2018

ANNUAL REPORT

Evanston Public Works Agency

Water Production Bureau

Water and Sewer Utilities

Committed to serving the community for 145 years

2018 Executive Summary

Evanston 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

477,174 Residents supplied
58,938 Businesses supplied
in Evanston and 8 other communities

SEWER UTILITY

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

BUDGET

$45.6million - Water Fund
$14.8 million - Sewer Fund
48.5 full-time equivalents (FTE) staff

General Information

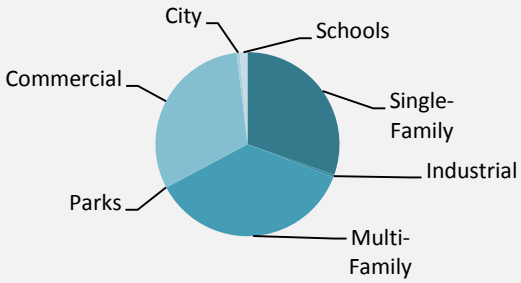
15,049 Million Gallons – Total Water Pumped in 2018
55 Million Gallons – Maximum Pumpage in One Day
June 13th – Day When the Maximum Pumpage occurred

583 Fire Hydrants Replaced/Repaired

1.3 Miles of Water Main Installed/Replaced/Rehabilitated
66 Water Main Valves Installed/Replaced/Rehabilitated
1.5 Miles of Sewer Main Installed/Replaced/Rehabilitated
149 Sewer Structures Installed/Replaced/Repaired
10.2 Miles of Sewer Main Inspected
8.9 Miles of Sewer Main Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



11.5 Million kWh of Electric Power Used

127,945 Therms of Natural Gas Used

$66.10 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)

CROSS CONNECTION CONTROL

4,522 Backflow Prevention Devices Certified in 2018

Programs and Initiatives

Water Quality – Lead and Copper Tested in Drinking Fountains

Sampled water from 59 park drinking fountains. Twelve fountains tested above 15 ppb and were shut off. Using strategies for high lead levels that were formed in 2017 all twelve fountains were remediated.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

156 miles of water main were surveyed, 3 water service leaks and 2 water main breaks were found. This resulted in 9.9 million gallons/year of water savings.

Exchanged and Replaced 20-Year-Old Meters with New Meters

Exchanged and replaced over 5,592 old meters to obtain better resolution of the meter reading. A new customer portal, WaterSmart, was introduced 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.

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 2018.

- **Water Main Replacement:** Colfax Place – Crawford Avenue to East End Alley; Colfax Street – Bryant Avenue to Ridge Avenue; Dewey Avenue – Grove Street to Church Street; Hinman Avenue – Keeney Street to Kedzie Street; Lawndale Avenue – Elgin Road to Grant Street; Madison Place – West end to Hartrey Avenue
- **Inspection** of Large Diameter Water Mains
- **Replacement** of Drinking Fountains
- **Construction** of Emerson Street Water Meter Vault
- **Combined Sewer:** CIPP Rehabilitation
- **Large Diameter Sewer Rehabilitation:** Mulford Street

Accomplishments and Goals

2018 MAJOR ACCOMPLISHMENTS

Water Supply Expansion

Began supplying water to Morton Grove and Niles. Executed a water supply agreement with Lincolnwood.

Large Diameter Sewer Rehabilitation Project

Completed Mulford Street Large Diameter Sewer Lining Project. Performed engineering design and secured State low-interest loan funding for the Greenleaf Street Large Diameter Sewer Rehabilitation project scheduled for 2019.

Completed Phase 1 of the Citywide Water Meter Replacement Program

Replacement of 5,592 water meters, approximately 38% of the total water meters.

2019 MAJOR GOALS AND INITIATIVES

Water Supply Expansion

Begin supplying water to Lincolnwood.

Water Treatment Facility Improvements

Begin the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

Maintenance Management System Implementation

Begin Year 3 implementation of the Computerized Maintenance Management System (CMMS) to more effectively manage long-term maintenance and replacement of critical equipment and structures.

Large Diameter Sewer Rehabilitation Project

Complete Greenleaf Street Large Diameter Sewer Lining Project.

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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 400,000 people and 50,000 businesses in Evanston and eight other communities. The Water Utility also operates and maintains more than 155 miles of water mains, 2,000 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 200 miles of sewer mains ranging in size from less than 6-inch diameter to 120-inch diameter, including over 5,500 manhole structures and over 9,000 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 2018 adopted budget was approximately $60.4 million ($45.6 million Water Fund and $14.8 million Sewer Fund). Public Works Agency staff includes 48.5 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2016	2017	2018
Total Water Pumped (millions of gallons)	14,519	14,821	15,049
Fire Hydrants Repaired or Replaced	345	545	583
Water Main Valves Repaired or Replaced	56	61	50
Water Main Replaced or Rehabilitated (miles)	2.27	0.87	1.26
Large Diameter Sewer Rehabilitated (feet)	1,908	0	835
Small Diameter Sewer Rehabilitated (feet)	5,845	13,921	3,827
Sewer Mains Inspected (feet of pipe)	80,094	70,782	53,710
Sewer Mains Cleaned (feet of pipe)	225,966	254,962	47,193
Sewer Structures Repaired or Replaced	98	112	122

2018 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 400,000 customers in eight communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Supply Expansion

Continue to develop and implement a strategy to expand Evanston's wholesale water customer base, including executing a water supply agreement with Lincolnwood and beginning to supply water to the Morton Grove and Niles Water Commission.

Main Replacement and Improvement

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, to improve upon our historical 1% annual water main renewal rate, and to survey the entire distribution system for leaks on an annual cycle.

Coordinated 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.

Water Meter Replacement

Completed Phase 1 of the citywide Water Meter Replacement Program with the replacement of 5,592 water meters, approximately 38% of the total water meters.

Maintenance Management System Implementation

Completed Year 2 implementation of the Computerized Maintenance Management System (CMMS) including Roads, curbs, sidewalks; Facilities (Service Center, Police and Fire Stations) assets to more effectively manage long-term maintenance and replacement of critical equipment and structures.

Complete Large Diameter Sewer Rehabilitation

Completed Mulford Street Large Diameter Sewer Lining awarded in 2017. Performed engineering design and secured State low-interest loan funding for the Greenleaf Street Large Diameter Sewer Rehabilitation project scheduled for 2019.

Small Diameter Sewer Rehabilitation

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

Arterial Street Sewer Structure Rehabilitation

Continued the sewer structure rehabilitation program to address deterioration of sewer structures on arterial streets.

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.

Continue Best Management Practices 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.

Increase Storm Water Management Initiatives
Increased storm water management initiatives in compliance with requirements for National Pollution Discharge Elimination System (NPDES) permit and Municipal Separate Storm Sewer System (MS4) permit.

2019 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 450,000 customers in ten communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Supply Expansion
Continue to develop and implement a strategy to expand Evanston's wholesale water customer base, including beginning to supply water to Lincolnwood.

Water Treatment Facility Improvements
Assure the quality and reliability of the potable water supply by beginning a major water treatment plant improvement with the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

Maintenance Management System Implementation
Begin Year 3 implementation of the Computerized Maintenance Management System (CMMS) including Roads, curbs, sidewalks; Facilities (Service Center, Police and Fire Stations) assets to more effectively manage long-term maintenance and replacement of critical equipment and structures.

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.

Complete South Standpipe Modifications
Complete modifications to the South Standpipe Pump Station motor controls, electrical system and pump station building.

Complete Large Diameter Sewer Rehabilitation
Complete Greenleaf Street Large Diameter Sewer Rehabilitation project that secured State low-interest loan funding in 2018.

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 the Sewer Structure Rehabilitation
Continue the sewer structure rehabilitation program to address deterioration of sewer structures on arterial streets.

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.

Increase Stormwater Management Initiatives
Increase stormwater management initiatives in compliance with requirements for National Pollution Discharge Elimination System (NPDES) permit and Municipal Separate Storm Sewer System (MS4) permit.

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 ft^2 each, surface loading rate of 3 gpm/ft^s
12 – 10.0 mgd, 1,391 ft^2 each, surface loading rate of 5 gpm/ft^2
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 parking lot – 5.0 MG
Total Plant Storage – 9.4 MG

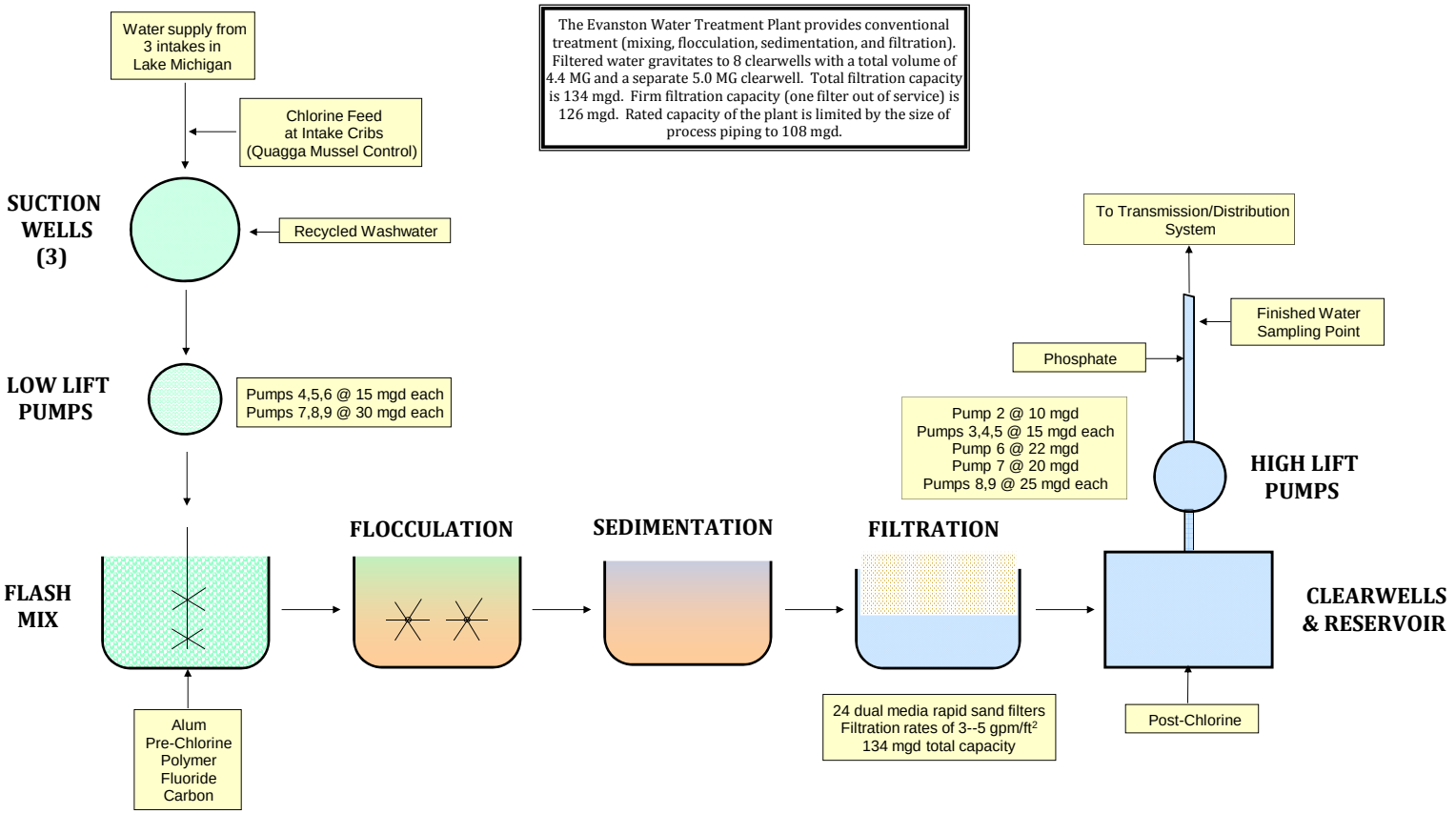
High Lift Pumps
1 – 15 mgd, electric motor driven
2 – 25 mgd, electric motor driven
1 – 10 mgd, dual drive, electric/natural gas
2 – 15 mgd, dual drive, electric/natural gas
1 – 22 mgd, dual drive, electric/natural gas
1 – 20 mgd, natural gas engine
Total capacity of 147 mgd
Emergency standby capacity 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 2018)

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

1944

- 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

1994

- Constructed new chemical storage and handling building

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 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

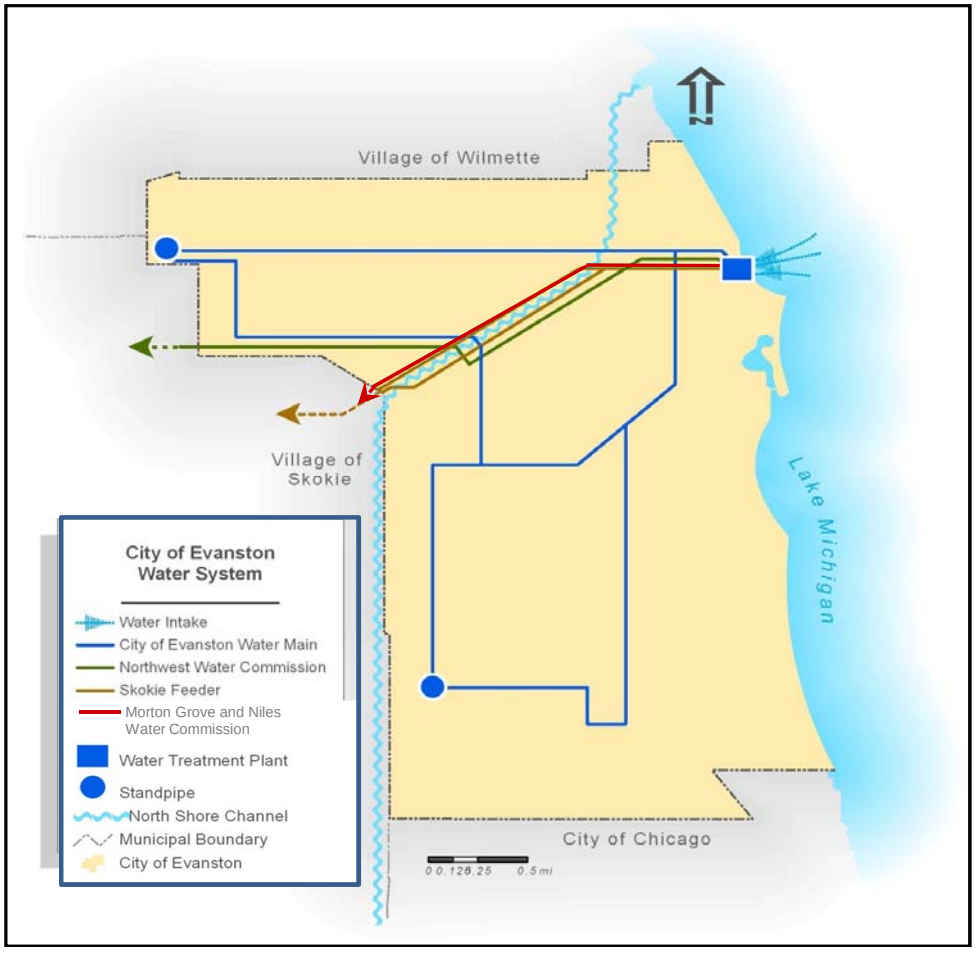
Notes: MG = million gallons; mgd = million gallons per day; HP = horsepower; kV = kilovolt; kW = kilowatt; kVA = kilovolt-ampere

Service Area & Customers

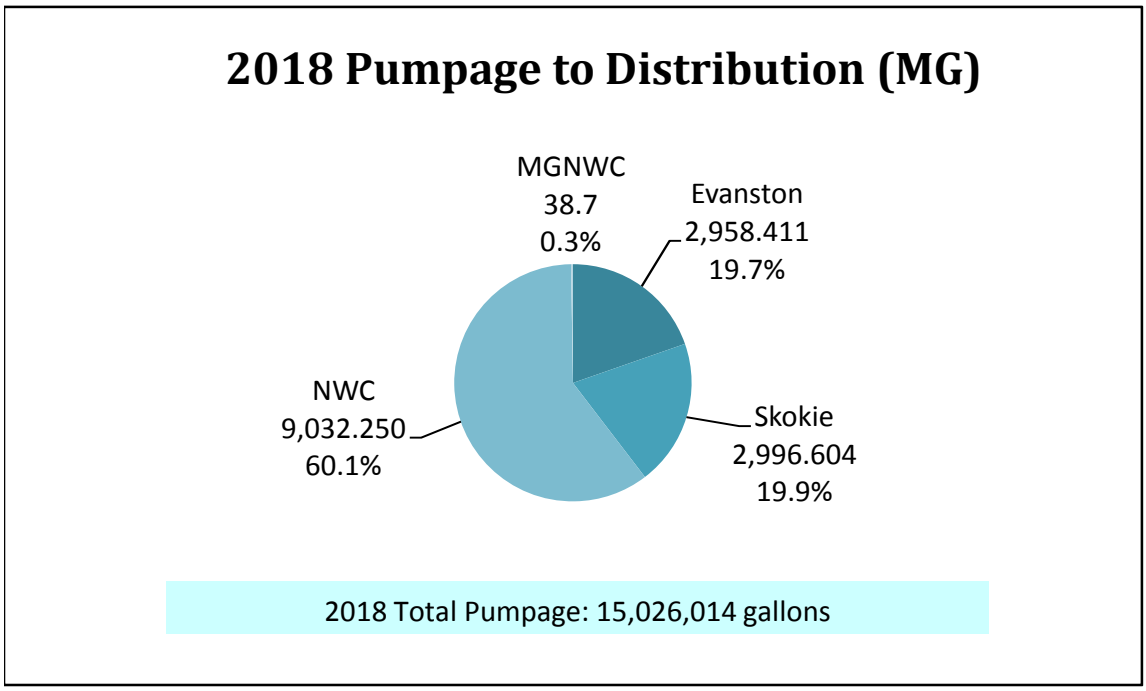
	Area (Square Miles)	2018 Persons*	2018 Businesses**
Evanston	7.8	75,557	8,459
Skokie	10	64,773	10,120
MORTON GROVE AND NILES WATER COMMISSION			
Morton Grove	5.1	23,391	3,237
Niles	5.9	29,823	3,957
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	75,911	8,255
Buffalo Grove	9.5	41,551	5,266
Palatine	13.6	69,099	6,867
Wheeling	8.7	38,264	4,611
Des Plaines	14.4	58,805	8,166
Total Served	**91.54**	**477,174**	**58,938**

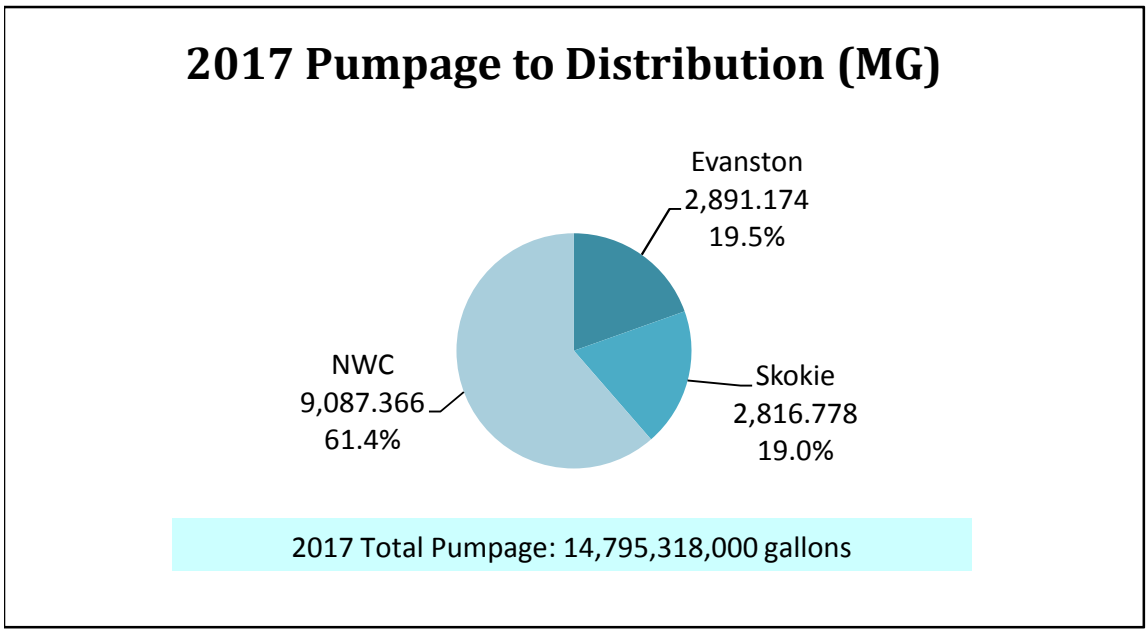
* U.S. Census Bureau, 2017 Estimate

** U.S. Census Bureau, 2012 Estimate



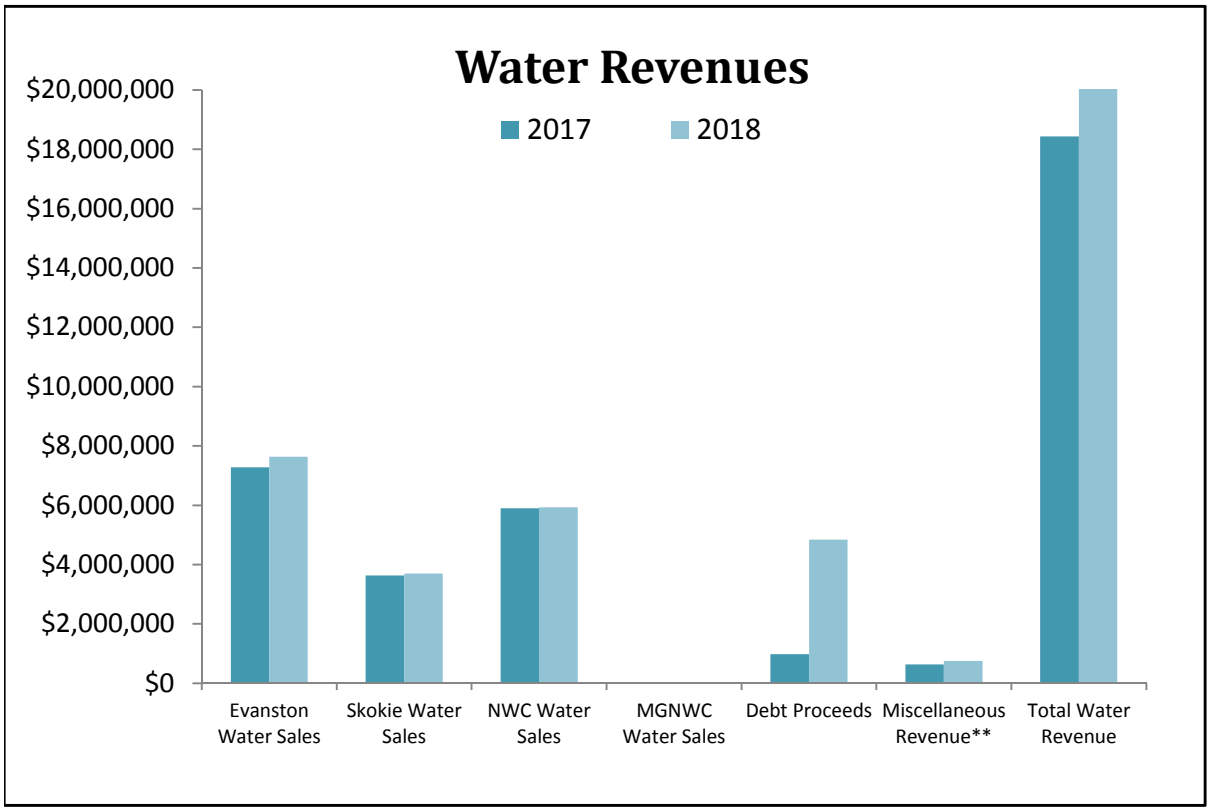
Pumpage to Distribution





Water Revenues*

	2017	2018
Evanston Water Sales	$7,280,260	$7,631,465
Skokie Water Sales	$3,635,940	$3,700,000
NWC Water Sales	$5,898,634	$5,930,626
MGNWC Water Sales	$0	$27,677
Debt Proceeds	$980,000	$4,837,719
Miscellaneous Revenue**	$640,031	$750,516
Total Water Revenue	$18,434,865	$22,878,004

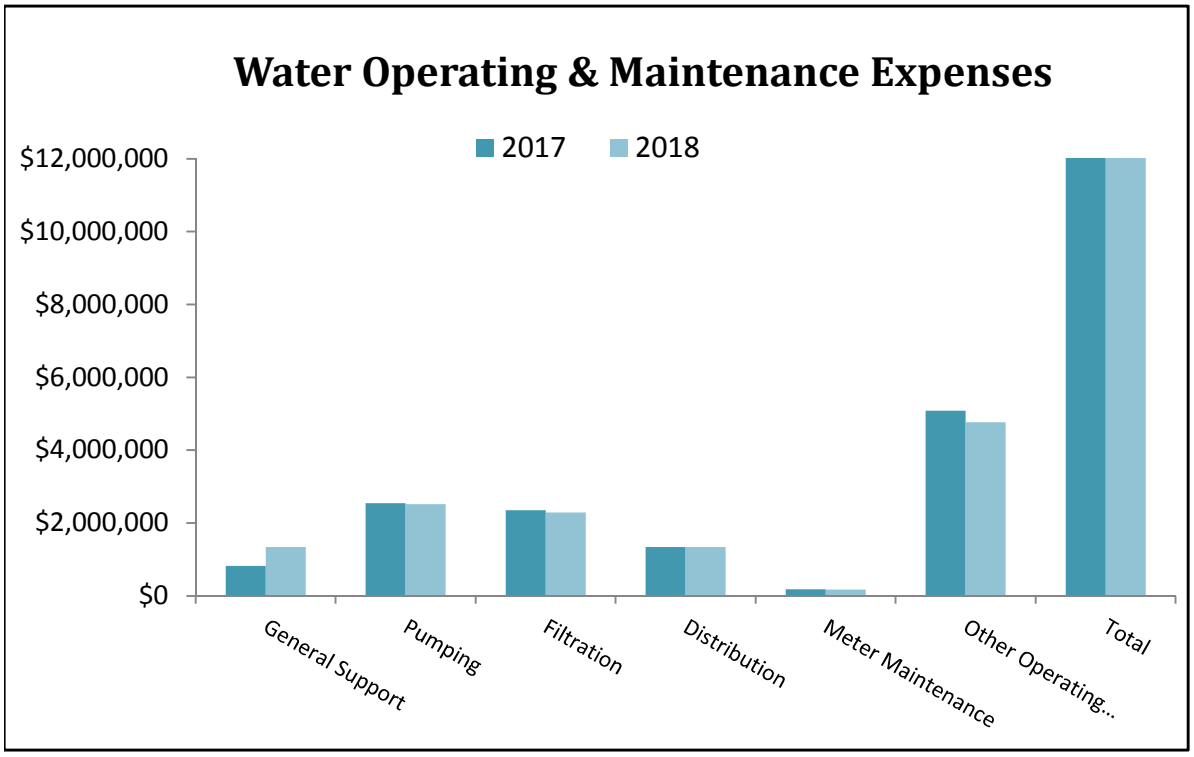


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, http://www.cityofevanston.org/transparency/budget-financial-reports/.

** 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*

	2017	2018
General Support	$823,317	$1,341,288
Pumping	$2,545,715	$2,521,261
Filtration	$2,354,333	$2,288,007
Distribution	$1,345,255	$1,345,242
Meter Maintenance	$181,466	$169,264
Other Operating Expenses**	$5,084,840	$4,769,596
Total	$12,334,926	$12,434,658



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

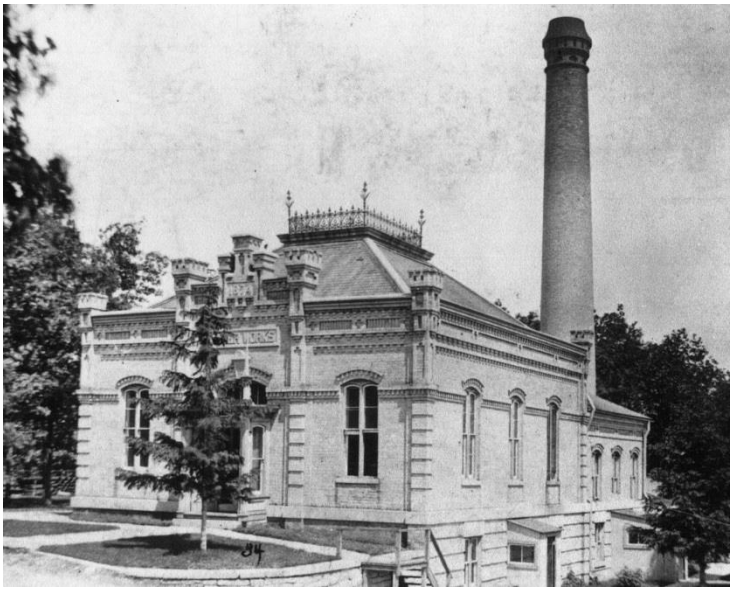
Pumping

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

2018 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
Jan-18	1,241.611	15.658	1,257.269	1,261.896	216.455	248.500	776.631	0.000
Feb-18	1,062.504	13.988	1,076.492	1,087.420	194.000	236.125	656.695	0.000
Mar-18	1,136.779	13.291	1,150.070	1,171.560	217.536	258.030	695.994	0.000
Apr-18	1,136.646	15.077	1,151.723	1,160.706	204.291	252.649	703.766	0.000
May-18	1,292.370	22.313	1,314.683	1,307.456	266.832	254.426	786.198	0.000
Jun-18	1,260.623	39.418	1,300.041	1,277.665	228.457	242.700	765.774	0.000
Jul-18	1,495.653	40.616	1,536.269	1,522.616	317.457	282.685	922.474	0.000
Aug-18	1,406.350	41.944	1,448.294	1,423.516	290.750	274.854	857.912	0.000
Sep-18	1,286.089	34.994	1,321.083	1,308.027	291.057	227.388	789.086	0.000
Oct-18	1,192.429	33.881	1,226.310	1,206.077	255.946	234.640	715.491	0.000
Nov-18	1,112.651	32.935	1,145.586	1,129.388	224.383	239.629	665.376	0.000
Dec-18	1,169.621	33.471	1,203.092	1,193.079	251.247	244.978	696.853	38.749
Total	**14,793.326**	**337.586**	**15,130.912**	**15,049.406**	**2,958.411**	**2,996.604**	**9,032.250**	**38.749**

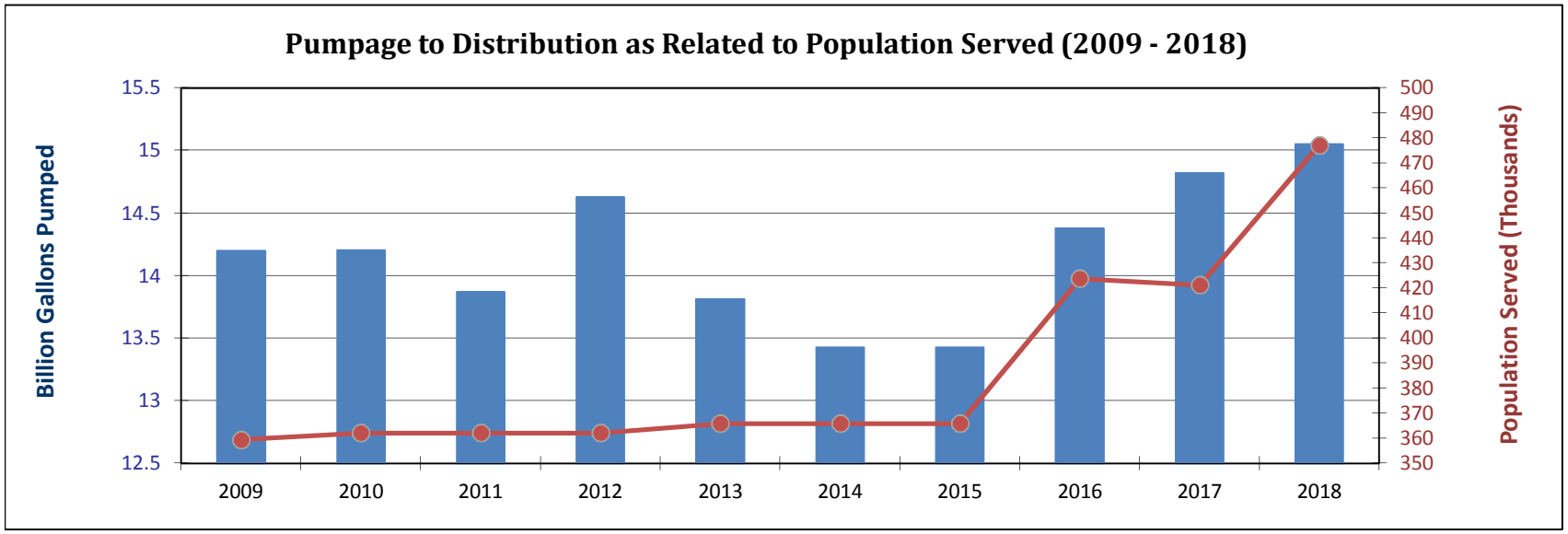
2018 Average Day Pumpage (MGD)

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
Jan-18	40.052	0.505	40.557	40.706	6.982	8.016	25.053	0.000
Feb-18	37.947	0.500	38.446	38.836	6.929	8.433	23.453	0.000
Mar-18	34.400	0.429	37.099	37.792	7.017	8.324	22.451	0.000
Apr-18	33.939	0.503	38.391	38.690	6.810	8.422	23.459	0.000
May-18	41.689	0.486	37.152	42.176	8.607	8.207	25.361	0.000
Jun-18	42.021	1.314	43.335	42.589	7.615	8.090	25.526	0.000
Jul-18	48.247	1.310	49.557	49.117	10.241	9.119	29.757	0.000
Aug-18	45.366	1.353	46.719	45.920	9.379	8.866	27.675	0.000
Sep-18	42.870	1.166	44.036	43.601	9.702	7.580	26.303	0.000
Oct-18	38.465	1.093	39.558	38.906	8.256	7.569	23.080	0.000
Nov-18	37.088	1.098	38.186	37.646	7.479	7.988	22.179	0.000
Dec-18	37.730	1.080	38.809	38.486	8.105	7.903	22.479	1.250
Average	**40.530**	**0.925**	**41.455**	**41.231**	**8.105**	**8.210**	**24.746**	**1.250**

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
2018	14,793.326	337.586	15,130.912	15,049.406	2,958.411	2,996.604	9,032.250	38.749
2017	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366	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
2015	13,471.823	200.285	13,672.108	13,423.806	2,790.010	2,786.896	7,846.900	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
2013	13,925.102	247.609	14,172.711	13,814.461	2,908.602	2,787.256	8,096.927	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
2011	13,939.618	212.426	14,152.042	13,941.167	2,920.633	2,866.652	8,082.667	0.000
2010	14,087.849	218.251	14,306.100	14,268.257	2,635.488	3,094.554	8,472.134	0.000
2009	14,363.047	193.841	14,556.888	14,350.335	2,990.094	2,829.824	8,379.613	0.000
2008	14,872.552	134.595	15,007.147	14,693.877	3,089.536	2,961.341	8,589.720	0.000



Average Daily Per Capita Consumption

	Evanston		Skokie		NWC		MGNWC		Total	
Year	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)*	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)
2018	75,557	107	64,773	127	283,630	87	53,214	NA	477,174	86
2017	74,895	106	64,270	120	282,093	88	-	0	421,258	96
2016	75,527	111	64,821	118	283,493	84	-	0	423,841	94
2015	75,570	101	65,176	117	225,137	95	-	0	365,883	101
2014	75,570	99	65,176	116	225,137	97	-	0	365,883	101
2013	75,570	106	65,176	117	225,137	99	-	0	365,883	103
2012	74,486	105	64,784	130	222,802	106	-	0	362,072	110
2011	74,486	107	64,784	121	222,802	99	-	0	362,072	105
2010	74,486	97	64,784	131	222,802	104	-	0	362,072	107
2009	74,360	110	63,333	122	221,364	104	-	0	359,057	108

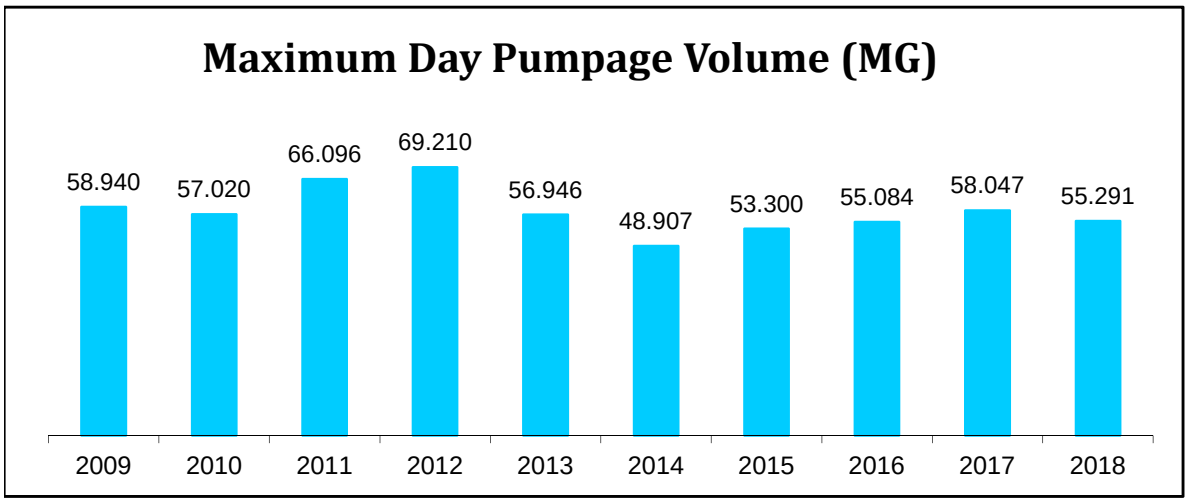
*In 2016 NWC began providing water to Des Plaines. Only a portion of the total population of Des Plaines consumes water provided by the City of Evanston.

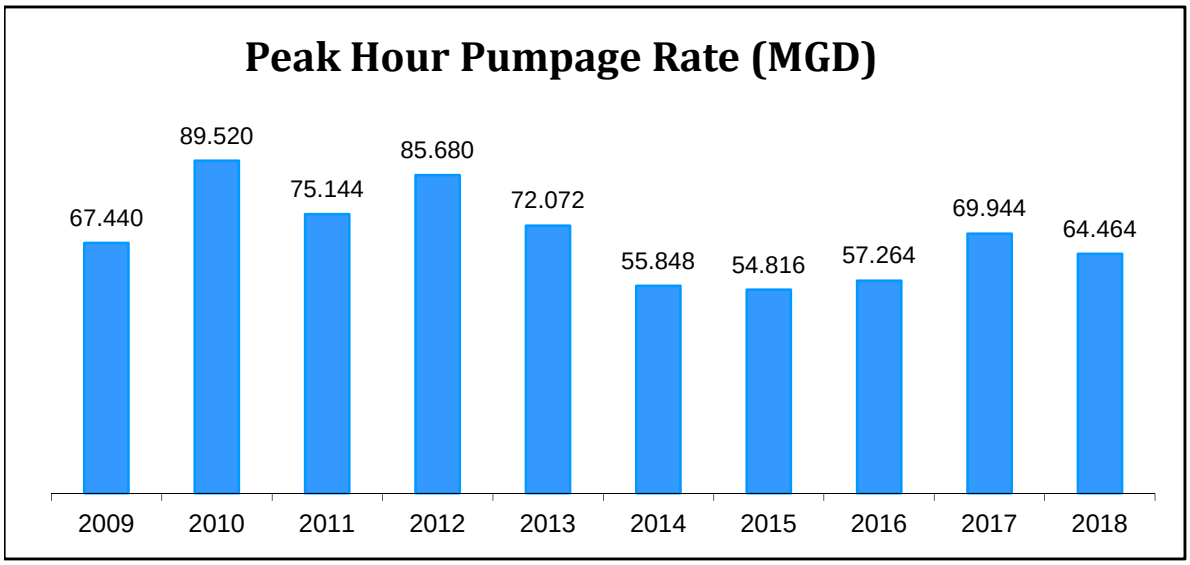
Maximum Pumpage to Distribution

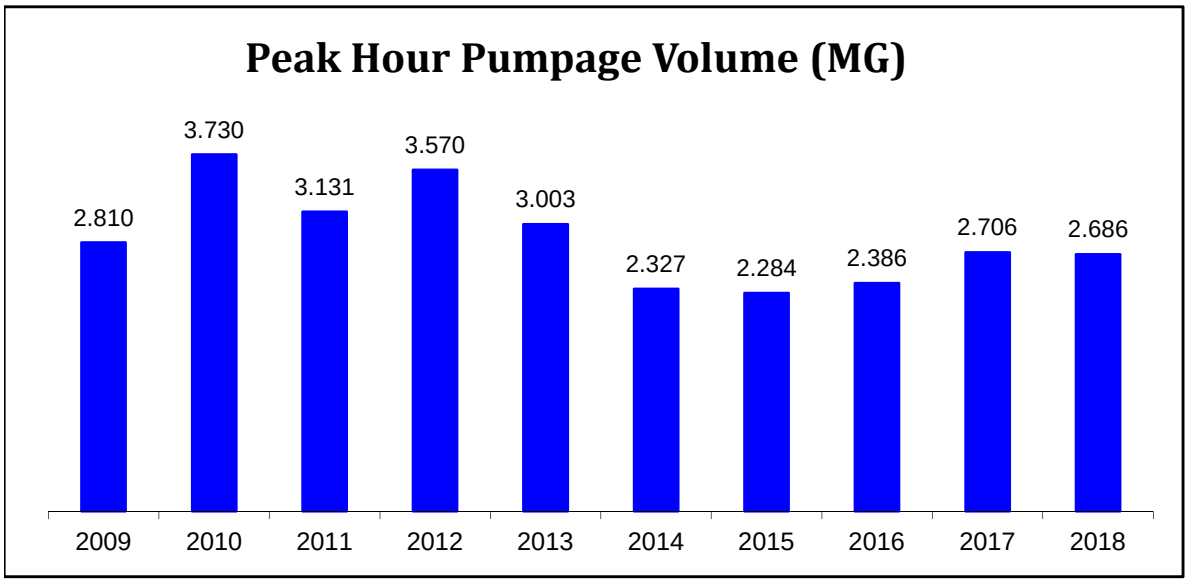
Year	*Max Day Pumpage Volume (MG)*	*Peak Hour Pumpage Rate (MGD)*	*Peak Hour Pumpage Volume (MG)*
2018	55.291	64.464	2.686
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003
2012	69.210	85.680	3.570
2011	66.096	75.144	3.131
2010	57.020	89.520	3.730
2009	58.940	67.440	2.810

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

Maximum Day and Peak Hour Pumpage







Maximum Pumpage Days (MGD)

	Maximum Day Pumpage To			
Year	**Distribution**	**Evanston**	**Skokie**	**NWC**
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
2011	July 18th	July 18th	July 18th	July 19th
	66.096	12.614	13.724	40.820
2010	July 17th	July 29th	August 20th	July 19th
	57.020	13.643	12.957	34.661
2009	August 14th	August 13th	August 14th	August 6th
	58.940	13.992	11.495	34.725

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
2018	11,533,446	$927,363	$0.080	766
2017	11,361,088	$902,245	$0.079	767
2016	11,450,522	$943,798	$0.082	797
2015	10,365,952	$810,030	$0.078	772
2014	10,897,123	$787,444	$0.072	812

Natural Gas Used for Pumping and Emergency Engines

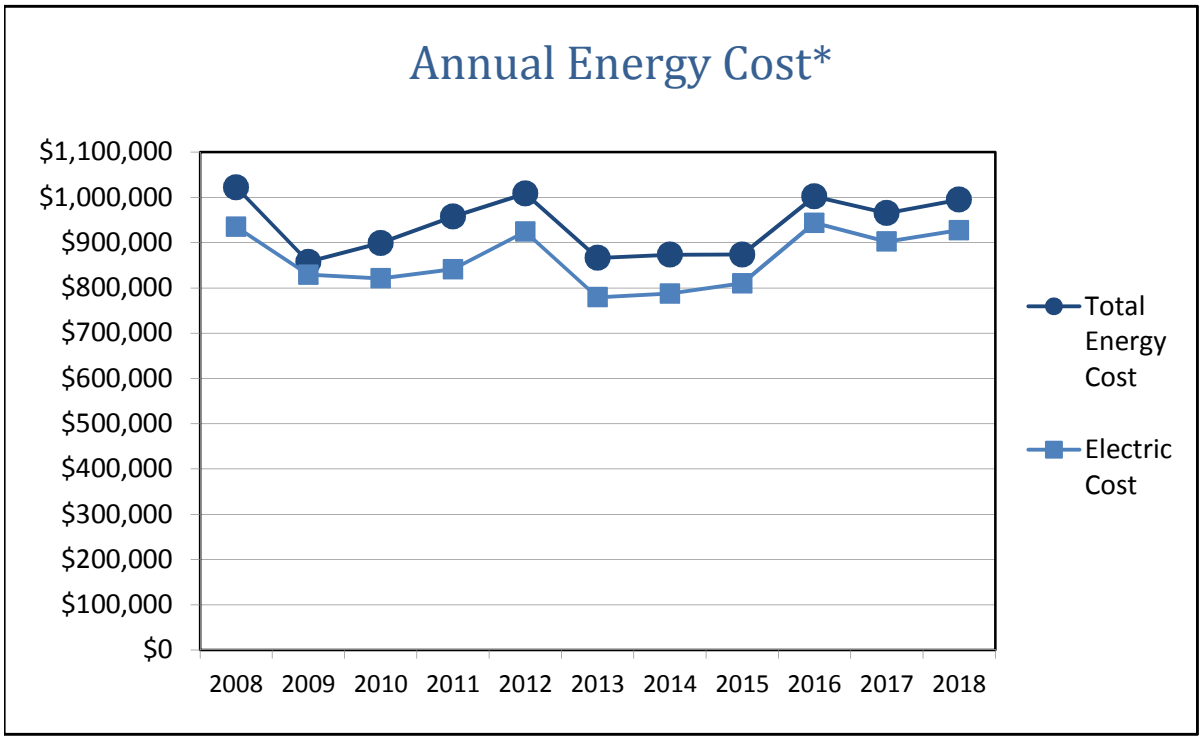
Year	Therms	Total Cost*	Average Unit Cost per Therm
2018	127,945	$67,419	$0.527
2017	126,267	$63,074	$0.500
2016	121,018	$58,307	$0.482
2015	132,575	$86,033	$0.649
2014	129,481	$86,926	$0.671

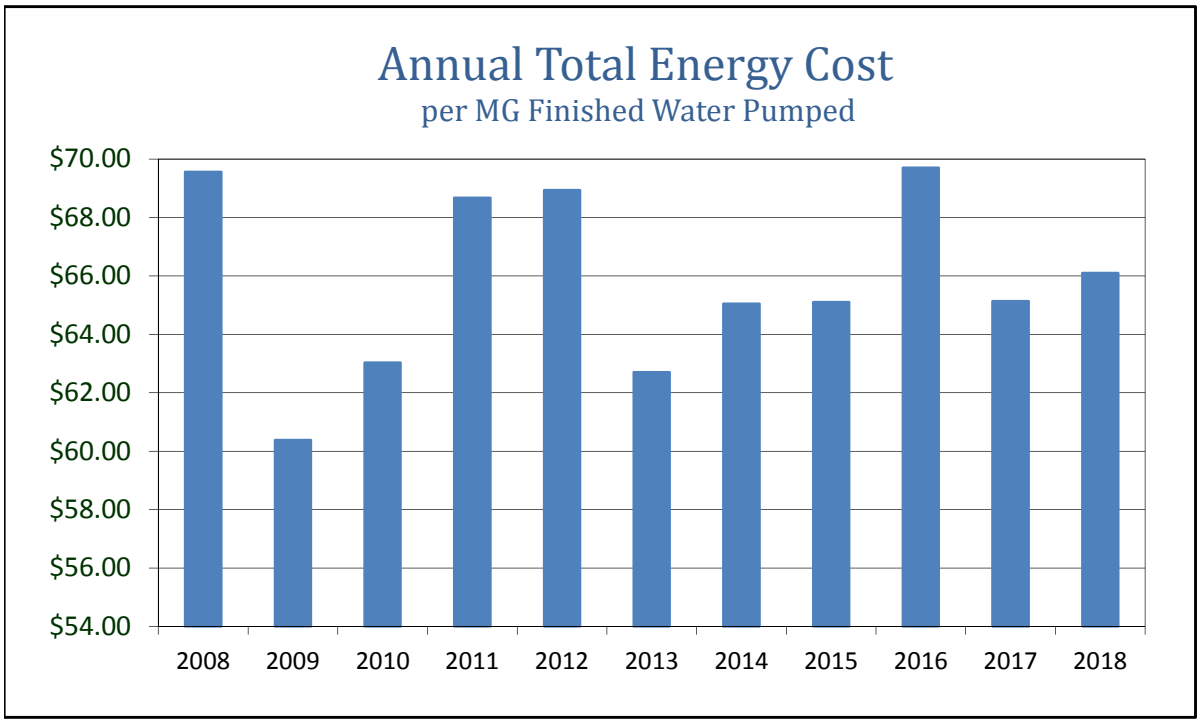
* Includes natural gas purchase and delivery charges.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2018	$994,782	$66.10
2017	$965,320	$65.13
2016	$1,002,105	$69.71
2015	$896,063	$66.75
2014	$874,370	$65.12

Energy Costs

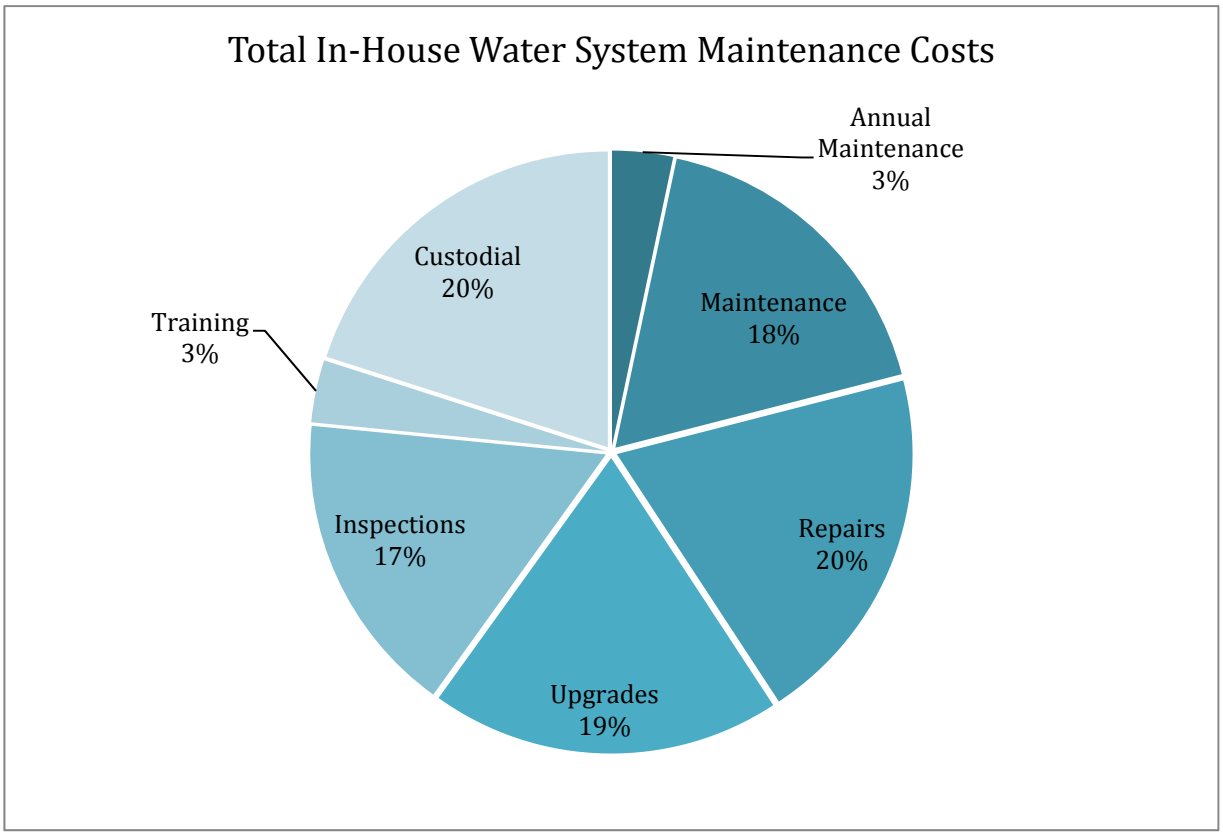




* Energy costs increased in 2012 due to increased pumping during the summer drought.

Breakdown of In-House Maintenance Costs

Description	2018
Annual Maintenance	$7,751
Maintenance	$41,135
Repairs	$46,044
Upgrades	$44,607
Inspections	$38,709
Training	$7,941
Custodial	$46,684
Total	**$232,871**



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.

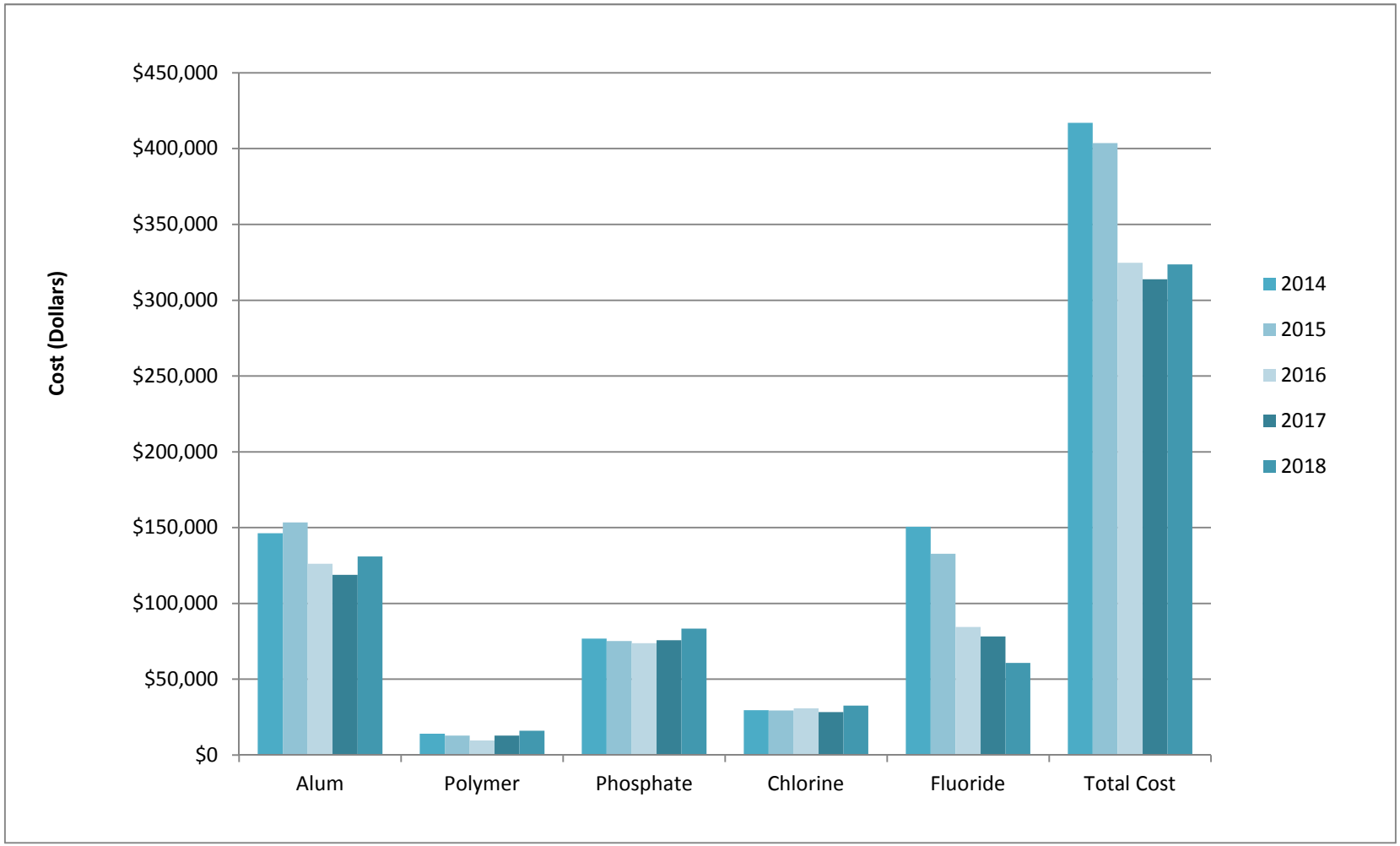
Filters 1 – 12, photo taken in 1924

Chemical Treatment: Chemicals Used and Costs

	Chemical Feed (lbs/MG)						
	Avg Daily	Max Day	Min Day	Unit Cost	Pounds per Year	Total Cost	Cost per MG Treated
Aluminum Sulfate							
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
2016	56.0	90.6	39.8	$346.15 / dry ton	798,936	$126,232	$8.75
2015	51.4	95.1	38.2	$447.28 / dry ton	686,299	$153,484	$11.39
2014	48.1	90.3	39.4	$447.28 / dry ton	653,896	$146,237	$10.71
Chlorine							
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
2016	12.2	16.2	8.9	$316.00 / ton	177,845	$30,781	$2.13
2015	11.9	16.1	6.6	$318.00 / ton	161,345	$29,445	$2.19
2014	11.7	18.4	8.1	$365.00 / ton	161,480	$29,470	$2.16
Activated Carbon*							
Hydrofluosilic Acid (Fluoride)							
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
2016	28.3	31.1	0.0	$412.00 / ton	409,596	$84,377	$5.85
2015	37.3	70.7	0.0	$443.37 / ton	492,533	$132,738	$9.85
2014	41.0	45.6	0.0	$519.00 / ton	558,523	$150,522	$11.03
Polymer							
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
2016	2.8	4.8	1.9	$480.00 / ton	39,726	$9,534	$0.66
2015	2.5	5.5	1.9	$578.00 / ton	33,903	$12,883	$0.96
2014	2.7	5.0	1.9	$538.00 / ton	36,832	$13,996	$1.03
Blended Phosphate							
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
2016	13.6	14.8	11.1	$4.27 / gallon	198,430	$73,678	$5.11
2015	13.1	17.7	11.4	$4.35 / gallon	173,430	$75,103	$5.57
2014	13.2	14.1	10.1	$4.48 / gallon	177,169	$76,722	$5.62

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

Annual Chemical Costs



Filter Operations

Filter Runs

	Avg Hours per Filter Run		Total Hours per Year	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2018	156.3	160	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
2011	229.1	197.3	96,336	88,162
2010	229.2	198.8	96,286	100,046
2009	253.8	239.2	97,313	94,790

Filter Washes

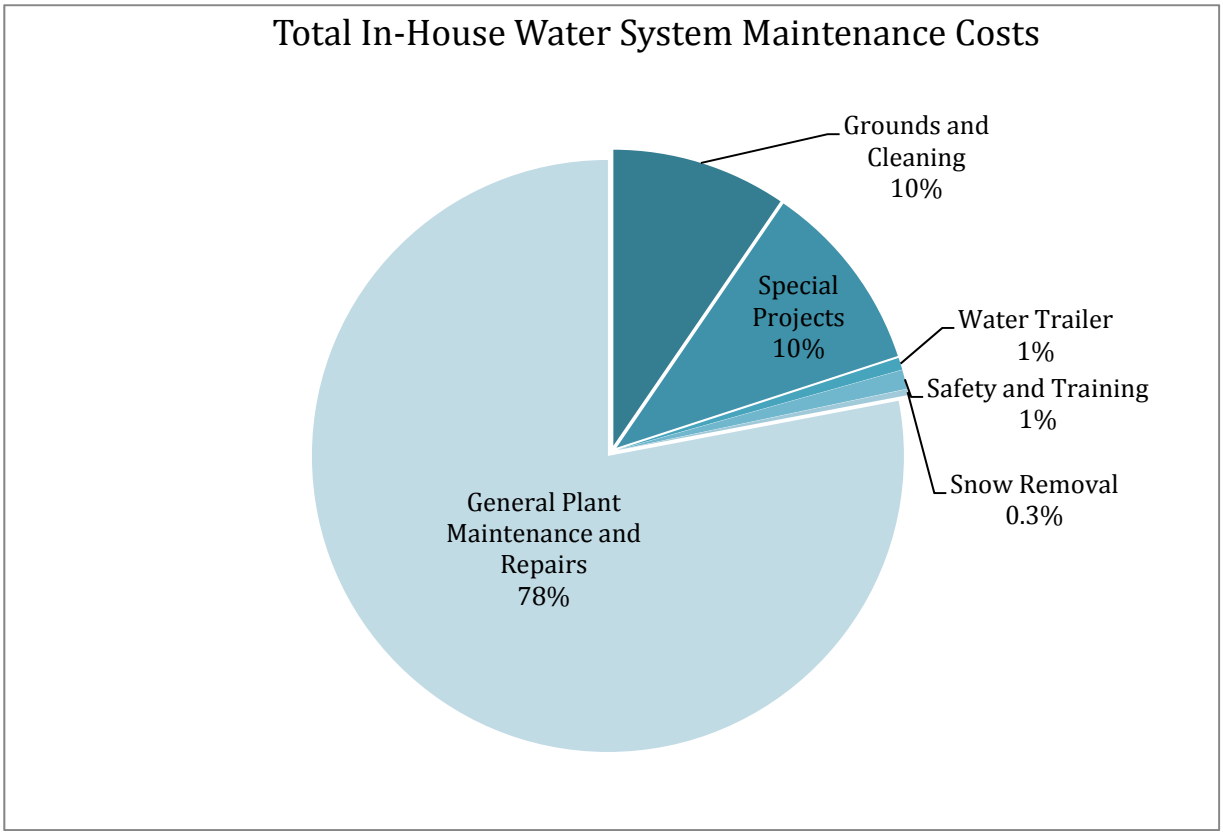
	Total Washes per Year		Max # of Washes per Day	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2018	647	760	7	7
2017	525	519	6	6
2016	429	513	6	6
2015	347	462	5	5
2014	429	557	5	7
2013	427	524	7	7
2012	476	611	7	9
2011	430	486	5	6
2010	452	559	7	7
2009	387	409	6	5

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2018	339.444	2.23	7.11
2017	254.370	1.7	5.84
2016	239.545	1.60	9.65
2015	200.285	1.49	5.31
2014	243.089	1.78	6.2
2013	248.996	2.13	9.72
2012	321.030	1.49	5.14
2011	211.546	1.53	15.2
2010	223.704	1.02	4.54
2009	149.063	0.95	4.15

Breakdown of In-House Maintenance Costs

Description	2018
General Plant Maintenance and Repairs	$165,763
Grounds and Cleaning	$20,296
Special Projects	$22,175
Water Trailer	$1,398
Safety and Training	$2,232
Snow Removal	$690
Total	**$212,554**



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		Positive for	Positive for
Year	Number Sampled	Total Coliform	E.Coli
2018	984	1	0
2017	978	1	1
2016	974	0	0
2015	989	3	0*
2014	987	4	1

*In March 2015 Fecal Coliform was no longer tested due to regulation changes

Raw Water		Colony Count	
Year	Number Sampled	Average	Maximum
2018	730 (Twice Daily)	60	>200
2017	729 (Twice Daily)	77	>200
2016	732 (Twice Daily)	69	>200
2015	730 (Twice Daily)	59	>200
2014	728 (Twice Daily)	38	>200

After Primary Treatment		Colony Count	
Year	Number Sampled	Average	Maximum
2018	730 (Twice Daily)	0	0
2017	729 (Twice Daily)	0	0
2016	732 (Twice Daily)	0	0
2015	730 (Twice Daily)	0	0
2014	729 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples		Colony Count	
Year	Number Sampled	Average	Maximum
2018	1460 (4 times Daily)	0	0
2017	1430 (4 times Daily)	0	0
2016	1403 (4 times Daily)	0	0
2015	1460 (4 times Daily)	0	0
2014	1459 (4 times Daily)	0	0

Odor, Turbidity, Temperature and Fluoride

Report of Evanston Water Quality Control Laboratory

Odor

Year	Number of Tests
2018	498
2017	506
2016	503
2015	506
2014	498

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.

	Raw Water			After Primary Treatment			Plant Tap		
Year	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
2018	6.69	94.7	0.35	0.78	2	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
2016	7.26	60.0	0.32	0.63	7.70	0.11	0.08	0.61	0.07
2015	6.49	79.7	0.42	0.61	1.81	0.23	0.08	0.19	0.06
2014	4.11	61.4	0.17	0.66	2.20	0.21	0.08	0.24	0.07

Raw Water Temperature

Year	Average	Maximum	Minimum
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
2016	11.1°C / 52.0°F	24.6°C / 76.3°F	1.0°C / 33.8°F
2015	10.2°C / 50.4°F	22.5°C / 72.5°F	0.9°C / 33.6°F
2014	10.0°C / 50.0°F	23.8°C / 74.8°F	0.8°C / 33.4°F

Fluoride Content (EPA target is 0.7 ppm)

	Plant Tap			Distribution		
Year	Avg	Max	Min	Avg	Max	Min
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
2016	0.70	0.85	0.16	0.71	0.82	0.64
2015	0.94	1.11	0.21	0.98	1.18	0.75
2014	0.96	1.10	0.22	1.07	1.07	0.90

Chlorine Residual (ppm)

Report of Evanston Water Quality Control Laboratory

Filter Influent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
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
2016	0.70	1.02	0.50	0.84	1.19	0.63
2015	0.68	1.06	0.46	0.81	1.21	0.11
2014	0.68	1.14	0.42	0.81	1.29	0.52

Filter Effluent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
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
2016	0.62	0.92	0.40	0.75	1.10	0.50
2015	0.59	0.92	0.39	0.93	76.00	0.49
2014	0.60	1.04	0.38	0.72	1.19	0.51

Plant Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
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
2016	0.72	0.92	0.54	0.87	1.12	0.69
2015	0.69	0.93	0.5	0.84	1.13	0.62
2014	0.68	1.00	0.51	0.83	1.20	0.61

Distribution Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
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
2016	0.45	0.73	0.17	0.61	0.94	0.34
2015	0.44	0.78	0.17	0.60	0.92	0.30
2014	0.45	0.80	0.17	0.61	1.02	0.31

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	Plant Tap Max	Plant Tap Min
2018	365	0.29	0.39	0.21
2017	365	0.30	0.38	0.22
2016	365	0.28	0.41	0.17
2015	365	0.25	0.35	0.18
2014	365	0.24	0.3	0.2

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water Avg	Raw Water Max	Raw Water Min	Plant Tap Avg	Plant Tap Max	Plant Tap Min
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
2016	732	8.3	8.6	7.8	7.6	7.8	7.2
2015	730	8.3	8.5	7.9	7.6	7.8	7.3
2014	729	8.3	8.6	8	7.6	7.7	7.3

Alkalinity (ppm)

Year	Number of Tests	Raw Water Avg	Raw Water Max	Raw Water Min	Plant Tap Avg	Plant Tap Max	Plant Tap Min
2018	730	108	117	97	101	112	93
2017	730	106	116	97	100	113	89
2016	732	106	114	93	99	110	84
2015	730	106	121	92	100	115	91
2014	730	109	134	92	102	130	91

Hardness (ppm as $CaCo_3$)

Year	Number of Tests	Raw Water Avg	Raw Water Max	Raw Water Min	Finished Water Avg	Finished Water Max	Finished Water Min
2018	730	137	147	127	134	152	120
2017	730	136	149	124	133	149	124
2016	732	136	149	119	134	154	119
2015	730	135	149	124	133	154	124
2014	730	135	149	104	133	149	97

Detected Substances: 2018 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; 0.16 NTU Highest single measurement	0.07 - 0.16	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.
Nitrate [measured as Nitrogen](ppm)	10	10	0.4	Single Sample	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium (ppm)	NA	NA	7.3	Single Sample	NO	Erosion from naturally occurring deposits
Barium (ppm)	2	2	0.02	Single Sample	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of Natural deposits
Combined Radium 226/228 (pCi/L)b	0	5	0.99	Single Sample	NO	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)b	0	15	0.16	Single Sample	NO	Erosion of natural deposits
Cotinine (ppb)	NOT REGULATED	NOT REGULATED	0.002	Single Sample	NO	Nicotine metabolite/waste water discharge
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.17	Single Sample	NO	Artificial sweetener
Sulfate (ppm)	NOT REGULATED	USEPA National Secondary Standard of 250	24	Single Sample	NO	Naturally occurring, coagulant residual

Detected Substances: 2018 Water Quality Data

Disinfectants and Disinfection By-Products	*MCLG*	*Highest Allowed (MCL)*	*Highest Level Detected*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
Total Trihalomethanes (ppb)	NA	80	31	13.4 - 40.3	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA	60	10	5.2 - 12	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	0.6	0.4 - 1	NO	Water additive used to control microbes

Lead & Copper	*MCLG*	*Action Level (AL)*	*90th Percentile*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
Lead (ppb)	0	15	5	<1 - 11	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.18	<0.002 - 0.540	NO	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems

Additional Information About Your Water

Measured Parameter	*Evanston Average*	*Evanston Minimum*	*Evanston Maximum*	*Measured Parameter*	*Evanston Result*
pH (0-14 pH units)	7.6	7.2	7.7	Calcium (ppm)	34
Hardness (as mg $CaCO_{3/}$/L)	134	120	152	Chloride (ppm)	14
Hardness (gpg)	7.8	7.0	8.9	Dissolved Solids (ppm)	130
Alkalinity (ppm)	101	93	112	Magnesium (ppm)	12
Raw Water Temperature °F	52	34	78	Potassium (ppm)	1.5

Non-Detected Contaminants

2018 Water Quality Data

Inorganic Contaminants	MCLG	MCL	EEA MRL	Level Found
ARSENIC (ppb)	none	50	1	ND
CADMIUM (ppb)	5	5	1	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	ND
MERCURY (INORGANIC) (ppb)	2	2	0.1	ND
NICKEL	n/a	100	1	ND
SELENIUM (ppb)	50	50	2	ND
ANTIMONY (ppb)	6	6	1	ND
BERYLLIUM (ppb)	4	4	0.3	ND
THALLIUM (ppb)	0.5	2	0.3	ND
ZINC (ppb)	n/a	5000	5	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	ND
DIQUAT (ppb)	200	200	1	ND
DALAPON (ppb)	20	20	0.4	ND
ENDOTHALL (ppb)	100	100	9	ND
DI(2-ETHYLHEXYL)ADIPATE (ppb)	400	400	0.6	ND
OXAMYL (VYDATE) (ppb)	200	200	1	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

2018 Water Quality Data

THM/HAAs	MCLG	MCL	EEA MRL	Level Found
MONOCHLOROACETIC ACID (ppb)	70	na	2.0	ND
MONOBROMOACETIC ACID (ppb)	na	na	1.0	ND

Unregulated Contaminants	MCLG	MCL	EEA MRL	Level Found
Bisphenol A (ppb)	na	na	0.1	ND
Nonylphenol, isomer mix (ppb)	na	na	0.5	ND
4-n-Octylphenol (ppb)	na	na	0.5	ND
4-tert-Octylphenol (ppb)	na	na	0.5	ND
Pentachlorophenol (ppb)	na	na	0.1	ND
Phenylphenol (ppb)	na	na	0.1	ND
Tetrabromobisphenol A (ppb)	na	na	0.1	ND
2,4,6-Trichlorophenol (ppb)	na	na	0.1	ND
Pharmaceutically Active Compounds Positive	na	na	varies	ND
Pharmaceutically Active Compounds Negative	na	na	varies	ND
Perfluorooctanoic acid (PFOA)	na	na	0.002	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. In June and July 2017, Evanston sampled water from 30 homes with lead service lines and analyzed them for lead and copper content. All results were below the action levels. The 90th percentile level for lead in these samples was 5 ppb. The 90th percentile level for copper was 0.18 ppm. In January 2017, fourteen additional voluntary samples were taken for lead only. All results were below the action levels. The 90th percentile for lead in these samples was 7.6 ppb.

In 2018, Evanston began implementation of a seasonal drinking fountain start-up plan including sampling water, high flow flushing, and replacing drinking fountain components known to contain lead. Evanston sampled water from 59 park drinking fountains. Twelve fountains tested above 15 ppb and were shut off. Using strategies for high lead levels that were formed in 2017 all twelve fountains were remediated.

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 $CaCO_3$/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.

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.

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.

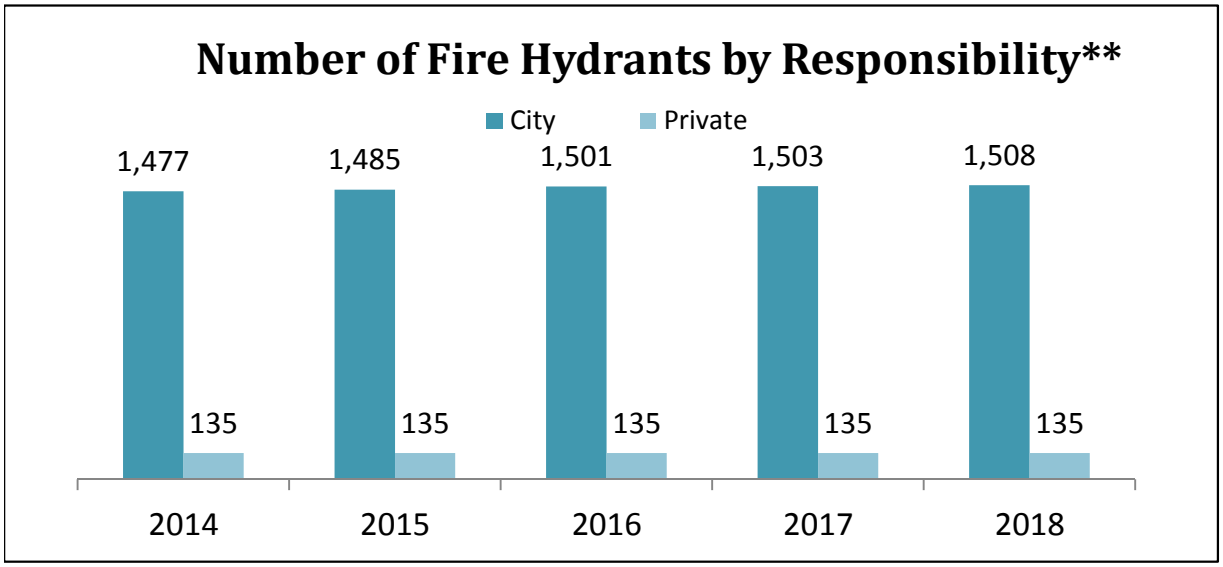
Pieces of wood water main from Evanston's original water distribution system.

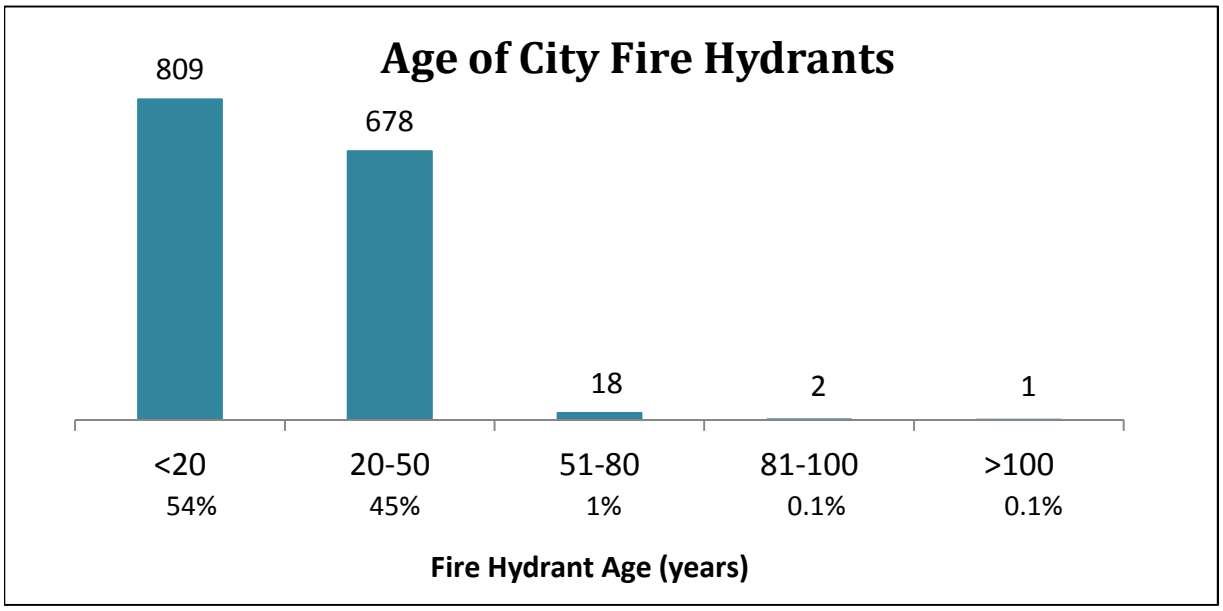
Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2014*	2015	2016	2017	2018
Fire Department	1,100	1,477	1,428	1,453	1,491
Public Works Agency	0	0	13	11	19

Installation & Maintenance	2014	2015	2016	2017	2018
Installed (new)	12	11	18	2	5
Replaced	15	13	18	10	14
Repaired	315	51	327	535	569





* Testing was limited to avoid impacting water pressure during transmission main improvements.
** Changes due to hydrant removal/addition during water main improvements and utility atlas updates.

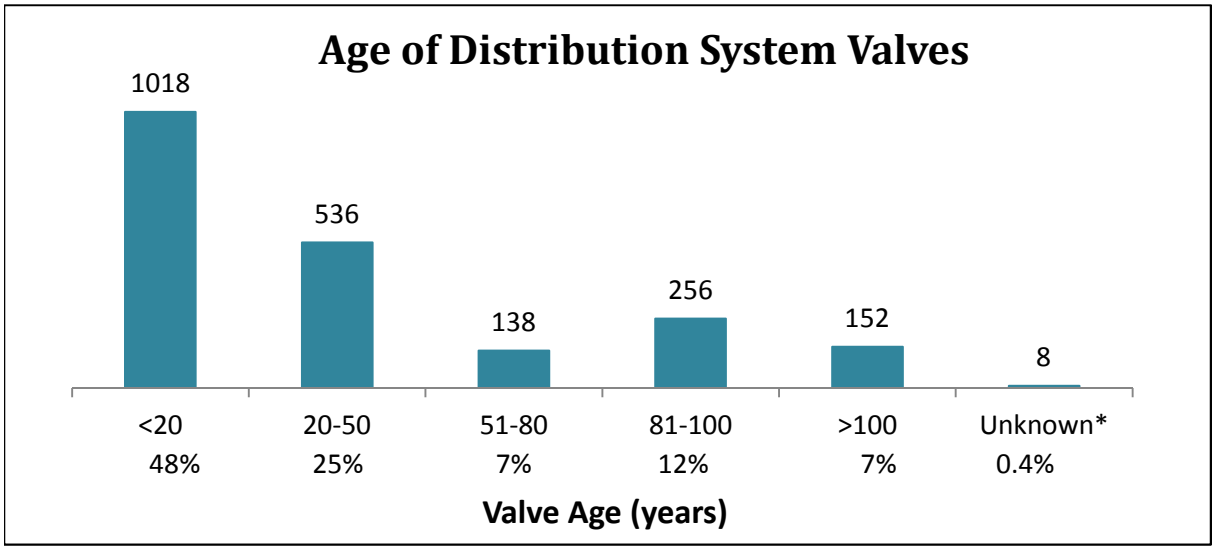
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2014	2015	2016	2017	2018
In-House	910	908	828	586	848
Contractor	0	0	0	0	0

Installation & Maintenance	2014	2015	2016	2017	2018
Installed (new)	14	13	27	13	16
Replaced	34	16	37	13	20
Repaired	19	55	19	48	30

Number of Valves by Size	2014	2015	2016	2017	2018
4" or smaller	23	23	23	22	23
6"	979	975	961	957	965
8"	507	513	521	532	540
10"	189	192	199	199	200
12"	243	244	252	252	253
14"	2	2	2	2	2
16"	50	50	50	50	50
18"	5	5	5	5	5
20"	2	2	2	2	2
24"	33	33	33	33	38
30"	12	12	13	13	13
36"	12	12	13	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,061	2,067	2,078	2,084	2,108



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

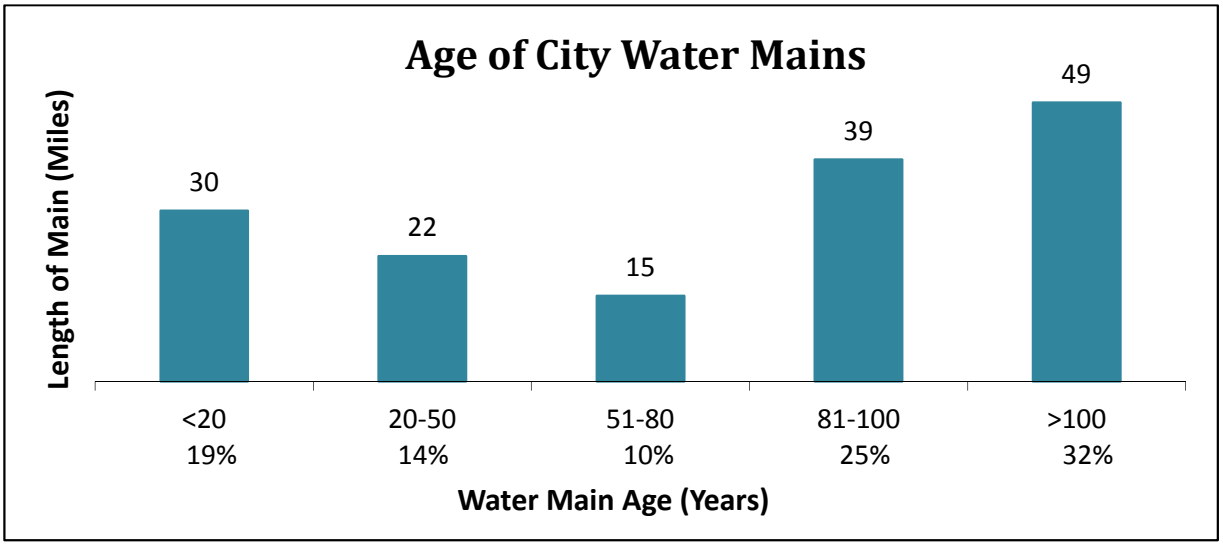
Water Mains

System Data and Maintenance

Improvements (lineal feet)	2014	2015	2016	2017	2018
Replaced by City	0	0	0	0	0
Replaced by Contractor	8,526	4,303	8,172	4,571	6,673
Rehabilitated by Contractor	569	395	3,802	0	0

Water Main Break Repairs	2014	2015	2016	2017	2018
Blow-Out	32	5	21	25	22
Shear Break	36	18	7	6	9
Damage	2	0	0	0	1
Total	70	23	28	31	32

Pipe Sizes (length in miles)*	2014	2015	2016	2017	2018
4" or smaller	1.37	1.37	1.37	1.37	1.37
6"	72.99	73.26	71.88	71.63	71.63
8"	28.81	28.93	29.01	28.87	29.57
10"	12.76	12.81	13.18	13.18	13.16
12"	17.51	17.66	17.95	17.95	17.95
14"	0.37	0.37	0.37	0.37	0.37
16"	6.26	6.26	6.26	6.26	6.27
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	8.60	8.60	8.60	8.63
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	155.77	156.36	155.72	155.33	156.03



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

Water Services

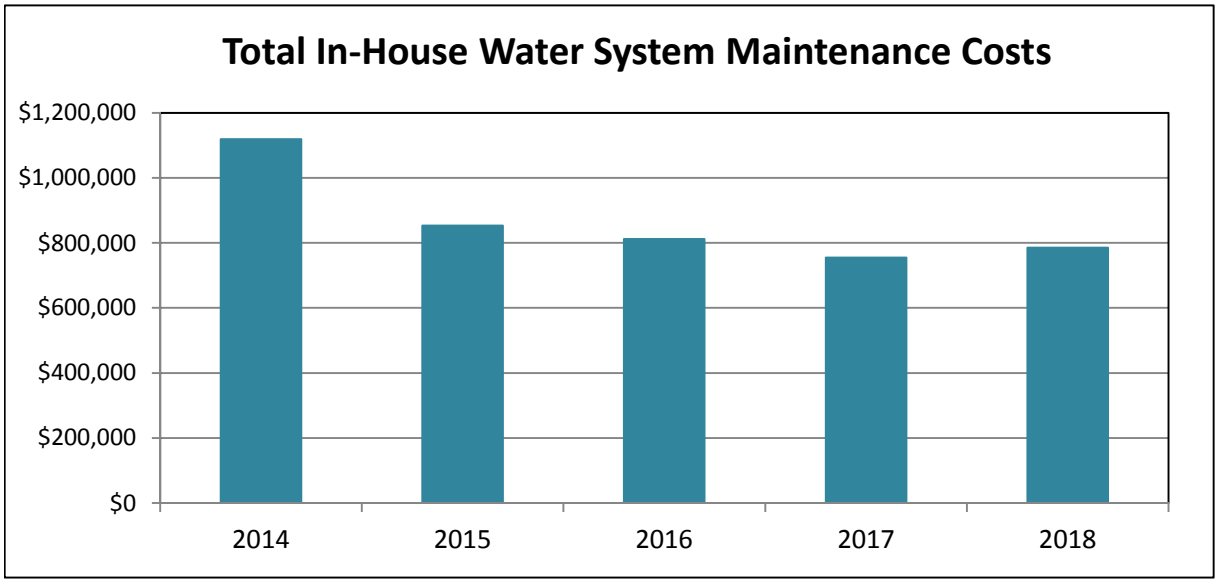
System Data and Maintenance

Water Service Accounts: 15,129*

Installation & Maintenance	2014	2015	2016	2017	2018
New Services Installed	19	13	3	7	7
Service Taps Replaced	33	36	53	52	42
Services Replaced by Contractor	124	147	78	42	102
Service Leaks Repaired	36	22	21	12	14

Breakdown of In-House Maintenance Costs

	2014	2015	2016	2017	2018
Water Mains	$322,859	$83,864	$109,939	$123,158	$123,734
Fire Hydrants	$42,398	$65,197	$41,150	$42,292	$45,067
Water Services	$293,347	$166,275	$133,658	$97,085	$171,581
Valves	$43,665	$148,309	$65,263	$18,027	$87,328
Snow & Ice Removal	$74,519	$46,314	$38,105	$14,235	$57,315
Assist Contractor	$71,591	$57,511	$96,170	$100,447	$78,722
JULIE Locates	$71,911	$108,200	$117,375	$107,064	$72,489
Equip/Facility Maint.	$62,051	$77,189	$86,794	$146,597	$66,482
Assist Other City Depts.	$25,509	$8,878	$26,713	$24,749	$22,224
Assist W&S Divisions	$5,581	$20,610	$4,617	$5,112	$4,318
Safety & Training	$17,207	$22,639	$31,543	$26,268	$15,641
Misc.	$88,294	$48,069	$60,838	$49,939	$40,554
Total	**$1,118,932**	**$853,054**	**$812,166**	**$754,972**	**$785,455**

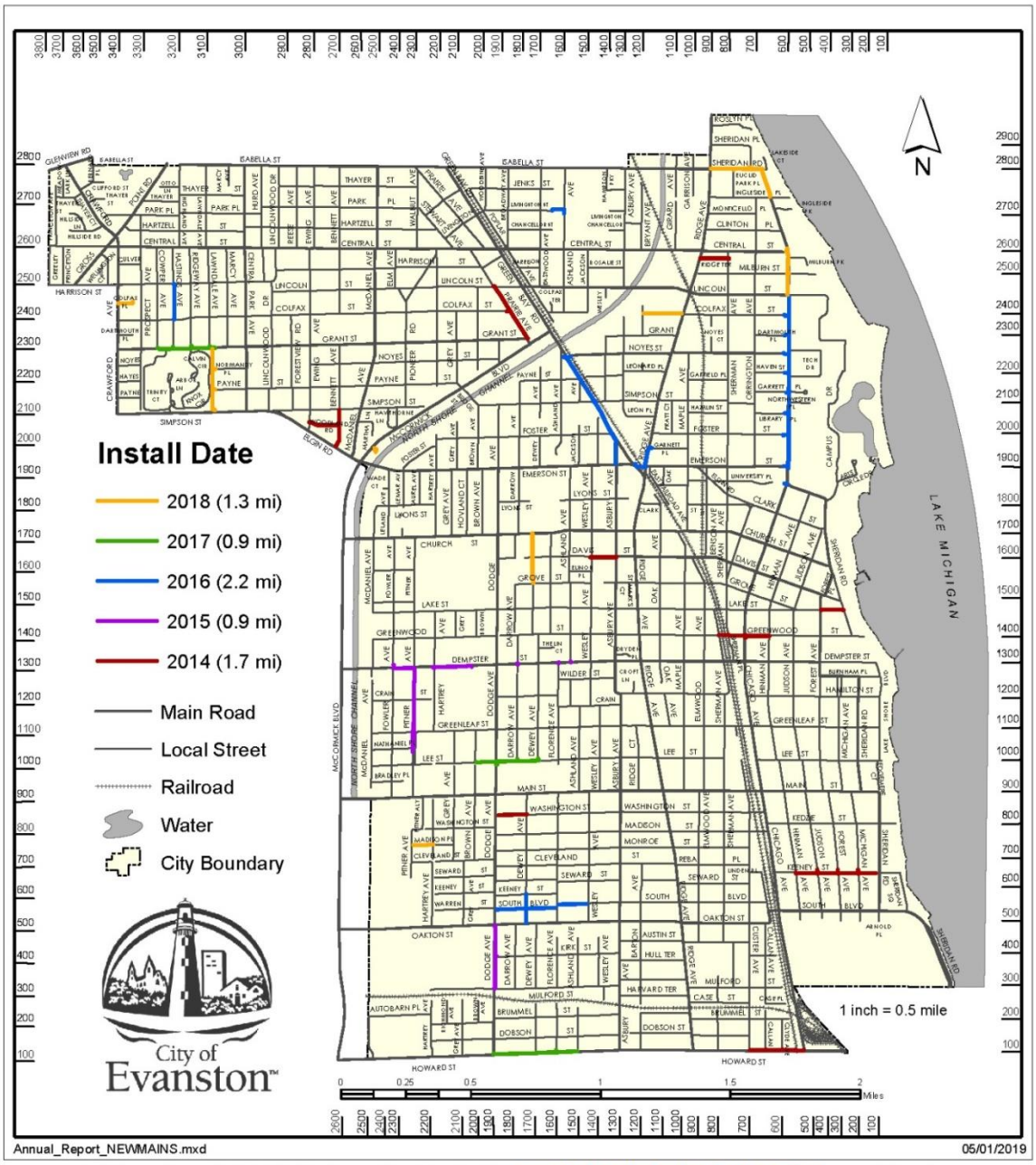


* Includes metered domestic water service accounts and unmetered fire service accounts.

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

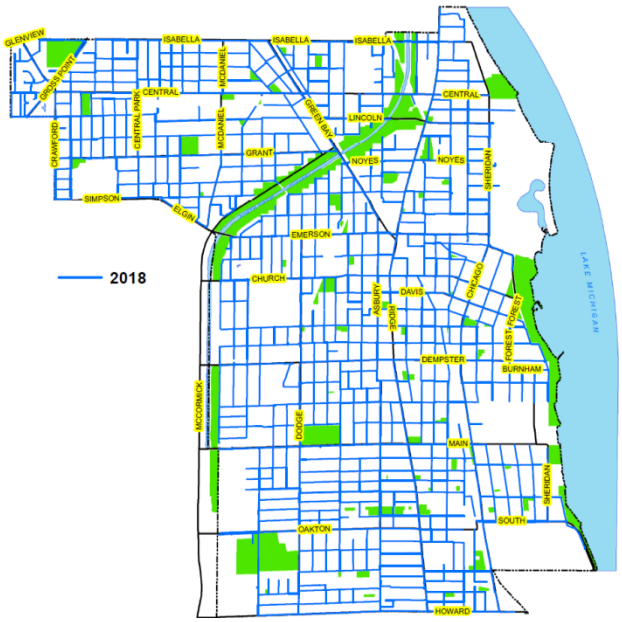


This map is provided "as is" without warranties of any kind. See www.cityofevanston.org/mapdisclaimers.html for more information.

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 2018 survey found three leaks on building water service pipes and three breaks on water mains. These defects were all successfully repaired, and the resulting estimated water savings for 2018 were over 14.50 Million Gallons (MG).

Year	Miles of Water Main Surveyed	Water Service Leaks Found	Water Main Breaks Found	Water Savings After Repairs
2015	135	3	2	9.90 MG/Year
2016	149	2	3	13.53 MG/Year
2017	156	3	2	9.90 MG/Year
2018	143	3	3	14.50 MG/Year
Totals	**583**	**11**	**10**	**47.83 MG**

In 2019 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.

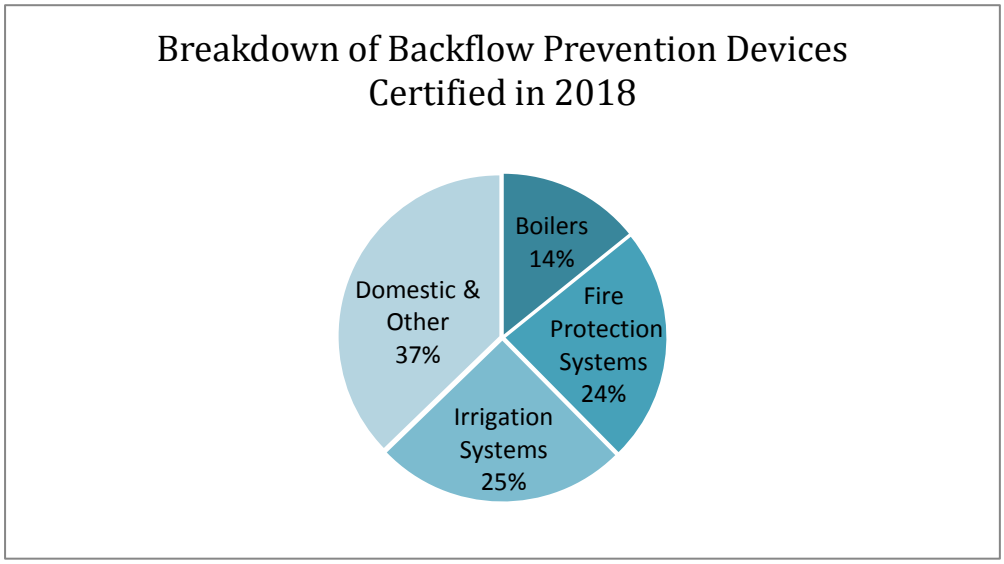
Cross Connection Control

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. An annual 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
2014	3,644
2015	4,039
2016	4,241
2017	4,364
2018	4,522



Metering

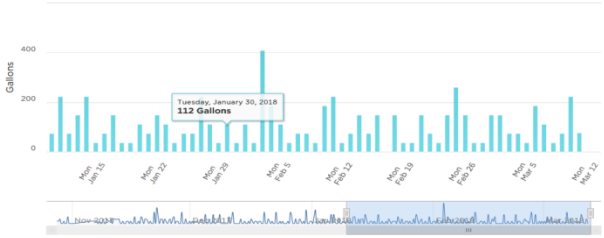
The Meter Division manages water meter reading and billing for Evanston's 14,462 retail water and sewer customers, working with the City's Collector's Office to process water/sewer bill payments and cross connection control fees. The Meter Division also coordinates with the Distribution Division to manage 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. Current technology allows meter readings to be taken automatically every hour, with once-daily, wireless upload of readings to a computerized billing system.

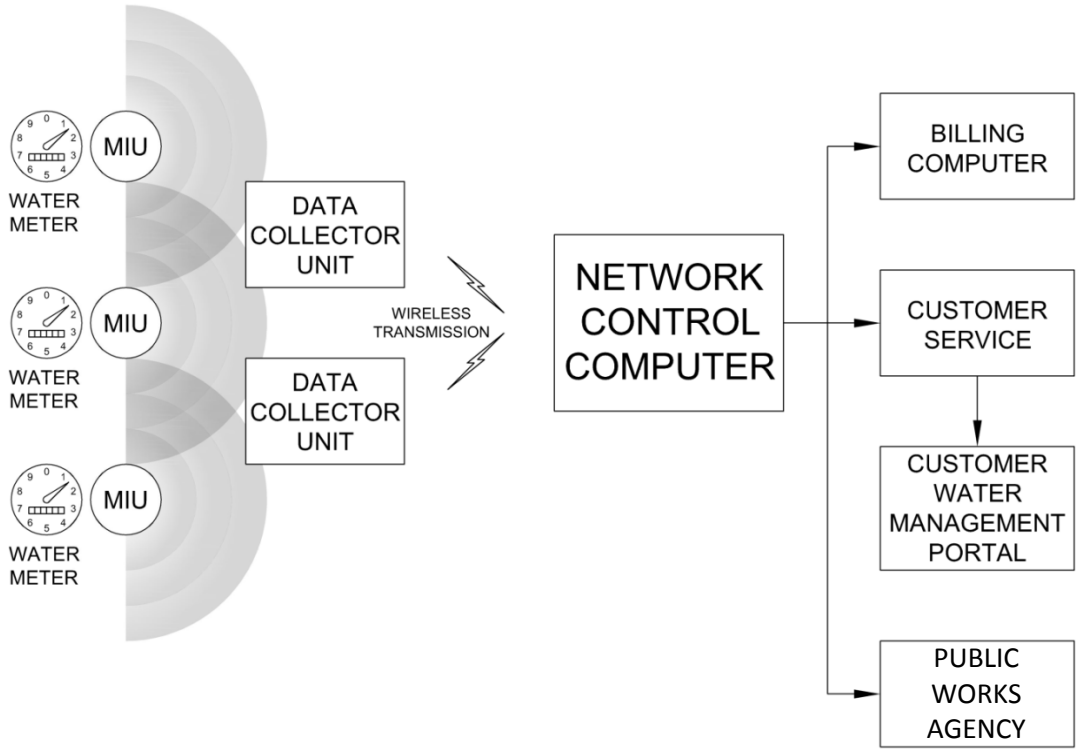
In 2017 a contractor was hired to exchange and replace out 5,732 old meters that are 20 years old and to obtain better resolution of the meter reading.

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) project. 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 is the new 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.



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 6 DCUs located on various buildings throughout the community. Each DCU sends its meter reading information to the Network Control System at the Water Treatment Plant on a daily basis.
- The Network Control System 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 Network Control System 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 usage 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”	11,525
3/4"	1,082
1”	1,126
1.5”	259
2”	478
3”	59
4”	31
6”	3
8”	4
Total	14,567

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 1/1/2018
5/8” & 3/4”	$8.83
1”	$17.61
1 ½”	$32.97
2”	$51.92
3”	$91.43
4”	$146.46
6”	$258.28
8”	$437.73

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.

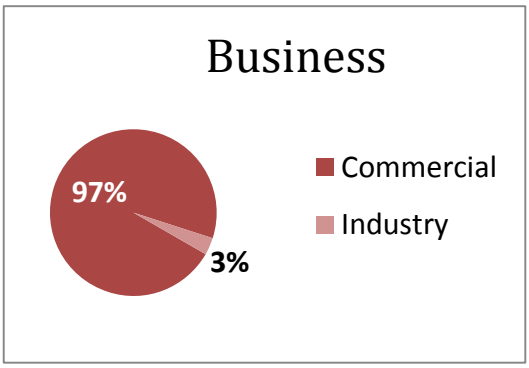
Water usage over the minimum is billed at $2.47 per CF effective 1/1/2018. This is equivalent to a rate of $3.30 per 1,000 gallons.

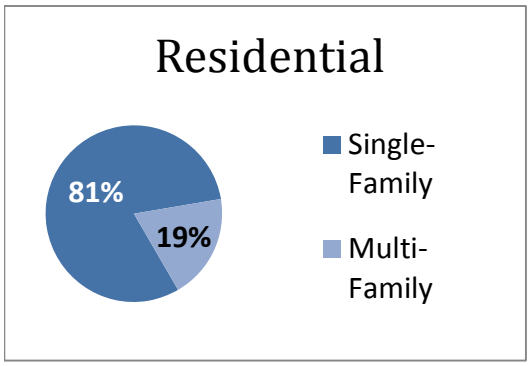
Water Customer Classes and Metered Usage

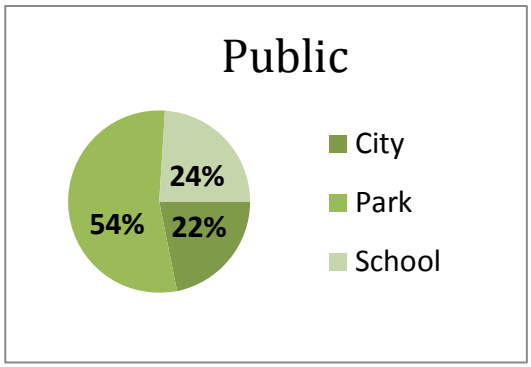
Billed by Category and Water Usage for 2018

Category	Number of Accounts	2018 Usage (100 CF)*
Metered Water Services		
Single-Family	10,830	1,068,781
Multi-Family	2,601	1,275,855
Commercial	960	1,083,414
Industry	34	16,405
City	31	19,137
Park	77	5,984
School	34	46,941
Subtotal	14,567	3,516,517
Unmetered Water Services		
Fire Services**	606	-
Totals	**15,173**	**3,516,517**

Water Service Accounts by Category:



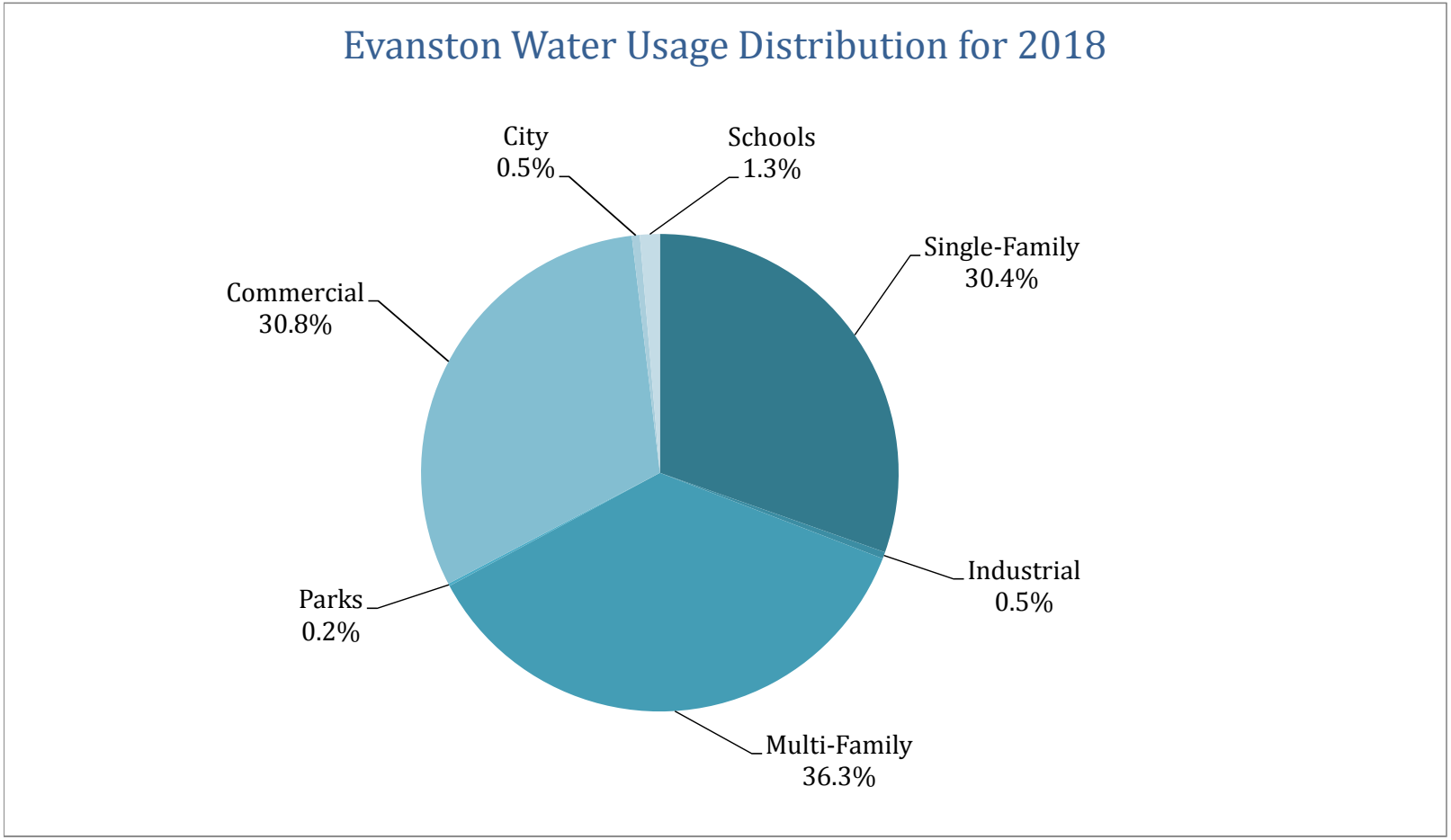




* Water usage is metered in units of 100 cubic feet (CF). 100 CF is approximately 748 gallons

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

Water Usage Breakdown for Evanston Customers



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.

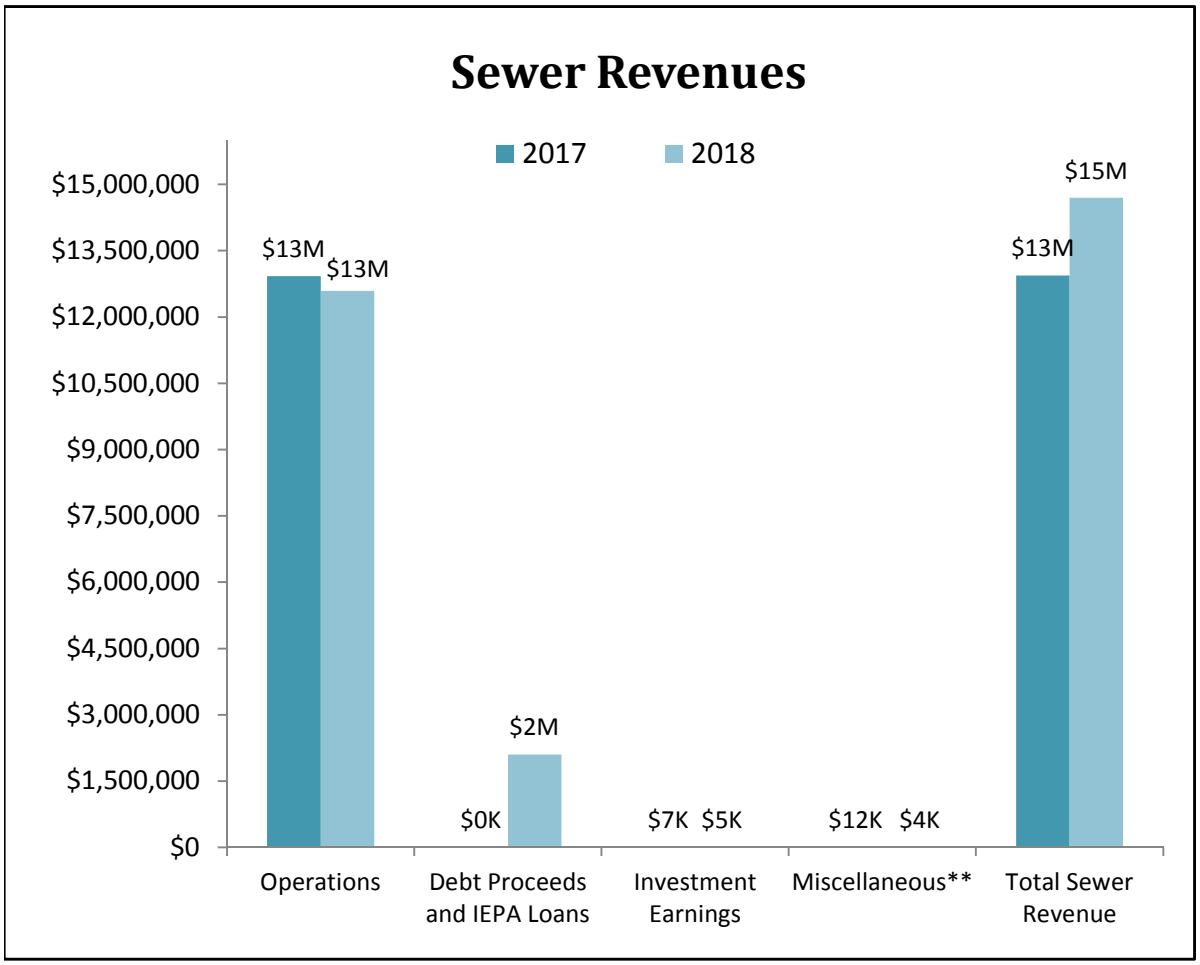
Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

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*

	2017	2018
Operations	$12,921,749	$12,589,650
Debt Proceeds and IEPA Loans	$0	$2,100,000
Investment Earnings	$6,500	$5,000
Miscellaneous**	$12,000	$4,000
Total Sewer Revenue	$12,940,249	$14,698,650

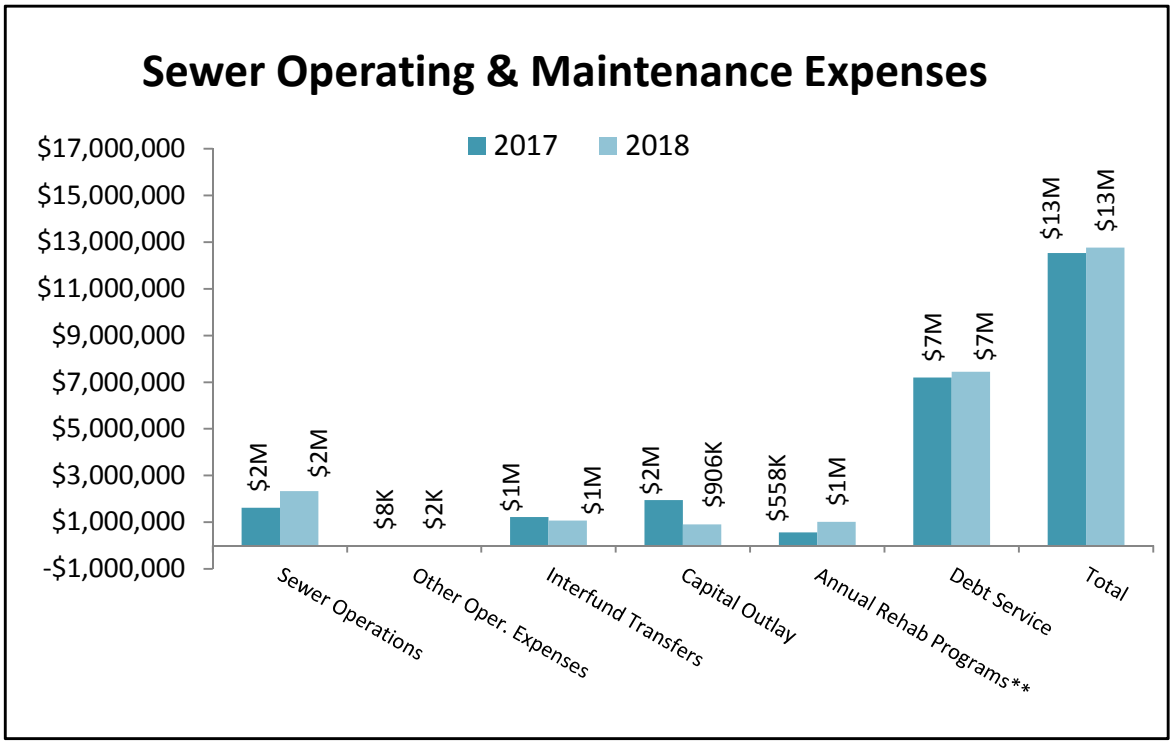


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports/.

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

Sewer Operating & Maintenance Expenses*

	2017	2018
Sewer Operations	$1,615,026	$2,332,207
Other Oper. Expenses	$7,676	$1,700
Interfund Transfers	$1,219,451	$1,069,452
Capital Outlay	$1,943,160	$905,883
Annual Rehab Programs**	$557,574	$1,010,000
Debt Service	$7,198,860	$7,447,026
Total	$12,541,747	$12,766,268



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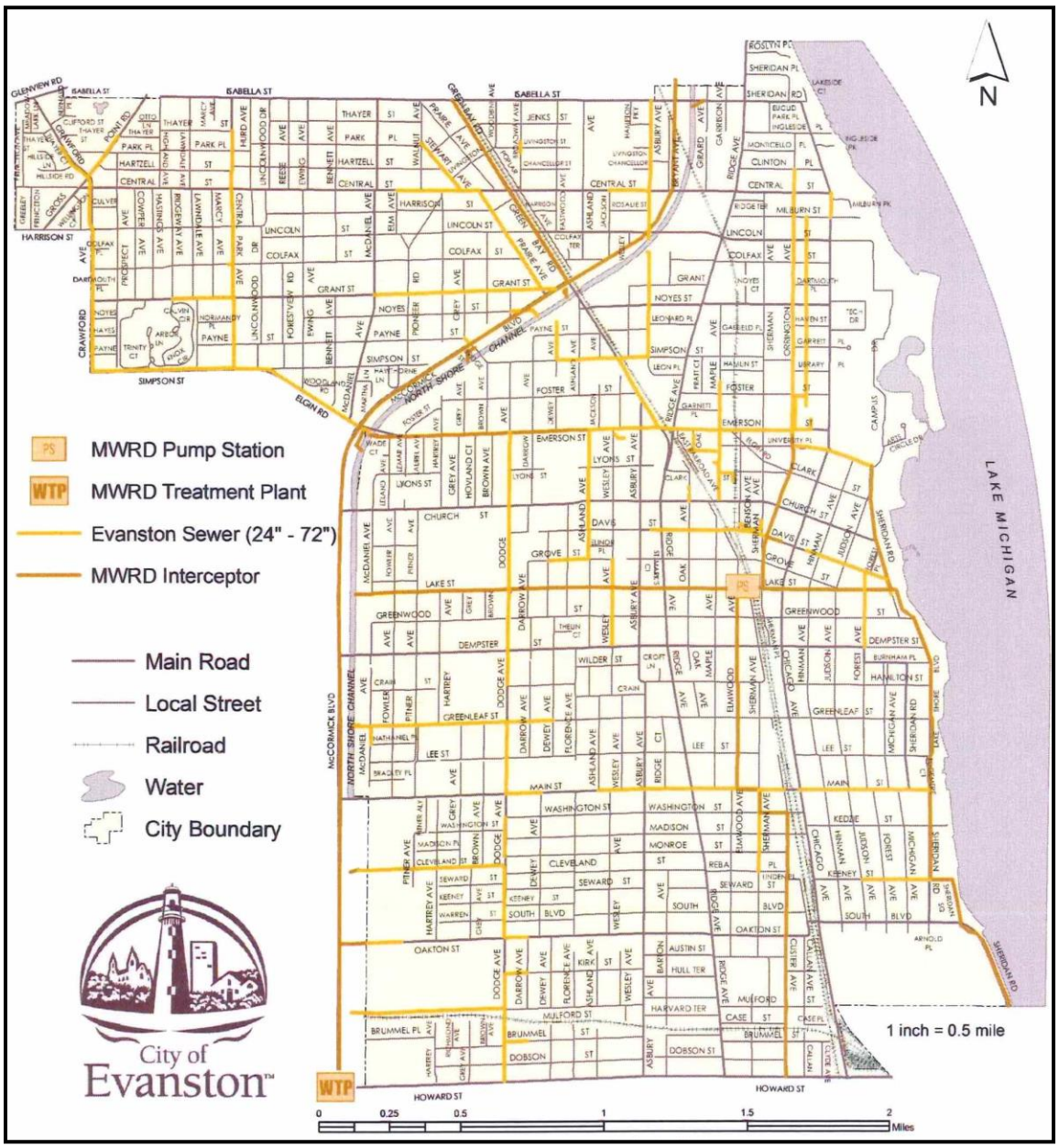
**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

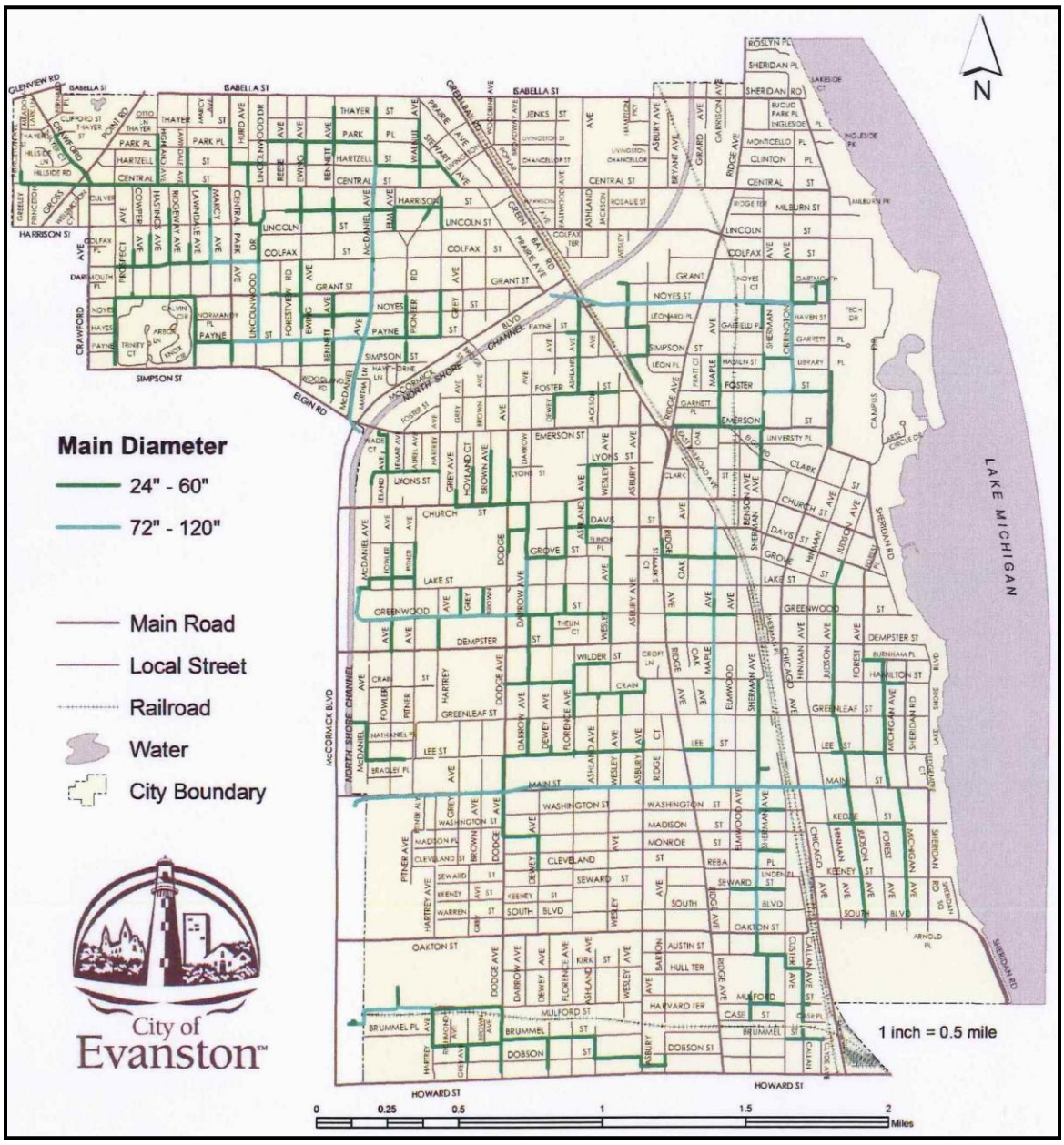
Major Combined Sewer System

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.



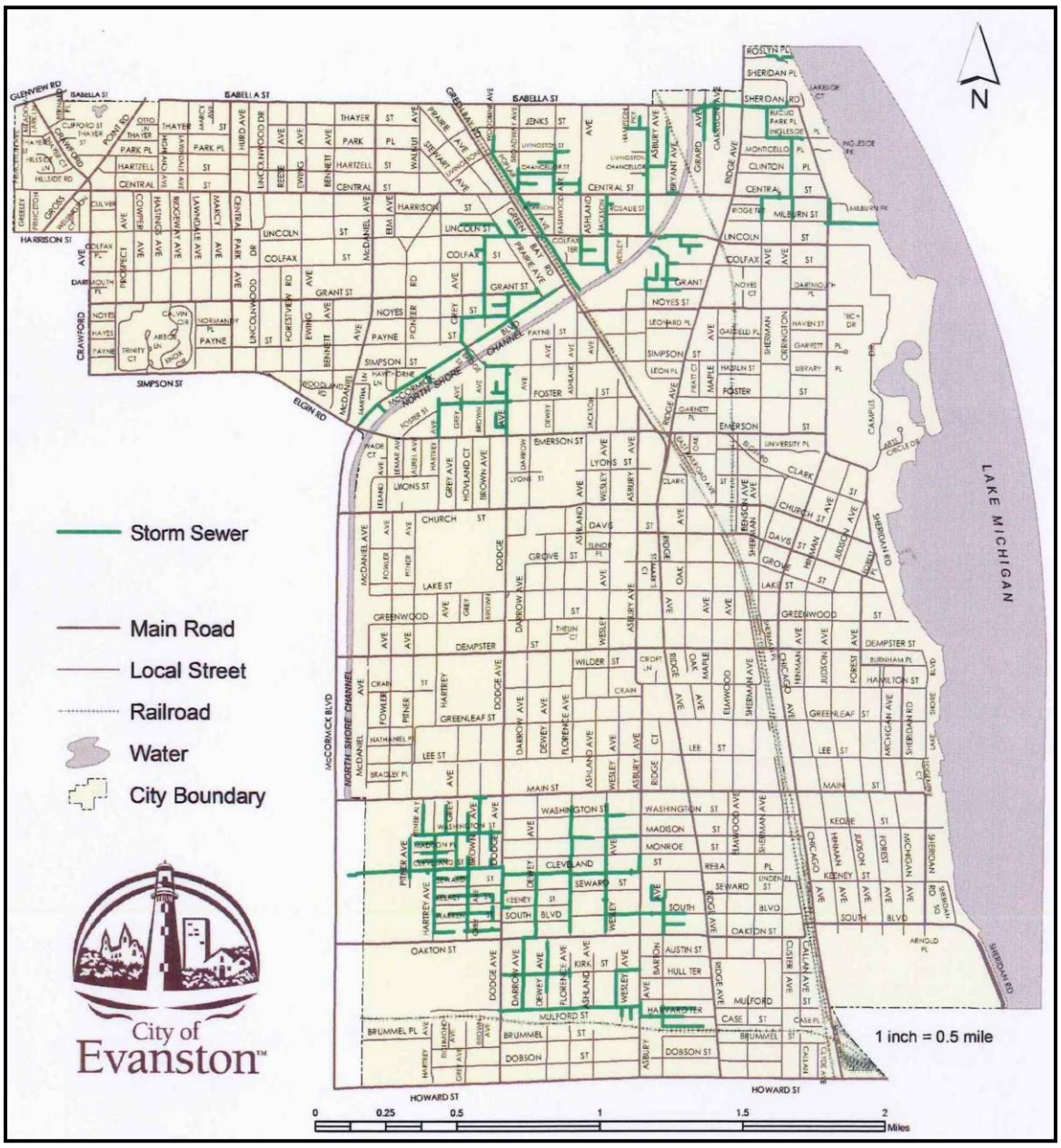
Major Relief Sewer System

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.

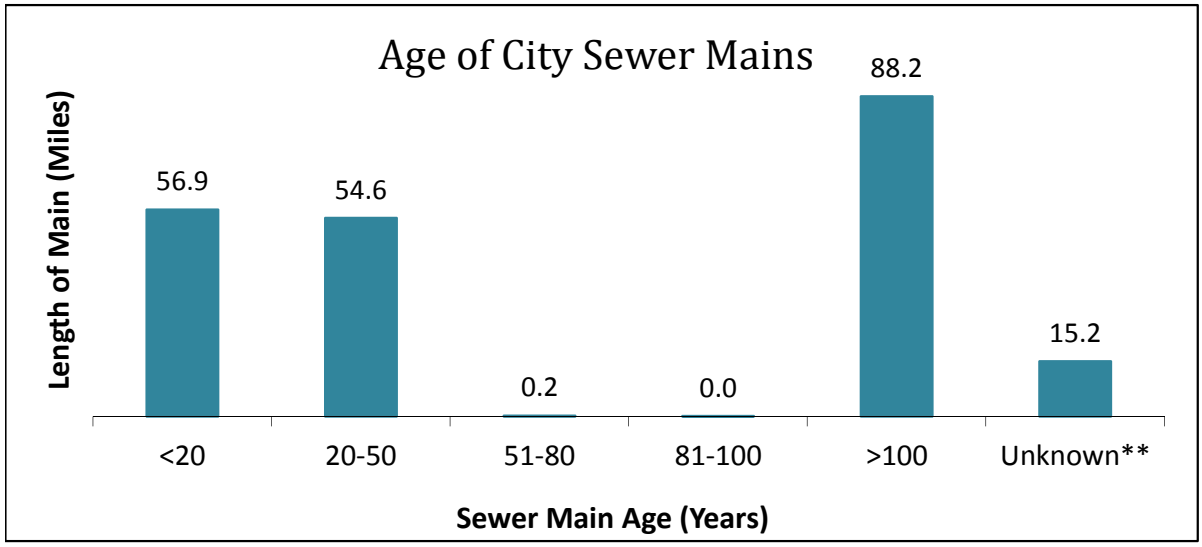


Sewer Mains

System Data and Maintenance

	Pipe Length (miles)				
Sewer Length by Type	2014	2015	2016	2017	2018
Combined Sewer	143.85	144.30	144.27	144.30	144.53
Relief Sewer	52.82	53.54	53.69	53.78	54.54
Storm Sewer	16.31	16.29	16.30	16.30	16.30
Total Length	212.98	214.13	214.26	214.38	215.37

Sewer Installation	Pipe Length (feet)				
and Maintenance	2014	2015	2016	2017	2018
Installed (new)	0	2,782	0	501	2,311
Replaced	0	0	0	178	760
CIPP Rehabilitation (Lining)	12,059	11,330	7,753	13,921	4,662
Spot Repair	780	2,143	2,943	1,048	3,107
Clean - Hydroflush	136,679	110,419	217,566	253,055	45,575
Clean - Root Cut	14,412	39,987	8,400	1,907	1,618
Inspection - General	26,570	45,777	28,492	19,881	9,509
Inspection - Televised	69,805	50,300	51,602	50,901	42,897
Inspection - Storm-related*	971	530	0	161	1,304



* 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

	Combined Sewer		Relief Sewer		Storm Sewer	
Diameter	Feet	Miles	Feet	Miles	Feet	Miles
<6"	2,926	0.55	243	0.05	0	0.00
6"	1,578	0.30	0	0.00	0	0.00
8"	21,749	4.12	11,426	2.16	1,933	0.37
9"	124,692	23.62	7,536	1.43	989	0.19
10"	110,556	20.94	30,551	5.79	11,054	2.09
12"	223,627	42.35	26,777	5.07	9,729	1.84
14"	1,019	0.19	0	0.00	0	0.00
15"	91,985	17.42	5,903	1.12	5,249	0.99
16"	2,085	0.39	6,791	1.29	724	0.14
18"	61,823	11.71	16,592	3.14	7,693	1.46
20"	8,410	1.59	127	0.02	0	0.00
21"	14,959	2.83	2,747	0.52	1,910	0.36
22"	858	0.16	0	0.00	0	0.00
24"	21,405	4.05	47,321	8.96	15,967	3.02
27"	6,434	1.22	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,107	3.62	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,757	3.74	18,386	3.48	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	12,282	2.33	3,570	0.68
45"	1,029	0.19	0	0.00	0	0.00
48"	13,182	2.50	22,580	4.28	7,966	1.51
51"	1,104	0.21	0	0.00	0	0.00
54"	1,981	0.38	3,159	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,215	1.37	5,262	1.00	3,633	0.69
72"	4,077	0.77	11,640	2.20	0	0.00
78"	0	0.00	5,440	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	5,025	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	1,639	0.31	2,324	0.44	691	0.13
Totals	**763,114**	**144.53**	**287,968**	**54.54**	**86,084**	**16.30**

Total Sewer Main Length: 215.37 miles

Sewer Structures

System Data and Maintenance

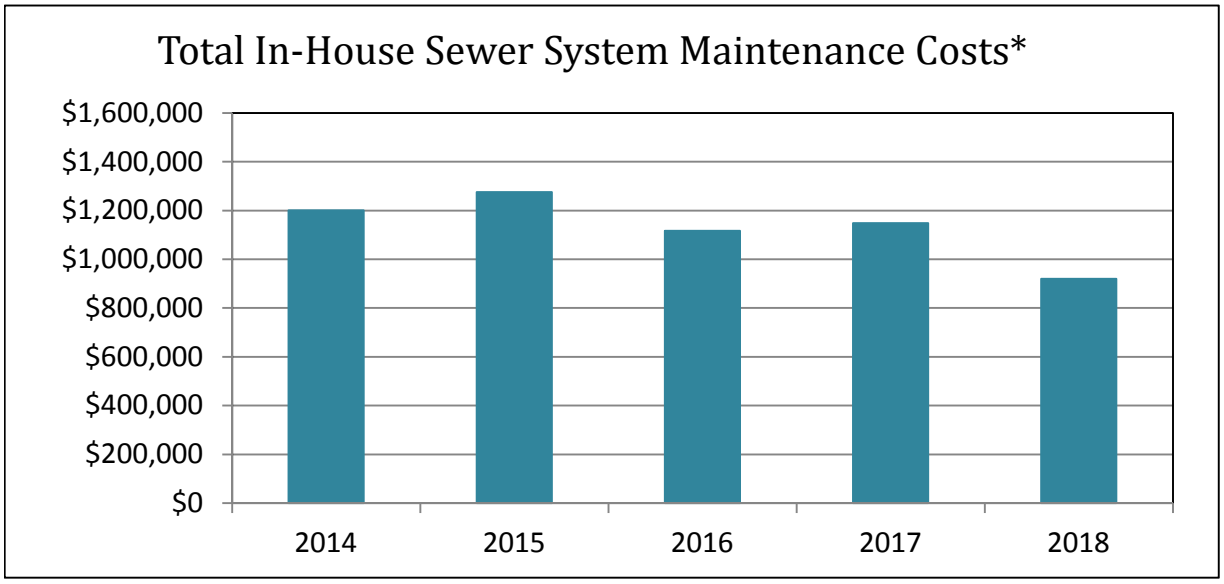
Number of Sewer Structures	2014	2015	2016	2017	2018
Manholes	5,566	5,582	5,583	5,588	5,620
Inlets	2,974	3,018	3,024	3,025	3,092
Catch Basins	6,208	6,238	6,246	6,241	6,280
Total	14,748	14,838	14,853	14,854	14,992

Sewer Structure Installation & Maintenance	2014	2015	2016	2017	2018
Installed (new)	1	41	3	4	27
Replaced	21	18	9	15	6
Repair	55	73	89	97	116
Clean	3,181	3,262	2,779	1,889	3,006
Inspect - General	161	614	156	196	668
Inspect - Storm-Related*	985	935	689	995	998

* 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	2014	2015	2016	2017	2018
Sewer Mains	$355,398	$344,407	$396,738	$377,668	$238,526
Sewer Structures	$353,667	$547,051	$388,196	$434,624	$360,072
Equip/Facility Maint.	$87,884	$162,452	$122,994	$164,159	$117,291
Assist W&S Divisions	$73,275	$80,729	$52,271	$41,226	$36,266
Snow & Ice Removal	$243,207	$68,538	$32,077	$12,423	$66,934
Assist Contractors	$18,681	$16,637	$16,955	$23,378	$20,102
Assist Other City Depts.	$35,943	$17,107	$61,226	$31,302	$41,396
Safety & Training	$18,759	$27,486	$30,844	$23,472	$26,350
Miscellaneous	$13,868	$10,588	$14,874	$39,778	$12,525
JULIE Locates	$553	$193	$357	$236	$648
Total	**$1,201,233**	**$1,275,188**	**$1,116,533**	**$1,148,265**	**$920,111**



* 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).

Due to weather, the remaining 1.18 miles of combined sewer mains to be lined in 2018 will be completed in Quarter 1 of 2019.