed, please find the New York City Water Quality report for the month of **December 2019**. There was no well pumpage to distribution in the Groundwater System this month. Croton water was feeding into distribution for the month of December 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 July 1, 2019 to December 31, 2019. The six month running percentage of samples collected with fecal coliform concentrations >20 CFU/100 mL was 0.00% 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 0.55 mg/L, 1S03A (Tunnel 2) was 0.76 mg/L, and 1S03B (Tunnel 3) was 0.61 mg/L.

The Croton Filtration Plant was online continuously feeding through the Croton Low Service entry point from December 1 to December 23, 2019. The Croton High Service entry point was online December 1 to December 3, 2019. When the High Service pump is off, distribution Tunnel 3 water intermittently was back feeding through the High Service to the Low Service entry point. The minimum daily free chlorine residual values for Croton System entry point readings at site 1SCL1 (Low Service) was 0.59 mg/L and 0.68 mg/L from site 1SCH3 (High Service).

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 0.01 mg/L except for two samples that equaled 0.0 mg/L.

A total of 1337 distribution samples were tested for free chlorine residual this month. For all monthly distribution sites free chlorine residual ranged from 0.00 to 1.15 mg/L, and averaged 0.67 mg/L.

The fourth quarter of 2019 chlorine residual Running Annual Average was 0.57 mg/L. This meets the MRDL of 4 mg/L for the quarterly running annual average of all system samples.

5. Trihalomethane Monitoring / HAA5 Monitoring (Section 141.71(b)(6)):

Requirements met. The results for the fourth quarter of 2019 were included in the report dated December 10, 2019 (for the November 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 816 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 were no samples that tested positive for total coliform, and all samples were negative for *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 of these samples were negative for total coliform and *E. coli*.

The analyses of 522 distribution Operational samples resulted in no samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 247 Pre-Finished samples resulted in no samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 485 Autosampler Pre-finished samples resulted in no samples testing positive for total coliform. No *E. coli* were detected.

8. Distribution Turbidity Monitoring:

For distribution sites, turbidity ranged from < 0.10 to 8.63 NTU and averaged 0.73 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 entry point for the month. Daily analyses of entry point samples (119 samples in total), produced monthly average color values of seven (7) units for sites 1S03 (Tunnel 1), 1S03A (Tunnel 2), 1S03B (Tunnel 3), and four (4) units for sites 1SCL1 (Croton Low Service) and 1SCL3 (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 25 µg/L to 59 µg/L. Five (5) TTHM entry point samples were collected ranging from 19 µg/L to 31 µg/L. Twenty (20) HAA5 distribution samples were collected ranging from 23 µg/L to 54 µg/L. Five (5) HAA5 entry point samples were collected ranging from 29 µg/L to 41 µg/L.

11. Semivolatile and Other Organic Chemicals/parameters:

EPA Method 525.3 monitoring for 112 compounds of specified and unspecified organic parameters was conducted on December 9, 2019 at the three (3) 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. Due to QC failures for Tebuconazole, indeno[1,2,3-cd]pyrene, dibenzo[a,h]anthracene and benzo[g,h,i]perylene, resampling of five (5) distribution sites was conducted on December 18, 2019. All semi-volatile organic contaminant samples from distribution sites and entry points were below detection limits.

12. Fluoride Monitoring:

Daily analyses of entry point samples (119 samples in total), produced monthly average fluoride levels of 0.70 mg/L for sites 1S03 (Tunnel 1), 1S03A (Tunnel 2), 1S03B (Tunnel 3), 0.71 mg/L for site 1SCL1 (Croton Low Service) and 0.69 mg/L for site 1SCL3 (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. Other Monitoring:

Monitoring for Taste and Odor (T&O) compounds Geosmin and 2-Methylisoborneol (MIB) was conducted in December on 65 samples from release of Croton Falls Reservoir (CROFALLSSVC), release of Cross River Reservoir (CROSSRVVC), New Croton Reservoir, Jerome Park Reservoir, the Croton Low Service Entry Point, Delaware Aqueduct inflow to Kensico Reservoir (DEL17), and Delaware Aqueduct outflow from Kensico Reservoir (DEL18DT). Results ranged from ND to 11 ng/L for Geosmin and ND to 89 ng/L for MIB. Contract laboratory reports of available data are included as pdf files 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,

A handwritten signature in blue ink, appearing to read 'Schindler for SS', is written over the printed name and title.

Steven C. Schindler
Director, Water Quality

Enclosure

cc:

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

TABLE OF CONTENTS FOR CD FILES

Microbiological Reports:

Summary of Coliform Compliance Samples
 Coliform Positive Compliance Samples
 Coliform Resample for Positive Compliance Samples
 Summary of Coliform Operational Samples

(NYC_Micro_Summary_Compliance_201912.xls)
 (NYC_Micro_Compliance_Positives_201912.xls)
 (NYC_Micro_Compliance_Resamples_201912.xls)
 (NYC_Micro_Operational_201912.pdf)
 (NYC_Micro_Summary_Operational_201912.xls)
 (NYC_Micro_Operational_201912.pdf)
 (NYC_Micro_Operational_Positives_201912.xls)
 (NYC_Micro_Operational_201912.pdf)
 (NYC_Micro_Operational_Resamples_201912.xls)
 (NYC_EP_Coliform_For_Source_Turb_GT_149_201912.snp)
 (NYC_Monthly_Alldata_201912.xls|Micro)

Coliform Positive Operational Samples

Coliform Resample for Positive Distribution Operational Samples

Distribution Coliform Monitoring when Source Water Turbidity exceeds 1.49 NTU
 All Microbiological Results

Free Chlorine Residual (FCR) Reports:
 Entry Point FCR On-Line Monitoring Results

Daily Minimum FCR at Entry Points

FCR and Heterotrophic Plate Count (HPC) Compliance Samples
 FCR and HPC of Operational Samples

(Entry_Shift_Ci2_Onln_201912_Fig.pdf)
 (Croton_Entry_Point_Ci2_201912_Fig.pdf)
 (Entry_Shift_Ci2_Onln_201912_Tbl.pdf)
 (Croton_Entry_Point_Ci2_201912_Tbl.pdf)
 (NYC_Micro_Summary_FCR & HPC_Compliance_201912.xls)
 (NYC_Micro_Summary_FCR & HPC_Operational_201912.xls)
 (NYC_Micro_Operational_201912.pdf)
 (NYC_FCR_Quarterly_Summary_2019Q4.xls)
 (NYC_FCR_Monthly_Summary_201912.xls)
 (NYC_FCR_Monthly_Alldata_201912.xls)

Turbidity Reports:

Summary of Turbidity of Distribution Samples
 Turbidity of all Distribution Sites

(NYC_Turbidity_Monthly_Summary_201912.xls)
 (NYC_Turbidity_Monthly_Alldata_201912.xls)

Color Reports:

Color for Entry Point Samples

(Entry_Point_Color_Monthly_201912.xls)

Fluoridation Reports:

Summary of Fluoride Levels of Distribution Samples
 Fluoride Daily Entry Point Report for Surface Water Systems
 Fluoride of all Distribution Sites

(NYC_Fluoride_Monthly_Summary_201912.xls)
 (Entry_Point_Fluoride_Monthly_201912.xls)
 (NYC_Fluoride_Monthly_Alldata_201912.xls)

Volatile Organic Contaminant (VOC) and Disinfection By-products (DBP) Reports:

Total Trihalomethanes (TTHM) & VOC Monthly Report
 Semivolatiles of EPA Method 525 Report
 Haloacetic Acids (HAA5) Monthly Report

(NYC_TTHM_&_VOC_Rpt_201912.xls)
 (NYC_SOC_Rpt_201912.xls)
 (NYC_HAA5_Monthly_Rpt_201912.xls)

(842329_T&O_Sample_20191203.pdf, 842392_T&O_Sample_20191202.pdf, 842518_T&O_Sample_20191204.pdf, 842806_T&O_Sample_20191205.pdf, 843487_T&O_Sample_20191209.pdf, 843680_T&O_Sample_20191210.pdf, 844008_T&O_Sample_20191210.pdf, 844245_T&O_Sample_20191216.pdf, 844797_T&O_Sample_20191216.pdf, 845173_T&O_Sample_20191216.pdf, 845434_T&O_Sample_20191218.pdf, 845435_T&O_Sample_20191218.pdf, 846150_T&O_Sample_20191223.pdf, 846178_T&O_Sample_20191223.pdf, 846849_T&O_Sample_20191230.pdf)
 (NYC_VOC_525_HAA5_Rpt_201912.pdf)

Taste & Odor Sampling Reports from EEA Lab

Summary of EPA Organic Method Reports

Inorganic (IOC), Specified Organic (SOC), Metals Monitoring:

All parameters for December 2019
 Mercury results from EEA LAB

(NYC_Monthly_Alldata_201912.xls)
 (839952_Hg_Sample_20191106.pdf)

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: 10/17 To: 12/19
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
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	0.66
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
4-19	30	0	0.00	0.00
5-19	31	0	0.00	0.00
6-19	30	0	0.00	0.00
7-19	31	0	0.00	0.00
8-19	31	0	0.00	0.00
9-19	30	0	0.00	0.00
10-19	31	0	0.00	0.00
11-19	30	0	0.00	0.00
12-19	31	0	0.00	0.00

David Robinson

1/3/20

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations

1/2/2020

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: December, 2019

Date	Turbidity (NTU)						Total Coliform (Colonies per 100 mL)	Fecal Coliform
	12 AM	4 AM	8 AM	12 PM	4 PM	8 PM		
12/1/19	0.70	0.70	0.75	0.70	1.0	0.80	E10	E1
12/2/19	0.90	0.90	0.90	0.90	1.1	0.90	E30	E5
12/3/19	0.90	0.90	0.90	0.75	0.70	0.75	E50	E3
12/4/19	0.70	0.70	0.70	0.85	0.75	0.80	E30	E1
12/5/19	0.75	0.80	0.80	0.70	0.75	0.80	E20	E1
12/6/19	0.70	0.65	0.75	0.65	0.70	0.70	E10	E1
12/7/19	0.70	0.65	0.70	0.65	0.70	0.85	<10	E4
12/8/19	0.80	0.70	0.85	0.70	0.70	0.75	E10	E2
12/9/19	0.75	0.70	0.80	0.80	0.70	0.70	E25	<1
12/10/19	0.75	0.85	0.90	0.75	0.75	0.70	E20	<1
12/11/19	0.70	0.70	0.75	0.80	0.75	0.70	E80	E5
12/12/19	0.70	0.80	0.75	0.75	0.80	0.75	E20	E2
12/13/19	0.80	0.85	0.85	0.70	0.70	0.65	E10	E2
12/14/19	0.70	0.70	0.70	0.80	0.85	0.85	E30	E1
12/15/19	0.85	0.75	0.85	0.85	0.80	0.80	E40	E3
12/16/19	0.85	0.70	0.70	0.75	0.70	0.75	E30	E1
12/17/19	0.70	0.70	0.75	0.75	0.70	0.65	E20	E1
12/18/19	0.65	0.70	0.75	0.70	0.90	0.75	E10	E2
12/19/19	0.85	0.75	0.80	0.70	0.70	0.65	E10	E1
12/20/19	0.75	0.65	0.75	0.75	0.75	0.90	E20	E6
12/21/19	0.70	0.70	0.70	0.75	0.75	0.75	E10	E2
12/22/19	0.70	0.70	0.75	0.85	0.80	0.75	E10	E4
12/23/19	0.75	0.70	0.75	0.70	0.70	0.80	E60	<1
12/24/19	0.75	0.75	0.70	0.70	0.70	0.70	E15	<1
12/25/19	0.70	0.65	0.65	0.75	0.70	0.70	E15	E4
12/26/19	0.70	0.70	0.70	0.70	0.60	0.60	E30	<1
12/27/19	0.65	0.65	0.65	0.65	0.55	0.60	E20	E2
12/28/19	0.60	0.60	0.65	0.70	0.65	0.60	<5	E1
12/29/19	0.65	0.60	0.70	0.85	0.85	0.90	E20	<1
12/30/19	0.50	0.70	0.80	1.1	1.1	0.90	E10	E4
12/31/19	0.85	0.75	0.75	0.70	0.65	0.70	E35	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 ☒ No
2. Does the turbidity reading exceed 5 NTU at any time? ☐ Yes ☒ 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:

David Robinson

1/3/20

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations

1/2/2020

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 01/02/2020 1:43 pm

Page 2 of 3



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: December, 2019

Date/Time	Site	Analytes Affected	Qualifier
12/17/19 08:52	DEL18DT	Fecal Coliform	The duplicate analysis was not within the control limits.
12/23/19 09:26	DEL18DT	Total Coliform	QC blank contamination. The end control of funnel 22 had one gold colony and the duplicate for DEL18DT was out of range.

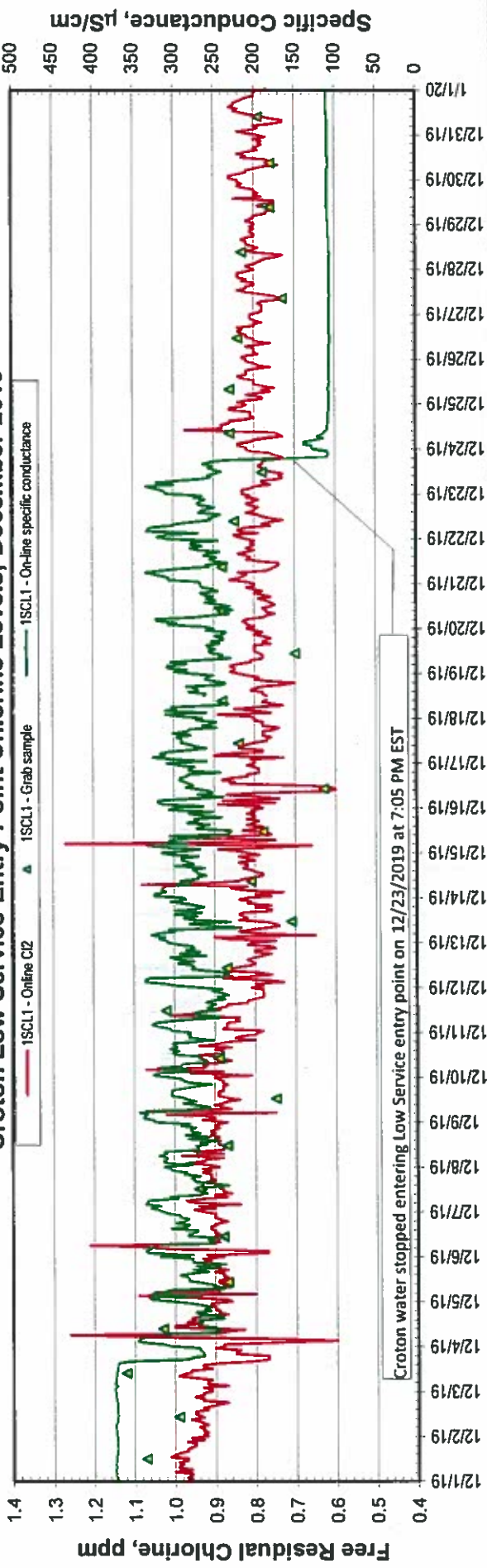
Analytical Methods

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

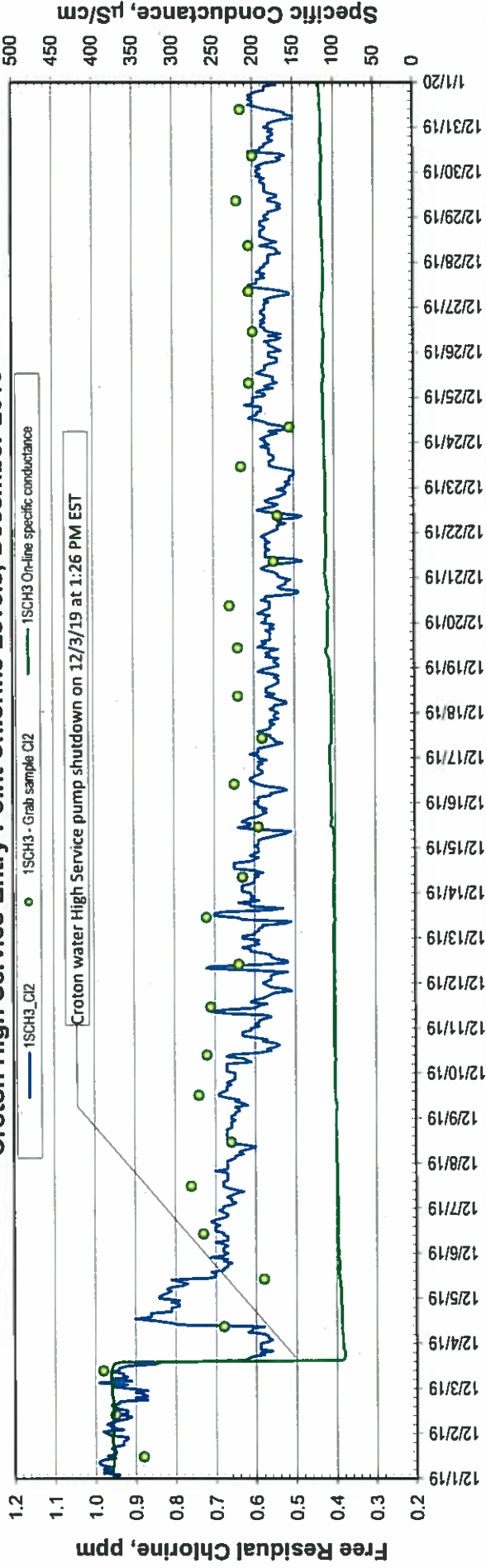
ENTRY POINT CHLORINE RESIDUAL
(FAD Requirement)

New York City Department of Environmental Protection
Bureau of Water Supply
Croton Distribution Entry Point Residual Chlorine Continuous Monitoring Results

Croton Low Service Entry Point Chlorine Levels, December 2019

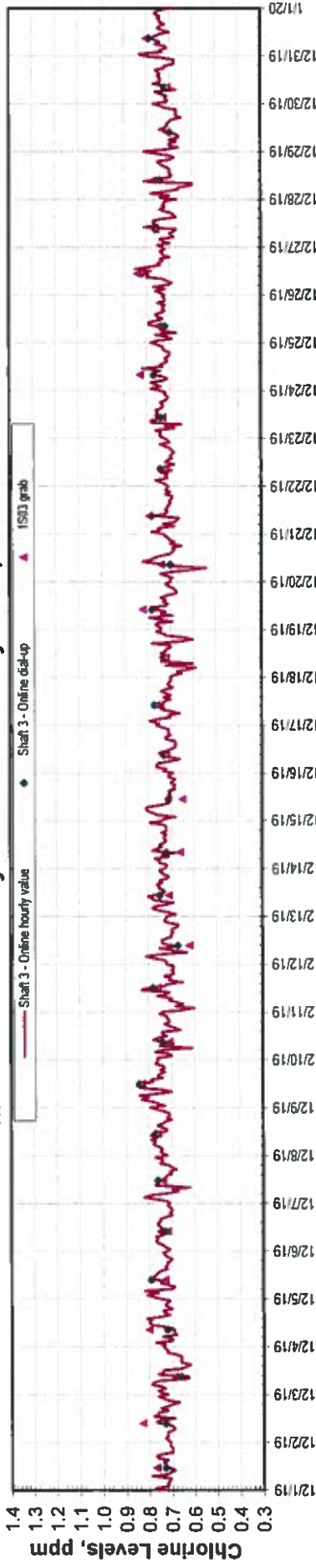


Croton High Service Entry Point Chlorine Levels, December 2019

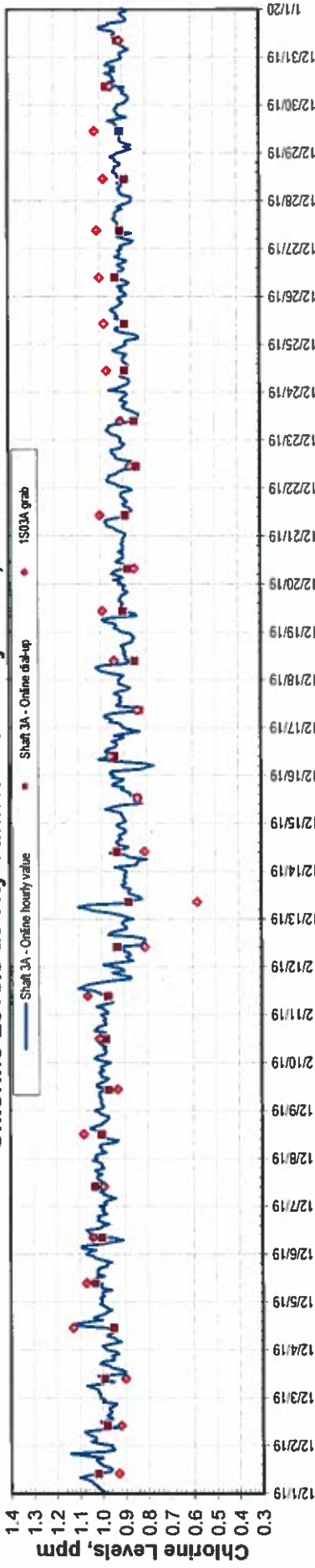


New York City Department of Environmental Protection
Bureau of Water Supply
City Tunnel Entry Point Residual Chlorine Continuous Monitoring Results

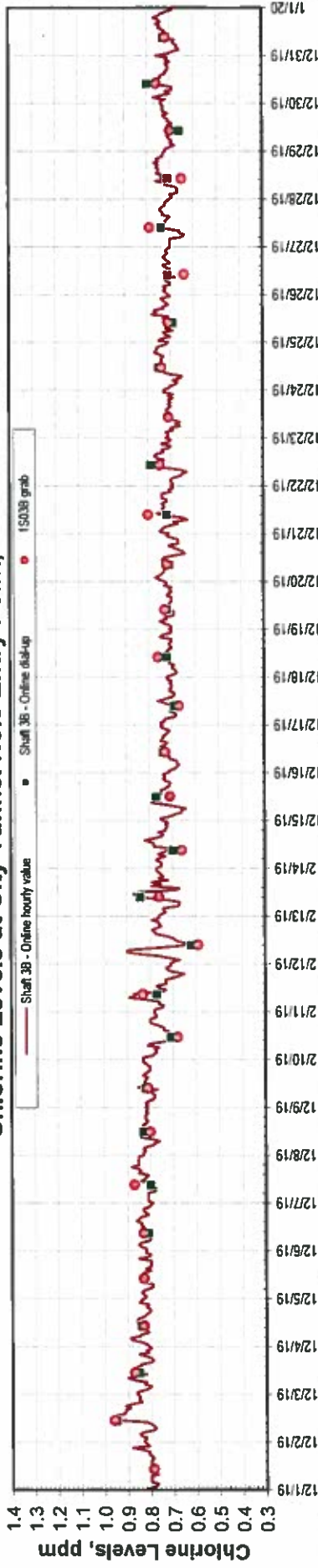
Chlorine Levels at City Tunnel No.1 Entry Point, December 2019



Chlorine Levels at City Tunnel No.2 Entry Point, December 2019



Chlorine Levels at City Tunnel No.3 Entry Point, December 2019



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained at or above 0.2 ppm at all times.
Since 11/3/19, 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 Croton Distribution Entry Points

Low Service			High Service		
Date	MinCl_1SCL1	Remark 1	Date	MinCl_1SCH3	Remark 2
12/01/19	0.91		12/01/19	0.92	
12/02/19	0.85		12/02/19	0.85	
12/03/19	0.75		12/03/19	0.68	
12/04/19	0.60		12/04/19		
12/05/19	0.73		12/05/19		
12/06/19	0.67		12/06/19		
12/07/19	0.76		12/07/19		
12/08/19	0.77		12/08/19		
12/09/19	0.71		12/09/19		
12/10/19	0.77		12/10/19		
12/11/19	0.69		12/11/19		
12/12/19	0.67		12/12/19		
12/13/19	0.66		12/13/19		
12/14/19	0.68		12/14/19		
12/15/19	0.65		12/15/19		
12/16/19	0.60		12/16/19		
12/17/19	0.62		12/17/19		
12/18/19	0.59		12/18/19		
12/19/19	0.76		12/19/19		
12/20/19	0.74		12/20/19		
12/21/19	0.71		12/21/19		
12/22/19	0.73		12/22/19		
12/23/19	0.70		12/23/19		
12/24/19			12/24/19		
12/25/19			12/25/19		
12/26/19			12/26/19		
12/27/19			12/27/19		
12/28/19			12/28/19		
12/29/19			12/29/19		
12/30/19			12/30/19		
12/31/19			12/31/19		

No Croton water.

No Croton water.

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.

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
12/01/19	0.68		12/01/19	0.89		12/01/19	0.77	
12/02/19	0.66		12/02/19	0.93		12/02/19	0.76	
12/03/19	0.62		12/03/19	0.88		12/03/19	0.78	
12/04/19	0.61		12/04/19	0.91		12/04/19	0.80	
12/05/19	0.65		12/05/19	0.94		12/05/19	0.78	
12/06/19	0.68		12/06/19	0.89		12/06/19	0.78	
12/07/19	0.61		12/07/19	0.94		12/07/19	0.78	
12/08/19	0.70		12/08/19	0.90		12/08/19	0.75	
12/09/19	0.65		12/09/19	0.94		12/09/19	0.76	
12/10/19	0.61		12/10/19	0.95		12/10/19	0.70	
12/11/19	0.57		12/11/19	0.85		12/11/19	0.65	
12/12/19	0.64		12/12/19	0.85		12/12/19	0.61	
12/13/19	0.65		12/13/19	0.80		12/13/19	0.65	
12/14/19	0.68		12/14/19	0.80		12/14/19	0.71	
12/15/19	0.67		12/15/19	0.81		12/15/19	0.63	
12/16/19	0.64		12/16/19	0.76		12/16/19	0.67	
12/17/19	0.64		12/17/19	0.80		12/17/19	0.66	
12/18/19	0.57		12/18/19	0.84		12/18/19	0.67	
12/19/19	0.66		12/19/19	0.83		12/19/19	0.67	
12/20/19	0.55		12/20/19	0.84		12/20/19	0.64	
12/21/19	0.65		12/21/19	0.84		12/21/19	0.62	
12/22/19	0.66		12/22/19	0.83		12/22/19	0.63	
12/23/19	0.64		12/23/19	0.82		12/23/19	0.65	
12/24/19	0.70		12/24/19	0.86		12/24/19	0.64	
12/25/19	0.63		12/25/19	0.82		12/25/19	0.67	
12/26/19	0.69		12/26/19	0.86		12/26/19	0.68	
12/27/19	0.66		12/27/19	0.85		12/27/19	0.64	
12/28/19	0.59		12/28/19	0.84		12/28/19	0.66	
12/29/19	0.63		12/29/19	0.86		12/29/19	0.66	
12/30/19	0.66		12/30/19	0.86		12/30/19	0.68	
12/31/19	0.68		12/31/19	0.85		12/31/19	0.66	

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.

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

December 2019

All Distribution Sites			
Samples	Min	Max	Average
1337	0.00	1.15	0.67

Hach DPD Method (analyte is not ELAP certified)

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	RESIDUAL CHLORINE	COMMENT
36735	12/11/19	11250	Regular	1.15	Max
36050	12/12/19	3ISL4	Regular	0.00	Mini

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.

REPORT

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

Residual Chlorine (mg/L) Averages of Distribution Samples

Fourth Quarter 2019

Monthly Average		Quarterly Average			Running Annual Average †
		1st Quarter of 2019	2nd Quarter of 2019	3rd Quarter of 2019	
Oct-19	Nov-19	Dec-19			
0.59	0.67	0.67	0.54	0.57	0.57

Hach DPD Method (analyte is not ELAP certified)

† The Running Annual Average of all distribution sites is calculated four times a year (at the end of every quarter) by taking the average of the quarterly average of this quarter and the three previous quarters, and is not to exceed the MRDL of 4.0 mg/L.

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 12/1/2019 to 12/31/2019

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	199	199	0	0	0.0%
Manhattan	57	167	167	0	0	0.0%
Queens ***	79	229	229	0	0	0.0%
Staten Island	29	86	86	0	0	0.0%
Ground Water Supply ***	-	-	-	-	-	-
Total	281	816	816	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: Rupe Agnew Date: 01/07/2020

Director: Ken B... Date: 11/8/2020

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

[illegible]

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

Director: Ken Beck Date: 11/8/2020

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

12/1/2019 to 12/31/2019

[illegible]

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

Director: Ken Bell Date: 11/8/2020

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

12/1/2019 to 12/31/2019

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	134	92	0	0	--	0	0.0%
Brooklyn	70	199	199	134	0	0	-	0	0.0%
Manhattan	57	167	167	113	0	0	--	0	0.0%
Queens †	79	229	229	156	1	0	-	0	0.0%
Staten Island	29	86	86	58	1	0	-	0	0.0%
Ground Water Supply †	-	-	-	-	-	-	-	-	-
Total	281	816	815 ^a	553	2	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.

^a One sample (No: 37645, Date: 12/21/2019, Site: 15050) were unmeasurable due to color interference.

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

Supervisor: Rups Aggarwal Date: 01/07/2020

Director: Ken Bar Date: 11/8/2020

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**

December 2019

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

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

* As determined by Collert 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

December 2019

All Distribution Sites			
Samples	Min	Max	Average
1338	<0.10	8.63	0.73

Analytical Method SM 2130 B

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	TURBIDITY	COMMENT
35646	12/1/19	15550	Reg Stop	<0.10	Min
36242	12/6/19	51950	Reg Stop	8.63	Max

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 December 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)	7	7	6	7	6	6	7	7	5	7	6	7	7	7	6	7	10	7	6	7	7	5	8	8	7	6	7	7	7	6	7
Catskill/Delaware 1S03A (Tunnel 2)	6	7	6	7	7	7	6	6	5	7	7	7	7	7	7	6	10	7	7	7	8	7	8	10	7	6	7	7	8	6	8
Catskill/Delaware 1S03B (Tunnel 3)	7	7	6	8	7	7	7	6	7	5	8	6	7	7	6	6	10	7	8	7	8	7	7	9	7	7	7	6	9	7	7
Croton System 1SCL1 (a)	4	3	4	3	3	4	4	4	5	4	4	4	4	4	4	4	3	4	4	4	3	4	4	-	-	-	-	-	-	-	-
Croton System 1SCH3 (b)	4	3	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 12/24/19 at 1SCL1.

(b) Croton System offline as of 12/4/19 at 1SCH3.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	5	10	7
Catskill/Delaware 1S03A (Tunnel 2)	31	5	10	7
Catskill/Delaware 1S03B (Tunnel 3)	31	5	10	7
Croton System 1SCL1 (a)	23	3	5	4
Croton System 1SCH3 (b)	3	3	4	4

Supervisor  Date 01/08/20

Director  Date 11/01/20

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 December 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)	0.69	0.69	0.69	0.70	0.68	0.70	0.72	0.70	0.69	0.70	0.69	0.71	0.70	0.70	0.69	0.71	0.70	0.71	0.70	0.71	0.70	0.70	0.70	0.72	0.70	0.71	0.71	0.72	0.71	0.70	0.70
Catskill/Delaware 1S03A (Tunnel 2)	0.69	0.69	0.70	0.69	0.68	0.70	0.72	0.70	0.69	0.72	0.71	0.71	0.69	0.70	0.70	0.72	0.70	0.71	0.69	0.71	0.70	0.70	0.71	0.72	0.70	0.70	0.71	0.72	0.71	0.70	0.70
Catskill/Delaware 1S03B (Tunnel 3)	0.68	0.69	0.69	0.69	0.69	0.70	0.71	0.70	0.70	0.72	0.70	0.71	0.70	0.70	0.70	0.71	0.70	0.69	0.70	0.71	0.70	0.70	0.71	0.72	0.70	0.71	0.72	0.71	0.70	0.70	0.70
Croton System 1SCL1 (a)	0.70	0.70	0.71	0.68	0.71	0.69	0.73	0.71	0.70	0.71	0.71	0.73	0.66	0.73	0.70	0.72	0.71	0.69	0.71	0.72	0.72	0.70	0.71	-	-	-	-	-	-	-	-
Croton System 1SCH3 (b)	0.68	0.67	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 offline as of 12/24/19 at 1SCL1.

(b) Croton System offline as of 12/4/19 at 1SCH3.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	0.68	0.72	0.70
Catskill/Delaware 1S03A (Tunnel 2)	31	0.68	0.72	0.70
Catskill/Delaware 1S03B (Tunnel 3)	31	0.68	0.72	0.70
Croton System 1SCL1 (a)	23	0.66	0.73	0.71
Croton System 1SCH3 (b)	3	0.67	0.71	0.69

Supervisor  Date 01/08/2020

Director  Date 11/10/20