

2021

ANNUAL REPORT



Evanston Public Works Agency

Water Production Bureau

Water and Sewer Utilities

Committed to serving the community for 148 years

2021 Executive Summary

Evanston Water Production Bureau of the **Public Works Agency** manages **Water** and **Sewer** operations for the City of Evanston. The Public Works Agency also coordinates with ComEd, Nicor, AT&T, and other private utilities on behalf of Evanston residents and businesses to help resolve service issues and improvement needs.



WATER UTILITY

504,214 Residents supplied
61,146 Businesses supplied
in Evanston and **9 other**
communities



SEWER UTILITY

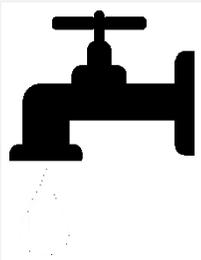
Responsible for operation and
maintenance of:
Combined, Relief, and Storm
sewer systems



BUDGET

\$44.4 million - Water Fund
\$12.6 million - Sewer Fund
60.5 full-time equivalents (FTE) staff

General Information



17,635 Million Gallons -
Total Water Pumped in 2021
67 Million Gallons -
Maximum Pumpage in One Day
June 11th - Day When the
Maximum Pumpage occurred



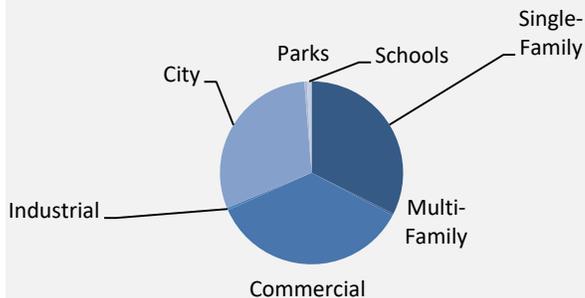
55 Fire Hydrants
Replaced/Repaired



1.6 Miles of Water Main Installed/Replaced/Rehabilitated
68 Water Main Valves Installed/Replaced/Rehabilitated
3.8 Miles of Sewer Main Installed/Replaced/Rehabilitated
14.8 Miles of Sewer Main Inspected
20.7 Miles of Sewer Main Cleaned
140 Sewer Structures Installed/Replaced/Repaired
2,749 Sewer Structures Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



15.5 Million kWh of Electric Power Used

124,522 Therms of Natural Gas Used

\$60.17 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)



CROSS CONNECTION CONTROL

4,782 Backflow Prevention Devices Certified in 2021

Programs and Initiatives

Water Quality – Lead and Copper Tested in Drinking Fountains

Continued the seasonal drinking fountain start-up plan which included sampling water, high flow flushing, and replacing drinking fountain components known to contain lead. Sampled water from 57 park drinking fountains.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

139 miles of water main were surveyed, three (3) water service leaks and one (1) water main break was found. This resulted in 5.74 million gallons/year of water savings.

First Responder



2,151 hours Distribution division spent on First Responder events

2,757 hours Sewer division spent on First Responder events

Capital Projects

Each year the City conducts millions of dollars of infrastructure projects as part of their **Capital Improvement Program or (CIP)**. Below are the Water and Sewer Capital Improvements completed in 2021.



- **Water Main Replacement:** Foster Street – Emerson Street to Hartrey Avenue, Harrison Street – Cowper Avenue to Ridgeway Avenue Ridgeway Avenue – Grant Street to Harrison Street, Lincolnwood – Payne Street to Simpson Street, Garrison Avenue – South End to City Limits, Dewey Avenue – Madison Street to Keeney Street, Dewey – Madison Street to Main Street
- **Combined Sewer:** CIPP Rehabilitation
- **Laboratory Modernization Construction Project:** Renovated the water quality laboratory.
- **Water Treatment Facility Improvements:** Replaced the 54” Intake Heater Cable (installed in 2009).

Accomplishments and Goals

2021 MAJOR ACCOMPLISHMENTS

Laboratory Modernization Construction Project

Completed the renovation of the water quality laboratory, used to analyze water for bacteriological contamination and other water quality parameters, at the water treatment plant to continue to meet requirements necessary to be certified by the Illinois Department of Public Health.

Water Treatment Facility Improvements

Replaced the 54” Intake Heater Cable (installed in 2009).

2022 MAJOR GOALS AND INITIATIVES

Greenleaf Street Large Diameter Sewer Lining
Complete the Greenleaf Street Large Diameter Sewer Rehabilitation Project.

Raw Water Intake Improvement Project

Begin construction on the replacement of the City’s 42”/36” Lake Michigan Raw Water Intake installed in 1909 to address diminished flow capacity.

30” Transmission Main Rehabilitation Project

Begin construction on the 30” Transmission Main Rehabilitation Project.

Lead Service Line Replacement Program

Begin development of a citywide lead service line replacement plans as a result of the enactment of Public Act 102-0613 as well as well as a corrosion control optimization study.

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Evanston Water and Sewer Utilities Annual Accomplishments and Performance Measures

Introduction

The Evanston Public Works Agency manages water and sewer operations for the City of Evanston. The Water Utility is responsible for operation and maintenance of the Water Treatment Plant, which supplies water to over 504,000 people and 61,000 businesses in Evanston and nine other communities. The Water Utility also operates and maintains more than 156 miles of water mains, 2,100 valves, and 1,500 fire hydrants in the Evanston distribution system. This division also manages leak detection and cross connection control programs to minimize water loss and ensure the safety of the community's water supply.

The Sewer Utility is responsible for operation and maintenance of the sewer conveyance systems in Evanston, including a combined sewer system, a relief combined sewer system, and a storm sewer system. These systems are comprised of over 217 miles of sewer mains ranging in size from less than 6-inch diameter to 120-inch diameter, including over 5,700 manhole structures and over 9,400 drainage structures.

The Public Works Agency also coordinates with ComEd, Nicor, AT&T, and other private utilities on behalf of Evanston residents and businesses to help resolve service issues and improvement needs.

The Department's total FY 2021 adopted budget was approximately \$57.0 million (\$44.4 million Water Fund and \$12.6 million Sewer Fund). Public Works Agency staff includes 60.5 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2019	2020	2021
Total Water Pumped (millions of gallons)	15,750	16,934	17,635
Fire Hydrants Repaired or Replaced	330	59	55
Water Main Valves Repaired or Replaced	43	47	40
Water Main Replaced or Rehabilitated (miles)	1.3	1.3	1.2
Large Diameter Sewer Rehabilitated (feet)	0	2,369	1,272
Small Diameter Sewer Rehabilitated (feet)	11,578	12,823	13,031
Sewer Mains Inspected (feet of pipe)	56,567	65,585	78,263
Sewer Mains Cleaned (feet of pipe)	152,025	60,752	109,457
Sewer Structures Repaired or Replaced	119	126	119

2021 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 504,000 customers in nine communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Distribution and Expansion

Improved water distribution system reliability and reduced water loss by continuing the water main replacement and water main leak detection programs. Water main replacement was supplemented with water main lining where feasible. The entire distribution system was also surveyed for leaks.

Coordination for Efficient Project Funding

Coordinated capital improvement projects with the Street Resurfacing Program and with TIF District improvement projects to ensure cost-effective and efficient use of capital improvement funding.

Laboratory Modernization Construction Project

Completed the renovation of the water quality laboratory, used to analyze water for bacteriological contamination and other water quality parameters, at the water treatment plant to continue to meet requirements necessary to be certified by the Illinois Department of Public Health.

Intake Heater Replacement Project

Assured the reliability of the potable water supply by replacing the 54" Intake Heater Cable (installed in 2009). The 54" intake was originally installed in 1975.

Continue Small Diameter Sewer Rehabilitation

Continued the annual small diameter sewer CIPP rehabilitation program at a rate of at least 1% (1.34 miles) of the combined, small diameter sewer system rehabilitated per year.

Coordination with Street Resurfacing Program

Continued to coordinate the inspection and repair of sewer mains and drainage structures in advance of the street resurfacing program.

Preventative Measures for Sewer Mains

Continued preventative maintenance cleaning and inspection of sewer mains and drainage structures.

Combined and Storm Sewer Regulatory Inspections

Continued to perform inspection of combined and storm sewer outfalls in accordance with IEPA requirements.

2022 Major Goals and Initiatives

Maintain a High Quality of Service

Be a leader in the public drinking water industry by providing high quality service to over 504,000 customers in ten communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Distribution and Expansion

Improve water distribution system reliability and reduce water loss by continuing the water main replacement and water main leak detection programs. Goals are to supplement water main replacement with water main lining where feasible, to improve upon our historical 1% annual water main renewal rate, and to survey the entire distribution system for leaks on an annual cycle.

Coordination for Efficient Project Funding

Coordinate capital improvement projects with the Street Resurfacing Program and with TIF District improvement projects to ensure cost-effective and efficient use of capital improvement funding.

Raw Water Intake Improvement Project

Begin construction on the replacement of the City's 42"/36" Lake Michigan Raw Water Intake installed in 1909 to address diminished flow capacity.

Lead Service Line Replacement Program

Begin development of a citywide lead service line replacement plans as a result of the enactment of Public Act 102-0613 as well as well as a corrosion control optimization study.

Greenleaf Street Large Diameter Sewer Lining

Complete the Greenleaf Street Large Diameter Sewer Rehabilitation Project. Engineering design, bid and contract award has been finalized. State low-interest loan funding for the rehabilitation project has been secured.

Continue Small Diameter Sewer Rehabilitation

Continue the annual small diameter sewer CIPP rehabilitation program at a rate of at least 1% (1.34 miles) of the combined, small diameter sewer system rehabilitated per year.

Continue Coordination with Street Resurfacing Program

Continue to coordinate the inspection and repair of sewer mains and drainage structures in advance of the street resurfacing program.

Continue Preventative Measures for Sewer Mains

Continue preventative maintenance cleaning and inspection of sewer mains and drainage structures.

Combined and Storm Sewer Inspections

Continue to perform inspection of combined and storm sewer outfalls in accordance with IEPA requirements.

Development of Stormwater Master Plan

Continue a hydraulic analysis of the Evanston sewer system to determine where improvements could be made to address the potential to flooding due to stormwater runoff. This will assist in meeting the objectives established in the CARP.

30" Transmission Main Rehabilitation Project

Improve the water distribution system reliability by beginning construction on the 30" Transmission Main Rehabilitation Project.

SCADA Update Project

Complete the Supervisory Control and Data Acquisition (SCADA) System Upgrade Project.

Electrical Improvements Projects

Begin the engineering phase of the Medium Voltage Switchgear Reliability and Generator Replacement Project.

Water Treatment Plant Data

Intakes

36/42" – 5,946' long, 28' deep
 48" – 5,300' long, 28' deep
 54" – 5,340' long, 28' deep

Suction Wells

2 – 22' diameter x 74' deep with
 traveling screens
 1 – 20' diameter x 52.5' deep

Low Lift Pumps

2 – 30 mgd, electric motor driven
 3 – 15 mgd, dual drive, electric/natural gas
 1 – 30 mgd, dual drive, electric/natural gas
 Total capacity of 135 mgd
 Emergency standby capacity of 75 mgd

Flash Mix Basin

14.75' x 14.75' x 31.58' deep
 Single vertical shaft mixer
 Counter-flow rotation
 Application point for alum, chlorine,
 fluoride, polymer, and carbon
 Rated capacity 108 mgd w/ partial bypass

Slow Mix/Settling Basins

Four double-deck basins with series flow
 2 – 2.865 MG capacity, five 60' shafts
 per basin, 4 paddle wheel sections
 2 – 4.3 MG capacity, eight 60' shafts per
 basin, 4 paddle wheel sections
 Retention time at 108 mgd (flash mix
 capacity) is 3 hours and 11 minutes

Treated Water Elevated Storage

South – 5.0 MG, 640 Hartrey Avenue
 North – 7.5 MG, 2536 Gross Point Road

Filters

Anthracite-capped rapid sand filters
 12 – 3.19 mgd, 738 ft² each, surface
 loading rate of 3 gpm/ft^s
 12 – 10.0 mgd, 1,391 ft² each, surface
 loading rate of 5 gpm/ft²
 Total rated capacity of 134 mgd
 Automatic surface and backwash system
 on all 24 filters

Treated Water Ground Storage

8 clearwells beneath filters – 4.4 MG total
 1 clearwell beneath NU green space – 5.0 MG
 Total Plant Storage – 9.4 MG

High Lift Pumps

1 – 10 mgd, submersible, electric motor
 driven
 1 – 15 mgd, electric motor driven
 2 – 25 mgd, electric motor driven
 1 – 10 mgd, dual drive, electric/natural gas
 2 – 15 mgd, dual drive, electric/natural gas
 1 – 22 mgd, dual drive, electric/natural gas
 1 – 20 mgd, natural gas engine
 Total capacity of 157 mgd
 Emergency standby capacity of 82 mgd

Wash Water Pumps

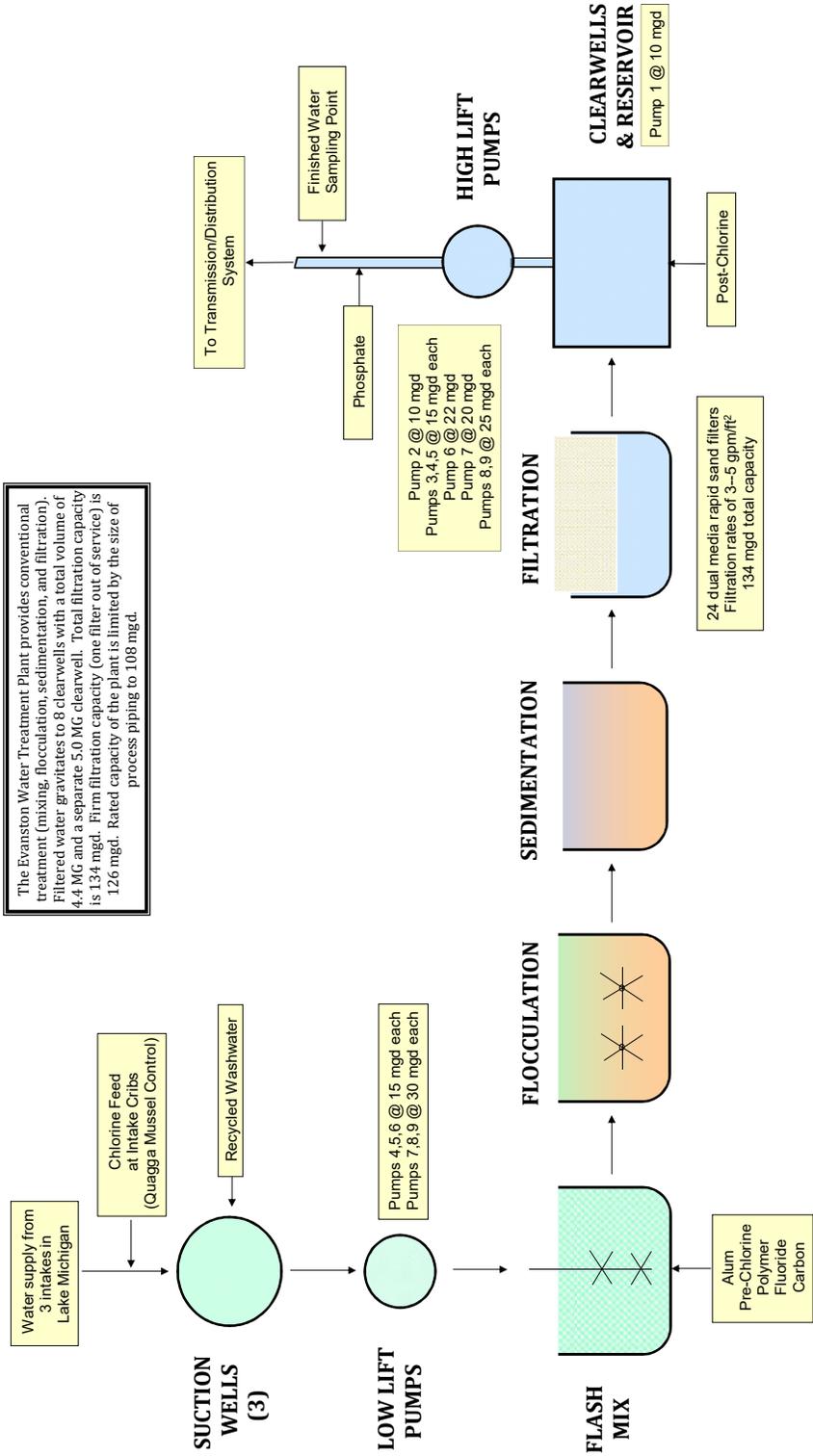
2 – 20 mgd
 2 – 10 mgd

Detention Tank

80' x 192' x 12' deep, divided in 2 sections
 Total capacity of 1.1 MG
 1 – submersible sludge pump at 700 gpm

Legend: MG = million gallons; mgd = million gallons per day; gpm = gallons per minute

Water Treatment Schematic



Water Works Improvements (1874 to 2021)

1874

- Evanston Community Water System established.

1913

- Constructed 12 mgd filter plant.

1923

- Expanded filter plant to 24 mgd.

1934

- Constructed 5.0 million gallon underground reservoir at plant site.

1941

- Contracted to supply water to Skokie.

1949

- Constructed high lift (finished water) pumping station.
- Expanded filter plant to 48 mgd.
- Constructed slow mix basins 1 and 2.

1956

- Constructed 48" intake and low lift (raw water) pump station.
- Constructed 36" feeder main to Skokie.

1964

- Expanded filter plant to 72 mgd.
- Constructed additional 36" feeder main to Skokie.
- Constructed slow mix basins 3 and 4.

1971

- Installed 20 mgd high lift pump and natural gas engine.

1974

- Constructed filter wash water detention basin, 1.1 MG capacity.

1976

- Constructed 54" intake, 5,340 feet in length.
- Extended 48" intake to 5,300 feet in length.

1981

- Constructed material storage building at south water tank yard.
- Installed 3 new boilers (2 – 50 HP and 1 – 20 HP).
- Replaced 5 kV switchgear and motor starter equipment for low lift pumps.
- Upgraded slow mix equipment in basins 1 and 2.

1982

- Installed two 30 mgd low lift pumps.

- Replaced 5 kV motor starter center for high lift pumps.

1983

- Constructed new chemical building and chemical feed system.
- Installed a 500 kW emergency generator.
- Rehabilitated six 1914 and six 1924 filters to increase rate to 3 MGD per filter.

1984

- Constructed 5 MG standpipe with booster station to replace the 1.5 MG elevated tank in southwest Evanston.

1985

- Began selling water to Northwest Water Commission at the rate of 10 MGD.
- Installed dual drive 22 MGD high lift pump and new piping.
- Installed two 48" diameter pipes from reservoir to east side of high lift suction tunnel.
- Completed system automation which provided a microprocessor-based digital control system to perform control and supervisory functions.

1986

- Constructed a 7.5 MG standpipe with booster station to replace the 1.0 MG elevated tank in northwest Evanston.
- Began pumping to Northwest Water Commission reservoir in Des Plaines.

1988

- Installed two 700 gpm sludge pumps with automatic samplers in the settling basins along with 3,400 feet of 8" diameter sludge main from the Filtration Plant to the MWRD interceptor at Lincoln Street and Asbury Ave.

1989

- Completed filter control upgrade to microprocessors.

1990

- Turndown and extension of 48" raw water intake lines into North and South suction wells.
- Upgraded west filter influent valves from 16" to 24".

1991

- Upgraded electrical substation and switchgear to 3,750 kVA.
- Upgraded west filter effluent piping.

1992

- Installed chlorine feed system to intakes for zebra/quagga mussel control.
- Installed a 15 MGD high lift pump to replace one 8 MGD pump and one 6 MGD pump.
- Installed two 48" diameter butterfly valves on suction piping from reservoir to high lift suction wells.
- Installed hydrofluosilicic acid tank and feed system in garage #6.
- Installed 60" diameter flash mix bypass pipe to influent duct of settling basins.
- Replaced slow mix equipment and flushing system in basins 3 and 4.
- Replaced 480 V filter plant switchgear.

- Installed blended phosphate system and initiated blended phosphate treatment for corrosion control.

1995

- Replaced Low Lift Pump #6 gasoline engine with natural gas engine.

1996

- Replaced 1949 filter building roof.
- Constructed loading dock on 1913 filter building.

1997

- Replaced High Lift Pump #2 gasoline with a natural gas engine.

1998

- Replaced Low Lift Pump #5 and #7 dual drive gasoline engines with natural gas fueled engines.

2000

- Installed individual effluent turbidimeters on all 24 filters.

2001

- Converted High Lift Pump #3 to dual drive.
- Replaced filter bottoms and rehabbed six filters in 1948 filter addition.

2002

- Completed installation of automatic fixed radio meter reading system.
- Replaced effluent settling basin sluice gates with rectangular butterfly valves.

2003

- Installed uninterruptible power supply to filtration and pumping equipment.

2004

- Constructed garages east of the settling basins.
- Constructed an access way to the chemical building from filtration division.
- Installed a chlorine scrubber.

2005

- Replaced Low Lift Pump #4 gasoline engine with natural gas engine.

2006

- Replaced Low Lift Pump #7.

2008

- Renovated administrative offices.
- Expanded filter shop area.

2009

- Implemented AQUAS (Harris) Utility Billing System.
- Installed anchor ice and zebra mussel control systems in 54" intake.

2010

- Installed a 25 kW solar energy facility on the high lift pump station roof.

2012

- Rehabilitated Filters 19-24 with new media, underdrains, and backwash equipment.
- Rehabilitated the 1963 filter building structure and roof.
- Replaced all windows in the high lift pump station.
- Replaced electrical switchgear in high lift pump station.

2013

- Modified electrical distribution equipment and settings on protective devices throughout the water treatment plant to reduce arc flash hazards.
- Conducted comprehensive maintenance and evaluation of electrical Switchgears.

2014

- Replaced five roofs: Boiler Room, Low Lift Pumping Station, Chemical Building, and 1948 Filter Building (2 roofs).
- Replaced master flow meter on the 48" diameter feeder main to Evanston and Skokie.

2015

- Improvements to one of the water plant intakes.
- Upgrade/replacement of the City's automatic meter reading and billing system
- Chlorination equipment replacement.

2016

- Completed standpipe painting and replaced four roofs (1964 Filter Building Clerestory, 1948 Filter Building Clerestory, Filter Cross Corridor & Chlorine Building).

2017

- Water treatment plant reliability improvements completed to address reliability and redundancy issues at the water treatment plant. Improvements included rehabilitating shorewells, installing a high lift influent valve vault, installing additional electrical panels for the intake heaters, upgrading filter valves, installing a new phosphate feed system, installing settling basin influent conduit connections, and upgrading the yard piping that feeds the washwater detention basin clean out lines and shorewell screens.

2018

- Completed exterior door improvements.
- Replaced alum feed pumps.
- Installation of new flushing water system in Settling Basin 1.

2019

- Completed South Standpipe pump station new electrical room and maintenance building improvements.
- Replacement of various doors at the water plant.
- Installed Plant Service Water Supply Booster Pump.
- Installed West Filter Rate Controller with Master Meter.

- Improved flushing water supply to Settling Basin 1.
- Completed Milburn gate automation.

2020

- Replaced the City's five (5) MG finished water clearwell, which is located on Northwestern University's campus, to address structural deterioration.

2021

- Completed the modernization of the Water Quality Laboratory.
- Completed the modernization of the filter plant freight elevator.
- Replaced the 54" Intake Heater Cable (installed in 2009).

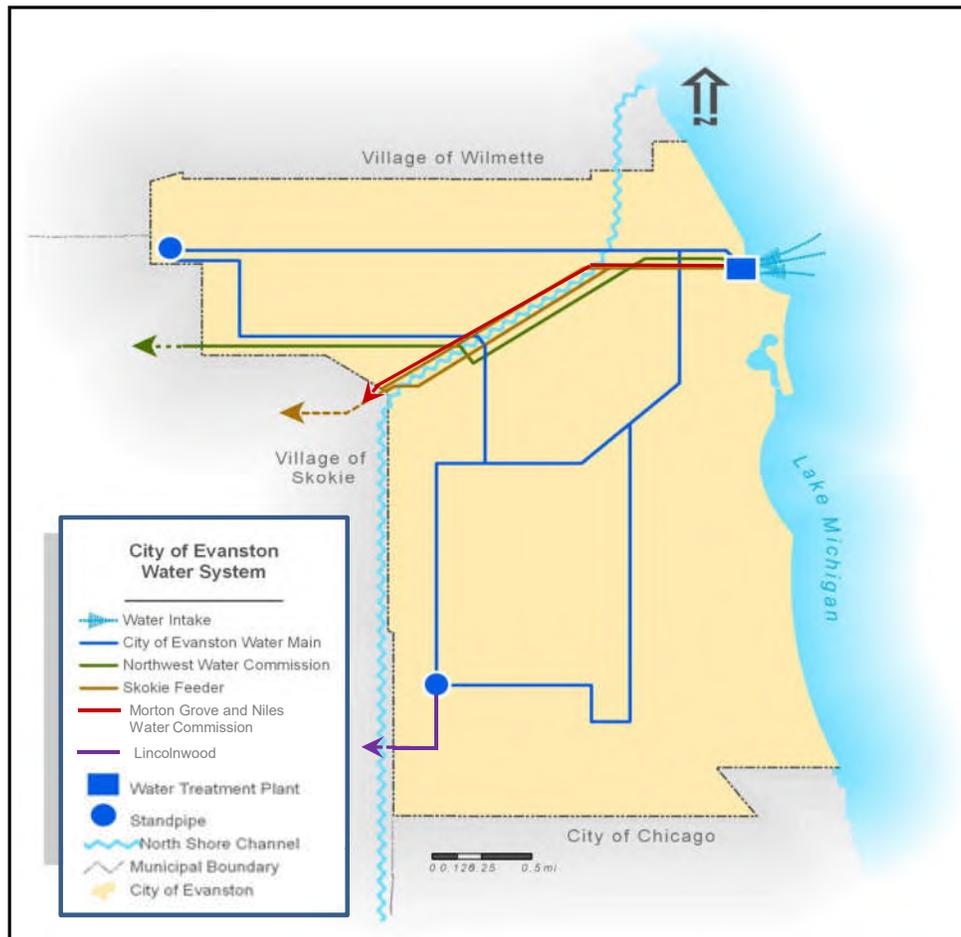
Notes: MG = million gallons mgd = million gallons per day
HP = horsepower kV = kilovolt
kW = kilowatt kVA = kilovolt-ampere

Service Area & Customers

	Area (Square Miles)	2021 Persons*	2021 Businesses**
Evanston	7.8	78,110	8,459
Skokie	10.1	67,824	10,120
Linclonwood	2.7	13,463	2,208
MORTON GROVE - NILES WATER COMMISSION			
Morton Grove	5.1	25,297	3,237
Niles	5.9	30,912	3,957
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	77,676	8,255
Buffalo Grove	9.5	43,212	5,266
Palatine	13.6	67,908	6,867
Wheeling	8.7	39,137	4,611
Des Plaines	14.3	60,675	8,166
Total Served	94.3	504,214	61,146

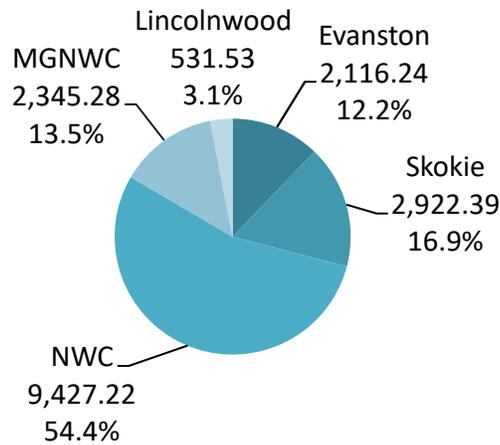
* U.S. Census Bureau, 2020

** U.S. Census Bureau, 2012 Estimate



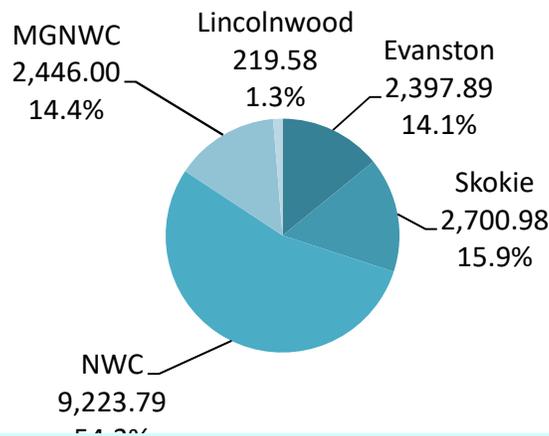
Pumpage to Distribution

2021 Pumpage to Distribution (MG)



2021 Total Pumpage: 17,342.66 million gallons

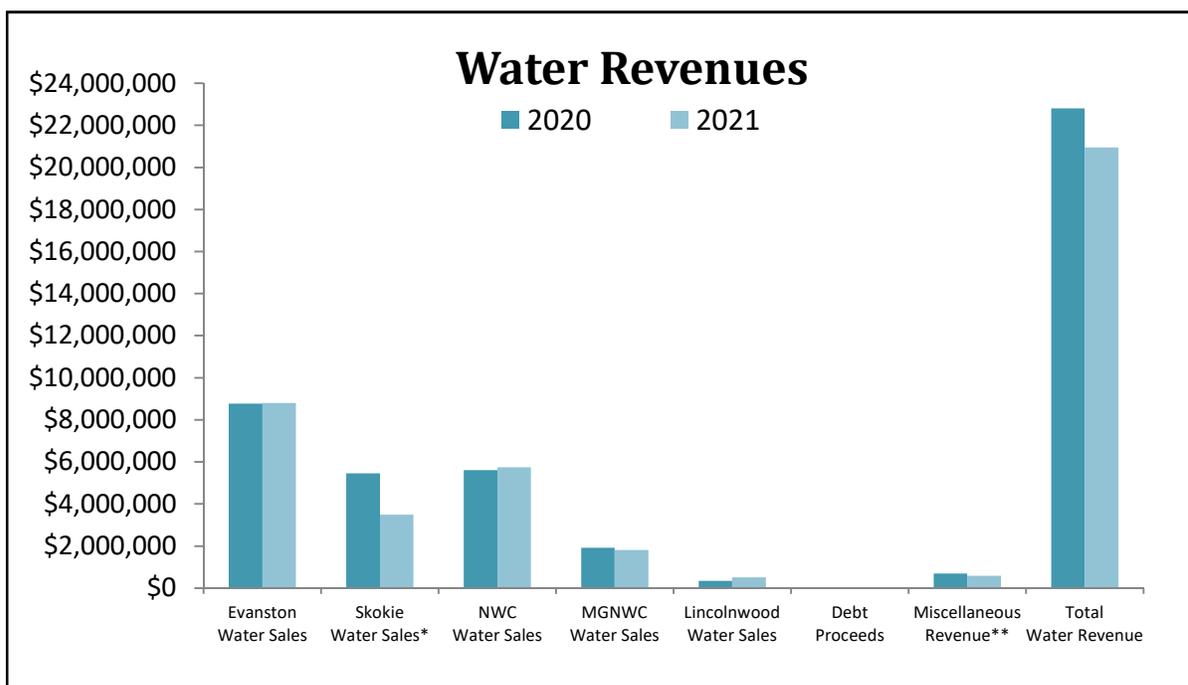
2020 Pumpage to Distribution (MG)



2020 Total Pumpage: 16,988.24 million gallons

Water Revenues

	2020	2021
Evanston Water Sales	\$8,771,788	\$8,794,137
Skokie Water Sales*	\$5,455,762	\$3,491,947
NWC Water Sales	\$5,613,924	\$5,738,488
MGNWC Water Sales	\$1,918,954	\$1,813,040
Lincolnwood Water Sales	\$352,370	\$509,932
Debt Proceeds	\$0	\$0
Miscellaneous Revenue**	\$691,788	\$593,189
Total Water Revenue	\$22,804,586	\$20,940,733

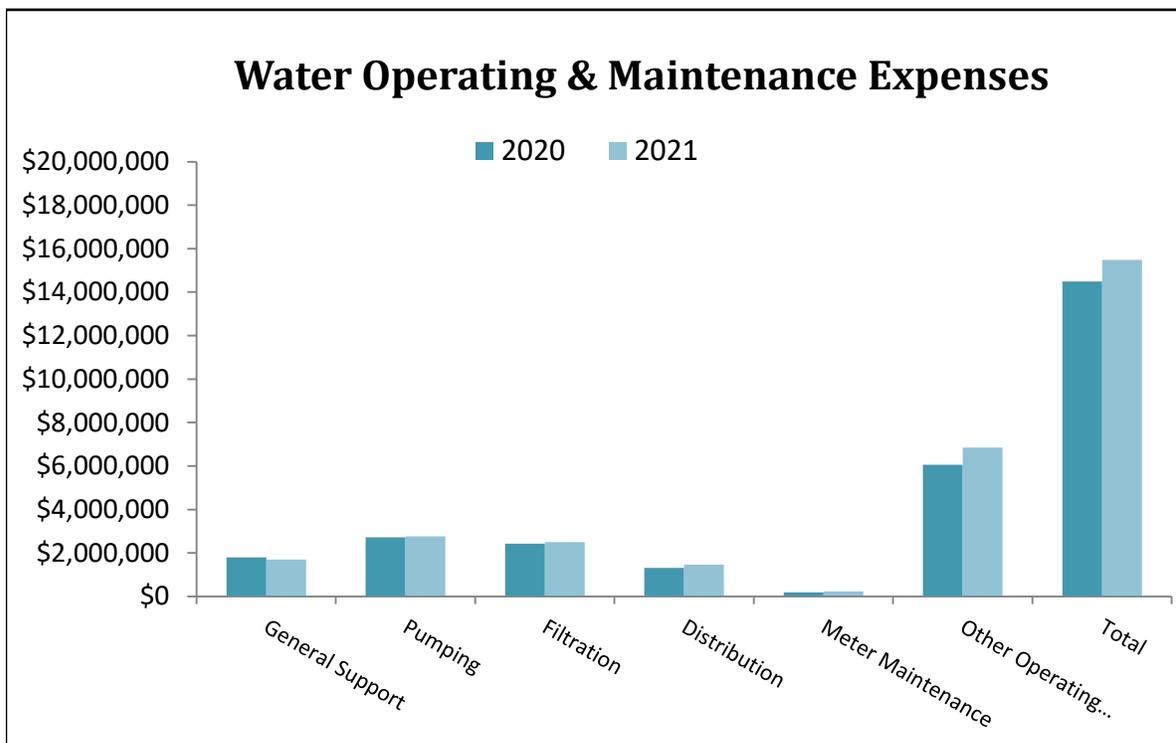


* Due to contract disputes this value represents the amount billed to Skokie. The amount paid in 2020 was \$2,489,520

** Miscellaneous Revenue includes cross connection control fees, investment earnings, property sales and rentals, fees, outside work, grants, development fees, phosphate sales, and merchandise sales.

Water Operating & Maintenance Expenses*

	2020	2021
General Support	\$1,792,393	\$1,700,684
Pumping	\$2,716,482	\$2,759,497
Filtration	\$2,431,060	\$2,492,821
Distribution	\$1,306,956	\$1,465,348
Meter Maintenance	\$179,891	\$224,093
Other Operating Expenses**	\$6,061,104	\$6,849,194
Total	\$14,487,886	\$15,491,638



* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <http://www.cityofevanston.org/transparency/budget-financial-reports/>. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

**Other Operating Expenses include capital outlay, interfund transfers (general and insurance), and other operating expenses.

First Responder

A first responder is defined as a person with specialized training who is among the first to arrive and provide assistance at the scene of an emergency such as an accident, natural disaster, or act of terrorism. First responders are responsible for the protection and preservation of life, property, evidence and the environment.



The “Public Works First Responder” symbol is used to identify public works personnel and acknowledge their federally-mandated role as first responders.

President George W. Bush issued Homeland Security Presidential Directive 5 (HSPD-5), Management of Domestic Incidents, in 2003, in which a public works response to emergencies and disasters were officially recognized as an absolute necessity, and the federal government was directed to include public works in all planning and response efforts.



The City of Evanston Distribution and Sewer divisions have annual emergency preparedness training which includes confined space training and certification. These divisions also respond to varied emergency events in the community such as snow and ice control, water main breaks, sewer main collapses, hydrant repairs, and sinkholes. They respond to utility outages and emergencies that occur at any time and in any weather to maintain water and sewer service for residents of Evanston.

Fixing water main breaks is one way the Distribution Division ensures the safety of residents and protects both private and City property.

Distribution - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Water Main Breaks	1,360	\$52,835	\$43,600	\$4,852	\$101,286
Snow & Ice Control	477	\$20,315	\$3,366	\$0	\$23,681
Hydrant - Inspect	10	\$528	\$124	\$0	\$652
Hydrant - Repair	2	\$74	\$17	\$0	\$91
Hydrant - Thaw	15	\$541	\$172	\$0	\$714
Meter/MIU - Replace	3	\$180	\$37	\$210	\$426
Service - Inspect	16	\$914	\$238	\$0	\$1,153
Service - Repair Leak	166	\$7,241	\$5,665	\$282	\$13,188
Service - Replace	12	\$441	\$384	\$0	\$824
Water Main - Check For Leaks	36	\$1,824	\$478	\$0	\$2,301
Dist - Assist W&S Contractor	33	\$1,809	\$436	\$0	\$2,245
Dist - Equipment Maintenance	4	\$221	\$45	\$0	\$266
Dist - JULIE Locates	20	\$1,004	\$342	\$0	\$1,346
Total	2,151	\$87,926	\$54,903	\$5,344	\$148,173

Sewer - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Basement Backups	267	\$10,256	\$6,652	\$0	\$16,908
Basement Flooding	49	\$1,774	\$1,421	\$0	\$3,195
Snow & Ice Control	1,998	\$88,806	\$26,739	\$0	\$115,545
Sinkholes	405	\$14,060	\$14,541	\$79	\$28,680
Sewer Main - Inspect	2	\$103	\$17	\$0	\$120
Sewer Structure - Repair	2	\$90	\$31	\$0	\$122
Sewer Structure - Inspect	19	\$1,025	\$315	\$0	\$1,339
Sewer - Assist W&S Contractor	9	\$449	\$195	\$0	\$684
Sewer - Assist W&S Divisions	3	\$129	\$138	\$0	\$268
Sewer - JULIE Locates	6	\$328	\$138	\$0	\$466
Total	2,757	\$117,020	\$50,188	\$79	\$167,326

Pumping

Evanston's Pumping Division manages the City's three Lake Michigan water supply intakes, pumping of raw water to the start of the water treatment process; pumping of treated water to retail customers in Evanston as well as wholesale customers; and operation and maintenance of Evanston's treated water storage facilities and remote water pumping stations. This division also monitors water storage tanks in the Village of Skokie, as well as controlling the rate of water supply to the Northwest Water Commission and Morton Grove and Niles Water Commission.



High Lift Pumping Station at the Evanston Water Treatment Plant

There is at least one pump operating at the Evanston Water Treatment Plant at all times, to ensure that a sufficient quantity of water is always available for public consumption and firefighting. There is always at least one water operator present at the Pumping Station to control water supply and pressure and respond to emergencies.

Evanston has been pumping drinking water from the site of the existing water treatment plant on Lincoln Street since 1874. The original "water works" consisted of a coal-fired steam engine and a single pump with a capacity of 2 million gallons per day. Construction of a pumping station to serve the entire City drastically improved Evanston's ability to fight fires and allowed the City to reliably deliver Lake Michigan water to homes and businesses on demand for the first time.



Evanston's original pumping station in 1874

2021 Monthly Pumpage (MG)

Month	Lake Water Pumpage	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Pumpage To				
					Evanston	Skokie	N.W.C.	M.G.N.W.C	Lincolnwood
Jan-21	1,331.599	19.774	1,351.373	1,346.623	177.445	213.707	712.456	185.454	35.694
Feb-21	1,294.423	17.780	1,312.203	1,311.331	170.948	208.191	690.432	183.559	37.071
Mar-21	1,347.917	19.188	1,367.105	1,362.306	178.666	221.984	707.103	190.839	39.054
Apr-21	1,349.946	18.796	1,368.742	1,362.003	178.694	214.829	712.024	194.915	38.672
May-21	1,547.731	21.052	1,568.783	1,558.861	205.038	249.666	833.049	198.715	46.490
Jun-21	1,678.964	27.102	1,706.066	1,721.049	180.575	289.066	948.629	218.868	55.155
Jul-21	1,634.582	24.224	1,658.806	1,691.905	191.092	286.915	923.268	206.239	55.813
Aug-21	1,665.648	29.160	1,694.808	1,718.695	196.379	290.284	931.678	215.361	56.496
Sep-21	1,566.141	24.403	1,590.544	1,594.637	191.235	272.673	854.726	197.536	51.638
Oct-21	1,411.391	22.133	1,433.524	1,383.139	164.919	241.643	727.413	183.732	42.095
Nov-21	1,301.825	19.811	1,321.636	1,278.751	144.921	206.598	682.721	189.012	36.925
Dec-21	1,317.647	19.785	1,337.432	1,305.499	136.327	226.830	703.720	181.047	36.431
Total	17,447.814	263.208	17,711.022	17,634.799	2,116.239	2,922.386	9,427.219	2,345.277	531.534

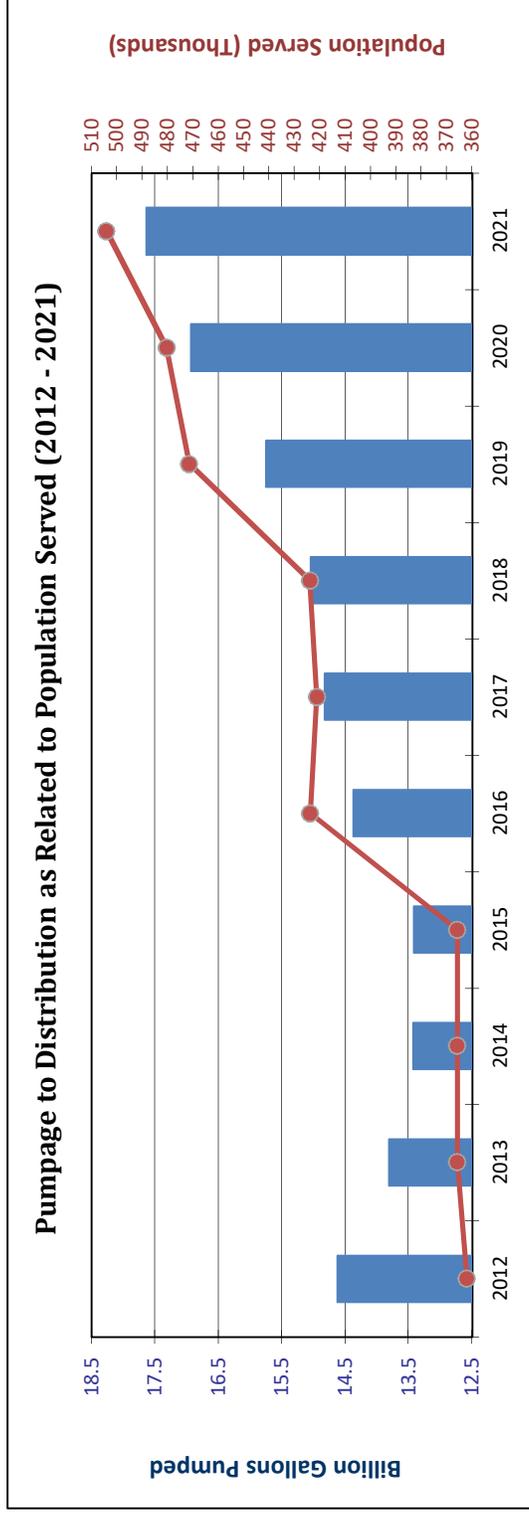
2021 Average Day Pumpage (MGD)

Month	Lake Water Pumpage*	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Pumpage To				
					Evanston	Skokie	N.W.C.	M.G.N.W.C	Lincolnwood
Jan-21	42.955	0.638	43.593	43.439	5.724	6.894	22.982	5.982	1.151
Feb-21	44.635	0.613	45.248	45.218	5.895	7.179	23.808	6.330	1.278
Mar-21	43.481	0.619	44.100	43.945	5.763	7.161	22.810	6.156	1.260
Apr-21	44.998	0.627	45.625	45.400	5.956	7.161	23.734	6.497	1.289
May-21	49.927	0.679	50.606	50.286	6.614	8.054	26.873	6.410	1.500
Jun-21	55.965	0.903	56.869	57.368	6.019	9.636	31.621	7.296	1.839
Jul-21	52.728	0.781	53.510	54.578	6.164	9.255	29.783	6.653	1.800
Aug-21	53.731	0.941	54.671	55.442	6.335	9.364	30.054	6.947	1.822
Sep-21	52.205	0.813	53.018	53.155	6.375	9.089	28.491	6.585	1.721
Oct-21	45.529	0.714	46.243	44.617	5.320	7.795	23.465	5.927	1.358
Nov-21	43.394	0.660	44.055	42.625	4.831	6.887	22.757	6.300	1.231
Dec-21	42.505	0.638	43.143	42.113	4.398	7.317	22.701	5.840	1.175
Average	47.802	0.721	48.523	48.315	5.798	8.007	25.828	6.425	1.456

Note: "Pumpage to Evanston" includes process and domestic water uses at the water treatment plant.

Annual Pumpage (MG)

Year	Lake Water Pumpage	Wash Water Recycled	Total Raw Water Pumpage	Finished Water Pumpage	Pumpage To				
					Evanston	Skokie	N.W.C.	M.G.N.W.C	Lincolnwood
2021	17,447.814	263.208	17,711.022	17,634.799	2,116.239	2,922.386	9,427.219	2,345.277	531.534
2020	17,531.059	335.632	17,866.691	16,933.859	2,397.887	2,700.980	9,223.791	2,446.004	219.580
2019	15,471.453	405.958	15,877.411	15,750.251	2,875.905	2,719.820	8,883.870	1,229.601	0.000
2018	14,793.326	337.586	15,130.912	15,049.406	2,958.411	2,996.604	9,032.250	38.749	0.000
2017	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366	0.000	0.000
2016	14,201.170	231.020	14,432.190	14,375.415	3,059.358	2,795.396	8,664.097	0.000	0.000
2015	13,471.823	200.285	13,672.108	13,423.806	2,790.010	2,786.896	7,846.900	0.000	0.000
2014	13,416.872	239.547	13,656.419	13,427.979	2,719.978	2,766.348	7,941.653	0.000	0.000
2013	13,925.102	247.609	14,172.711	13,814.461	2,908.602	2,787.256	8,096.927	0.000	0.000
2012	14,817.637	322.302	15,110.465	14,627.115	2,858.883	3,068.004	8,619.694	0.000	0.000



Average Daily Per Capita Consumption

Year	Evanston			Skokie			NWC			MGNWC			Lincolnwood			Total		
	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)*	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Per Capita Use (gpcd)
2021	78,110	74	118	67,824	118	89	288,608	89	114	13,463	108	94	504,214	94	94	504,214	94	94
2020	73,473	89	118	62,700	118	90	280,281	90	130	12,245	NA	97	480,433	97	97	480,433	97	97
2019	74,106	106	118	63,280	118	86	281,992	86	NA	-	NA	91	471,505	91	91	471,505	91	91
2018	75,557	107	127	64,773	127	87	283,630	87	NA	-	NA	86	477,174	86	86	477,174	86	86
2017	74,895	106	120	64,270	120	88	282,093	88	0	-	0	96	421,258	96	96	421,258	96	96
2016	75,527	111	118	64,821	118	84	283,493	84	0	-	0	94	423,841	94	94	423,841	94	94
2015	75,570	101	117	65,176	117	95	225,137	95	0	-	0	101	365,883	101	101	365,883	101	101
2014	75,570	99	116	65,176	116	97	225,137	97	0	-	0	101	365,883	101	101	365,883	101	101
2013	75,570	106	117	65,176	117	99	225,137	99	0	-	0	103	365,883	103	103	365,883	103	103
2012	74,486	105	130	64,784	130	106	222,802	106	0	-	0	110	362,072	110	110	362,072	110	110

*In 2016 NWC began providing water to Des Plaines. Only a portion of the total population of Des Plaines consumes water provided by the City of Evanston.

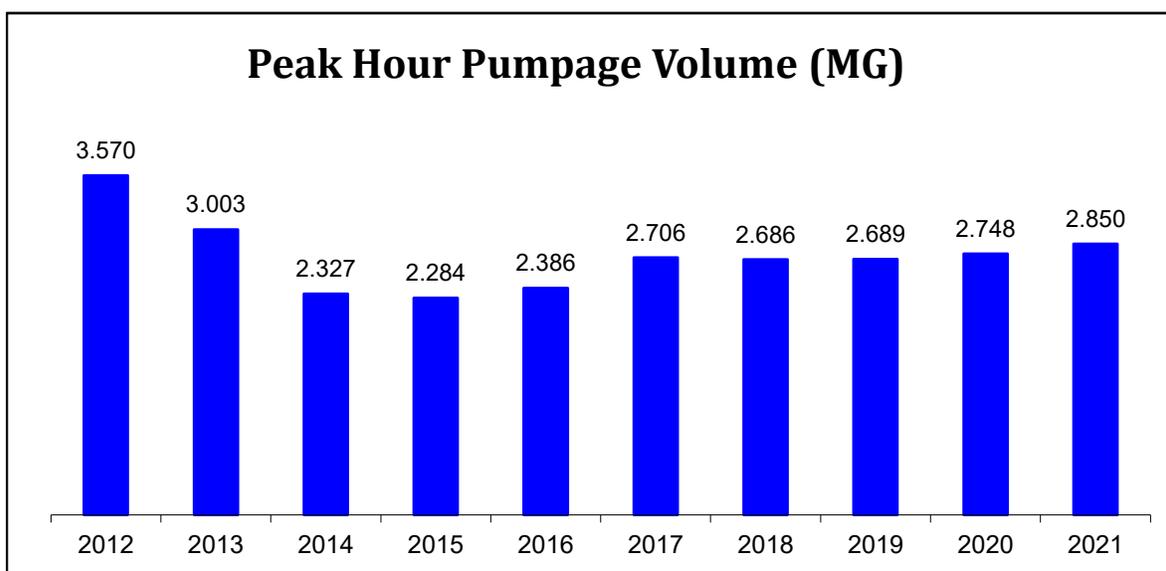
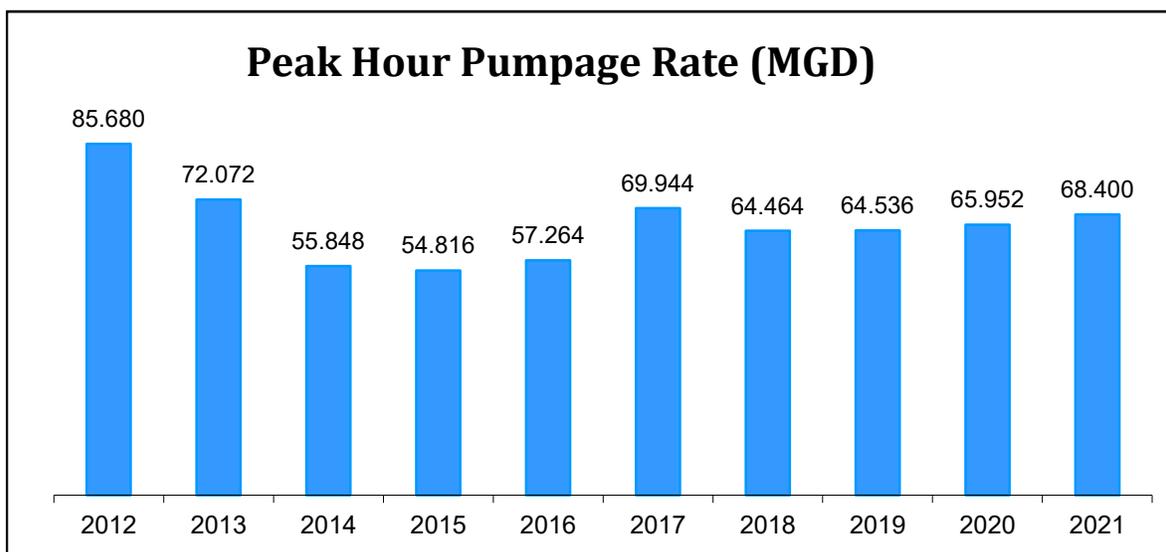
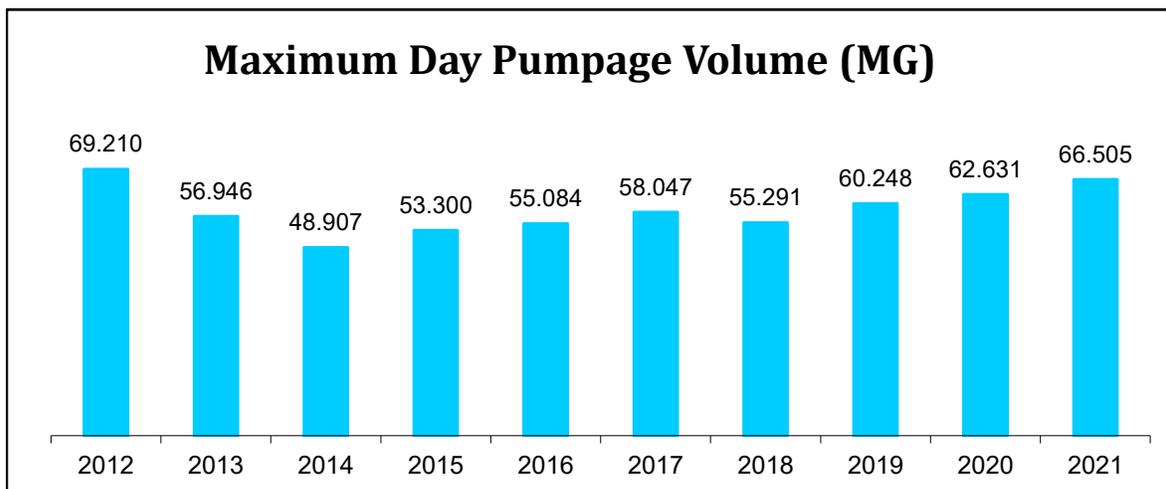
*In 2020, the City of Evanston began providing water to Lincolnwood starting in July.

Maximum Pumpage to Distribution

Year	Max Day Pumpage Volume (MG)	Peak Hour Pumpage Rate (MGD)	Peak Hour Pumpage Volume (MG)
2021	66.505	68.400	2.850
2020	62.631	65.952	2.748
2019	60.248	64.536	2.689
2018	55.291	64.464	2.686
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003
2012	69.210	85.680	3.570

Historical Maximum Day Pumpage: 95.154 MG on July 7, 1989

Maximum Day and Peak Hour Pumpage



Maximum Pumpage Days (MGD)

Year	Maximum Day Pumpage To					
	Distribution	Evanston	Skokie	NWC	MGNWC	Lincolnwood
2021	June 11th	May 25th	June 11th	June 9th	June 11th	June 11th
	65.178	7.971	12.258	36.751	8.883	2.373
2020	August 21st	August 18th	August 21st	August 23rd	March 26th	August 21st
	62.631	9.814	10.047	33.727	10.587	2.338
2019	July 15th	July 14th	July 15th	July 15th	Dec. 2nd	-
	60.248	11.368	10.930	33.829	7.707	-
2018	June 13th	June 13th	June 13th	June 30th	-	-
	55.372	13.575	9.609	33.989	-	-
2017	June 13th	June 13th	June 12th	June 14th	-	-
	58.047	11.931	10.927	39.371	-	-
2016	July 20th	July 20th	August 10th	July 22nd	-	-
	55.084	12.561	10.370	32.593	-	-
2015	August 14th	August 6th	August 14th	August 2nd	-	-
	53.300	11.852	10.950	30.414	-	-
2014	August 4th	August 15th	August 4th	August 4th	-	-
	48.907	9.875	10.870	30.871	-	-
2013	August 28th	August 28th	August 28th	August 27th	-	-
	56.946	12.585	11.209	33.374	-	-
2012	July 17th	July 17th	July 17th	July 6th	-	-
	69.210	18.580	13.579	43.775	-	-

Historical Maximum Day Pumpage to Distribution: 95.154 MG on July 7, 1989

Energy Costs

Electric Power - Kilowatt Hours (kWh) Used

Year	Total kWh	Total Cost	Average Unit Cost per kWh	kWh Per Million Gallons Pumped
2021	15,531,318	\$1,011,347	\$0.065	881
2020	12,640,104	\$995,122	\$0.079	746
2019	11,963,458	\$947,943	\$0.079	760
2018	11,533,446	\$927,363	\$0.080	766
2017	11,361,088	\$902,245	\$0.079	767

Natural Gas Used for Pumping and Emergency Engines

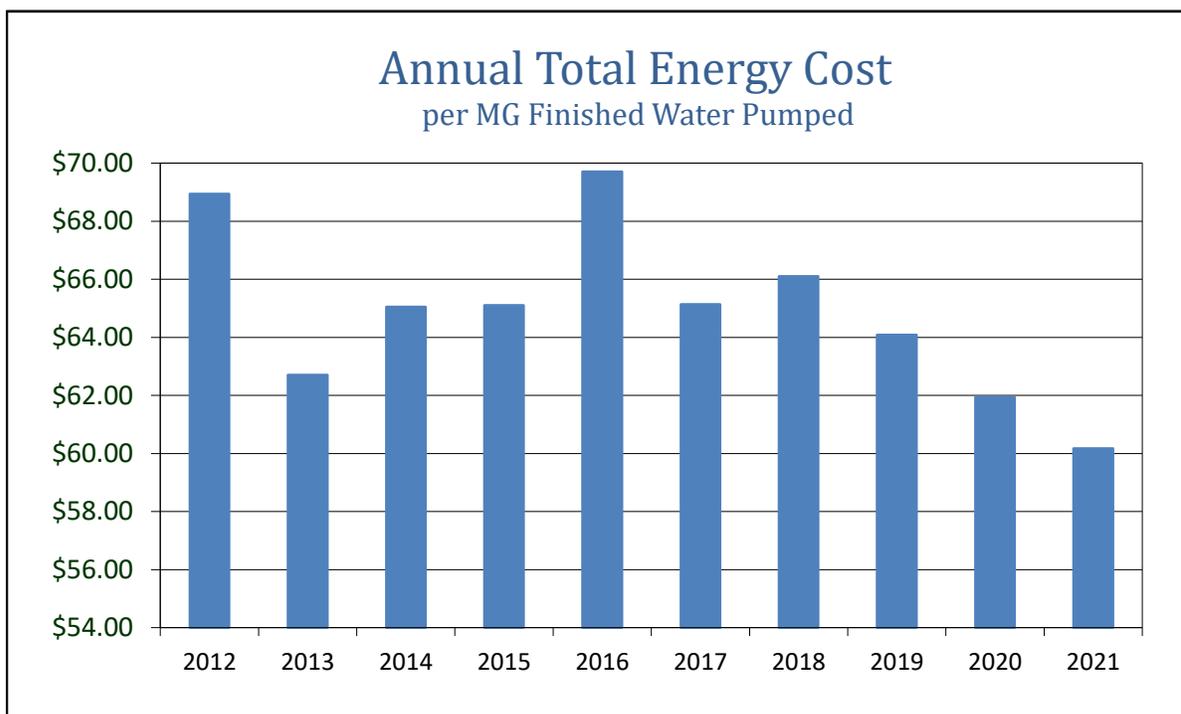
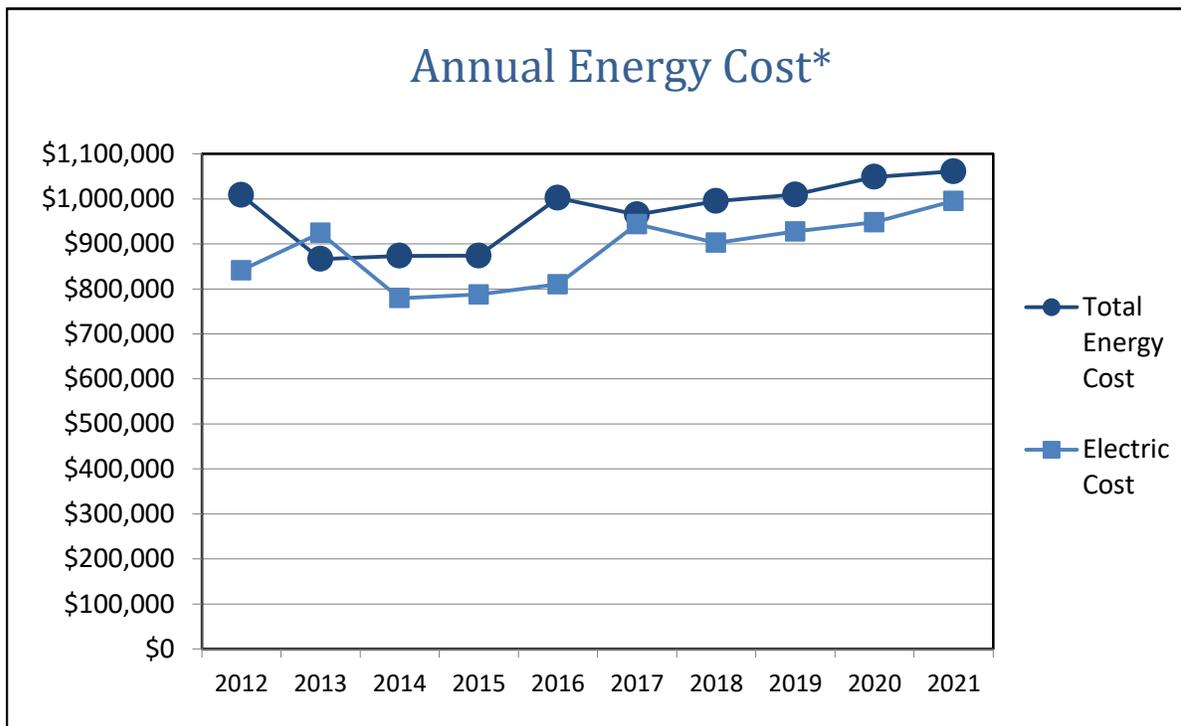
Year	Therms	Total Cost*	Average Unit Cost per Therm
2021	124,522	\$49,803	\$0.400
2020	131,460	\$53,586	\$0.408
2019	127,891	\$61,462	\$0.481
2018	127,945	\$67,419	\$0.527
2017	126,267	\$63,074	\$0.500

* Includes natural gas purchase and delivery charges.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2021	\$1,061,150	\$60.17
2020	\$1,048,708	\$61.93
2019	\$1,009,404	\$64.09
2018	\$994,782	\$66.10
2017	\$965,320	\$65.13

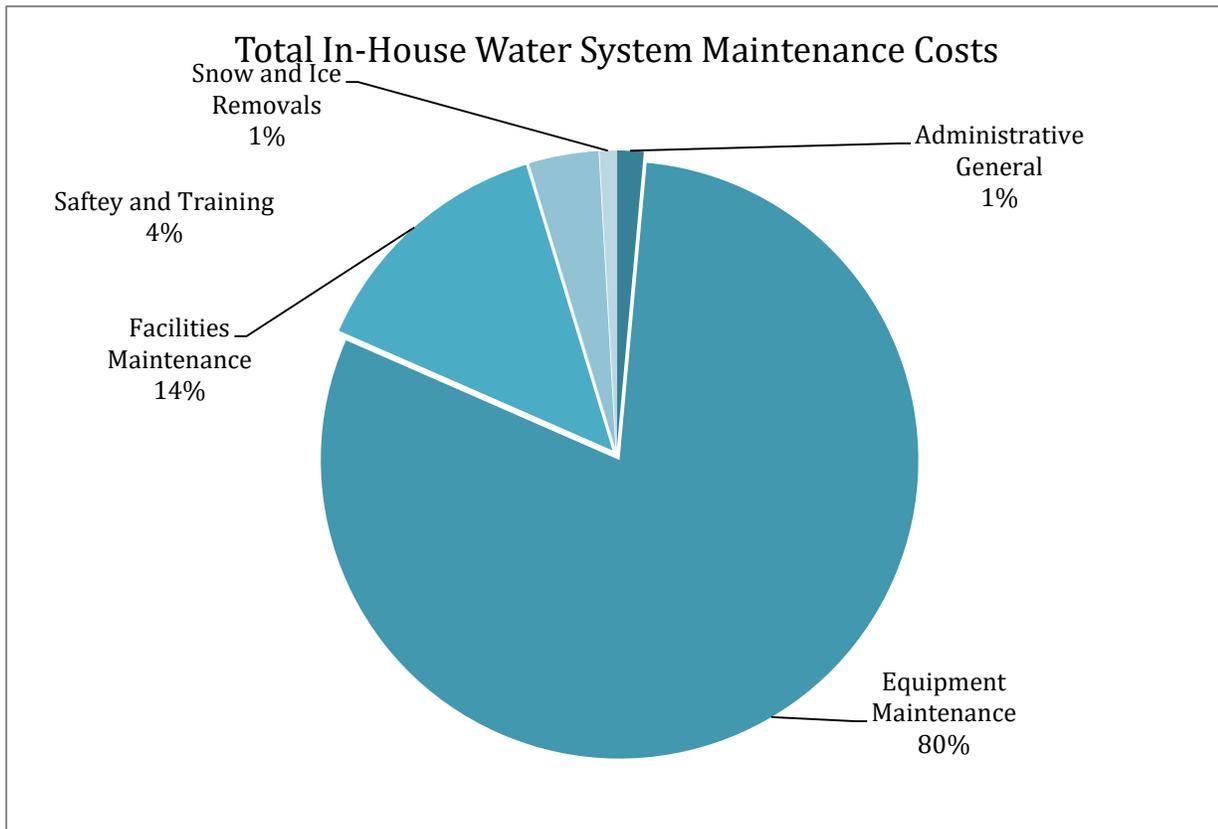
Energy Costs



* Energy costs increased in 2012 due to increased pumping during the summer drought.

Breakdown of In-House Maintenance Costs

Description	2020	2021
Administrative General	\$3,500	\$3,488
Assist Public Works	\$0	\$0
Assist Other Departments	\$0	\$0
Assist Contractor	\$0	\$0
Equipment Maintenance	\$229,652	\$192,860
Facilities Maintenance	\$43,120	\$33,103
JULIE Locates	\$0	\$0
Miscellaneous	\$0	\$0
Safety and Training	\$3,584	\$9,089
Snow and Ice Removals	\$0	\$2,175
Total	\$279,856	\$240,715



Filtration

The Filtration Division manages the water treatment process, including chemical addition, sedimentation, filtration, and disinfection. This involves operation and maintenance of 5 chemical feed systems, 4 settling basins, 24 filters, and numerous pipes, valves, and instrumentation systems. There is always at least one state-certified water treatment operator at the filtration plant at all times, who monitors instrumentation and water quality testing results to ensure that the water is always safe to drink.



Filters 1 – 12 in operation at the Evanston Water Treatment Plant

This division also includes the City's Water Quality Laboratory, which monitors Evanston's drinking water for compliance with state and federal water quality regulations and completes regular reporting to the public and the Illinois Environmental Protection Agency to certify the quality of Evanston's water.

Full-scale water treatment began in Evanston in 1914. The process included settling basins with chemical addition to allow larger contaminants to drop out of the water by gravity, filtration to remove smaller contaminants, and disinfection with chlorine. The new treatment process virtually eliminated waterborne disease in Evanston. This process was state-of-the-art at the time, and Evanston was one of the first communities in the region to adopt full-scale water treatment with rapid sand filtration. Though only the filters from the 1914 treatment plant survive to this day, Evanston's water treatment process still follows the same steps.



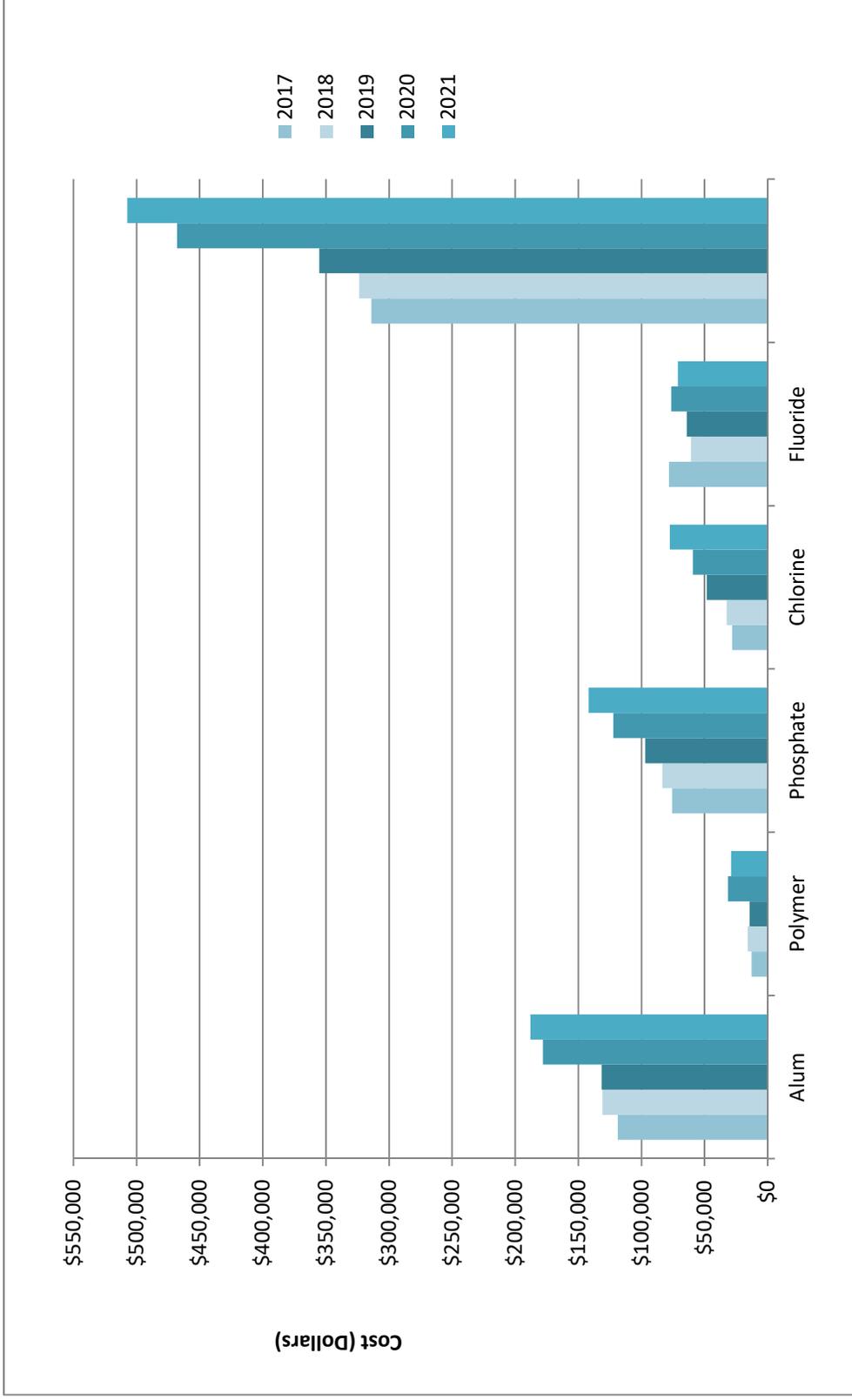
Filters 1 – 12, photo taken in 1924

Chemical Treatment: Chemicals Used and Costs

	Chemical Feed (lbs/MG)			Unit Cost	Pounds per Year	Total Cost	Cost per MG Treated
	Avg Daily	Max Day	Min Day				
Aluminum Sulfate							
2021	64.0	100.8	49.1	\$296.00 / dry ton	1,270,234	\$187,995	\$10.78
2020	69.0	130.1	49.0	\$300.00 / dry ton	1,187,180	\$178,077	\$10.31
2019	58.9	101.2	48.3	\$282.00 / dry ton	933,182	\$131,579	\$8.29
2018	61.6	100.6	47.1	\$282.00 / dry ton	928,450	\$130,911	\$8.82
2017	58.1	95.2	49.0	\$275.00 / dry ton	864,828	\$118,914	\$8.01
Chlorine							
2021	15.9	21.1	8.8	\$439.00 / ton	352,784	\$77,436	\$4.44
2020	15.9	20.8	12.5	\$430.00 / ton	276,160	\$59,374	\$3.44
2019	14.0	18.6	10.0	\$432.00 / ton	223,780	\$48,336	\$3.04
2018	12.8	19.6	9.1	\$334.00 / ton	194,755	\$32,524	\$2.19
2017	12.6	19.3	8.3	\$298.00 / ton	189,480	\$28,233	\$1.90
Activated Carbon*							
Hydrofluosilic Acid (Fluoride)							
2021	23.0	34.9	0.0	\$353.00 / ton	403,100	\$71,147	\$4.08
2020	27.2	28.7	24.9	\$326.20 / ton	468,955	\$76,487	\$4.43
2019	25.0	30.2	0.0	\$333.00 / ton	385,133	\$64,125	\$4.04
2018	26.7	55.8	0.0	\$302.00 / ton	402,710	\$60,809	\$4.10
2017	29.4	33.9	11.1	\$358.00 / ton	436,565	\$78,145	\$5.26
Polymer							
2021	2.8	5.3	1.8	\$1,296.00 / ton	44,880	\$29,082	\$1.67
2020	3.0	5.7	1.8	\$1,220.00 / ton	51,715	\$31,546	\$1.83
2019	2.5	4.8	1.7	\$730.00 / ton	39,142	\$14,287	\$0.90
2018	2.9	5.1	1.9	\$730.00 / ton	43,738	\$15,964	\$1.08
2017	2.9	5.1	2.2	\$596.00 / ton	43,014	\$12,818	\$0.86
Blended Phosphate							
2021	16.6	18.6	15.0	\$4.872 / gallon	317,237	\$141,796	\$8.13
2020	16.2	19.0	14.6	\$4.816 / gallon	276,994	\$122,386	\$7.09
2019	15.0	16.1	14.1	\$4.48 / gallon	235,963	\$96,983	\$6.11
2018	14.5	15.2	13.4	\$4.03 / gallon	217,723	\$83,390	\$5.62
2017	14.2	19.5	13.1	\$4.12 / gallon	211,332	\$75,778	\$5.10

* Carbon can be fed for taste and odor control, though this has not been necessary since 2005.

Annual Chemical Costs



Filter Operations

Filter Runs

Year	Avg Hours per Filter Run		Total Hours per Year	
	3 MGD	8 MGD	3 MGD	8 MGD
2021	181.2	170.1	104,693	92,880
2020	119.2	114.3	64,901	102,652
2019	113.5	95.3	52,899	103,710
2018	156.3	160.0	89,721	99,625
2017	208.9	191.8	102,660	93,663
2016	237.5	223.6	93,948	103,703
2015	238.6	229.0	80,514	103,404
2014	226.2	201.8	95,298	104,573
2013	224.5	200.6	95,958	101,536
2012	208.7	171.5	96,000	92,402

Filter Washes*

Year	Total Washes per Year		Max # of Washes per Day	
	3 MGD	8 MGD	3 MGD	8 MGD
2021	586	556	5	6
2020	549	977	8	8
2019	498	1066	6	8
2018	647	760	7	7
2017	525	519	6	6
2016	429	513	6	6
2015	347	462	5	5
2014	429	557	5	7
2013	427	524	7	7
2012	476	611	7	9

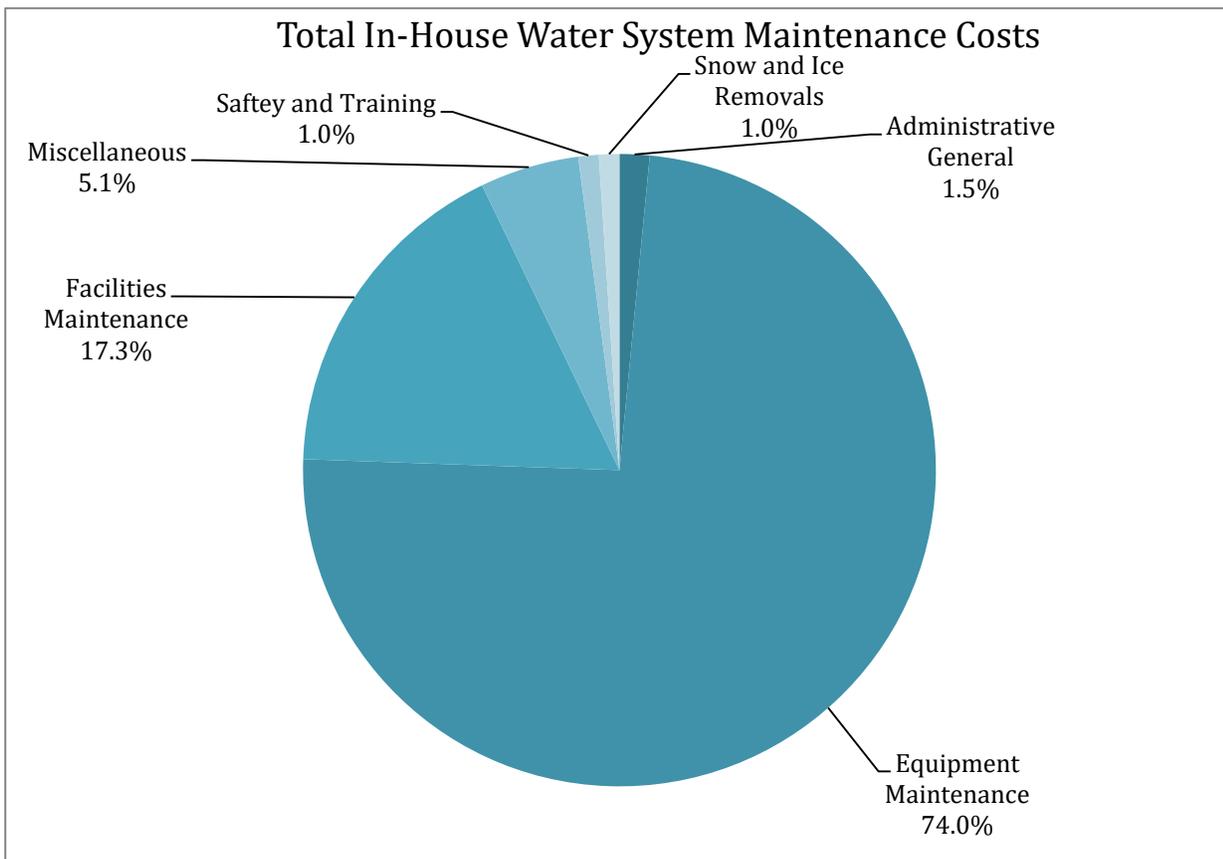
*In 2018, the filter run hours between washes were reduced from 300 hours to 100 hours in an effort to minimize mudball formation in the filter media

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2021	261.751	1.49	4.89
2020	377.241	2.22	6.25
2019	408.744	2.61	6.13
2018	339.444	2.23	7.11
2017	254.370	1.70	5.84
2016	239.545	1.60	9.65
2015	200.285	1.49	5.31
2014	243.089	1.78	6.20
2013	248.996	2.13	9.72
2012	321.030	1.49	5.14

Breakdown of In-House Maintenance Costs

Description	2020	2021
Administrative General	\$5,174	\$5,889
Assist Public Works	\$0	\$0
Assist Other Departments	\$0	\$0
Assist Contractor	\$0	\$0
Equipment Maintenance	\$279,767	\$285,176
Facilities Maintenance	\$72,659	\$66,630
JULIE Locates	\$0	\$0
Miscellaneous	\$23,640	\$19,515
Safety and Training	\$3,111	\$4,014
Snow and Ice Removals	\$432	\$4,019
Total	\$384,783	\$385,243



Bacteriological Water Analysis (Membrane Filter Method)

Report of Evanston Water Quality Control Laboratory

The U.S. Environmental Protection Agency (EPA) standard is based on the presence or absence of total coliform bacteria in a water sample. Evanston is required to collect 80 water samples per month from the distribution system. The EPA requires that no more than 5% of these monthly samples test positive for the presence of total coliform.

Distribution System (Colilert Method)		Positive for	Positive for
Year	Number Sampled	Total Coliform	E. coli
2021	962	4	0
2020	960	0	0
2019	979	0	0
2018	984	1	0
2017	978	1	1

Raw Water		Colony Count	
Year	Number Sampled	Average	Maximum
2021	730 (Twice Daily)	119	>200
2020	732 (Twice Daily)	63	>200
2019	728 (Twice Daily)	56	>200
2018	730 (Twice Daily)	60	>200
2017	729 (Twice Daily)	77	>200

After Primary Treatment		Colony Count	
Year	Number Sampled	Average	Maximum
2021	730 (Twice Daily)	0	0
2020	732 (Twice Daily)	0	0
2019	730 (Twice Daily)	0	0
2018	730 (Twice Daily)	0	0
2017	729 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples		Colony Count	
Year	Number Sampled	Average	Maximum
2021	1460 (4 times Daily)	0	0
2020	1464 (4 times Daily)	0	0
2019	1460 (4 times Daily)	0	0
2018	1460 (4 times Daily)	0	0
2017	1430 (4 times Daily)	0	0

Odor, Turbidity, Temperature and Fluoride

Report of Evanston Water Quality Control Laboratory

Odor*

Year	Number of Tests
2021	0
2020	371
2019	502
2018	498
2017	506

*Testing was discontinued in 2021. Testing will resume if taste and/or odor problems arise.

Turbidity (Expressed in Nephelometric Turbidity Units or NTU)

EPA standard is <0.3 NTU in 95% of samples and never >1 NTU in any single sample of finished water.

Year	Raw Water			After Primary Treatment			Plant Tap		
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
2021	5.92	60.2	0.36	0.60	1.60	0.22	0.11	0.17	0.07
2020	8.23	74.8	0.46	0.76	1.94	0.23	0.11	0.18	0.09
2019	4.55	49.9	0.32	0.63	2.10	0.19	0.10	0.15	0.08
2018	6.69	94.7	0.35	0.78	2.00	0.23	0.09	0.16	0.07
2017	4.22	47.4	0.35	0.57	2.92	0.19	0.09	0.28	0.07

Raw Water Temperature

Year	Average	Maximum	Minimum
2021	11.6°C / 52.8°F	23.7°C / 74.7°F	0.2°C / 32.4°F
2020	10.8°C / 51.5°F	24.9°C / 76.8°F	1.4°C / 34.5°F
2019	10.5°C / 50.9°F	28.0°C / 82.4°F	1.1°C / 34.0°F
2018	11.2°C / 52.2°F	25.7°C / 78.3°F	1.2°C / 34.2°F
2017	11.6°C / 52.9°F	25.0°C / 77.0°F	0.9°C / 33.6°F

Fluoride Content (EPA target is 0.7 ppm)

Year	Plant Tap			Distribution		
	Avg	Max	Min	Avg	Max	Min
2021	0.66	0.76	0.00	0.67	0.75	0.00
2020	0.71	0.81	0.59	0.69	0.78	0.60
2019	0.66	0.79	0.14	0.77	0.96	0.00
2018	0.69	1.00	0.28	0.71	0.80	0.61
2017	0.71	0.78	0.28	0.72	0.80	0.65

Chlorine Residual (ppm)*

Report of Evanston Water Quality Control Laboratory

Filter Influent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2021	1.05	1.29	0.70	1.19	1.49	0.81
2020	1.09	1.40	0.80	1.24	1.52	0.94
2019	0.96	1.22	0.41	1.11	1.41	0.56
2018	0.80	1.17	0.51	0.96	1.34	0.70
2017	0.79	1.16	0.55	0.94	1.33	0.68

Filter Effluent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2021	0.96	1.19	0.78	1.09	1.37	0.87
2020	1.00	1.30	0.80	1.14	1.49	0.95
2019	0.89	1.16	0.49	1.02	1.33	0.61
2018	0.72	1.01	0.46	0.86	1.22	0.61
2017	0.71	1.06	0.50	0.84	1.20	0.60

Plant Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2021	1.02	1.24	0.87	1.20	1.42	0.87
2020	1.07	1.29	0.75	1.23	1.54	0.91
2019	0.95	1.20	0.77	1.11	1.42	0.90
2018	0.76	1.00	0.42	0.92	1.17	0.53
2017	0.75	1.02	0.57	0.91	1.21	0.71

Distribution Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2021	0.82	1.20	0.61	0.92	1.30	0.71
2020	0.80	1.12	0.47	0.96	1.32	0.55
2019	0.70	0.96	0.38	0.87	1.10	0.56
2018	0.50	0.78	0.17	0.66	0.98	0.28
2017	0.49	0.76	0.23	0.66	0.94	0.40

*As of July 25, 2019 the Illinois Pollution Control Board increased the minimum chlorine residual in the distribution system from 0.2 ppm to 0.5 ppm. In order to meet this requirement the target chlorine leaving the plant was increased to maintain an average 1.00 ppm +/- 0.1 ppm.

Phosphate, pH, Alkalinity and Hardness

Report of Evanston Water Quality Control Laboratory

Phosphate (EPA standard is 0.15 - 0.50 ppm)

Year	Number of Tests	Plant Tap		
		Avg	Max	Min
2021	365	0.28	0.37	0.23
2020	365	0.28	0.35	0.22
2019	365	0.27	0.37	0.22
2018	365	0.29	0.39	0.21
2017	365	0.30	0.38	0.22

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2021	730	8.3	8.5	8.0	7.6	7.8	7.3
2020	732	8.3	8.7	7.9	7.6	7.8	7.2
2019	730	8.3	8.5	7.8	7.6	7.8	7.2
2018	730	8.2	8.5	7.9	7.6	7.7	7.2
2017	730	8.2	8.5	8	7.6	7.8	7.2

Alkalinity (ppm)

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2021	730	107	126	89	99	114	74
2020	732	108	119	95	100	114	85
2019	730	108	119	97	102	112	94
2018	730	108	117	97	101	112	93
2017	730	106	116	97	100	113	89

Hardness (ppm as CaCO₃)

Year	Number of Tests	Raw Water			Finished Water		
		Avg	Max	Min	Avg	Max	Min
2021	730	139	150	122	137	149	120
2020	732	136	147	121	134	149	120
2019	730	137	149	127	135	154	121
2018	730	137	147	127	134	152	120
2017	730	136	149	124	133	149	124

Detected Substances: 2021 Water Quality Data

Substance	MCLG	Highest Allowed (MCL)	Highest Level Detected	Range of Levels Detected	Violation	Source of Contamination
Turbidity (NTU) (Cloudiness)	NA	TT=Monitored by % exceeding 0.3 NTU and max allowed is 1 NTU	100% of samples meet 0.3 NTU; 0.18 NTU Highest single measurement	0.07 - 0.17	NO	Soil runoff
Fluoride (ppm)	4	4	0.7	single sample	NO	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Total Coliform Bacteria	0	5% of Monthly Samples are Positive	3.4%	NA	NO	Naturally present in the environment
Nitrate [measured as Nitrogen](ppm)	10	10	0.3	single sample	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Sodium (ppm)	NA ¹	NA ¹	8.1	single sample	NO	Erosion from naturally occurring deposits
Barium (ppm)	2	2	0.021	single sample	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of Natural deposits
Sulfate (ppm)	NOT REGULATED	USEPA National Secondary Standard of 250	27	single sample	NO	Naturally occurring, coagulant residual
Combined Radium 226/228 (pCi/L) ²	0	5	1.02	single sample	NO	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L) ²	0	15	0.72	single sample	NO	Erosion of natural deposits
Hexavalent Chromium (ppb)	NOT REGULATED	NOT REGULATED	0.17	single sample	NO	Naturally-occurring element; used in making steel or other alloys. Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning and wood preservation.
Perfluorooctanesulfonic acid (PFOS) ³ (ppt)	14.0	70	2.4	2.2 - 2.4	NO	Surfactant for fire-fighting foam, mist suppressant for metal-plating baths, grease and water resistance to materials such as textiles, carpets, and paper. Production ceased in 2002.
Perfluorooctanoic acid (PFOA) ³ (ppt)	2.0	70	2.4	2.2 - 2.4	NO	Surfactant for fire-fighting foam, mist suppressant for metal-plating baths, grease and water resistance to materials such as textiles, carpets, and paper. Production ceased in 2015.
Cotinine (ppb)	NOT REGULATED	NOT REGULATED	0.0016	Single Sample	NO	Nicotine metabolite/waste water discharge
DEET (ppb)	NOT REGULATED	NOT REGULATED	0.0082	Single Sample	NO	Insect repellent
Sucralose (ppb)	NOT REGULATED	NOT REGULATED	0.099	Single Sample	NO	Artificial sweetener
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.082	Single Sample	NO	Artificial sweetener
Virginiamycin M1 (ppb)	NOT REGULATED	NOT REGULATED	0.0014	Single Sample	NO	Antibiotic

1. There is no state or federal MCL for Sodium. Sodium levels below 20 mg/l (ppm) are not considered to be a health issue.

2. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Radiation is everywhere; from the sun, from the earth and even in our bodies. The amounts detected in Evanston's water are well below the maximum contaminant level; so low in fact, that Evanston is on a reduced monitoring schedule and is only required to sample every 6 years.

3. In 2021, our PWS was sampled as part of the State of Illinois PFAS Statewide Investigation. Results from this sampling indicated PFAS were detected in our drinking water. PFOA was detected above the health advisory level and PFOS was detected below the health advisory level established by the Illinois EPA. Follow up monitoring is being conducted. Results can be found <https://www.cityofevanston.org/government/departments/public-works/public-outreach/historical-pfas-results>

Detected Substances: 2021 Water Quality Data

<i>Disinfectants and Disinfection By-Products</i>	<i>MCLG</i>	<i>Highest Allowed (MCL)</i>	<i>Highest Level Detected</i>	<i>Range of Levels Detected</i>	<i>Violation</i>	<i>Source of Contamination</i>
Total Trihalomethanes (ppb)	NA ¹	80	28 ²	12.7 - 37.0	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA ¹	60	14 ²	6.4 - 17.9	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	1.0 ³	1.0 - 1.0	NO	Water additive used to control microbes

<i>Lead & Copper</i>	<i>MCLG</i>	<i>Action Level (AL)</i>	<i>90th Percentile</i>	<i># of Sites Over AL</i>	<i>Violation</i>	<i>Source of Contamination</i>
Lead (ppb)	0	15	5.8	1	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.16	0	NO	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems

Additional Information About Your Water

<i>Measured Parameter</i>	<i>Evanston Average</i>	<i>Evanston Minimum</i>	<i>Evanston Maximum</i>
pH (0-14 pH units)	7.6	7.3	7.8
Hardness (as mg CaCO ₃ /L)	137	120	149
Hardness (gpg)	8.0	7.0	8.7
Alkalinity (ppm)	99	74	114
Raw Water Temperature °F	53	32	75

<i>Measured Parameter</i>	<i>Evanston Result</i>
Calcium (ppm)	35
Chloride (ppm)	15
Dissolved Solids (ppm)	190
Magnesium (ppm)	12
Potassium (ppm)	1.5
Aluminum (ppb)	130

1. Although there is no collective MCLG for this contaminant group, there are individual contaminant MCL's: Trihalomethanes: bromodichloromethane(zero); bromoform(zero); dibromochloromethane(0.06 mg/L) Haloacetic acids: dichloroacetic acid(zero); trichloroacetic acid (0.3 mg/L).

2. Highest Running Annual Average (quarterly) (RAA). RAA quarterly is calculated by adding the most recent quarter plus the three previous quarters and dividing by four. The highest RAA during the year is reported.

3. Running Annual Average (monthly) (RAA). RAA monthly is based on the monthly averages of all samples.

Non-Detected Contaminants

2021 Water Quality Data

Inorganic Contaminants	MCLG	MCL	EEA MRL	Level Found
ARSENIC (ppb)	10	10	1.0	nd
CADMIUM (ppb)	5	5	1.0	nd
CHROMIUM (ppb)	100	100	0.9	nd
CYANIDE (ppb)	200	200	0.02	nd
IRON (ppb)	n/a	1000	0.02	nd
MANGANESE (ppb)	n/a	150	2.0	nd
MERCURY (INORGANIC) (ppb)	2	2	0.1	nd
NICKEL	n/a	100	1.0	nd
SELENIUM (ppb)	50	50	2.0	nd
ANTIMONY (ppb)	6	6	1.0	nd
BERYLLIUM (ppb)	4	4	0.3	nd
THALLIUM (ppb)	0.5	2	0.3	nd
ZINC (ppb)	n/a	5000	5.0	nd
NITRITE (AS NITROGEN) (ppm)	1	1	0.01	nd

Synthetic Organic Contaminants

ENDRIN (ppb)	2	2	0.01	nd
BHC- GAMMA (LINDANE)	200	200	0.02	nd
METHOXYCHLOR (ppb)	40	40	0.1	nd
TOXAPHENE (ppb)	0	3	1.0	nd
DALAPON (ppb)	200	200	1.0	nd
DIQUAT (ppb)	20	20	0.4	nd
ENDOTHALL (ppb)	100	100	9.0	nd
DI(2-ETHYLHEXYL)ADIPATE (ppb)	400	400	0.6	nd
OXAMYL (VYDATE) (ppb)	200	200	1.0	nd
SIMAZINE (ppb)	4	4	0.07	nd
DI(2-ETHYLHEXYL)PHTHALATE (ppb)	0	6	0.6	nd
PICHLORAM (ppb)	500	500	0.1	nd
DINOSEB (ppb)	7	7	0.1	nd
HEXACHLOROCYCLOPENTADIENE (ppb)	50	50	0.1	nd
ALDICARB SULFOXIDE	n/a	n/a	0.5	nd
ALDICARB SULFONE	n/a	n/a	0.7	nd
CARBOFURAN (ppb)	40	40	0.9	nd
ALDICARB	n/a	n/a	0.5	nd
ATRAZINE (ppb)	3	3	0.1	nd
ALACHLOR (LASSO)(ppb)	0	2	0.1	nd
HEPTACHLOR	0	100	0.04	nd
HEPTACHLOR EPOXIDE (ppt)	0	100	0.02	nd
DIELDRIN	n/a	1	0.1	nd
2,4-Dichloro-Phenoxyacetic Acid (2,4-D) (ppb)	10	10	0.1	nd
2,4,5-TP (SILVEX) (ppb)	50	50	0.1	nd
HEXACHLOROBENZENE (ppb)	0	1	0.1	nd
BENZO (A) PYRENE (ppb)	0	200	0.02	nd
PENTACHLOROPHENOL (PCP) (ppb)	0	1	0.04	nd
ALDRIN (ppb)	n/a	1	0.1	nd
POLYCHLORINATED BIPHENYLS (PCB) (ppb)	0	500	varies (0.26)	nd
TOTAL DDT (ppb)	n/a	50*	0.1	nd
1,2 DIBROMO3-CHLOROPROPANE (DBCP) (ppb)	0	0.2	0.01	nd
ETHYLENE DIBROMIDE (EDB) (ppb)	0	50	0.01	nd
CHLORDANE (ppb)	0	2	0.1	nd

Non-Detected Contaminants

2021 Water Quality Data

Volatile Organic Contaminants (VOCs)	MCLG	MCL	EEA MRL	Level Found
METHYL TERT-BUTYL ETHER (MTBE) (ppb)	n/a	n/a	0.5	nd
1,2,4-TRICHLOROBENZENE (ppb)	70	70	0.5	nd
CIS-1,2-DICHLOROETHYLENE (ppb)	70	70	0.5	nd
XYLENES(ppm)	10	10	0.5	nd
DICHLOROMETHANE (ppb)	0	5	0.5	nd
O-DICHLOROBENZENE (ppb)	600	600	0.5	nd
P-DICHLOROBENZENE (ppb)	75	75	0.5	nd
1,1-DICHLOROETHYLENE (ppb)	7	7	0.5	nd
TRANS-1,2-DICHLOROETHYLENE (ppb)	100	100	0.5	nd
1,2-DICHLOROETHANE (ppb)	0	5	0.5	nd
1,1,1-TRICHLOROETHANE (ppb)	200	200	0.5	nd
CARBON TETRACHLORIDE (ppb)	0	5	0.5	nd
1,2-DICHLOROPROPANE (ppb)	0	5	0.5	nd
TRICHLOROETHYLENE (ppb)	0	5	0.5	nd
1,1,2-TRICHLOROETHANE (ppb)	3	5	0.5	nd
TETRACHLOROETHYLENE (ppb)	0	5	0.5	nd
MONOCHLOROBENZENE (ppb) same as CHLOROBENZENE	100	100	0.5	nd
BENZENE (ppb)	0	5	0.5	nd
TOLUENE (ppm)	1	1	0.5	nd
ETHYLBENZENE (ppb)	700	700	0.5	nd
STYRENE(ppb)	100	100	0.5	nd
VINYL CHLORIDE(ppb)	0	2	0.2	nd

THM/HAAs	MCLG	MCL	EEA MRL	Level Found
MONOBROMOACETIC ACID (ppb)	n/a	n/a	1.0	nd

Unregulated Contaminants	MCLG	MCL	EEA MRL	Level Found
Bisphenol A (ppb)	n/a	n/a	0.1	nd
Nonylphenol, isomer mix (ppb)	n/a	n/a	0.5	nd
4-n-Octylphenol (ppb)	n/a	n/a	0.5	nd
4-tert-Octylphenol (ppb)	n/a	n/a	0.5	nd
Pentachlorophenol (ppb)	n/a	n/a	0.1	nd
Phenylphenol (ppb)	n/a	n/a	0.1	nd
Tetrabromobisphenol A (ppb)	n/a	n/a	0.1	nd
2,4,6-Trichlorophenol (ppb)	n/a	n/a	0.1	nd
Pharmaceutically Active Compounds Positive	n/a	n/a	varies	nd
Pharmaceutically Active Compounds Negative	n/a	n/a	varies	nd

Non-Detected Contaminants

2021 Water Quality Data

Per and Polyfluoroalkyl Substances (PFASs)	MCLG	MCL	EEA MRL	Level Found
11Cl-PF3OUdS/F-53B Minor (ppt)	n/a	n/a	2.0	nd
9Cl-PF3ONS/F-53B Major (ppt)	n/a	n/a	2.0	nd
ADONA (ppt)	n/a	n/a	2.0	nd
HFPO-DA/GenX (ppt)	n/a	n/a	2.0	nd
N-ethyl Perfluorooctanesulfonamidoacetic acid (ppt)	n/a	n/a	2.0	nd
N-methyl Perfluorooctanesulfonamidoacetic acid (ppt)	n/a	n/a	2.0	nd
Perfluorobutanesulfonic acid (PFBS) (ppt)	n/a	n/a	2.0	nd
Perfluorodecanoic acid (PFDA) (ppt)	n/a	n/a	2.0	nd
Perfluorododecanoic acid (PFDoA) (ppt)	n/a	n/a	2.0	nd
Perfluoroheptanoic acid (PFHpA) (ppt)	n/a	n/a	2.0	nd
Perfluorohexanesulfonic acid (PFHxS) (ppt)	n/a	n/a	2.0	nd
Perfluorohexanoic acid (PFHxA) (ppt)	n/a	n/a	2.0	nd
Perfluorononanoic acid (PFNA) (ppt)	n/a	n/a	2.0	nd
Perfluorotetradecanoic acid (PFTeDA) (ppt)	n/a	n/a	2.0	nd
Perfluorotridecanoic acid (PFTrDA) (ppt)	n/a	n/a	2.0	nd
Perfluoroundecanoic acid (PFUnA) (ppt)	n/a	n/a	2.0	nd

MCL= Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

EEA MRL= Eurofins Eaton Analytical Minimum Reporting Level

ND = Not Detected

Lead and Copper Statement

Report of Water Quality Control Laboratory

There is no detectable lead in the water produced by the City of Evanston's water treatment plant. Lead enters the water from lead solder and/or lead pipes in water services, or through plumbing fixtures. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action levels of 15 ppb and 1.3 ppm, respectively.

Lead and copper sampling is performed every three years in compliance with state law. The most recent compliance samples were taken in June, July and August of 2020. Water was sampled from 40 homes with full lead service lines. The 90th percentile level for lead in these samples is 5.8 ppb. The 90th percentile level for copper in these samples is 0.16 ppm. The EPA requires 30 samples to be collected. In 2020, Evanston voluntarily collected 10 additional samples. This allowed for a better geographical sampling and for each ward to contain at least three samples.

In 2021, Evanston continued the seasonal drinking fountain start-up plan which included sampling water, high flow flushing, and replacing drinking fountain components known to contain lead. Evanston sampled water from 57 park drinking fountains.

PFAS Statement



Water Production Bureau

555 Lincoln Street
Evanston, Illinois 60201

T 847.448.8198
F 847.475.8851
www.cityofevanston.org

January 31, 2022

Re: IL EPA Drinking Water Sampling (PFAS)

Dear Water System Customer,

The Illinois Environmental Protection Agency (Illinois EPA) recently tested our water system for compounds known as Per- and Polyfluoroalkyl Substances (PFAS) as part of a statewide investigation of community water supplies. PFAS are a group of thousands of manmade substances that have been produced in the United States since the 1940s and utilized for a variety of applications ranging from water and stain-proofing to firefighting. Some PFAS have been phased out of production due to environmental and human health concerns, yet they persist in the environment and may contaminate surface and ground waters.

Neither the Illinois EPA nor the U.S. EPA have yet developed enforceable drinking water standards for PFAS. In the interim, Illinois EPA has developed health-based guidance levels for the small number of PFAS for which there is appropriate information to do so. The health-based guidance levels are intended to be protective of all people consuming the water over a lifetime of exposure. **It is important to understand that health-based guidance levels are not regulatory limits for drinking water.** Rather, the health-based guidance levels are benchmarks against which sampling results are compared to determine if additional investigation or other response action is necessary.

PFAS IN EVANSTON

Illinois EPA testing has determined that one PFAS chemical was detected in the City's drinking water just above the Illinois EPA Health-Based Guidance Level of 2.0 ppt for PFOA (The lowest concentration the laboratory can reliably detect is 2.0 ppt). **As a frame of reference, one part per trillion is roughly the equivalent of one drop in 20 Olympic-sized swimming pools.** The levels detected for PFOA were 2.2 ppt (9/2/2021), 2.3 ppt (11/16/2021), and 2.2 ppt (11/16/2021).

Communities along the west shore of Lake Michigan are seeing similar results at about 2 ppt on average.

City of Evanston PFAS Testing Results		
Date	City of Evanston Drinking Water	
	PFOS IEPA Guidance Level 14.0 (ppt) US EPA Guidance Level 70.0 (ppt)	PFOA IEPA Guidance Level 2.0 (ppt) US EPA Guidance Level 70.0 (ppt)
9/2/2021	2.4 ppt	2.2 ppt
11/16/2021	*2.3 ppt	*2.3 ppt
11/16/2021	**2.2 ppt	**2.2 ppt

*indicates confirmation sample results, **indicates duplicate confirmation sample results

The concentrations detected in City water are well below the US EPA published Lifetime Health Advisory Level of 70 parts per trillion (ppt). Notably, both the US EPA Lifetime Health Advisory Levels and Illinois EPA Health-Based Guidance Levels are measured in ppt, where many drinking water compounds are measured in parts per billion (ppb).

Our water may contain other PFAS at concentrations greater than or equal to the lowest concentration the laboratory can reliably detect, known as the minimum reporting level. However, neither the Illinois EPA nor the U.S. EPA currently have health-based guidance levels for these additional compounds. Results can also be found on the PFAS Investigation Network Interactive Map webpage:

<https://illinois-epa.maps.arcgis.com/apps/opsdashboard/index.html#/d304b513b53941c4bc1be2c2730e75cf>.

PFAS are present in many consumer goods, including food packaging and personal care products, and scientists have found values of PFAS in blood of nearly all individuals tested. Exposure to high levels of PFAS may cause adverse health effects such as increased cholesterol levels, increased risk for thyroid disease, low infant birth weights, reduced response to vaccines, pregnancy-induced hypertension and increased risk of liver and kidney cancer as seen in studies of laboratory animals. **Exposure to PFAS above the recommended health-based guidance levels does not necessarily mean that a person will get sick or an adverse health effect will occur.** Health-based guidance levels are conservative estimates. The possible health effects from PFAS are dependent on how much a person is exposed to and how long they are exposed to it. Exposure to PFAS above recommended health-based guidance levels for periods of time may mean that a person is at a greater risk of experiencing these adverse effects.

NEXT STEPS

The City is following recommendations from the Illinois EPA and closely monitoring the latest health-based guidance. We will continue monitoring PFAS values through quarterly sampling at the direction of the Illinois EPA. The most recent test results will be added to the above chart on the City's PFAS webpage once available.

We will begin evaluating treatment options to reduce public exposure to PFAS in potable water provided by the Evanston Water Utility. The City will continue to closely monitor the situation and ensure information is communicated with community members and wholesale water customers.

Based on these initial results, Evanston will perform additional sampling beginning January 2022 and will keep the community updated and informed.

Additional information regarding PFAS, the statewide PFAS investigation network, and the impact to public health can be found in the attached fact sheet as well as on the Illinois EPA PFAS webpage:

<https://www2.illinois.gov/epa/topics/water-quality/pfas/Pages/default.aspx>.

The confirmed sampling results for the Evanston Water Utility are also available on Illinois EPA's Drinking Water Watch system at <http://water.epa.state.il.us/dww/index.jsp>.

If you have questions, please contact:

Darrell A. King, Water Production Bureau Chief, at dking@cityofevanston.org or 847.448.4311.

Illinois Environmental Protection Agency
Barb Lieberoff, Office of Community Relations
epa.pfas@illinois.gov
217-524-3038

Illinois Department of Public Health
Brian Koch, Division of Environmental Health
Brian.Koch@illinois.gov
217-782-5830

Definitions and General Explanations

Action Level – The concentration of a contaminant, which, if exceeded, triggers treatment or other required actions by the water supply.

Disinfection By-Products – Total Trihalomethanes and Total Haloacetic Acids are used to regulate the amount of allowable by-products of chlorination.

EPA – Environmental Protection Agency

Fluoride – The Illinois Department of Public Health recommends a target of 0.7 ppm.

Lead and Copper – There is no detectable lead in the water provided to the Evanston community. Lead enters the water from lead solder, lead pipes, or plumbing fixtures. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action level of 15 ppb and 1.3 ppm respectively.

MCL – Maximum Contaminant Level, the highest level of a contaminant that is allowed in drinking water. A MCL is set as close to a MCLG as feasible using the best available treatment technology.

MCLG – Maximum Contaminant Level Goal, the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

mg CaCO₃/L – milligrams of calcium carbonate per liter.

mrem/yr – Millirems Per Year. A measure of radiation absorbed by the body.

MRDL – Maximum Residual Disinfection Level. The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG – Maximum Residual Disinfection Level Goal. The level of disinfectant in drinking water below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA – Not applicable.

NTU – Nephelometric Turbidity Units. A measure of the cloudiness of water.

pCi/L – Picocuries per liter. A measure of radioactivity.

ppm – Parts per million. A measure of the concentration of a substance in water. An equivalent unit of measurement is milligrams per liter (mg/L).

ppt – Parts per trillion. A measure of the concentration of a substance in water. An equivalent unit of measurement is nanograms per liter (ng/L).

ppb – Parts per billion. A measure of the concentration of a substance in water. An equivalent unit of measurement is micrograms per liter (µg/L).

Sodium – There is not a state or federal MCL for sodium. Sodium levels below 20 mg/L (ppm) are not considered to be a public health issue.

TT – Treatment Technique. A required process to reduce the level of a contaminant.

Turbidity – A measurement of the cloudiness of the water caused by suspended particles. This is monitored because it is a good indicator of water quality as well as the effectiveness of the filtration and disinfection processes.

TOC – Total Organic Carbon. The Evanston Water Supply monitored the percentage of TOC removal quarterly and met all TOC removal requirements set by the EPA.

Distribution

The Distribution Division manages operation, maintenance, and repair of Evanston's water mains, valves, fire hydrants, and the City's portion of water service lines. This includes repairing water main breaks and water service leaks; and installing new valves, hydrants, and water mains to improve the operation and efficiency of Evanston's water distribution system. Annual maintenance programs administered by this division include water main leak surveying, valve exercising, and fire hydrant testing. The Distribution Division also performs routine water quality sampling in buildings throughout Evanston, and administers the City's cross connection control program. These two programs ensure that water remains safe to drink after leaving the water treatment plant.

Evanston has had a water distribution system since the 1870s, longer than most communities in the Chicago area. The original water mains were made of wood, with a transition to cast iron water mains by the 1890s. After completion of the water treatment plant in 1914, the plentiful supply of safe drinking water drew many new residents and businesses to Evanston. The distribution system underwent significant expansion over the next few years, and many of those 90 to 100+ year-old water mains are still in operation today. Evanston manages an annual water main renewal program to replace and rehabilitate old water mains as they develop maintenance problems.



A Distribution Division field crew installing a new fire hydrant connection on a 24" diameter water main, to improve the City's ability to clean and test this main.



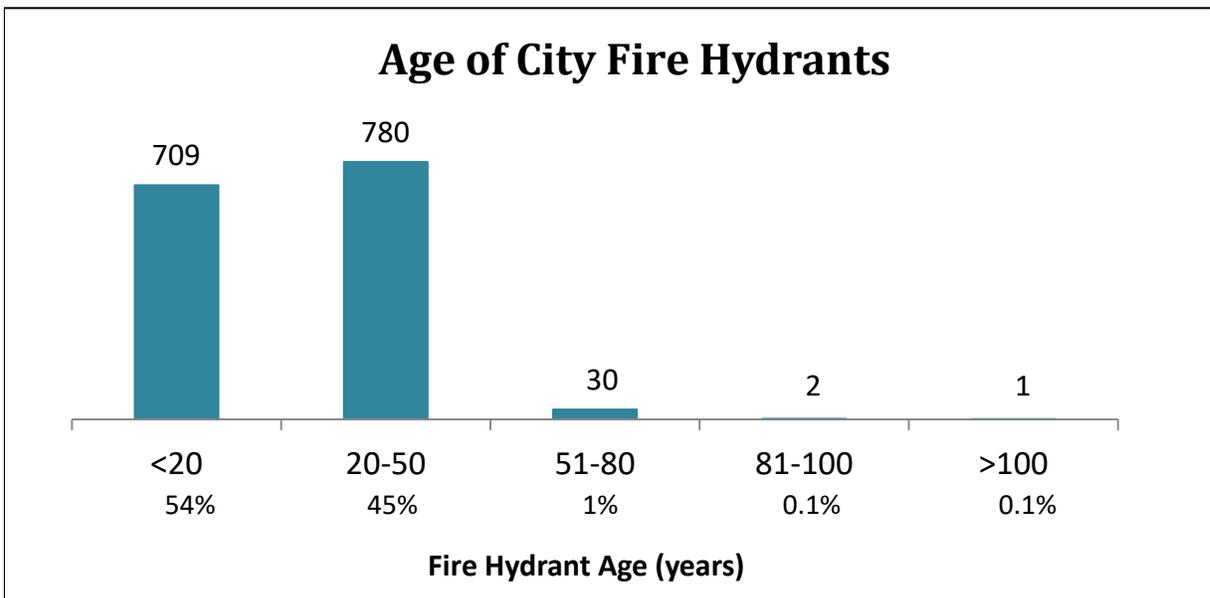
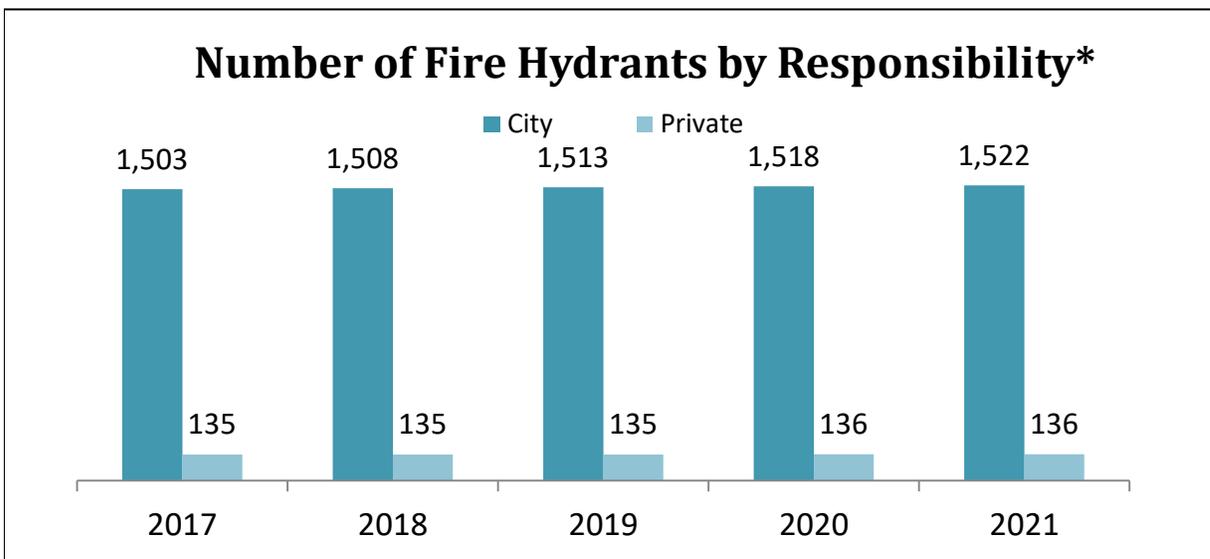
Pieces of wood water main from Evanston's original water distribution system.

Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2017	2018	2019	2020	2021
Fire Department	1,453	1,491	1,445	1,485	1,482
Public Works Agency	11	19	15	13	19

Installation & Maintenance	2017	2018	2019	2020	2021
Installed (new)	2	5	3	6	4
Replaced	10	14	19	23	14
Repaired	535	569	311	36	41



* Changes due to hydrant removal/addition during water main improvements and utility atlas updates.

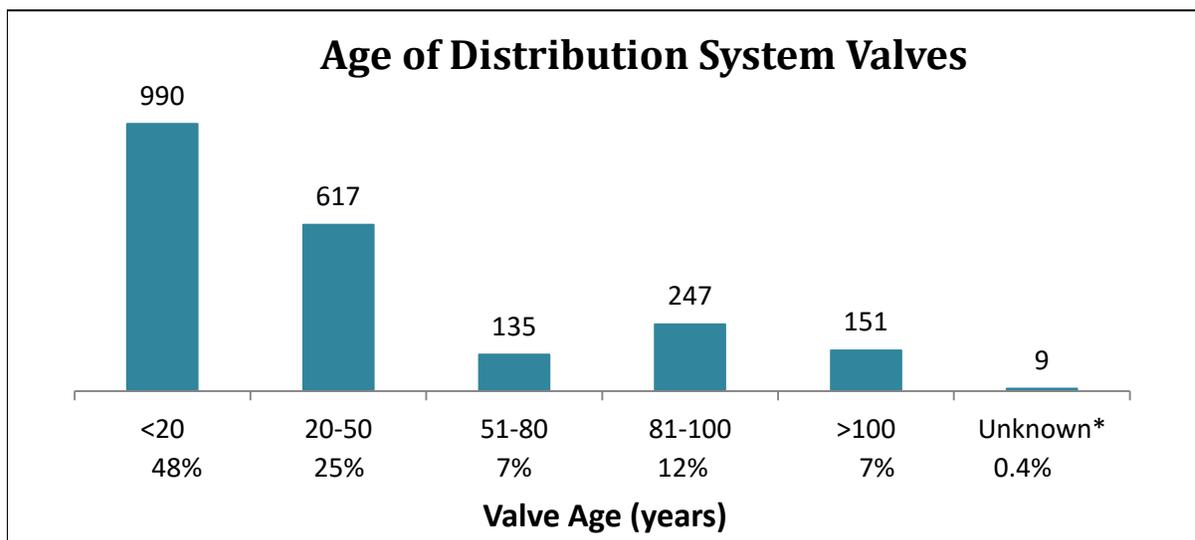
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2017	2018	2019	2020	2021
In-House	586	848	524	537	826
Contractor	0	0	0	0	0

Installation & Maintenance	2017	2018	2019	2020	2021
Installed (new)	13	16	19	19	28
Replaced	13	20	19	20	31
Repaired	48	30	24	27	9

Number of Valves by Size	2017	2018	2019	2020	2021
4" or smaller	22	23	23	23	23
6"	957	965	961	958	971
8"	532	540	554	557	564
10"	199	200	205	204	210
12"	252	253	253	257	258
14"	2	2	2	2	2
16"	50	50	50	53	49
18"	5	5	6	6	6
20"	2	2	2	2	2
24"	33	38	33	34	34
30"	13	13	13	13	13
36"	13	13	13	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,084	2,108	2,119	2,126	2,149



* Valves are buried beneath paved surfaces and are not accessible for field verification of age.

Water Mains

System Data and Maintenance

Improvements (lineal feet)	2017	2018	2019	2020	2021
Replaced by City	0	0	0	0	0
Replaced by Contractor	4,571	6,673	6,780	6,692	6,401
Installed New by Contractor	0	0	0	2,485	2,059
Rehabilitated by Contractor	0	0	0	0	0

Water Main Break Repairs	2017	2018	2019	2020	2021
Blow-Out	25	22	20	29	24
Shear Break	6	9	8	3	14
Damage	0	1	0	0	2
Total	31	32	28	32	40

Pipe Sizes (length in miles)*	2017	2018	2019	2020	2021
4" or smaller	1.37	1.37	1.37	1.37	1.41
6"	71.63	71.63	70.81	70.00	69.93
8"	28.87	29.57	30.35	30.71	30.77
10"	13.18	13.16	13.16	12.94	13.31
12"	17.95	17.95	17.95	17.95	17.96
14"	0.37	0.37	0.37	0.37	0.37
16"	6.26	6.27	6.27	6.27	6.26
18"	0.83	0.83	0.83	0.83	0.83
20"	0.56	0.56	0.56	0.56	0.56
24"	8.60	8.63	8.63	9.10	8.92
30"	1.69	1.69	1.69	1.69	1.69
36"	3.30	3.30	3.30	3.30	3.30
42"	0.04	0.04	0.04	0.04	0.04
48"	0.68	0.68	0.68	0.68	0.68
Total	155.33	156.03	155.99	155.78	156.00

* Changes due to water main removal/addition during improvement projects and utility atlas updates.

Water Services

System Data and Maintenance

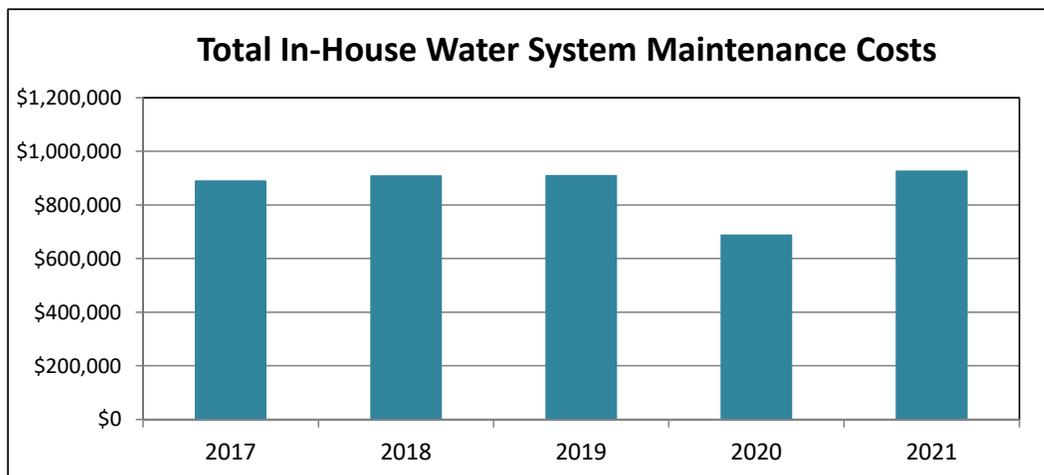
Water Service Accounts: 15,166*

Installation & Maintenance	2017	2018	2019	2020	2021
New Services Installed	7	7	15	7	10
Service Taps Replaced	52	42	64	75	72
Services Replaced by Contractor	42	102	136	82	189
Service Leaks Repaired	12	14	10	11	6

Breakdown of In-House Maintenance Costs

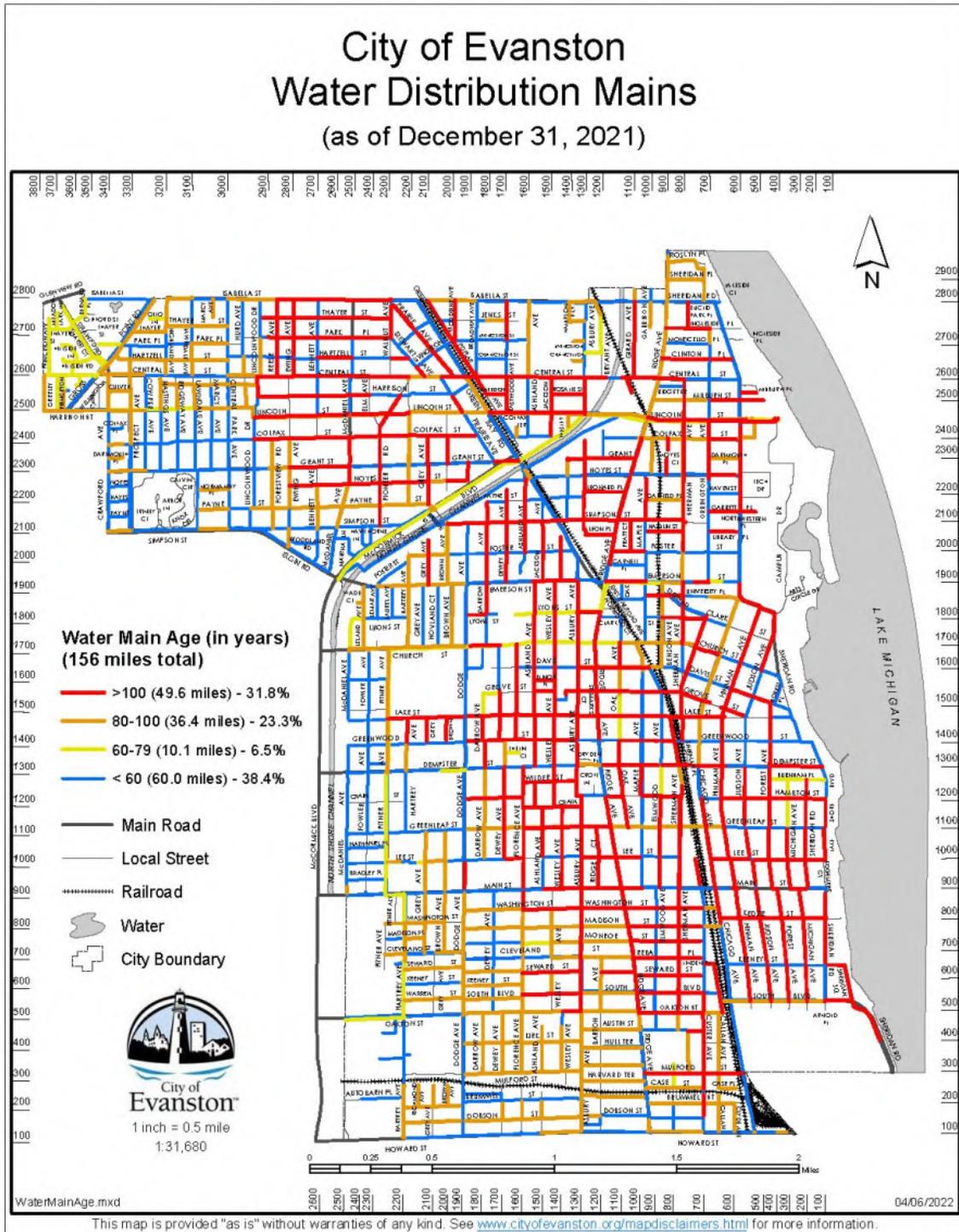
	2017	2018	2019	2020	2021
Water Mains*	\$123,158	\$123,734	\$119,977	\$72,920	\$148,054
Fire Hydrants	\$42,292	\$45,067	\$34,908	\$24,782	\$35,965
Water Services	\$97,085	\$171,581	\$239,846	\$128,266	\$286,098
Valves	\$18,027	\$87,328	\$62,031	\$17,578	\$51,509
Drinking Fountains	\$0	\$3,348	\$13,885	\$6,849	\$12,604
Water Meters	\$94,931	\$91,575	\$100,570	\$85,809	\$92,897
Water Quality	\$38,621	\$27,861	\$24,962	\$24,328	\$19,775
Snow & Ice Removal	\$14,235	\$57,315	\$49,963	\$13,757	\$23,681
Assist Contractor	\$100,447	\$78,722	\$62,476	\$62,695	\$52,794
JULIE Locates	\$107,064	\$72,489	\$57,619	\$80,832	\$66,709
Equip/Facility Maint.	\$146,597	\$66,482	\$64,903	\$117,705	\$58,735
Assist Other City Depts.	\$24,749	\$22,224	\$7,365	\$8,866	\$3,279
Assist W&S Divisions	\$5,112	\$4,318	\$7,403	\$3,620	\$2,140
Assist Public Works	\$0	\$0	\$0	\$0	\$3,470
Safety & Training	\$26,268	\$15,641	\$17,374	\$7,406	\$14,385
Administrative General	\$49,939	\$40,554	\$45,451	\$31,633	\$53,426
Total	\$888,524	\$908,239	\$908,733	\$687,044	\$925,521

*Water Main includes Leak Detection In-House Maintenance Cost of \$16,940



* Includes metered domestic water service accounts and unmetered fire service accounts.

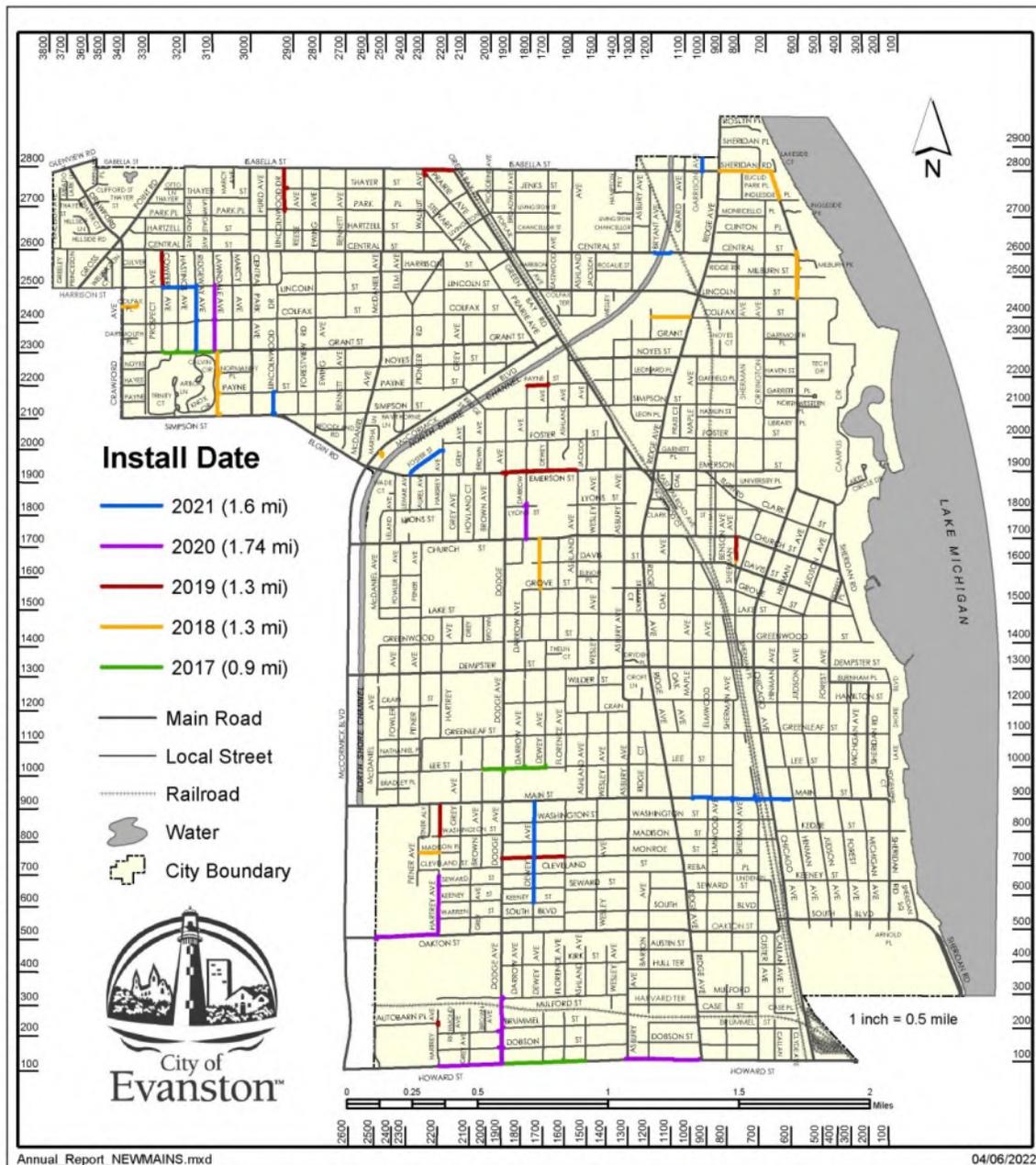
Water Main Age



Water Main Improvements

The Public Works Agency manages an annual water main improvement program, with the goal of renewing at least 1.5 miles of water mains annually (1% annual system-wide renewal rate). This program addresses water mains that have developed maintenance problems due to their age, as well as water mains that need to be enlarged to satisfy current fire flow requirements.

Water Mains Installed or Rehabilitated



This map is provided "as is" without warranties of any kind. See www.cityofevanston.org/mapdisclaimers.html for more information.

Leak Detection Program

In 2013, the Public Works Agency developed a City-wide surveying program to catch water main leaks early and minimize our water loss. This saves operating costs to produce the water, conserves a vital natural resource, and allows more water mains to be repaired proactively rather than on an emergency basis.

The Public Works Agency uses leak noise loggers, small transmitters that sense the sound waves created by water escaping through a hole in a water main, to test water mains for leaks throughout the year. This proactive leak surveying program began in 2013, and water distribution crews were able to survey all 156 miles of Evanston's water mains in 2013-2014.



The 2021 survey found three leaks on a building water service pipe and one break on water mains. These defects were all successfully repaired, and the resulting estimated water savings for 2021 were over 5.74 Million Gallons (MG).

Year	Miles of Water Main Surveyed	Water Service Leaks Found	Water Main Breaks Found	Water Savings After Repairs
2017	156	3	2	9.90 MG/Year
2018	143	3	3	14.06 MG/Year
2019	146	1	2	8.85 MG/Year
2020	141	2	3	13.53 MG/Year
2021	139	3	1	5.74 MG/Year
Totals	725	12	11	52.08 MG

In 2021 and future years, the Public Works Agency anticipates being able to survey the entire 156 miles of water mains in Evanston every year. This frequency is important since water main breaks and leaks can develop at any time; a water main that shows no signs of leakage one year can develop a large leak by the next year.

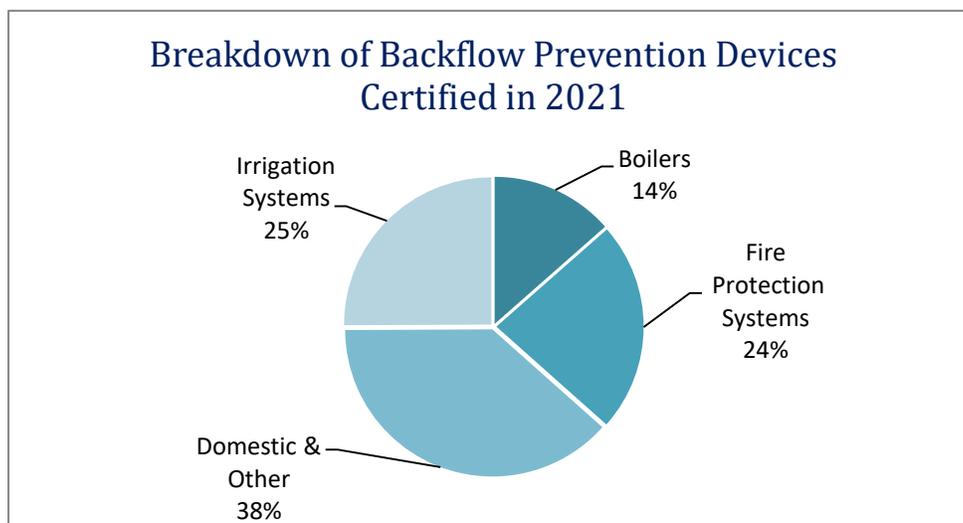
Cross Connection Control

A cross connection is a point in a plumbing system where the potable (safe, drinkable) water supply is connected to a non-potable (polluted or untreated) source. A cross connection exists whenever the drinking water system is or could be connected to any non-potable source. If cross connections are not properly protected and there is a drop in pressure, untreated sources and dirt can be pulled into household plumbing systems.

The State of Illinois and the City of Evanston require mandatory backflow protection on certain households and facilities where high health-hazard-type cross connections are normally found. Underground lawn sprinkling systems, fire protection systems, hospitals and health clinics, mortuaries, laboratories, food and beverage processing and car washes are just a few of the locations where backflow prevention is necessary to protect the quality of our public water supply.

In 2008, the Public Works Agency hired a plumbing inspector to manage the City's cross connection control program. Since that time, over 4,000 backflow prevention devices have been added to the City's inventory and are now regularly inspected for compliance with State and City codes. In 2020, the City implemented a web-based software application, created by BSI, to manage its cross connection control program. This tracking system enables the City to ensure these devices are properly maintained throughout their life cycle. This helps keep the high quality drinking water produced by the City's water treatment plant safe to drink after entering the water distribution system.

Year	Backflow Prevention Devices Certified Annually
2017	4,364
2018	4,522
2019	4,642
2020	4,742
2021	4,782



Metering

The Meter Division manages water meter reading and billing for Evanston's 14,513 retail water and sewer customers, working with the City's Collector's Office to process water/sewer bill payments and cross connection control fees. The Meter Division also coordinates with the Distribution Division to manage replacement of damaged and obsolete water meters, accuracy testing for large water meters, and water service shutoff and restoration.

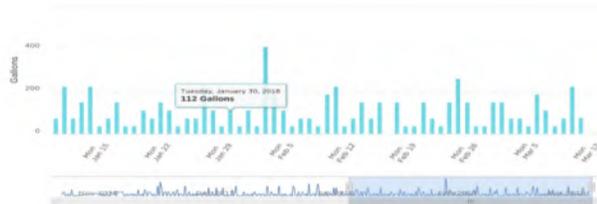
In 2013-2014, the Meter Division managed Evanston's migration to a new Advanced Metering Infrastructure (AMI) system, which has improved accuracy and efficiency of the water metering and billing processes. The AMI system also generates automated hourly meter reads and leak alerts for customers to help reduce water loss. In 2020, the AMI software was upgraded to a Cloud-Based Management Platform, the new Neptune 360. Current technology allows automatic system updates and meter readings to be taken automatically every hour, with once-daily, wireless upload of readings to a computerized billing system.

In 2017 a contractor was hired to exchange and replace out 5,732 old meters that are 20 years old and to obtain better resolution of the meter reading.

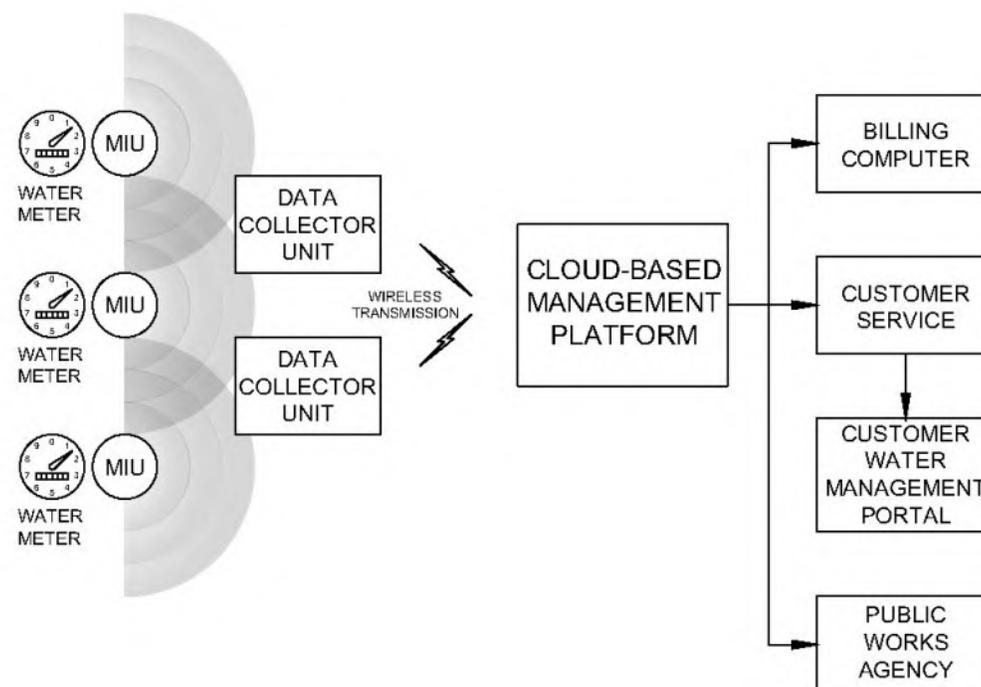


A Public Works Agency employee installs a new remote water meter reading unit on the exterior of a home as part of the Advanced Metering Infrastructure (AMI) software. This unit makes it possible for meter readings to be transmitted via wireless network without City staff having to visit each property to manually read the meters.

Introduced to our customers in 2018 and currently with over 9,100 customers is the Customer portal, WaterSmart which allows customers to monitor and receive alerts of their water usage. Customers can set their usage alerts to trigger between 1X and 5X of normal usage. Customers in the portal are notified or tracking hourly, daily or monthly usage.



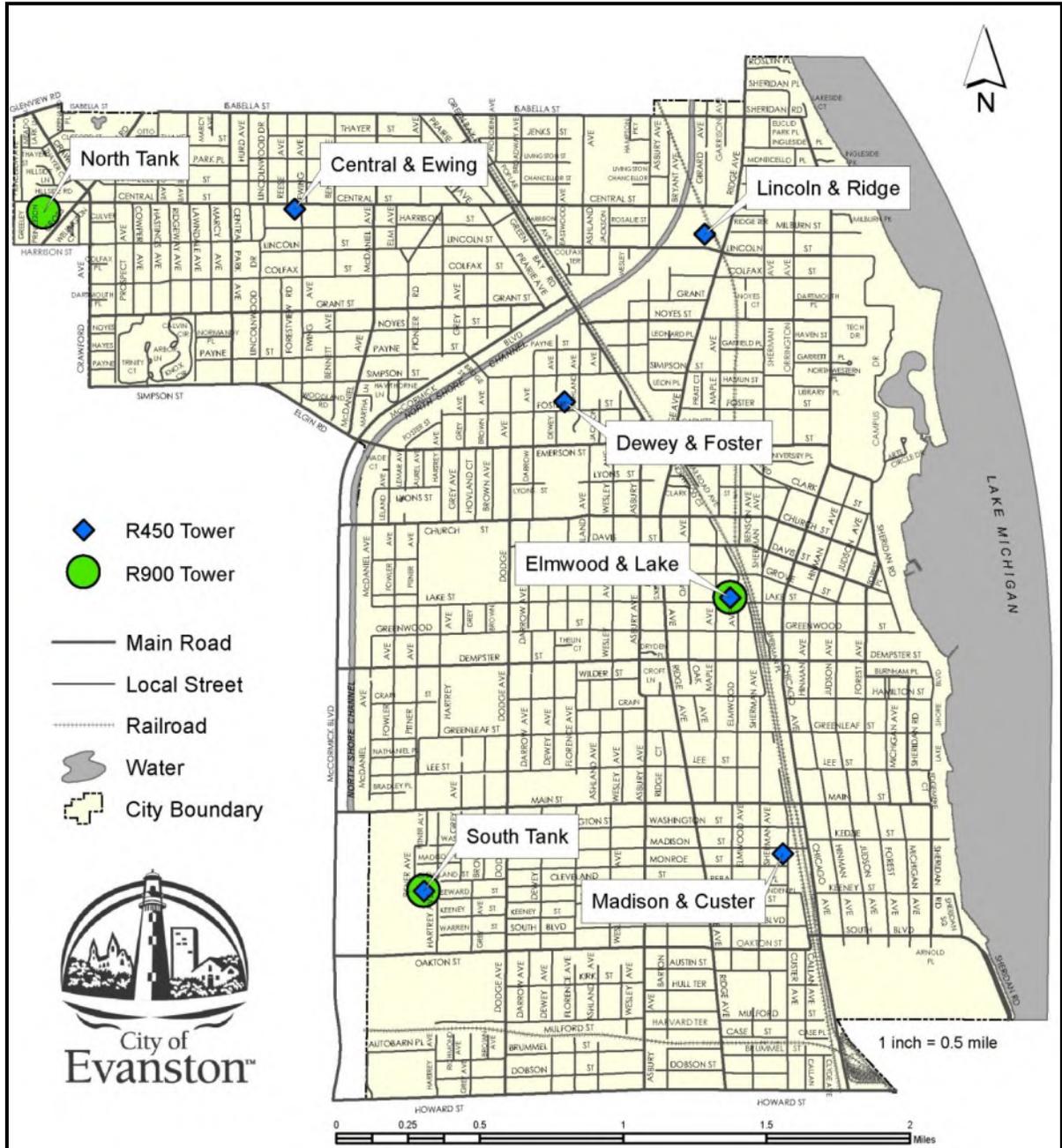
Automatic Metering Infrastructure (AMI) System



How it works:

- A Meter Information Unit (MIU) is attached to every water meter in Evanston. The MIU takes a meter reading once an hour and stores these readings for a full day. Each MIU broadcasts the readings once a day using a wireless transmitter.
- The Data Collector Unit (DCU) receives the meter readings from the MIUs. Evanston currently has a total of 9 DCUs located on various buildings throughout the community. We have added 3 additional DCU's to handle the new upgraded R900 MIU. Each DCU sends its meter reading information to the Neptune Cloud-Based Management Platform System on a daily basis. The system receives updates automatically and is accessible anytime, anywhere through an internet connections and critical information is always available with just a few clicks.
- The Cloud-Based Management Platform supports customer service and system management activities. It transfers the meter readings to the billing system to generate bi-monthly water and sewer bills for Evanston customers.
- The Cloud-Based Management Platform monitors fluctuations in water usage, and sends leak alerts to the network administrator if a customer's real-time meter readings are significantly higher than historical trends.
- The AMI system includes an online portal where Evanston customers can monitor their water usage, compare usage trends under various weather conditions, and set up leak alerts of their own.

Transmitter Tower Locations



Water Meter Inventory

Water is billed bi-monthly in units of 100 cubic feet (CF). The minimum service charge every two months is based on water meter size as follows:

Meter Size	Number of Meters
5/8"	11,340
3/4"	1,225
1"	1,126
1.5"	258
2"	484
3"	65
4"	28
6"	4
8"	4
Total	14,534

Water Rates for Evanston Customers

Water is billed bi-monthly in units of 100 cubic feet (CF). The minimum service charge every two months is based on water meter size as follows:

Meter Size	Minimum Charge Effective 1/1/2021
5/8" & 3/4"	\$10.33
1"	\$20.61
1 1/2"	\$38.58
2"	\$60.74
3"	\$106.97
4"	\$171.35
6"	\$302.12
8"	\$511.54

The minimum demand charge includes the first five hundred cubic feet (500 CF) of water consumed every two months, which is roughly equivalent to 3,740 gallons of water.

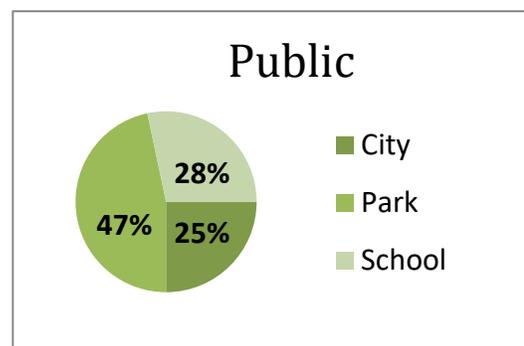
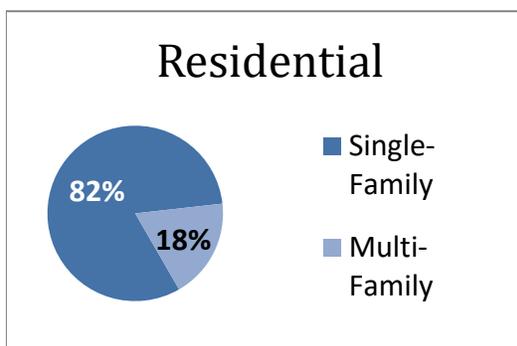
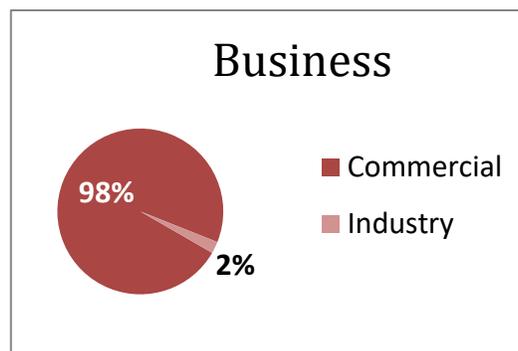
Water usage over the minimum is billed at \$2.89 per CF effective 1/1/2021. This is equivalent to a rate of \$3.86 per 1,000 gallons.

Water Customer Classes and Metered Usage

Billed by Category and Water Usage for 2021

Category	Number of Accounts	2021 Usage (100 CF)*
Metered Water Services		
Single-Family	10,912	999,810
Multi-Family	2,469	1,098,479
Commercial	929	925,927
Industry	22	10,589
City	30	14,633
Park	56	13,267
School	34	24,746
Subtotal	14,452	3,087,451
Unmetered Water Services		
Fire Services**	657	-
Totals	15,109	3,087,451

Water Service Accounts by Category:

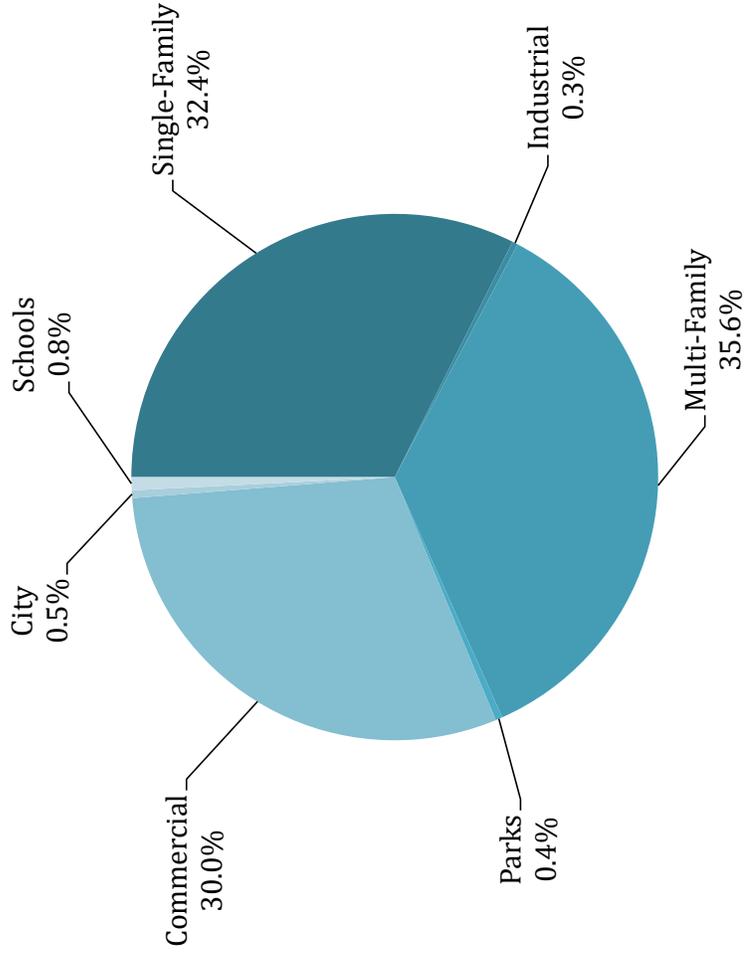


* Water usage is metered in units of 100 cubic feet (CF). 100 CF is approximately 748 gallons

** Fire services are not metered. They are billed a flat charge twice per year.

Water Usage Breakdown for Evanston Customers

Evanston Water Usage Distribution for 2021



Sewer

The Sewer Division manages the operation, inspection, maintenance, and repair of the City's sewer mains and structures (sewer manholes, catch basins, and stormwater inlets). This includes proactive programs such as sewer main and drainage structure cleaning, root cutting, and televised internal sewer main inspection; as well as responding to all reports of sewer backups and flooding. This division also inspects work done by contractors including sewer main lining and manhole rehabilitation. Sewer Division staff conduct regular inspection of sewer outfalls and other facilities throughout Evanston for compliance with the City's sewer system operating permits with the Illinois Environmental Protection Agency.



Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

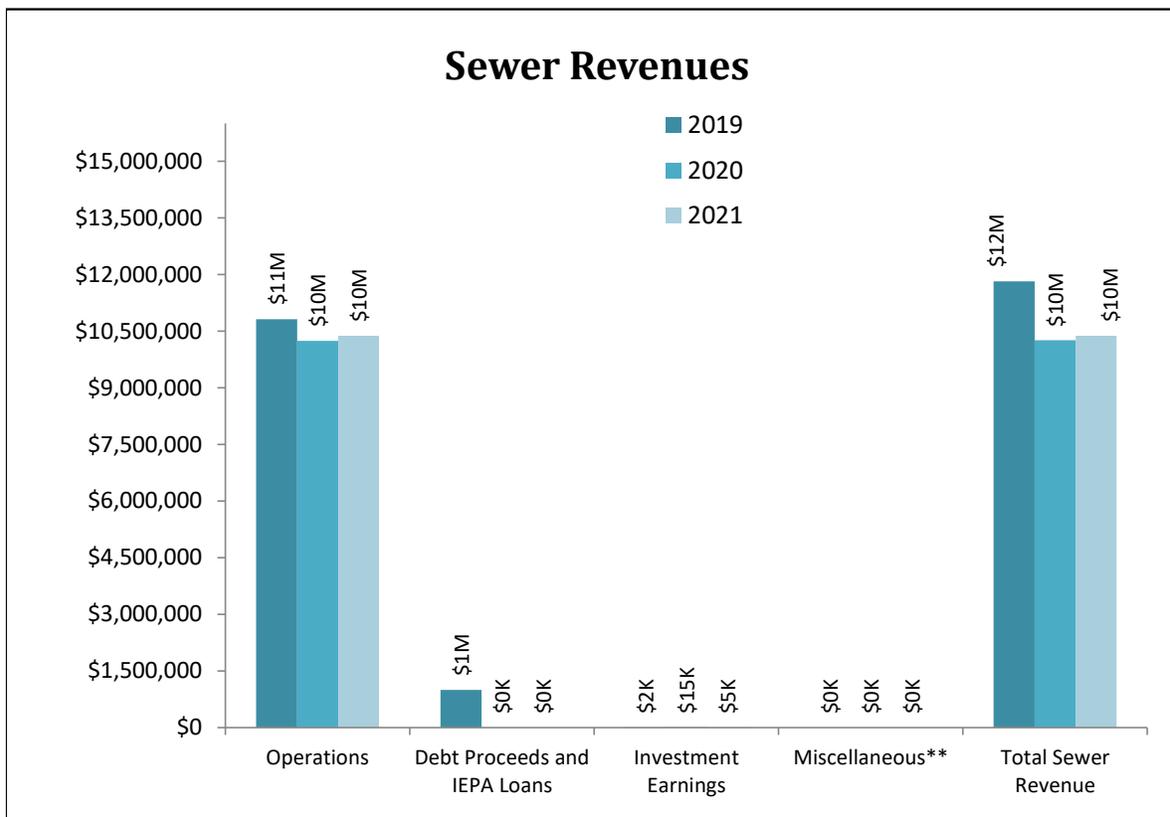
Much of Evanston's sewer system was constructed in the late 1800s to early 1900s. These pipes are far too small to convey both domestic sewage and stormwater runoff as they were intended to do. Beginning in the early 1990s, Evanston constructed a network of relief sewers, which are much larger and deeper than the original combined sewers. The relief sewers now convey most of the stormwater runoff, to avoid overwhelming the combined sewers during rain events. The relief sewers run to a number of drop shafts located along the North Shore Channel, where they discharge directly to the Metropolitan Water Reclamation District's (MWRD) deep tunnel system.



This drop shaft was one of the starting points for a tunneling machine that installed Evanston's relief sewers as a part of the Long Range Sewer Program in 1992 – 2008. Relief sewers are installed at depths of up to 60 feet to efficiently collect and transport large volumes of stormwater without impacting customers and other utilities.

Sewer Revenues*

	2019	2020	2021
Operations	\$10,819,358	\$10,242,066	\$10,373,597
Debt Proceeds and IEPA Loans	\$1,000,000	\$0	\$0
Investment Earnings	\$2,185	\$15,111	\$4,547
Miscellaneous**	\$0	\$0	\$0
Total Sewer Revenue	\$11,821,543	\$10,257,177	\$10,378,144

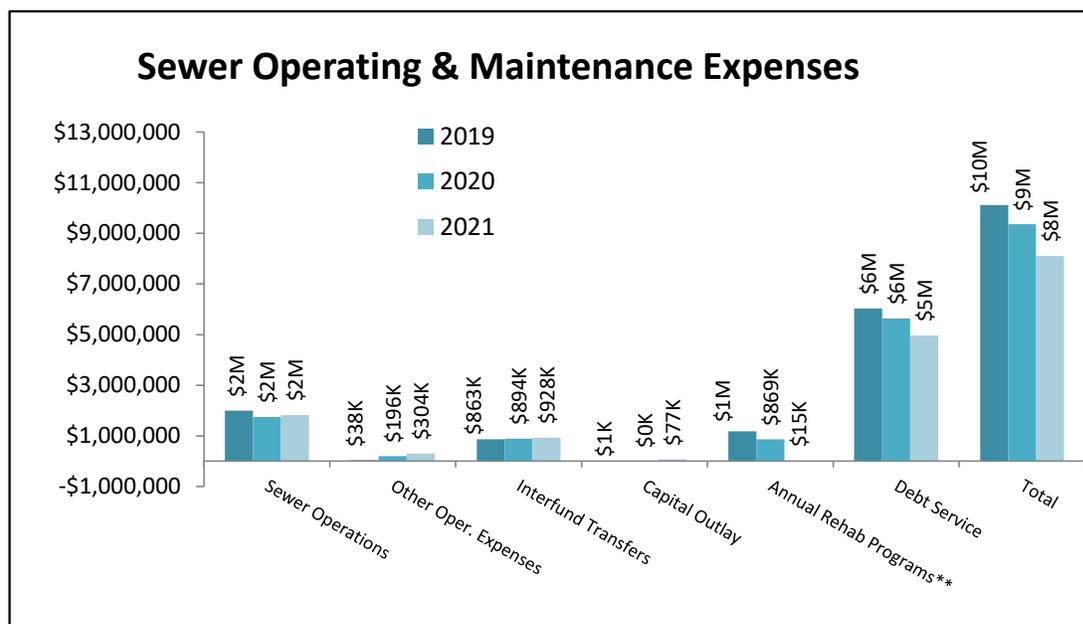


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <https://www.cityofevanston.org/government/transparency/budget-financial-reports/>. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

** Miscellaneous Revenue includes fees, grants, and merchandise sales.

Sewer Operating & Maintenance Expenses*

	2019	2020	2021
Sewer Operations	\$1,996,867	\$1,750,738	\$1,819,816
Other Oper. Expenses	\$38,212	\$196,023	\$303,860
Interfund Transfers	\$863,402	\$894,212	\$927,636
Capital Outlay	\$952	\$0	\$76,776
Annual Rehab Programs**	\$1,175,661	\$869,117	\$14,802
Debt Service	\$6,034,324	\$5,644,596	\$4,963,593
Total	\$10,109,418	\$9,354,686	\$8,106,483



* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <https://www.cityofevanston.org/government/transparency/budget-financial-reports>. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

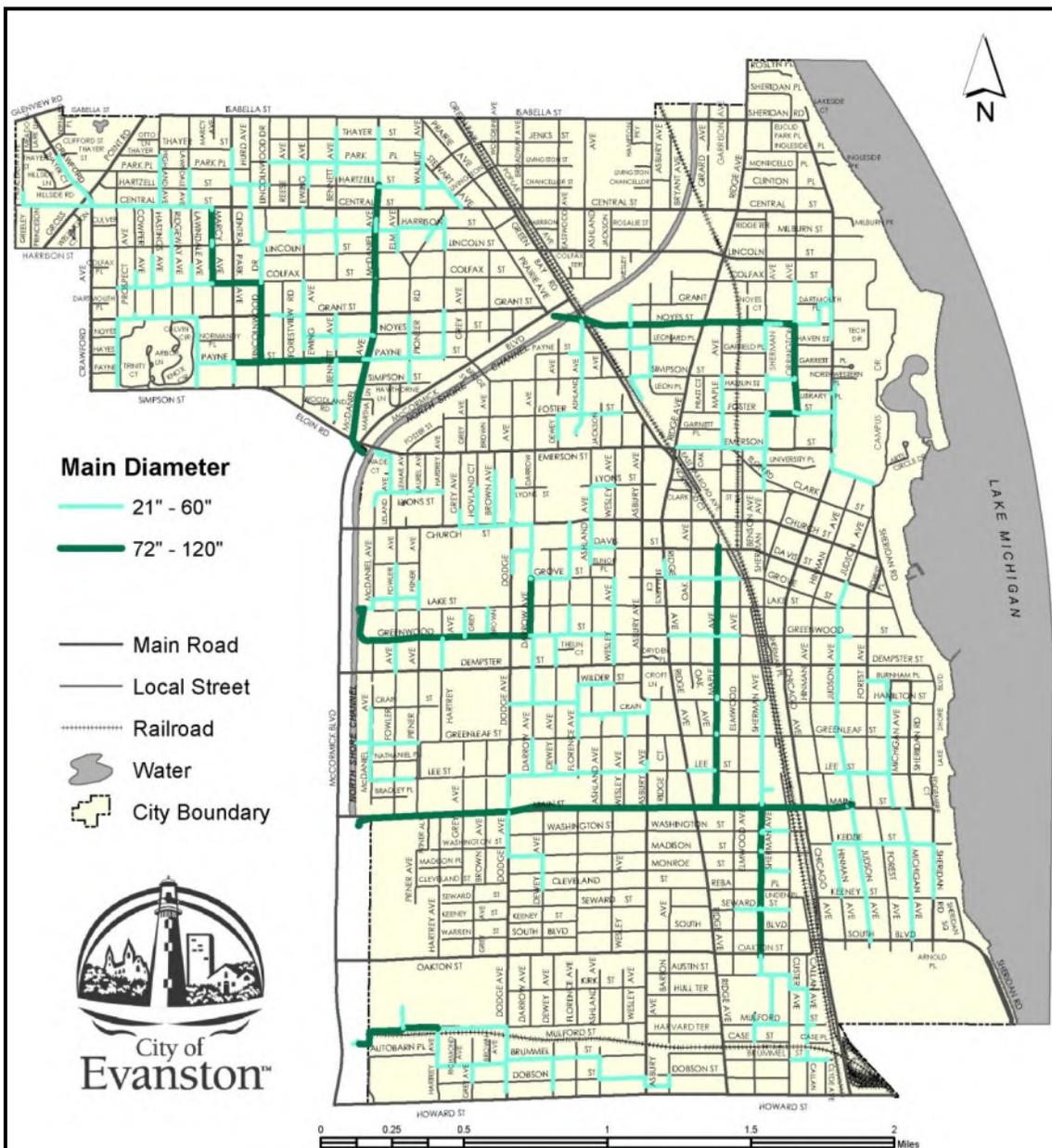
Major Combined Sewer System

The combined sewer system is Evanston's original sewage collection system. Much of this system was constructed in the late 1800s to early 1900s. The system was intended to capture and convey both domestic sewage and stormwater runoff, though as early as the early 1900s the City experienced flooding and basement backups during rain storms because the combined sewer pipes were not large enough to handle stormwater. In the early 1990s, Evanston began constructing a relief sewer system to convey the majority of the stormwater runoff and lessen the risk of basement backups.



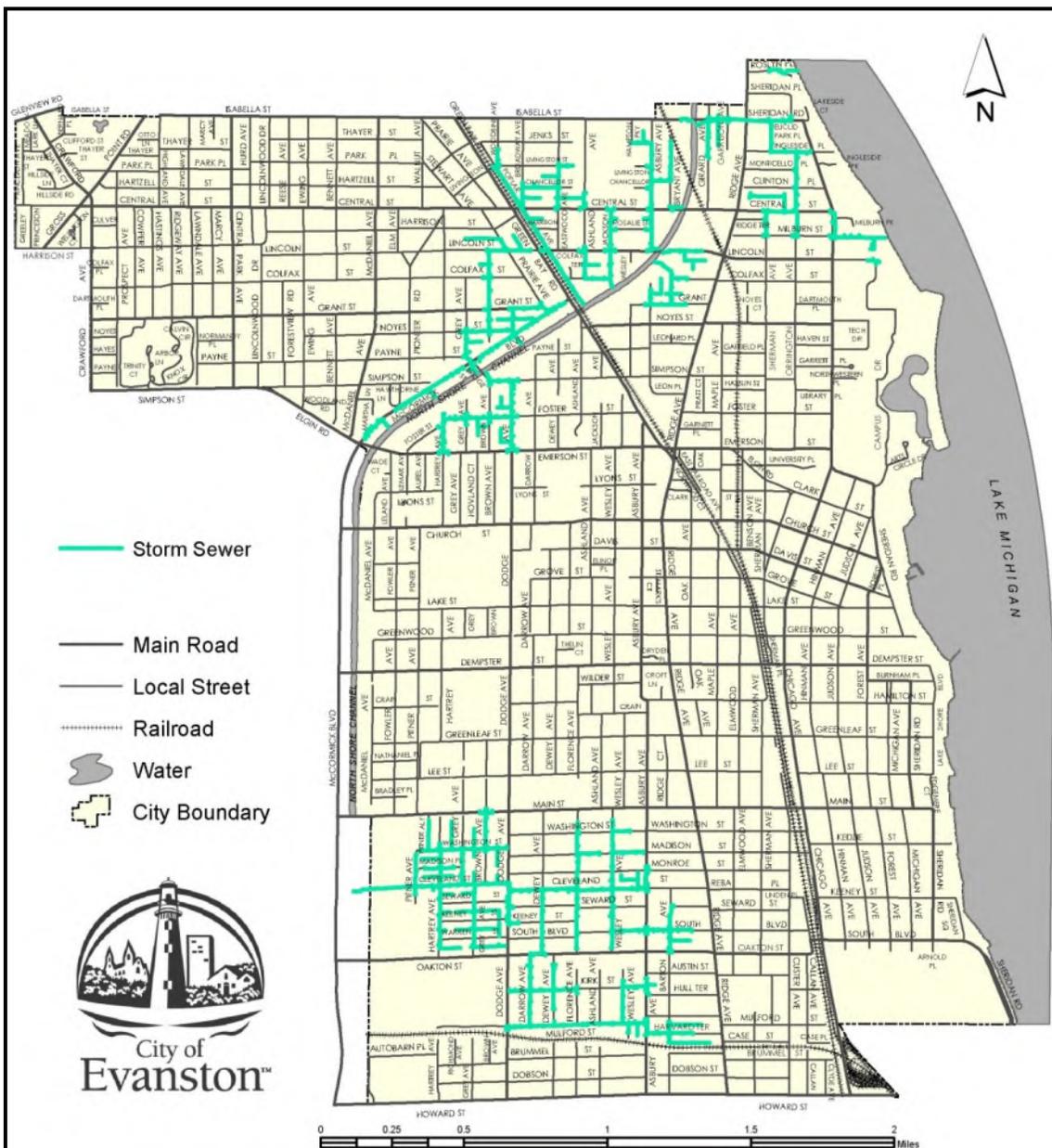
Major Relief Sewer System

Starting as long ago as 1902, property owners in Evanston experienced sewage backing up into their basements during significant rain events. In 1990, the City Council approved a Long Range Sewer Improvement Program to mitigate property damage caused by basement backups. As part of this program, a network of large diameter relief sewers was constructed between 1991 – 2008 at a cost of \$210 million. These pipes are larger and deeper than the combined sewers, and convey stormwater runoff and sewage overflows to avoid overwhelming the combined sewers.



Major Storm Sewer System

The storm sewer system discharges directly to the North Shore Channel and Lake Michigan. It is only utilized during rain events to convey stormwater from the streets to the channel or the lake. Most of the storm sewers in southwest Evanston were installed in the late 1970s to early 1980s. The remainder of storm sewers in this area, as well as the storm sewers in north central and northeast Evanston, were installed between 1991-2008 as part of the Long Range Sewer Improvement Program. Evanston operates the storm sewer system under a special permit issued by the Illinois Environmental Protection Agency.

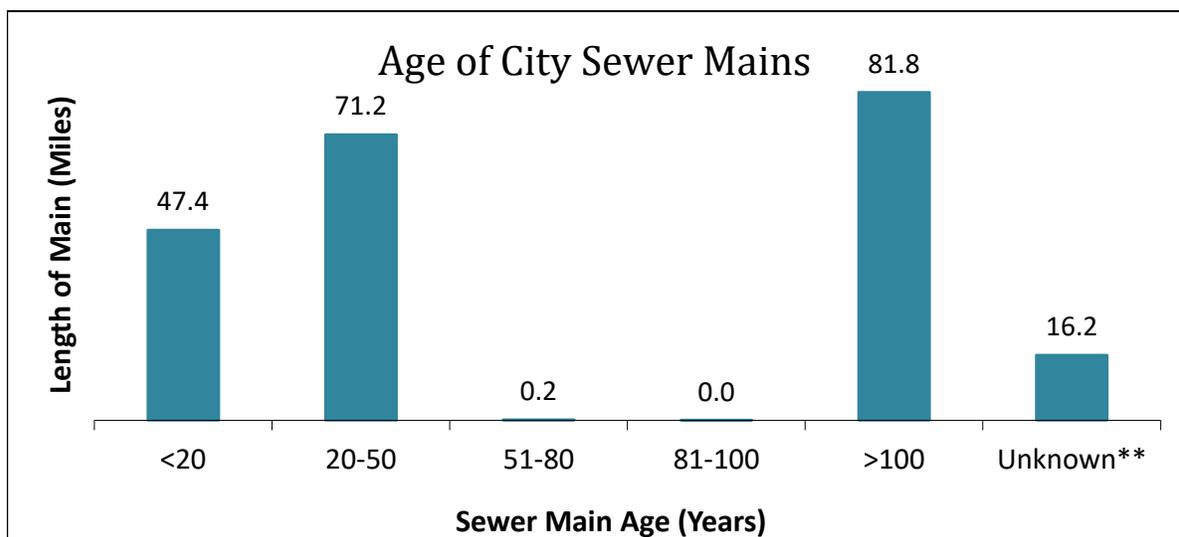


Sewer Mains

System Data and Maintenance

Sewer Length by Type	Pipe Length (miles)				
	2017	2018	2019	2020	2021
Combined Sewer	144.30	144.53	144.25	144.23	144.28
Relief Sewer	53.78	54.54	55.14	55.54	55.72
Storm Sewer	16.30	16.30	16.44	16.65	16.72
Total Length	214.38	215.37	215.84	216.42	216.72

Sewer Installation and Maintenance	Pipe Length (feet)				
	2017	2018	2019	2020	2021
Installed (new)	501	2,311	3,746	2,896	1,023
Replaced	178	760	281	84	287
CIPP Rehabilitation (Lining)	13,921	4,662	11,578	15,191	14,301
Spot Repair	1,048	3,107	1,495	3,219	4,480
Clean - Hydroflush	253,055	45,575	143,443	56,603	95,900
Clean - Root Cut	1,907	1,618	8,582	4,149	13,557
Inspection - General	19,881	9,509	6,292	7,154	3,387
Inspection - Televised	50,901	42,897	49,900	56,985	74,876
Inspection - Storm-related*	161	1,304	375	1,446	0



* Inspection of City sewer mains as a result of sewer surcharge during or after a wet weather event, and inspection of storm sewer outfalls into the North Shore Channel.

** Mains of unknown age were installed prior to detailed record keeping on sewer installations.

Length of Sewer Mains

By Type and Diameter

Diameter	Combined Sewer		Relief Sewer		Storm Sewer	
	Feet	Miles	Feet	Miles	Feet	Miles
<6"	2,925	0.55	243	0.05	0	0.00
6"	1,789	0.34	196	0.04	540	0.10
8"	20,766	3.93	11,713	2.22	1,883	0.36
9"	125,069	23.69	7,281	1.38	973	0.18
10"	110,611	20.95	32,889	6.23	11,422	2.16
12"	221,398	41.93	30,166	5.71	11,064	2.10
14"	1,019	0.19	0	0.00	0	0.00
15"	91,765	17.38	6,426	1.22	5,247	0.99
16"	2,085	0.39	6,889	1.30	724	0.14
18"	63,562	12.04	16,566	3.14	7,693	1.46
20"	8,093	1.53	132	0.03	0	0.00
21"	14,930	2.83	2,614	0.50	1,910	0.36
22"	867	0.16	0	0.00	0	0.00
24"	22,027	4.17	47,574	9.01	15,967	3.02
27"	6,020	1.14	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,078	3.61	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,761	3.74	18,238	3.45	6,730	1.27
39"	421	0.08	0	0.00	0	0.00
40"	377	0.07	0	0.00	0	0.00
42"	6,700	1.27	12,297	2.33	3,570	0.68
45"	1,029	0.19	0	0.00	0	0.00
48"	13,210	2.50	22,377	4.24	7,966	1.51
51"	1,104	0.21	0	0.00	0	0.00
54"	1,981	0.38	3,173	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,424	1.41	5,234	0.99	3,633	0.69
72"	4,129	0.78	11,669	2.21	0	0.00
78"	0	0.00	5,452	1.03	0	0.00
84"	0	0.00	88	0.02	0	0.00
96"	0	0.00	2,366	0.45	0	0.00
108"	0	0.00	5,012	0.95	0	0.00
113"	0	0.00	9,275	1.76	0	0.00
120"	0	0.00	7,340	1.39	0	0.00
Unknown	1,233	0.23	2,232	0.42	691	0.13
Totals	761,820	144.28	294,203	55.72	88,256	16.72

Total Sewer Main Length: 216.72 miles

Sewer Structures

System Data and Maintenance

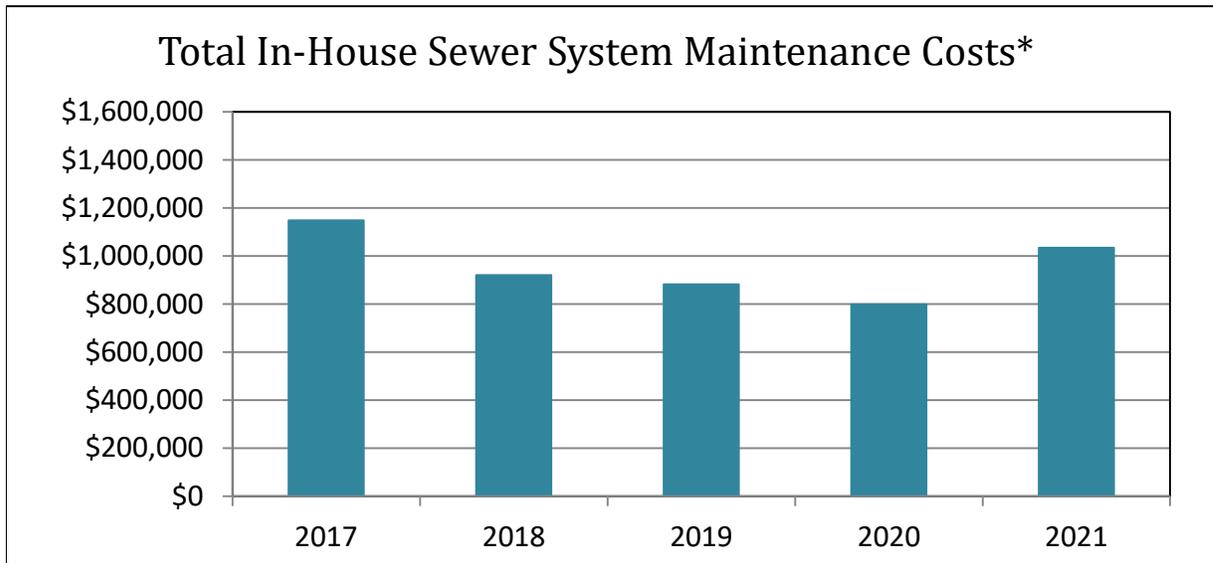
Number of Sewer Structures	2017	2018	2019	2020	2021
Manholes	5,588	5,620	5,637	5,644	5,652
Inlets	3,025	3,092	3,121	3,137	3,147
Catch Basins	6,241	6,280	6,291	6,217	6,229
Total	14,854	14,992	15,049	14,998	15,028

Sewer Structure Installation & Maintenance	2017	2018	2019	2020	2021
Installed (new)	4	27	41	23	21
Replaced	15	6	24	13	22
Repair	97	116	95	113	97
Clean	1,889	3,006	1,910	2,921	2,749
Inspect - General	196	668	187	252	475
Inspect - Storm-Related*	995	998	598	385	368

* Inspection of City drainage structures as a result of street or alley flooding during or after a wet weather event.

Breakdown of In-House Maintenance Costs

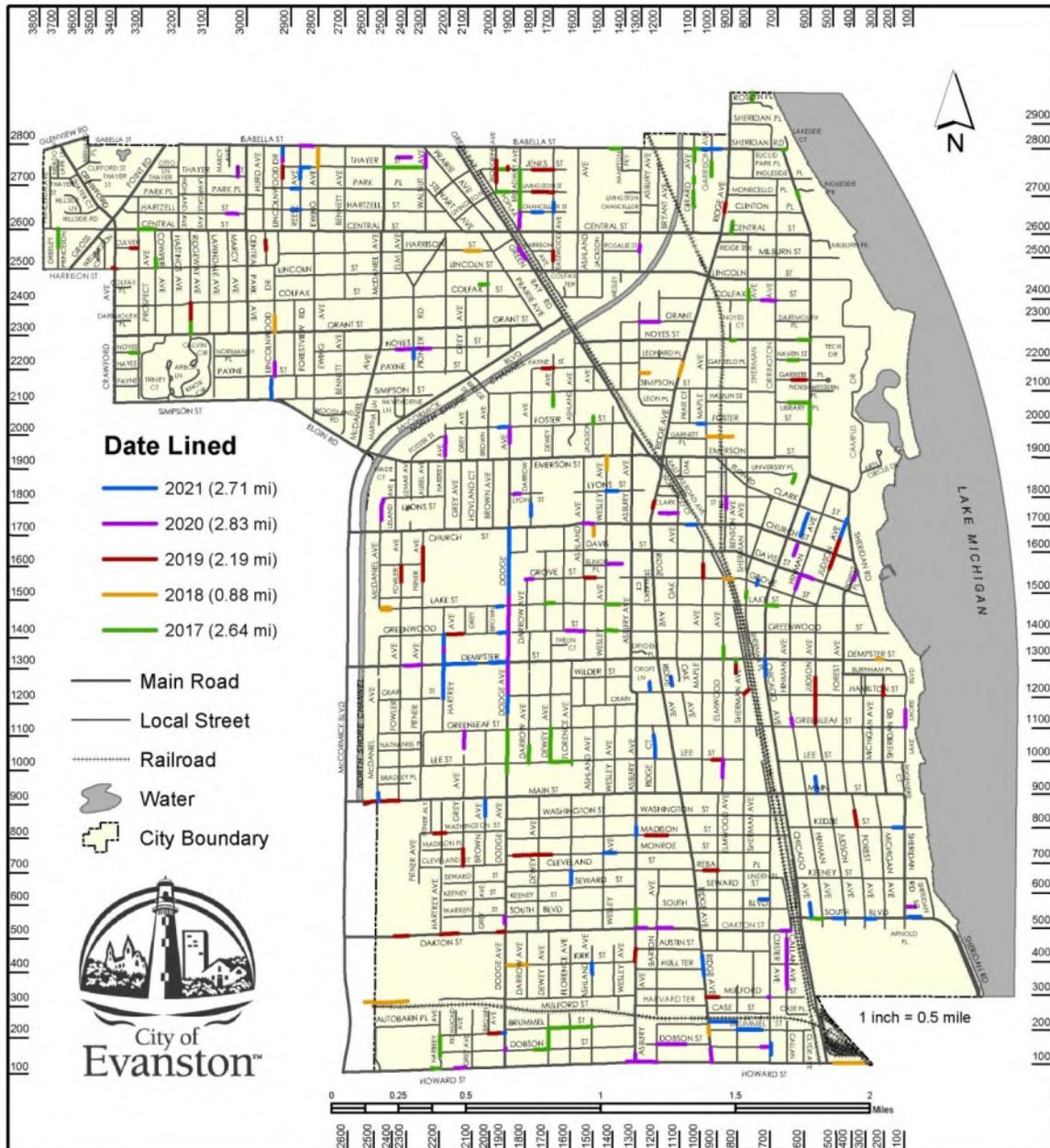
Description	2017	2018	2019	2020	2021
Sewer Mains	\$377,668	\$238,526	\$267,761	\$253,462	\$290,247
Sewer Structures	\$434,624	\$360,072	\$277,468	\$297,034	\$425,842
Equip/Facility Maint.	\$164,159	\$117,291	\$113,110	\$117,714	\$86,502
Assist W&S Divisions	\$41,226	\$36,266	\$21,835	\$20,069	\$23,813
Snow & Ice Removal	\$12,423	\$66,934	\$50,086	\$19,419	\$114,898
Assist Contractors	\$23,378	\$20,102	\$37,141	\$26,010	\$22,039
Assist Other City Depts.	\$31,302	\$41,396	\$65,575	\$28,378	\$26,789
Assist Public Works	\$0	\$0	\$0	\$0	\$5,394
Safety & Training	\$23,472	\$26,350	\$17,973	\$8,298	\$23,465
Administrative General	\$39,778	\$12,525	\$30,605	\$26,988	\$14,793
JULIE Locates	\$236	\$648	\$1,052	\$1,270	\$1,412
Total	\$1,148,265	\$920,111	\$882,606	\$798,642	\$1,035,194



* Costs fluctuate from year to year due to changes in maintenance needs and prioritization of repair projects.

Sewer Mains Rehabilitated (Lined)

The Public Works Agency manages an annual sewer improvement program, with the goal of rehabilitating at least 1.5 miles of combined sewer mains annually (minimum 1% annual system-wide renewal rate).



Green Infrastructure

Green infrastructure is an approach to managing precipitation by reducing and treating stormwater at its source while delivering environmental, social and economic benefits. In terms of green infrastructure, the City primarily uses porous pavement and rain gardens.

Component	Material Cost	Contractor Maintenance Cost	In-House Maintenance Cost	Total Cost
Porous Pavement	\$0.00	\$1,950.00	\$1,702.00	\$3,652.00
Rain Gardens	\$0.00	\$16,500.00	\$0.00	\$16,500.00
Totals	\$0.00	\$18,450.00	\$1,702.00	\$20,152.00

