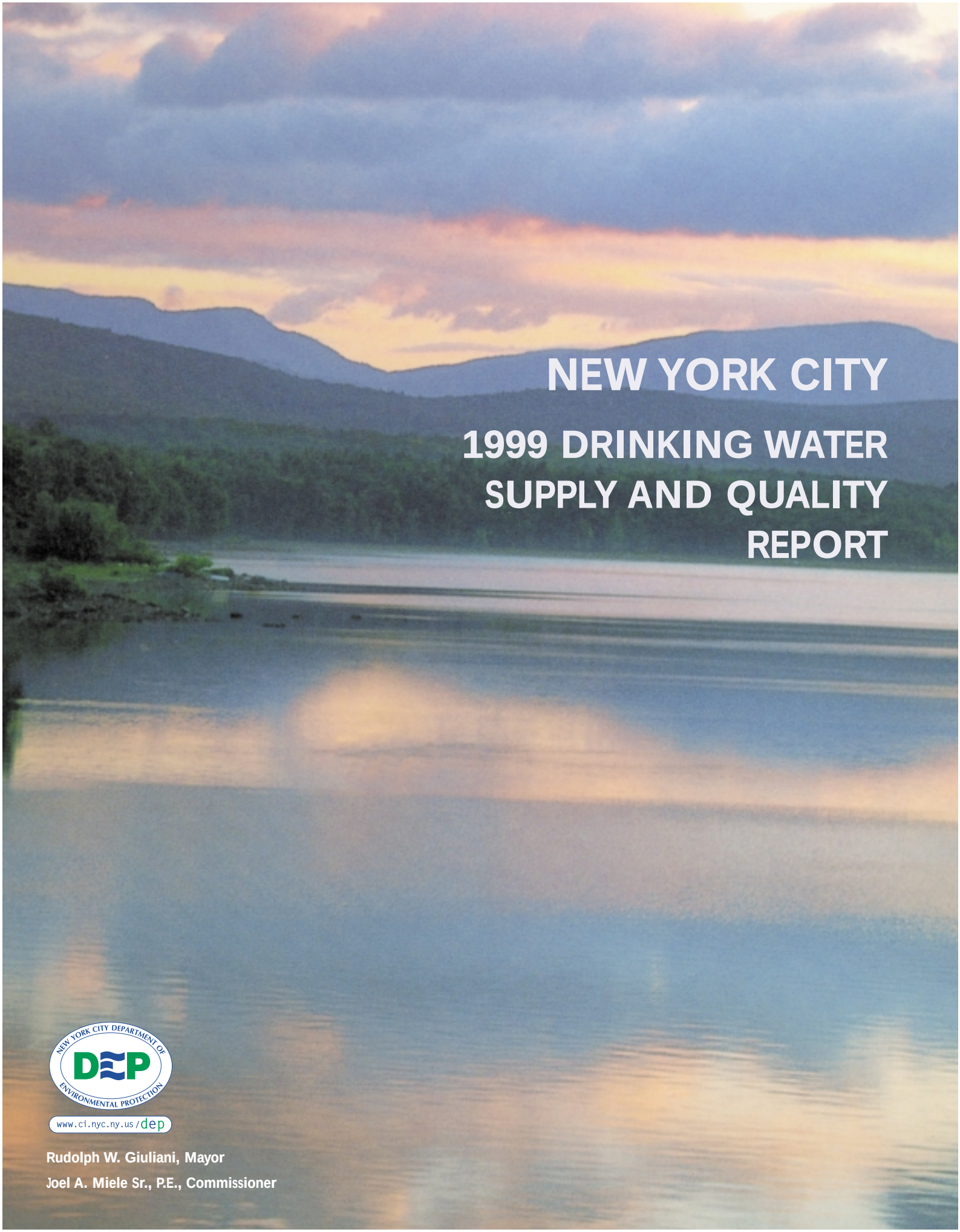

NEW YORK CITY

1999 DRINKING WATER SUPPLY AND QUALITY REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP

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Rudolph W. Giuliani, Mayor

Joel A. Miele Sr., P.E., Commissioner

New Croton Reservoir

NEW YORK CITY 1999 DRINKING WATER SUPPLY AND QUALITY REPORT

The New York City Department of Environmental Protection is pleased to present its 1999 Annual Water Quality Report. This presentation is in accordance with Part 5-1.72 of the New York State Sanitary Code (10NYCRR), and the National Primary Drinking Water Regulations, 40 CFR Part 141 Subpart O, of the Environmental Protection Agency, which require all drinking water suppliers to provide the public with an annual statement describing the water supply and the quality of its water.

New York City's Water Supply

The New York City surface (reservoir) water supply system (PWSID NY0003493) provides approximately 1.3 billion gallons of safe drinking water daily to nearly 8 million residents of New York City, as well as visitors, commuters and approximately one million people living in Westchester, Putnam, Ulster, and Orange counties. In addition to our surface water supplies, approximately 350,000 people in southeastern Queens receive groundwater or a blend of groundwater and surface water. In all, the City system supplies high quality water to nearly half the population of New York State.

Where Does New York City's Water Come From?

New York City's surface water is supplied from a network of 19 reservoirs and three controlled lakes in a 1,969 square-mile watershed that extends 125 miles north of New York City. Approximately 90% of our water comes from the Catskill/Delaware System, located in Delaware, Greene, Schoharie, Sullivan, and Ulster counties, west of the Hudson River. The Croton System, the City's original upstate supply, provides about 10% of our daily water from 12 reservoir basins in Putnam, Westchester, and Dutchess counties. In 1999, New York City's Groundwater System in southeastern Queens operated 20 wells and supplied an average of 20 million gallons of drinking water per day, or less than 2% of the City's total use.

What's in Source Water?

Sources of drinking water worldwide (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants.

Regulation of Drinking Water

In order to ensure that tap water is safe to drink, the New York State Department of Health and the United States Environmental Protection Agency (EPA) prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the federal Food and Drug Administration's regulations establish limits for contaminants in bottled water.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800) 426-4791.


New York City's
Water Supply System
Catskill/Delaware
Watersheds
Croton
Watershed
OTSEGO
COUNTY
CHENANGO
COUNTY
SCHOHARIE
COUNTY
ALBANY
COUNTY
RENSSELAER
COUNTY
GREENE
COUNTY
COLUMBIA
COUNTY
DELAWARE
COUNTY
DUTCHESS
COUNTY
ULSTER
COUNTY
SULLIVAN
COUNTY
ORANGE
COUNTY
PUTNAM
COUNTY
ROCKLAND
COUNTY
WESTCHESTER
COUNTY
NASSAU
COUNTY
MASSACHUSETTS
CONNECTICUT
PENNSYLVANIA
NEW YORK
NEW JERSEY
Albany
Oneonta
Gilboa
Delhi
Hunter
Phoenicia
Kingston
Poughkeepsie
Liberty
Ellenville
Walton
Downsville
Deposit
Schoharie Reservoir
Shandaken Tunnel
Pepacton Reservoir
Cannonsville Reservoir
Ashokan Reservoir
Esopus Creek
West Branch Delaware
East Branch Delaware
East Delaware Aqueduct
West Delaware Aqueduct
Neversink Reservoir
Rondout Reservoir
Neversink Tunnel
Delaware Aqueduct
Catskill Aqueduct
Delaware River
Neversink River
Hudson River
125 Miles
100 Miles
75 Miles
50 Miles
25 Miles (from City Hall)
Chelsea Pumping Station
Boyds Corner Reservoir
Lake Gleneida
Middle Branch Reservoir
Lake Gilead
Bog Brook Reservoir
East Branch Reservoir
Kirk Lake
Croton Falls Reservoir
Diverting Reservoir
Amawalk Reservoir
Titicus Reservoir
Cross River Reservoir
Muscoot Reservoir
West Branch Reservoir
New Croton Reservoir
Kensico Reservoir
White Plains
Hillview Reservoir
Jerome Park Reservoir
Croton Aqueduct
Bronx
Manhattan
Queens
Brooklyn
Staten Island
Groundwater Service Area
Long Island Sound
New York Bay
Atlantic Ocean
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP
Catskill / Delaware Watershed Area
Croton Watershed Area
Rivers and Reservoirs
Catskill Aqueduct and Tunnels
Croton Aqueduct
Delaware Aqueduct and Tunnels
County Borders
State Borders
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NYCDEP/BW&SO/AJ 3/00

Water Quality

The New York City Department of Environmental Protection (DEP) operates the water supply system that delivers water to City residents. DEP's monitoring program — far more extensive than required by law — demonstrates that the quality of New York City's drinking water remains high and meets all health-related State and federal drinking water standards. Color, an aesthetic condition in the Croton and Groundwater Systems, may exceed the standard on a seasonal basis.

DEP Drinking Water Quality Control Distribution Laboratory

DEP monitors the water in the distribution system, the upstate reservoirs and feeder streams, and the wells that are the sources for our supply. Water quality is monitored continuously as the water enters the distribution system, and is regularly tested at sampling points throughout the entire City. DEP conducts analyses for a broad spectrum of microbiological, chemical, and physical measures of quality. In 1999, DEP collected more than 41,500 in-City samples and performed approximately 594,300 analyses.

Test Results

The results of the tests conducted in 1999 on distribution water samples under DEP's Distribution System Monitoring Program are summarized in the tables in this Statement. Data is presented separately for the Croton, Catskill/Delaware, and Groundwater Systems. Whether a particular user receives Croton, Catskill/Delaware, groundwater, or a mixture, depends on location, system operations, and consumer demand.

The State requires monitoring for some parameters at a frequency of less than once per year because the concentrations of these parameters do not change frequently. Accordingly, some of these data, though representative, are more than one year old. Unregulated parameter monitoring is conducted to help EPA determine where certain parameters occur and whether it needs to regulate those parameters.

Recently, considerable attention has been focused on the chemical MTBE (methyl tertiary butyl ether), an oxygenate widely used in the United States as a gasoline fuel additive. In the U.S., MTBE has been found mainly in ground water supplies as a result of leaking gasoline storage tanks and pipelines. The potential for MTBE groundwater contamination is exacerbated by its solubility in water, which allows it to travel through groundwater aquifers faster than the other, less soluble, components of gasoline. The chemical has also been detected at much lower levels in surface water supplies, due more to air emissions and recreational power boating, than to leaking underground storage tanks. Even though the State does not require water supplies to monitor for MTBE, DEP has made it part of its analytical protocol since 1996.

Lead in Drinking Water

New York City water is lead-free when it is delivered from the City's upstate reservoir system, but water can absorb lead from solder, fixtures, and pipes found in the plumbing of some buildings or homes. Mandated at-the-tap lead monitoring is conducted at various households around the City twice a year. Based on the results of the 1999 monitoring of 107 homes, New York City met the established standard or Lead Action Level (AL).

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water you may flush your cold-water tap for 30 seconds to 2 minutes, until the water turns cold, before using water that has been standing in the pipes for more than six hours. Use only water from the cold water tap for cooking, drinking, and making baby formula. You also may wish to have your water tested. To request a free kit to test for lead in your drinking water, call DEP's 24-hour Help Center at (718) DEP-HELP. Additional information is available from the EPA's Safe Drinking Water Hotline (800) 426-4791.

Distribution Drinking Water Sample Bottles

Microscopic Examination Laboratory

Cryptosporidium and Giardia

While there is no evidence of illness related to the New York City water supply, federal and New York State law requires all water suppliers to notify their customers about the potential risks of *Cryptosporidium* and *Giardia*. Cryptosporidiosis and giardiasis are intestinal illnesses caused by microscopic pathogens which can be waterborne. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome both of these diseases within a few weeks.

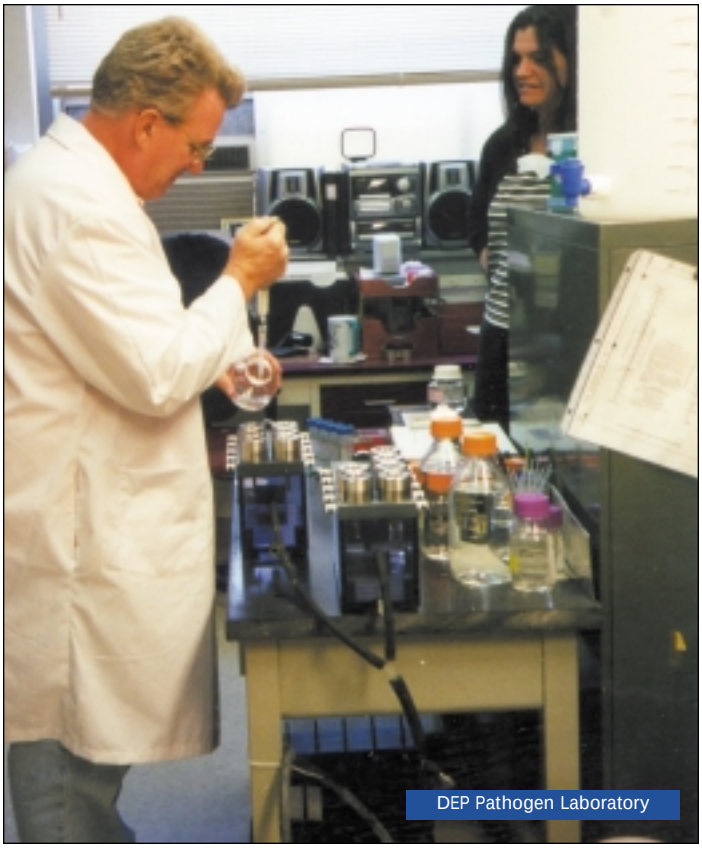
According to the EPA and the Centers for Disease Control and Prevention (CDC), it is unclear how most cases of cryptosporidiosis in the United States are contracted. The relative importance of various risk factors are unknown. Such factors include eating contaminated food, swallowing contaminated recreational water while swimming or camping, contact with animals, contact with human waste, certain sexual practices, or drinking contaminated water. Individuals who think they may have cryptosporidiosis or giardiasis should contact their health care provider immediately.

Some people may be more vulnerable to disease-causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with Crohn's disease or HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, *Giardia* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (800) 426-4791.

DEP's Monitoring for Pathogens

In 1992, the City added a pathogen monitoring component to its comprehensive watershed monitoring program. Since then, samples have been collected weekly from the effluents of Kensico and New Croton Reservoirs, before water is first chlorinated in the Catskill/Delaware and Croton Systems, respectively. In May 1999, DEP implemented a more sensitive analytical method which improved the Department's ability to detect both *Giardia* cysts and *Cryptosporidium* oocysts. Current test methods, however, are limited in that they do not allow us to determine if organisms identified are dead or if they are capable of causing disease.

In 1999, as part of the routine sampling program, 109 samples of Kensico Reservoir effluent and 37 samples of New Croton Reservoir effluent were collected and analyzed for *Giardia* cysts and *Cryptosporidium* oocysts. Of the 109 Kensico Reservoir samples, 47 samples were presumed positive for *Giardia* and 5 samples were confirmed positive. Five samples were presumed positive for *Cryptosporidium* at Kensico and two were confirmed. The New Croton Reservoir samples produced seven presumed positive *Giardia* samples, and no samples confirmed positive; and of two presumed positive *Cryptosporidium* samples no samples confirmed positive. DEP's *Giardia* and *Cryptosporidium* data from 1992 to the present can be viewed on our web site www.ci.nyc.ny.us/dep/html/pathogen.html, where updates are made weekly.

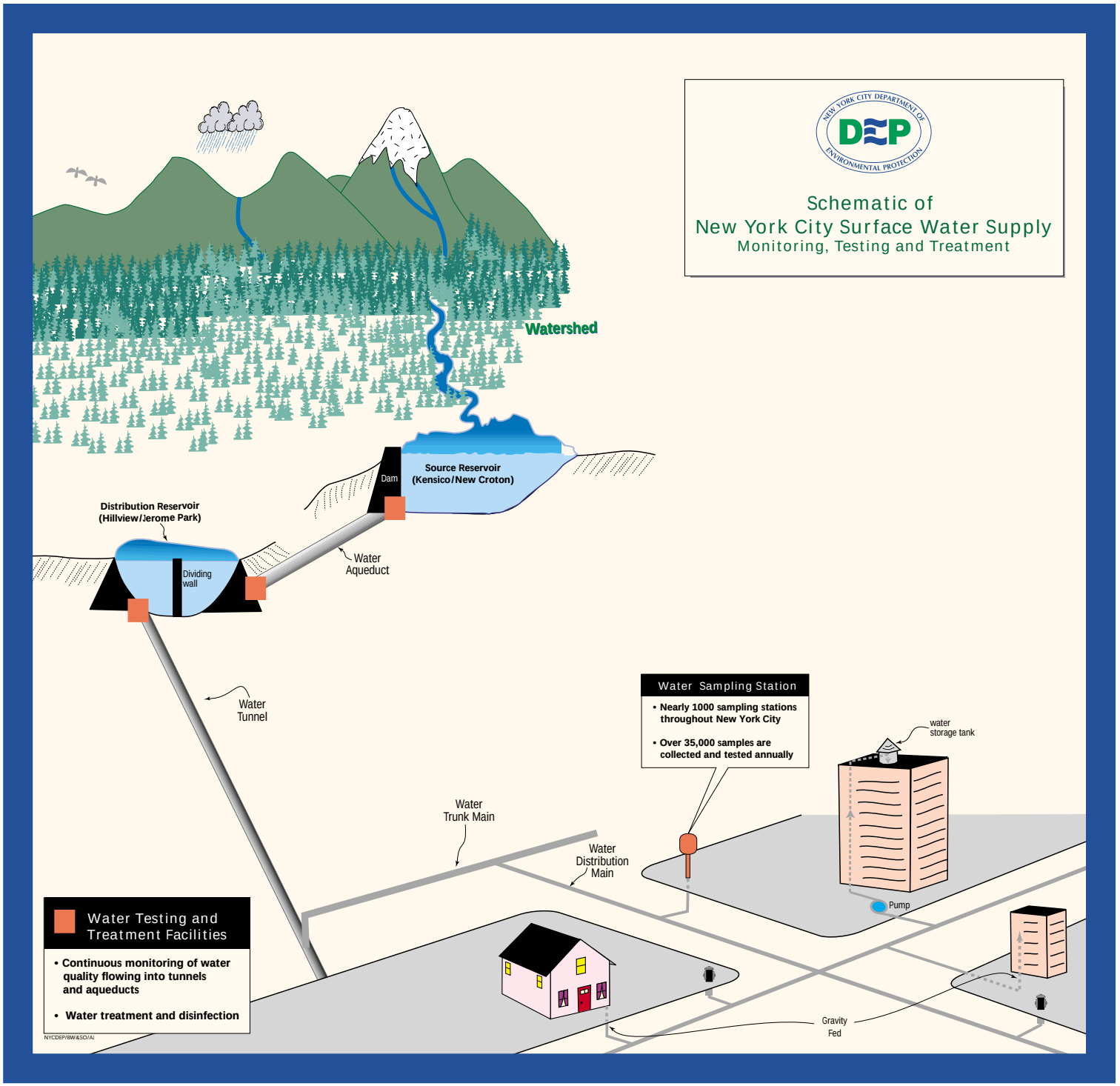


DEP Pathogen Laboratory

How is New York City's Water Treated?

All surface water and groundwater entering New York City's distribution system is treated with chlorine, fluoride, orthophosphate, and, in some cases, sodium hydroxide. New York City uses chlorine to meet the New York State Sanitary Code and federal Safe Drinking Water Act disinfection requirements. Fluoride, at a concentration of one part per million, is added to help prevent tooth decay and has been added since the mid-1960's in accordance with the New York City Health Code. Orthophosphate is added to create a protective film on pipes which reduces the release of metals such as lead from household plumbing. Sodium hydroxide is added to Catskill/Delaware water to raise the pH and reduce corrosivity.

A sequestering phosphate is applied at several wells to prevent the precipitation of naturally occurring minerals, mostly iron and manganese, in the distribution mains and customers' household piping. Air stripper facilities operate at several wells to remove volatile organic chemicals.



Ensuring a Safe and Sufficient Supply of Water

Watershed Programs

During 1999, New York City continued implementation of the watershed protection and partnership programs set forth in the January 1997 Watershed Memorandum of Agreement (MOA). These efforts focused on three key programs: the acquisition of watershed lands; the enforcement of strengthened Watershed Regulations; and the expansion of partnership programs that target specific sources of pollution in the watershed. In addition, DEP continued work on a number of water quality studies, and continued implementing the upgrades of City-owned and non-City-owned wastewater treatment plants (WWTPs).

Watershed Agricultural Program

Land Acquisition

In 1999, DEP met the goals for procuring watershed lands set forth in the 1997 Filtration Avoidance Determination (FAD) and the MOA. Specifically, DEP solicited 42,733 acres of watershed lands in designated priority areas. As of December 1999, DEP had 18,669 acres in 287 parcels either acquired or under purchase contract for a cost of $55.8 million. DEP also began an initiative to purchase conservation easements from willing sellers and a Whole Farm Easement Program in partnership with the Watershed Agricultural Council.

Watershed Regulations

On May 1, 1997, enhanced Watershed Regulations became effective, replacing regulations that had been in place since 1953. The Regulations are vital to water supply protection and provide a higher level of defense against modern-day threats to water quality. By vigorously enforcing the new Regulations, DEP is ensuring that the City's source waters are protected. The steps taken to ensure a high quality water supply include: aggressive policing and inspection of the watersheds, greatly increased water quality monitoring, systematic inspections of wastewater treatment plants, investigations of other potentially-polluting activities, and legal actions against polluters. Furthermore, in 1999, DEP staff reviewed more than 1,330 applications for new or remediated septic systems, 50 stormwater pollution prevention plans, and more than 90 proposals for projects that included one or more regulated activities.

Partnership Programs

In 1999, New York City made nearly $30 million in payments to support a variety of partnership programs in accordance with the terms of the MOA. West of the Hudson River, many of the partnership programs are being administered by the Catskill Watershed Corporation (CWC), a non-profit corporation formed solely for that purpose. Together, CWC and DEP continued to implement programs that remediated 374 failing septic systems, completed construction of 17 winter road de-icing materials storage facilities, processed funding applications for new stormwater control facilities for 11 projects, and solicited proposals for construction of best management practices to address existing stormwater runoff. In addition, CWC completed a study for the use of the City-funded $60 million Catskill Fund for the Future, which seeks to assist economic development opportunities in the watershed consistent with the City's water quality objectives.

Watershed Agricultural Program

Wastewater Treatment Plant Upgrades

The City continues to advance the program to upgrade all of the 102 non-City-owned wastewater treatment plants (WWTP) in the watershed. All facilities have signed agreements to participate in the upgrade program and have begun the process of hiring engineers to complete upgrade designs. In addition, the City completed the multi-million dollar upgrade of the Margaretville WWTP in Delaware County, the seventh of the City's eight watershed wastewater treatment facilities to be completely redesigned and upgraded.

Upstate Capital Improvements

The City continued to implement a multi-year program to upgrade and improve its upstate water supply facilities, including gatehouses, aqueducts, water testing laboratories, and other facilities which are important to ensuring a safe and reliable supply of drinking water. An ongoing dam reconstruction program has also been in effect for rehabilitation of dams. In 1999, work was done on facilities at the Amawalk, Titicus, Cross River, and West Branch Reservoirs, and at Kirk Lake, Lake Gilead, and Lake Gleneida.

The Distribution System

Sampling Stations

Since May 1, 1999, 28 fixed sampling sites (26 compliance and 2 surveillance) have been in use in the Groundwater System. The new stations replace internal compliance sampling sites, marking the completion of a project to install nearly 1000 fixed sampling stations throughout the entire City. These stations, which you may have seen in your neighborhood, allow DEP to collect water samples throughout the distribution system in an efficient and sanitary manner.

Water Quality Tracking System

DEP has put in place a new state of the art computer program and water quality tracking system. This system, called the Distribution Water Quality Module (DWQM), allows Drinking Water Quality Control staff to quickly access a large number of water quality parameters, including, chlorine residual, orthophosphate concentration, color, turbidity, bacteria, Heterotrophic Plate Count, and disinfection by-products, throughout the City as a whole or any section of the City. The system's ability to almost instantaneously identify problem locations or areas with low chlorine or high color, and track water quality trends, makes it an effective water quality management tool and helps to provide the best possible water quality throughout the City.

City Water Tunnel No. 3

The Third Water Tunnel, begun in 1970, is being built in three stages. The first stage of Tunnel No. 3, which became operational in July 1998, has already helped to improve the reliability of the City's drinking water distribution system. Stage II of Tunnel No. 3 includes two segments, and is scheduled to be finished in 2008. The first segment of Stage II which is in Brooklyn and Queens, is currently under construction and upon completion will improve service to Staten Island, Brooklyn and Queens. This phase will be followed by the construction of the Manhattan segment of Stage II.

Eventually, Stage III will extend from the Kensico Reservoir in Westchester County to the Van Cortlandt Park Valve Chamber in the Bronx, and Stage IV will deliver water to the eastern parts of the Bronx and Queens. When finished in 2020, Tunnel No. 3 will create a more flexible means of supplying drinking water to the entire City and will provide delivery alternatives in the event of disruption in any of the older tunnels. It will also permit New York City to drain, examine and rehabilitate City Tunnels No. 1 and 2.


NYC Tunnel No. 3 Construction

This map of the City indicates the general areas where water can be supplied by the Croton and Groundwater Systems when they are on line. It is possible to supply the entire City from the Catskill/Delaware System.

Operations

In our ongoing efforts to maintain the appropriate volume and high quality of water in the distribution system, there is some rotation in the water sources used by DEP. In the Groundwater System, wells are routinely removed and returned to service for maintenance or due to changes in demand. The entire Croton System was shut down from September 17, 1999, through the end of the year due to elevated levels of color, (which is an aesthetic problem, not a public health concern), and to permit contract work in the Croton Aqueduct. The Groundwater wells were then shut down in succession, in November and December of 1999, during an exercise in Y2K preparedness. Subsequently, for a few days, on December 29 & 30, 1999, the entire City was supplied by the Catskill/Delaware system.

Croton Filtration Plant

The City is planning to build a treatment facility to filter water from the Croton system. A preferred location for the filtration plant, the Mosholu Driving Range of Van Cortlandt Park in the Bronx, was announced in December 1998 and a design for the proposed facility is being prepared. The Croton filtration plant is slated to be operational by 2007.

The federal Surface Water Treatment Rule (SWTR) requires that all water supplies be filtered by June 29, 1993, unless the system meets special criteria to receive a waiver. Even though Croton water quality is high, it experiences seasonal color problems and will be subjected to stricter standards for disinfection by-products in the near future. In 1992, the City entered into a Stipulation with the New York State Department of Health calling for the construction of a Croton filtration facility.

In May 1998, the City entered into a Consent Decree with the United States and the State of New York, thereby settling an enforcement action brought against the City because it is not filtering Croton water at this time. In November 1998, the U.S. District Court for the Eastern District of New York approved the Consent Decree. The Consent Decree supercedes the 1992 Stipulation and sets out a revised timetable for the design and construction of the Croton filtration facility.

Until DEP begins to filter Croton water we are required to make the following statement: *Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

DEFINITION OF TERMS

Action Level (AL):

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow. An exceedence occurs if more than 10% of the samples exceed the Action Level.

Maximum Contaminant Level (MCL):

The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG):

The level of a contaminant in drinking water below which there is not known or expected risk to health. MCLGs allow for a margin of safety.

Treatment Technique (TT):

A required process intended to reduce the level of a contaminant in drinking water

90th Percentile Value:

The values reported for lead and copper represent the 90th percentile. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below the value. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

ABBREVIATIONS

NA = Not Applicable
ND = Non Detect
NDL = No Designated Limit
CFU/ml = colony forming units per milliliter
mg/L = milligrams per liter (10-3 grams per liter)
µg/L = micrograms per liter (10-6 grams per liter)
pCi/L = picocurie per liter (a measure of radioactivity)
NTU = Nephelometric Turbidity Units
µmho/cm = micromhos per centimeter

REGULATED PARAMETERS

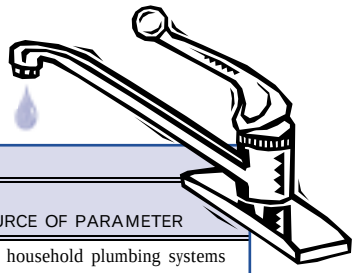
PARAMETERS	NYS DOH MCL	USEPA MCLG	CATSKILL-DELAWARE SYSTEM			CROTON SYSTEM			GROUNDWATER SYSTEM			SOURCE OF PARAMETER
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
REGULATED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS												
Barium (mg/L)	2.00	2	192	ND	ND	36	ND	ND	85	ND - 0.08	<0.005	Erosion of natural deposits
Chloride (mg/L)	250.0	-	192	5.9 - 15.9	9.1	36	30.9 - 57.2	48.0	281	6.4 - 138.0	42.2	Naturally occurring; road salt
Chromium (µg/L)	100	100	192	ND	ND	36	ND	ND	86	ND - 3	<2	Erosion of natural deposits
Color - entry points (color units)	15 [1]	-	1111	3 - 13	7	255	**4 - 28**	12	527	**1 - 22**	5	Iron and manganese; or organic sources, such as algal growth
Copper (mg/L)	1.3 [2]	1.3	278	ND - 0.06	0.01	41	ND - 0.04	0.01	285	ND - 1.07	0.04	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride (mg/L)	2.2	4	9268	0.05 - 1.30	1.08	883	0.90 - 1.14	1.01	1231	0.18 - 1.65	1.07	Erosion of natural deposits; water additive which promotes strong teeth; runoff from fertilizer
Gross Beta particle (pCi/L) [3]	50 [4]	-	9	ND - 1.0	< 0.7	3	1.2 - 2.1	1.7	1	1.8	1.8	Decay of natural deposits and man-made emissions
Iron (µg/L)	300 [5]	-	192	20 - 160	40	36	30 - 110	70	297	ND - 1360	260	Naturally occurring
Lead (µg/L)	15 [2]	0	280	ND - 4	<2	41	ND - 4	<2	299	ND - 35	<2	Corrosion of household plumbing systems; erosion of natural deposits
Manganese (µg/L)	300 [5]	-	192	10 - 80	20	36	20 - 100	50	295	ND - 430	50	Naturally occurring
Nitrate (mg/L nitrogen)	10	10	192	0.10 - 0.25	0.18	36	ND - 0.64	0.28	281	ND - 8.84	3.35	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units)	6.5 - 8.5	-	9269	6.6 - 8.8	-	883	6.9 - 7.6	-	1234	5.8 - 8.3	-	
Sodium (mg/L)	NDL [6]	-	192	5.8 - 12.7	7.9	36	14.8 - 30.0	24.4	140	3.5 - 49.7	24.4	Naturally occurring; road salt; water softeners; animal waste
Sulfate (mg/L)	250.0	-	192	5.9 - 7.3	6.2	36	8.8 - 13.8	12.6	281	5.8 - 95.0	34.6	Naturally occurring
Turbidity [7] - distribution system (NTU)	5 [8]	-	8158	0.1 - 3.6	0.7	628	0.3 - 1.7	0.8	1234	0.1 - 5.3	0.5	Soil runoff
Turbidity [7] - entry points (NTU)	1 [9]	-	-	-	-	255	0.5 - 1	0.8	-	-	-	Soil runoff
Zinc (mg/L)	5	-	192	ND - 0.02	<0.01	36	ND	ND	295	ND - 0.51	0.06	Naturally occurring
Regulated Conventional Physical and Chemical Parameters not detected:												
Antimony, Arsenic, Asbestos [10], Beryllium, Cadmium, Cyanide, Gross Alpha particle [3], Mercury, Nickel, Nitrite, Selenium, Silver, Thallium												
REGULATED ORGANIC CONTAMINANTS												
Total Trihalomethanes (µg/L)	100 [11]	-	194	11 - 64	33	36	28 - 76	44	189	ND - 45	6	By-product of drinking water chlorination
Principal Organic Contaminants detected:												
Tetrachloroethylene (µg/L)	5	0	194	ND	ND	36	ND	ND	189	ND - 6.1 [12]	1.0	Discharge from dry cleaners
Trichloroethene (µg/L)	5	0	194	ND	ND	36	ND	ND	189	ND - 1.5	<0.5	Residual of cleaning solvents and metal degreasers
Trichlorofluoromethane (µg/L)	5		194	ND	ND	36	ND	ND	189	ND - 6.2 [13]	<0.5	Emissions of solvents, chemical intermediate, blowing agent for polyurethane foams, dry cleaning, aerosol propellant and in fire extinguishing agent
Specified Organic Contaminants detected:												
Di(2-ethylhexyl) phthalate (µg/L)**	6	0	3	ND	ND	6	ND	ND	13	ND - 1.7 [14]	ND	Plasticizer from flexible plastics
Simazine (µg/L)**	4	4	3	ND	ND	6	ND - 0.05*	ND	13	ND	ND	Runoff from herbicide use
Principal Organic Contaminants not detected:												
Benzene, Bromobenzene, Bromochloromethane, Bromomethane, n-Butylbenzene, sec Butylbenzene, tert-Butylbenzene, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2 Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3 Dichloropropene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, p-Isopropyltoluene, Methylene chloride, n-Propylbenzene, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Toluene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m-Xylene, o-Xylene, p-Xylene												
Specified Organic Contaminants not detected:												
Alachlor, Aldicarb (Temik), Aldicarb sulfone, Aldicarb sulfoxide, Aldrin, Atrazine, Benzo(a)pyrene, Butachlor, Carbaryl, Carbofuran (Furadan), Chlordane, 2,4-D, Dalapon, 1,2-Dibromo-3-chloropropane, Dicamba, Dieldrin, Di(2-ethylhexyl)adipate, Dinoseb, Diquat, Endothall, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, Metolachlor, Metribuzin, Oxamyl (Vydate), Pentachlorophenol, Picloram, Polychlorobiphenyls [PCBs], Propachlor, Toxaphene, 2,4,5-TP (Silvex), Vinyl chloride												
MICROBIAL PARAMETERS												
Total Coliform Bacteria (% of samples positive/month)	5%	0	9283	0.0% - 1.0%	0.20%	883	0.0% - 8.0%	0.1%	1221	0.0% - 2.0%	0.3%	Naturally present in the environment
E. coli (CFU/100mL)	[15]	0	9283	ND	ND	883	ND	ND	1221	ND	ND	Human and animal fecal waste
Heterotrophic Plate Count (CFU/mL)	TT	-	9227	ND - 1120	1	881	ND - 388	1	1205	ND - 618	2	Naturally present in the environment

UNREGULATED PARAMETERS

PARAMETERS	NYS DOH MCL	CATSKILL-DELAWARE SYSTEM			CROTON SYSTEM			GROUNDWATER SYSTEM			SOURCE OF PARAMETER
		# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
UNREGULATED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS											
Alkalinity (mg/L $CaCO_3$)	-	277	8.0 - 26.1	11.8	40	24.5 - 57.2	44.7	305	10.5 - 221.8	57.7	Erosion of natural deposits
Aluminum (mg/L)	0.05 - 0.2 [16]	192	ND - 0.04	0.02	36	ND - 0.02	0.01	69	ND - 0.03	<0.01	Erosion of natural deposits
Ammonia (mg/L nitrogen)	-	192	ND - 0.03	<0.03	36	ND	ND	86	ND - 0.15	<0.03	Animal waste and fertilizer runoff
Boron (mg/L)	-	192	ND - 0.12	0.05	36	ND - 0.12	0.06	69	ND - 0.26	0.10	Erosion of natural deposits
Bromide (mg/L)	-	24	ND	ND	13	ND - 0.02	< 0.02	15	0.10 - 0.14	0.12	Erosion of natural deposits
Calcium (mg/L)	-	278	3.9 - 9.4	5.4	41	11.3 - 23.0	19.0	319	4.2 - 92.6	24.6	Erosion of natural deposits
Carbon dioxide (mg/L)	-	12	1.10 - 2.00	1.50	9	3.08 - 4.40	3.88	-	-	-	Present in air
Chemical Oxygen Demand (mg/L O_2)	-	192	ND - 10.6	4.7	36	5.7 - 12.1	8.9	69	ND - 5.4	<2.4	
Chlorate (mg/L)	-	8	ND	ND	-	-	-	8	ND - 0.17	0.05	By-product of drinking water chlorination
Chlorine Residual, free (mg/L)	-	9266	0.00 - 1.73	0.70	883	0.15 - 1.64	0.72	1229	0.02 - 1.46	0.69	Water additive for disinfection
Color - distribution system (color units)	-	8158	2 - 40	7	628	3 - 40	10	1234	1 - 68	6	Presence of iron, manganese, and organics in water
Corrosivity (Langelier index)	0 [16, 17]	192	-3.04 to -1.72	-2.47	36	-1.78 to -1.20	-1.48	135	-3.29 to 0.89	-1.43	
Dissolved Oxygen (mg/L)	-	12	8.7 - 15.9	12.1	9	5.6 - 12.4	9.1	-	-	-	
Foaming Agents (µg/L linear alkyl sulfonate)	500 [16]	180	ND - 10	<10	33	ND - 10	<10	75	ND - 20	<10	Residual of washing detergents
Hardness (grains/gallon [US] $CaCO_3$) [18]	-	192	0.9 - 1.8	1.1	36	3.0 - 5.1	4.5	308	1.0 - 24.7	6.7	Erosion of natural deposits
Iodide (mg/L)	-	192	ND	ND	36	ND - 0.01	<0.01	69	ND	ND	Erosion of natural deposits
Magnesium (mg/L)	-	192	1.0 - 2.5	1.3	36	4.3 - 8.8	7.1	69	1.2 - 39.0	11.8	Erosion of natural deposits
Phosphate, Ortho- (mg/L)	-	9265	0.26 - 3.30	1.83	883	0.30 - 2.75	1.21	1229	0.56 - 2.99	1.63	Water additive for corrosion control
Phosphate, Total (mg/L)	-	192	0.64 - 2.92	1.58	36	0.60 - 1.30	0.85	125	0.63 - 5.94	1.98	Water additive for corrosion control
Potassium (mg/L)	-	192	0.42 - 6.70	0.62	36	1.20 - 2.60	1.95	69	0.54 - 3.53	1.51	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-	192	1.8 - 3.2	2.5	36	2.6 - 4.6	3.8	215	1.0 - 29.9	13.2	Erosion of natural deposits
Specific Conductance (µmho/cm)	-	9269	66 - 179	83	883	180 - 389	268	1234	69 - 874	245	
Strontium (mg/L)	-	192	ND	ND	36	ND - 0.09	<0.05	69	ND - 0.17	<0.05	Erosion of natural deposits
Temperature (°F)	-	9269	34 - 76	55	883	37 -75	54	1234	39 - 78	58	
Total Dissolved Solids (mg/L)	500 [16]	192	21 - 75	46	36	128 - 180	158	135	27 - 540	210	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L carbon)	-	192	1.1 - 2.4	1.6	36	1.9 - 3.6	2.9	69	0.1 - 1.7	0.8	Organic matter naturally present in the environment
UV 254 Absorbency (absorbency unit)	-	192	0.019 - 0.040	0.028	36	0.033 - 0.067	0.053	69	0.002 - 0.049	0.017	Organic matter naturally present in the environment
Unregulated Conventional Physical and Chemical Parameters not detected:											
Lithium, Phenols, ^{90}Strontium - radiological [3], Tritium (^{3}H) - radiological [3]											
UNSPECIFIED ORGANIC CHEMICALS											
Disinfection By-Products detected											
Bromochloroacetic acid (µg/L)	50	182	ND - 2.70	1.40	31	0.89 - 3.56	2.15	73	ND - 2.58	0.75	By-product of drinking water chlorination
Bromodichloroacetic acid (µg/L)	50	47	1.90 - 3.10	2.45	8	5.60 - 8.70	7.30	22	ND - 2.80	0.91	By-product of drinking water chlorination
Chloral Hydrate (µg/L)	50	143	1.35 - 13.78	5.74	19	3.26 - 11.22	5.65	74	ND - 9.50	1.39	By-product of drinking water chlorination
Chloropicrin (µg/L)	50	181	ND - 1.14	0.49	28	ND - 0.91	0.47	91	ND - 0.82	0.08	By-product of drinking water chlorination
Haloacetic acid 5 (HAA5) (µg/L)	[19]	134	16.2 - 51.0	33.2	20	39.7 - 58.2	50.5	64	ND - 32.6	9.7	By-product of drinking water chlorination
Haloacetonitriles (HANs) (µg/L)	[19]	81	1.55 - 4.60	3.13	16	0.94 - 6.63	4.85	70	ND - 4.44	1.77	By-product of drinking water chlorination
Halogenated ketones (HKs) (µg/L)	[19]	116	1.40 - 5.61	2.86	16	2.84 - 5.52	4.31	89	ND - 3.46	0.78	By-product of drinking water chlorination
Total Organic Halogen (mg/L)	-	192	0.09 - 0.24	0.15	36	0.12 - 0.32	0.24	69	ND - 0.15	<0.10	By-product of drinking water chlorination
Unspecified Organic Chemicals detected											
DCPA (Dacthal) (µg/L)**	5	3	ND	ND	1	ND	ND	8	ND - 0.17 *	ND	Runoff from pesticide use
Di-n-Butyl phthalate (µg/L)**	5	3	ND	ND	6	ND	ND	9	ND - 0.70 *	ND	Plasticizer from flexible plastics
Methyl tert-butyl ether (MTBE) (µg/L)	50	194	ND - 3.0	NA	36	ND - 0.60	NA	189	ND - 10.1	NA	Additive to gasoline in the winter

Unspecified Organic Chemicals not detected:

Acenaphthene, Acenaphthylene, Acetochlor, Acifluorfen, Anthracene, Bentazon, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[g,h,I]perylene, a-BHC, b-BHC, d-BHC, g-BHC, Bromocil, Butylbenzylphthalate, Caffeine, Carboxin, a-Chlordane, g-Chlordane, Chlorobenzilate, Chloroneb, Chlorothalonil (Draconil, Bravo), Chrysene, Cyanazine, 2,4-DB, p,p'DDD, p,p'DDE, p,p'DDT, Diazinon, Dibenz[a,h]anthracene, 3,5-Dichlorobenxoic acid, Dichlorprop, Diethylphthalate, Dimethoate, Dimethylphthalate, 2,4-Dinitrotoluene, Di-N-octylphthalate, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, Etridiazole, EPTC, Fluoranthene, Fluorene, Indeno[1,2,3-cd] pyrene, Isophorone, Malathion, Methiocarb, MGK - 264, Molinate, Naphthalene, 4-Nitrophenol, trans-Nonachlor, Norflurazon, Paraquat, Parathion, Permethrin, Phenanthrene, Prometryn, Propoxur (Baygon), Pyrene, 2,4,5-T, Terbacil, Terbufos, Tetrachloroterephthalic acid, Thiobencarb, Trifluralin, Vernolate



LEAD AND COPPER RULE SAMPLING AT RESIDENTIAL WATER TAPS: July - December 1999							
PARAMETERS	NYS DOH AL	US EPA MCLG	# SAMPLES	RANGE	90th PERCENTILE VALUES	# SAMPLES EXCEEDING ACTION LEVEL(AL)	SOURCE OF PARAMETER
Copper (mg/L)	1.3	1.3	107	0.006 - 0.496	0.199	0	Corrosion of household plumbing systems
Lead (µg/L)	15	0	107	ND - 177	12	7	Corrosion of household plumbing systems

FOOTNOTES

(1) Determination of MCL violation: If a sample exceeds 15 color units, a second sample must be collected from the same location within 2 weeks. If the average of the two results exceeds 15 color units, then an MCL violation has occurred. In the Croton System there were 3 color violations on 7/17/99, 8/7/99 and 8/10/99. The Groundwater System experienced 2 violations on 6/9/99 at Well 14 and Well 45, and 1 on 8/4/99 at Well 14.

(2) Action Level (not an MCL) measured at the tap.

(3) Reported radiological data for gross alpha, gross beta, strontium 90, and tritium are for samples collected during 1997. Regulations stipulate that samples be taken every 4 years.

(4) New York State considers 50 pCi/L to be the level of concern for beta particles.

(5) If iron and manganese are present, the total concentration of both should not exceed 0.5 mg/L. Higher levels may be allowed by the State when justified by the supplier of water.

(6) Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

(7) Turbidity is a measure of cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality and can hinder the effectiveness of disinfection.

(8) MCL is the monthly average. Data presented are individual sample results.

(9) This MCL only applies to the Croton System. The MCL and data presented are monthly averages. This MCL was not exceeded.

(10) Reported asbestos data was collected in 1993. Regulations require this parameter to be sampled every 9 years.

(11) MCL is the calculated quarterly running average. In 1999 the MCL was never exceeded. Data presented are based on individual sampling results.

(12) Well 27, Well 47, and Well 48 tested positive for this parameter and were removed from service on 9/8/99, 8/5/99, and 7/29/99 respectively.

(13) Well 45 tested positive for this parameter and was removed from service 12/9/99.

(14) Two samples tested positive for this parameter. They were Well 53 sampled on 12/14/99 at 0.8 µg/L, and Well 58 on 12/14/99 at 1.7 µg/L.

(15) If a sample and its repeat sample are both positive for coliform bacteria and one of the two samples is positive for *E. coli*, then an MCL violation has occurred.

(16) USEPA Secondary MCL; NYSDOH has not set an MCL for this parameter.

(17) A Langelier Index of less than zero indicates corrosive tendencies.

(18) Hardness of up to 3 grains per gallon is considered soft water; between 3 and 9 is moderately hard water.

(19) No MCL currently exists for these groups of chemicals

* The contaminant was detected in only one sample. The level found was below the MCL.

** In the Croton System this parameter's data is from 1998. Data was not analyzed in 1999 due to system shutdown.

Color - entry point values highlighted and bolded indicate a violation occurred, see footnote (1)

1998 CORRECTIONS

PARAMETERS	NYS DOH MCL	CATSKILL-DELAWARE SYSTEM			CROTON SYSTEM			GROUNDWATER SYSTEM			SOURCE OF PARAMETER
		# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
Methyl tert-butyl ether (MTBE) (µg/L)	50	164	ND - 5.0	<0.5	41	ND - 0.60	<0.5	102	ND - 62	3.50	Additive to gasoline in the winter

The values for MTBE were incorrectly reported in the New York City 1998 Drinking Water Supply and Quality Statement; these are the corrected numbers. Though an individual sample result exceeded 50 in the Groundwater System, no MCL violation occurred in 1998. Determination of MCL violation: If a sample exceeds the MCL, one to three more samples must be collected from the same sampling point within 30 days. If at least one of the confirming samples is positive and the average of the initial and all confirming samples exceeds the MCL, then a MCL violation has occurred.

Water Conservation

The average single family household in New York City uses approximately 100,000 gallons of water each year, at a cost of $1.30 per 100 cubic feet of water (748 gallons), or about $174.00 each year. Although New York City is fortunate to have a plentiful supply of reasonably priced drinking water, everyone should do their part to conserve this precious resource.

DEP's ongoing efforts to save water include: use of sonar equipment to survey all water supply piping for leaks; replacement of approximately 70 miles of old water supply pipe a year; equipping fire hydrants with special locking devices; and installing home water meters to encourage conservation. These programs and others have proven successful and together have reduced water consumption in the City by approximately 200 million gallons per day in the last ten years. This is more water than the City of Boston or Westchester County uses in a day.

Here are some ways that you can help save water:

- Repair all leaks promptly. Leaks waste water 24 hours a day, 7 days a week. Check all faucets for leaks.
- Install aerators on all sinks and use a high-pressure, low-flow showerhead. Replacing old fixtures with water-conserving models can produce substantial savings without reducing effectiveness and comfort.
- Order a Home or Apartment Water Saving Kit. If you are an apartment building owner/manager or a home owner, you can obtain a free leak survey, along with water saving showerheads and other products. Call our Leak Survey contractor at (718) 326-9426 for information.
- Water your garden in the evening instead of the heat of day to reduce evaporation.

Frequently Asked Questions

My drinking water often looks "milky" when first taken from a faucet, but then clears up. Why?

Air becomes trapped in the water as it makes its long trip from the upstate reservoirs to the City. As a result, the water can sometimes appear cloudy or milky. This condition is not a public health concern. The cloudiness is temporary and clears quickly after the water is drawn from the tap and the excess air is released.

What can I do about chlorine odors in tap water?

Chlorine odors may be more noticeable when the weather is warmer. Chlorine is essential to kill organisms that may cause disease. The following are ways you can remove the chlorine and its odor from your drinking water:

- Fill a pitcher and let it stand in the refrigerator overnight. (This is the best way.)
- Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
- Pour water from one container to another about 10 times.
- Heat the water to about 100 degrees Fahrenheit.

Once you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

Sometimes my water is a rusty brown color. What causes this?

Brown water is commonly associated with plumbing corrosion problems inside buildings and from rusting hot water heaters. If you have an ongoing problem with brown water, it is probably due to rusty pipes. It is recommended that you run your cold water for 2 - 3 minutes if it has not been used for an extended period of time. This will flush the line. You can avoid wasting water by catching your "flush" water in a container and using it to water plants or for other purposes. In addition, brown water can result from street construction or water main work being done in the area. Any disturbance to the main, including the opening of a fire hydrant, can cause pipe sediment to shift, resulting in brown water. The settling time of the main will vary, depending on the size of the water main.

Should I buy bottled water?

You do not need to buy bottled water for health reasons in New York City since our water meets all federal and State health-based drinking water standards. Also, bottled water costs up to 1,000 times more than the City's drinking water.

Is New York City's water "hard?"

Hardness is a measure of dissolved calcium and magnesium in the water. The less calcium and magnesium in the water ("soft" water), the easier it is to create lather and suds. New York City's water is predominantly "soft."

The DO'S & DON'TS of Water Conservation

In or out of a drought, every New Yorker can save hundreds of gallons of water every week by following these water-saving tips.

Bathroom

- ✔ Do take short showers and save 5 to 7 gallons a minute.
- ✔ Do fill the tub halfway and save 10 to 15 gallons.
- ✔ Do install water-saving toilets, showerheads and faucet aerators. Place a plastic bottle filled with water in your toilet tank if you can't switch to a low flow toilet.
- ✖ Don't run the water while shaving, washing your hands or brushing your teeth. Faucets use 2 to 3 gallons a minute.
- ✖ Don't use the toilet as a wastebasket, and don't flush it unnecessarily.

Kitchen & Laundry

- ✔ Do run the dishwasher and washing machine only when full. Save even more by using the short cycle.
- ✔ Do install faucet aerators.
- ✖ Don't let the water run while washing dishes. Kitchen faucets use 2 to 3 gallons a minute. Filling a basin only takes 10 gallons to wash and rinse.
- ✖ Don't run water to make it cold. Have it chilled in the refrigerator, ready to drink.

Everywhere

- ✔ Do repair leaky faucets and turn taps off tightly. A slow drip wastes 15 to 20 gallons each day.
- ✖ Don't open fire hydrants.

Outdoor

- ✔ Do use a self-closing nozzle on your hose.
- ✖ Don't water your sidewalk or driveway - sweep them clean.
- ✖ Don't overwater your lawn or plants. Water before 9 a.m. or after 7 p.m.

Cut along dottted line and post in your home or office.

Save Water

REPORT LEAKS & WATER WASTE.

Call (718) DEP-HELP

Visit our Web site at: www.ci.nyc.ny.us/dep

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP

Rudolph W. Giuliani, Mayor
Joel A. Miele Sr., P.E., Commissioner

Contact Us

For a copy of this report, to report unusual water characteristics, or to request a free kit to test for lead in your drinking water, call DEP's 24-hour Help Center at (718) DEP-HELP (337-4357).

For more information on *Giardia* and *Cryptosporidium*, please contact the Parasitic Disease Surveillance Unit of the New York City DEP and New York City Department of Health (NYCDOH) at: (212) 788-4728.

To contact NYCDOH about other water supply health related questions call (212) 442-9666 or call the New York State Department of Health Bureau of Public Water Supply Protection at (518) 402-7650.

To report any polluting activities occurring in the watershed, call 1-888-DEP-NYC1 (1-888-337-6921), 24-hours a day.

To view this 1999 Statement, announcements of public hearings, or other information, visit DEP's Web site at:

www.ci.nyc.ny.us/dep

Este reporte contiene información muy importante sobre el agua que usted toma. Haga que se la traduzcan o hable con alguien que la entienda.

Ce rapport contient des informations importantes sur votre eau potable. Traduisez-le ou parlez en avec quelqu'un qui le comprend bien.

Rapò sa a gen enfòmasyon ki enpòtan anpil sou dlo w'ap bwè a. Fè tradwi-l pou ou, oswa pale ak yon moun ki konprann sa ki ekri ladan-l.

Ten raport zawiera bardzo istotną informacje o twojej wodzie pitnej. Przetłumacz go albo porozmawiaj z kimś kto go rozumie.

В этом материале содержится важная информация относительно вашей питьевой воды. Переведите его или поговорите с кем-нибудь из тех, кто понимает его содержание.

這個報告中包含有關你的飲用水的重要信息。
請將此報告翻譯成你的語言，或者詢問懂得這份報告的人。

이 보고서는 귀하의 식수에 관한 매우 중요한 정보를 포함하고 있습니다. 이 정보에 대해 이해하는 사람에게 그 정보를 번역하거나 통역해 받으십시오.

New York City
Department of Environmental Protection
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Corona, New York 11368-5107