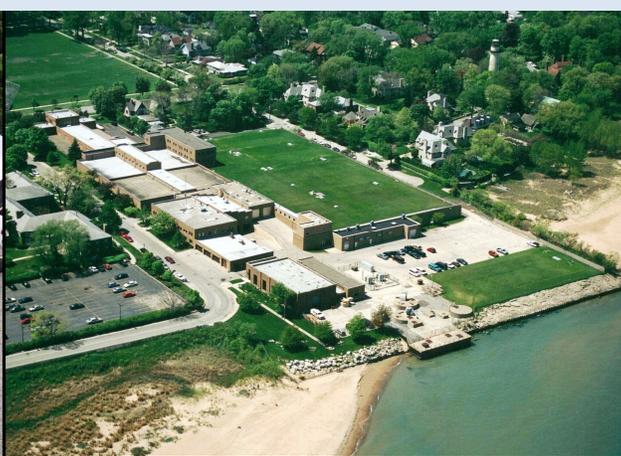




City of  
**Evanston**<sup>™</sup>

Serving the Community for 137 Years



# 2011 Annual Report

Evanston Utilities Department

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## Plant Data

### Intakes

36/42" – length 5,946', depth 28'  
 48" – length 5,300', depth 28'  
 54" – length 5,340', depth 28'  
 Approximate capacity 150 MGD

### Suction Wells

2 – 22' diameter x 74' depth to bottom with traveling screens  
 1 – 20' diameter x 52' 6" depth top to bottom  
 Alternate application point for activated carbon and polymers

### Low Lift Pumps

2 – Electric motor driven pumps (2-30 MGD)  
 4 – Dual drive, electric-natural gas (3 – 15 MGD, 1 – 30 MGD)  
 Total capacity of 135 MGD  
 Emergency standby of 75 MGD

### Flash Mix Basin

14' 9" x 14' 9" x 31' 7" deep  
 Single vertical shaft mixer  
 Rotation is counterflow  
 Applications point for Alum, Chlorine, Fluoride, Polymer and Carbon

### Slow Mix Settling Basins

2 with five 60' shafts per basin and 4 paddle wheel sections  
 Capacity of 2.865 MG each

2 with eight 60' shafts per basins and 4 paddle wheel sections  
 Capacity of 4.300 MG each  
 Flow parallel to shaft

Double deck-series flow  
 Retention time at 144 MGD is 2 hours and 27 minutes

### Filters

12- 4 MGD anthracite capped rapid sand filters, 738 ft<sup>2</sup> each  
 12- 8 MGD anthracite capped rapid sand filters, 1391 ft<sup>2</sup> each  
 Total rated capacity of 144 MGD at 4 gpm/ft<sup>2</sup>  
 Automatic surface and back wash system on all 24 filters

### Underground Storage

Clearwells (8) - 4.5 MG  
 Reservoir - 5.0 MG  
 Total Plant Storage - 9.5 MG

### High Lift Pumps

Electric Motor Driven Pumps:  
 1 – 15 MGD, 2 – 25 MGD  
 1 – Dual drive, electric-natural gas (10 MGD)  
 2 – Dual drive, electric-natural gas (15 MGD)  
 1 – Dual drive, electric-natural gas (22 MGD)  
 1 – Natural gas engine (20 MGD)  
 Total rated capacity of 147 MGD  
 Emergency capacity of 82 MGD

### Wash Water Pumps

2 – 20 MGD  
 2 – 10 MGD

### Detention Tank

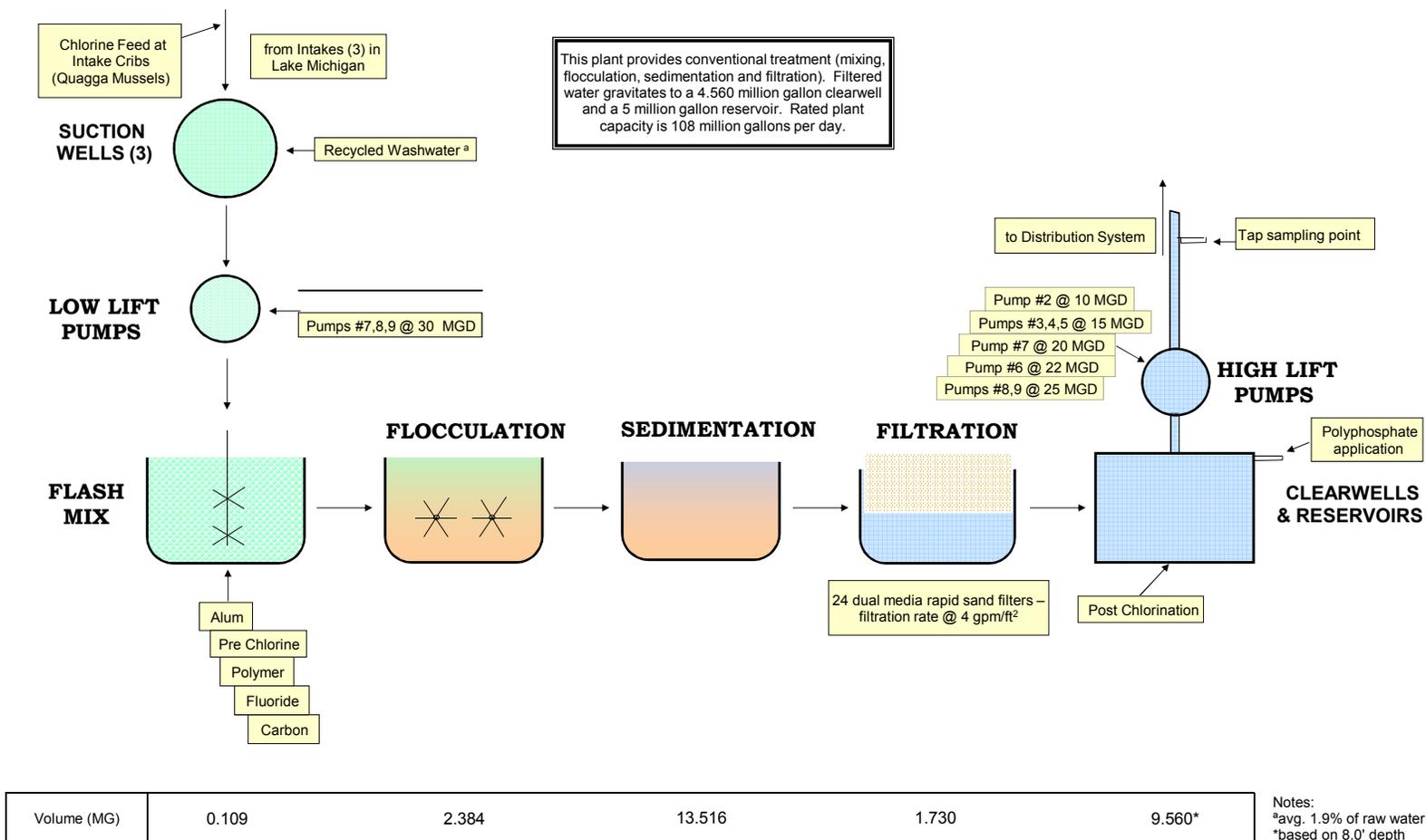
80'W x 192'L x 12'D divided into two sections  
 Total capacity of 1.1 MG  
 One submersible sludge pump at 700 gpm

### Note:

MG = million gallons  
 MGD = million gallons per day  
 gpm = gallons per minute

# City of Evanston Water Treatment Plant

555 Lincoln Street / Evanston, Illinois 60201



## **Water Works Improvements (1874 to 2011)**

- 1874** - Evanston Community water system established
- 1913** - 12 MGD filter plant construction
- 1923** - Filter plant expanded to 24 MGD
- 1934** - 5 million gallon underground reservoir constructed at plant site
- 1944** - Contracted to supply Skokie
- 1949** - High lift (finished water) pumping station constructed
  - Filter Plant expanded to 48 MGD
  - Slow Mix Basins 1 & 2 constructed
- 1956** - 48" intake and low lift (raw water) pump station constructed
  - 36" feeder main to Skokie
- 1964** - Filter plant expanded to 72 MGD
  - Additional 36" feeder main to Skokie
  - Slow mix basins 3 & 4 constructed
- 1971** - 20 MGD high lift pump and natural gas engine installed
- 1974** - Filter wash water detention basin, 1.1 MG capacity
- 1976** - Constructed 54" intake 5,340 feet in length
  - Extended 48" intake 5,300 feet
- 1981** - Material storage building constructed at south water tank yard
  - Installed 3 new boilers (2 - 50 HP and 1 – 20 HP)
  - Replacement of 5 kV switchgear and motor starting equipment for low lift pumps
  - Upgraded slow mix equipment in basins 1 and 2
- 1982** - Installation of two 30 MGD low lift pumps
  - Replaced 5 kV motor starter center for high lift pumps
- 1983** - New chemical building and chemical feed system
  - Installation of a 500 kW emergency generator
  - Rehabilitation of six 1914 and six 1924 filters to increase rate to 3 MGD per filter

- 1984** - 5 MG standpipe with booster station replaced the 1.5 MG elevated tank in southwest Evanston
- 1985** - Began selling water to Northwest Water Commission at the rate of 10 MGD, bypassing reservoir until repairs were completed
  - Installed dual drive 22 MGD high lift pump with associated suction/discharge 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** - A 7.5 MG standpipe with booster station replaced the 1.0 MG elevated tank in northwest Evanston
  - Began pumping to NWC reservoir June 1
- 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 Chicago Metropolitan Sanitary District 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
  - West filter influent valves upgraded from 16" to 24"
- 1991** - Upgrade electrical substation and switchgear to 3,750 kVA
  - Upgraded West filter effluent piping
- 1992** - Installation of chlorine feed system to intakes for Zebra Mussel control
  - Installation of a 15 MGD high lift pump replacing 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
  - Installation of blended phosphate system and initiation of blended phosphate treatment for corrosion control
- 1994** - Constructed new chemical storage and handling building
- 1995** - Replaced #6 Low Lift Pump Unit gasoline engine with natural gas engine

- 1996** - Replaced 1949 filter building roof  
- Constructed loading dock on 1913 filter building
- 1997** - Replaced #2 High Lift Pump Unit gasoline with a natural gas engine
- 1998** - Replaced #5 and #7 dual drive Low Lift Pump Unit's gasoline engines with natural gas fueled engines
- 2000** - Installed individual effluent turbidimeters on all 24 filters
- 2001** - Converted #3 High Lift Pump to dual drive  
- Replaced filter bottoms and rehabbed six filters in 1948 filter addition
- 2002** - Installation of automatic fixed radio meter reading system completed  
- Replaced effluent settling basin sluice gates with rectangular butterfly valves
- 2003** - Installed Uninterruptible Power Supply's in Filtration Division and Pumping Division
- 2004** - Constructed garages east of the settling basins  
- Constructed an access way to the chemical building from Filtration Division  
- Installed a scrubber
- 2005** - Replaced #4 Low Lift Pump Unit gasoline engine with natural gas engine
- 2006** - Replaced #7 Low Lift Pump Unit
- 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 Building roof

**Notes:**

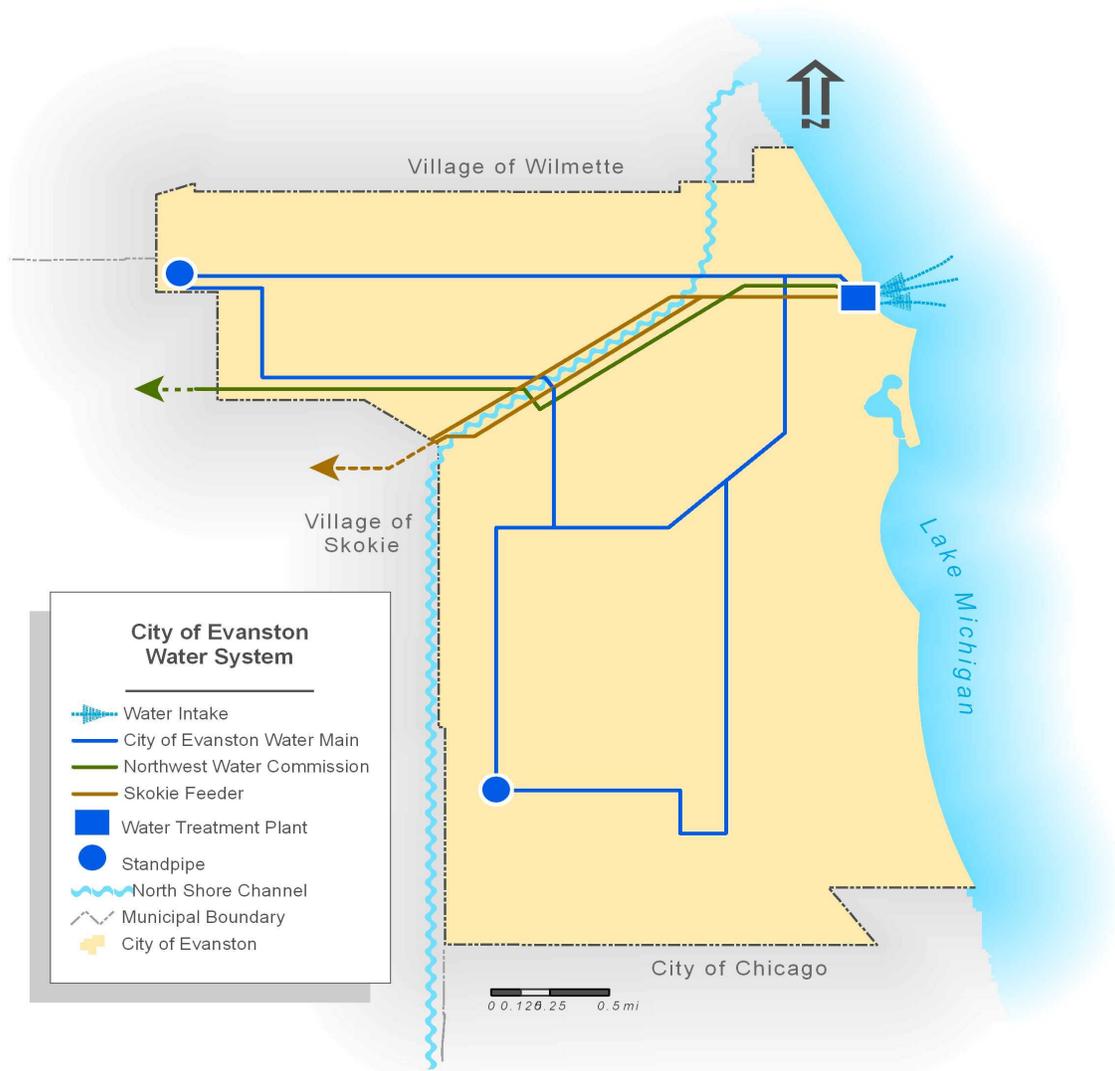
- HP = horsepower
- kV = kilovolt
- kW = kilowatt
- kVA = kilovolt-ampere

## Service Area & Population

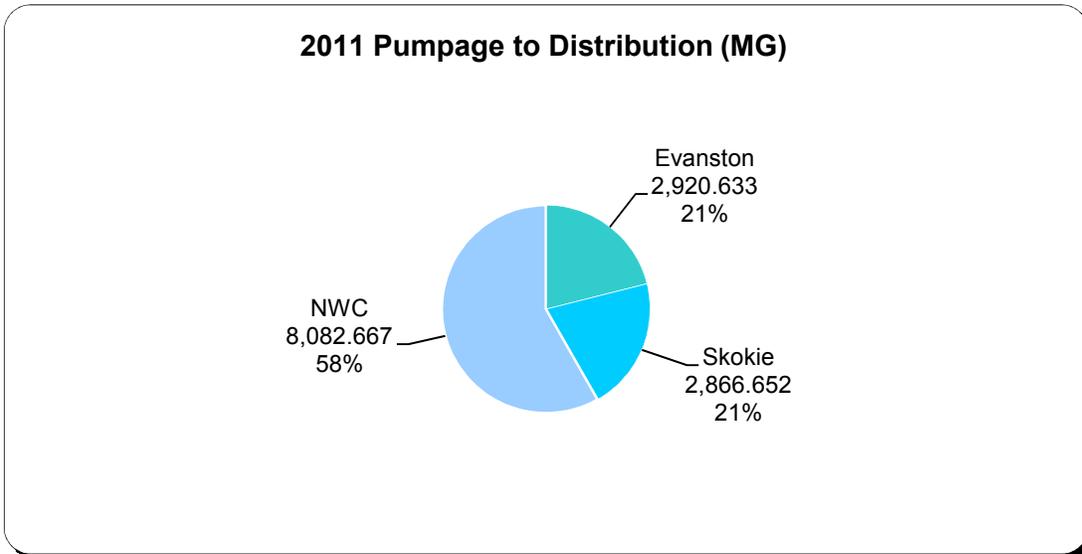
### General Statistics

	Area (Square Miles)	2011 Persons*
Evanston	7.8	74,486
Skokie	10.5	64,784
<b>NORTHWEST WATER COMMISSION</b>		
Arlington Heights	15	75,101
Buffalo Grove	4.5	41,496
Palatine	9	68,557
Wheeling	7.5	37,648
<b>Total Served</b>	<b>54.3</b>	<b>362,072</b>

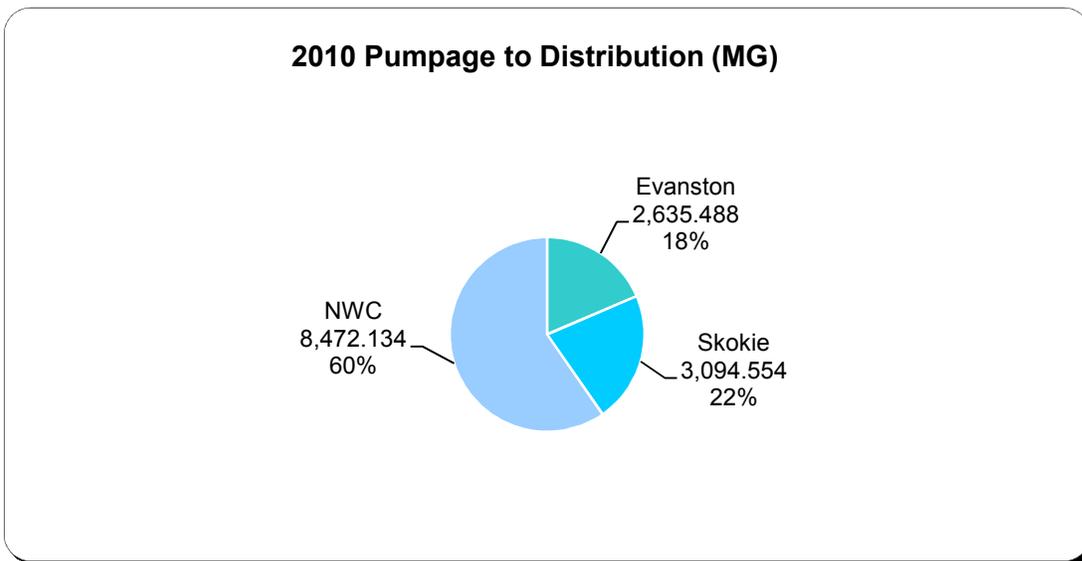
\*U.S. Census Bureau 2010 Census



## Pumpage to Distribution



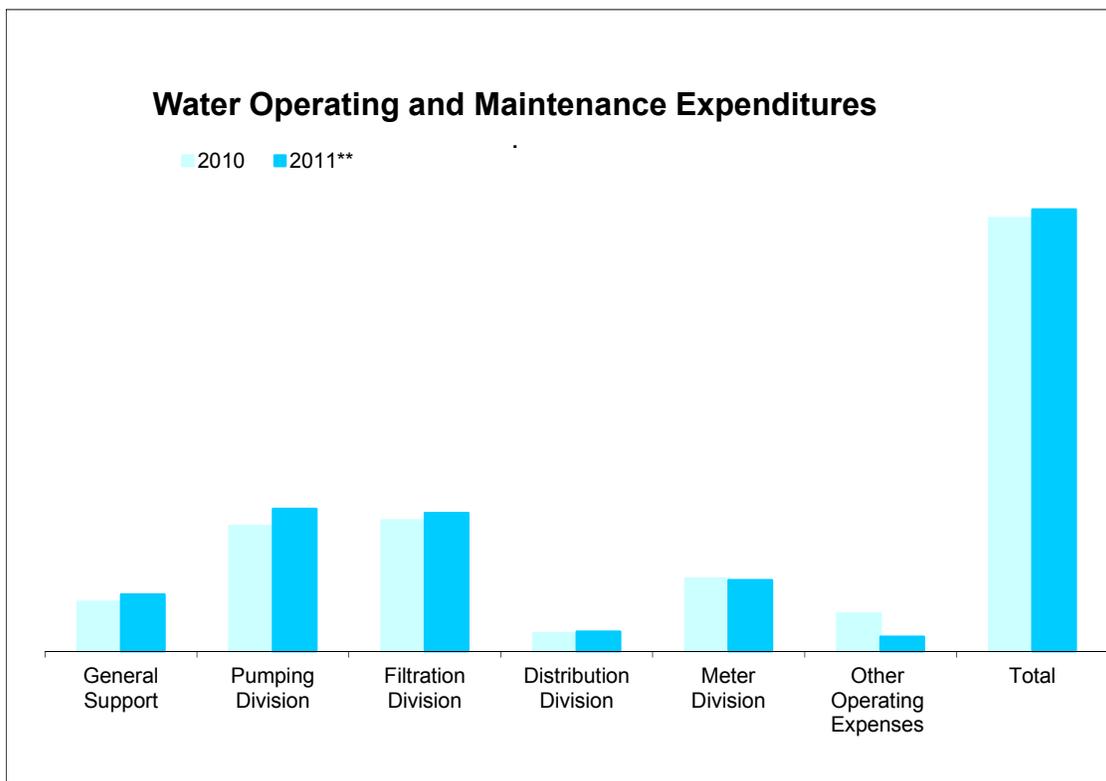
2011 Total Pumpage: 13,869,952,000 gallons



2010 Total Pumpage: 14,202,176,000 gallons

## Water Operating and Maintenance Expenditures\*

	2010	2011**
General Support	\$820,136	\$937,681
Pumping Division	\$2,075,791	\$2,359,750
Filtration Division	\$2,170,905	\$2,294,704
Distribution Division	\$294,342	\$321,003
Meter Division	\$1,205,917	\$1,178,872
Other Operating Expenses	\$624,486	\$239,780
<b>Total</b>	<b>\$7,191,577</b>	<b>\$7,331,790</b>

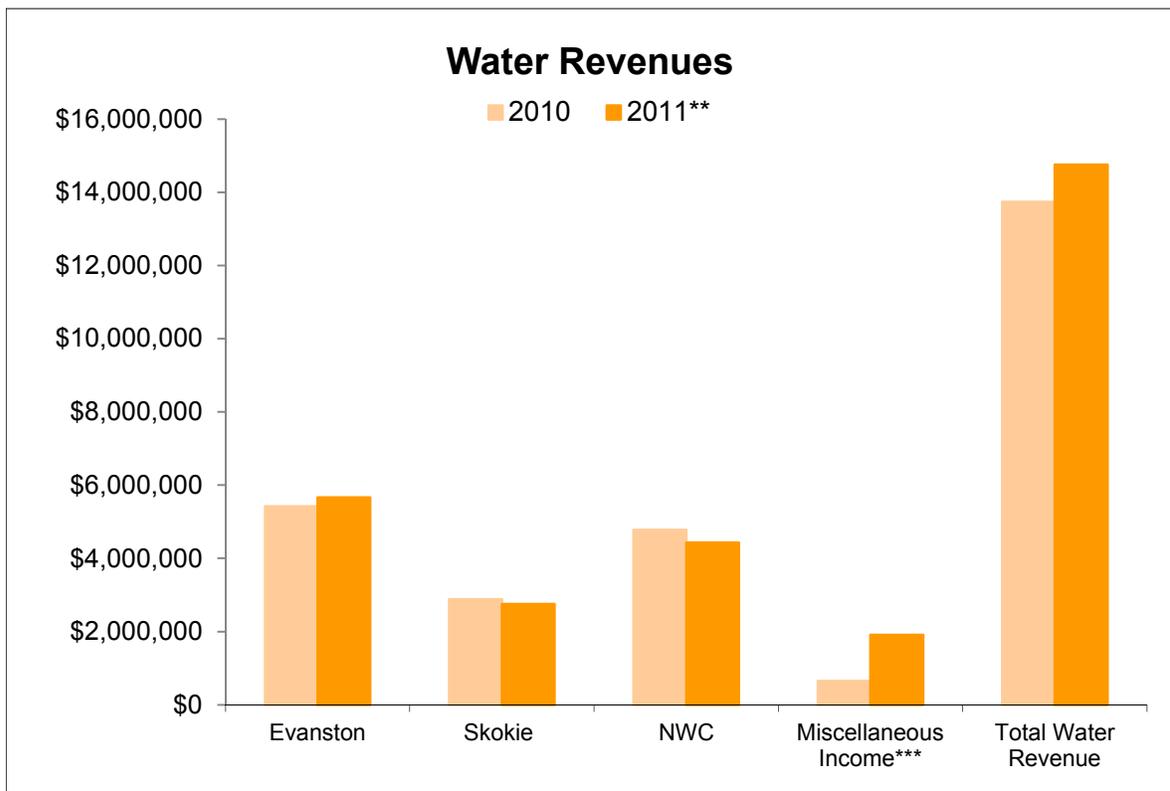


\* Financial numbers depicted herein are based on actual expenditures and do not include audit adjustments such as depreciation and inventory. For actual audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston.

\*\* Due to a change in the City's fiscal year calendar, audited financial data for 2010 was for the twelve months ending February 28, 2011, and audited financial data for 2011 was for the ten months ending December 31, 2011. 2011 financial data was scaled to provide a comparison to 2010 expenditures.

## Water Revenues\*

	2010	2011**
Evanston	\$5,419,316	\$5,667,776
Skokie	\$2,885,096	\$2,748,314
NWC	\$4,781,645	\$4,426,020
Miscellaneous Income***	\$651,825	\$1,911,206
<b>Total Water Revenue</b>	<b>\$13,737,882</b>	<b>\$14,753,316</b>



\* Financial numbers depicted herein are based on actual expenditures and do not include audit adjustments such as depreciation and inventory. For actual audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston.

\*\* Due to a change in the City's fiscal year calendar, audited financial data for 2010 was for the twelve months ending February 28, 2011, and audited financial data for 2011 was for the ten months ending December 31, 2011. The 2011 financial data was converted to a 12-month equivalent for comparison to 2010 data.

\*\*\* Miscellaneous income includes property rental, interest income, fees, grants and merchandise sales.

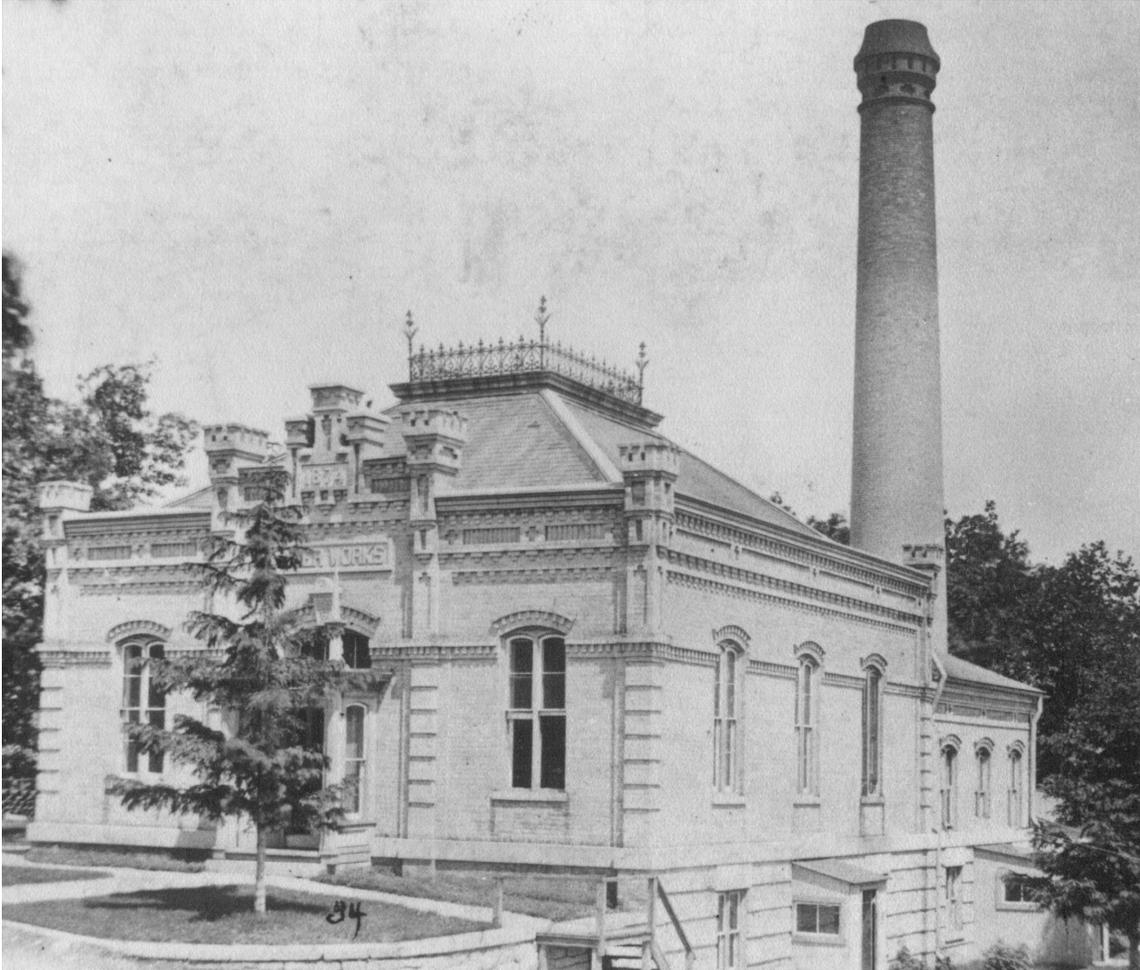
## Employee Profile and Safety

Section	Number of Employees
Administration	4
Pumping	11
Filtration	14
Distribution	10
Sewer	13
Meter	2
Apprentices	2
<b>Total</b>	<b>56</b>

Section	Number of AFMD* beginning 1/1/2011	Number of Injuries	Highest consecutive AFMD achieved	Date Highest AFMD Achieved	Number of AFMD ending 12/31/2011
Pumping	39	0	2,493	12/31/2011	2,493
Filtration	5,827	1	8,421	10/31/2011	523
Distribution	335	1	1,796	8/26/2011	693
Sewer	587	1	2,156	10/5/2011	588

\*AFMD = Accident Free Man Days

# Pumping



The original Water Works was built in 1874 to provide water for Evanston's 3,500 residents. The system consisted of a 16 inch intake pipe extending 1,200 feet into the lake, a small Holly steam engine capable of pumping 2 million gallons per day, a hand fired boiler, and a few miles of cast iron water main. The original cost of the steam engine and boiler was \$24,000. During the first year of operation the plant pumped 95 million gallons of water.

## 2011 Monthly Pumpage (MG)

Month	Lake Water Pumpage*	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Plant Use	Pumpage To			
						Distribution	Evanston	Skokie	N.W.C.
Jan-11	1,103.295	16.115	1,119.410	1,130.756	4.761	1,125.995	221.892	251.857	652.246
Feb-11	974.741	14.242	988.983	1,000.740	5.737	995.003	208.084	211.973	574.946
Mar-11	1,062.824	15.019	1,077.843	1,068.211	4.694	1,063.517	235.796	214.915	612.806
Apr-11	1,047.173	12.834	1,060.007	1,048.344	5.197	1,043.147	225.344	212.487	605.316
May-11	1,181.588	16.801	1,198.389	1,171.386	8.198	1,163.188	258.444	224.434	680.310
Jun-11	1,247.031	18.353	1,265.384	1,237.587	7.728	1,229.859	261.397	251.544	716.918
Jul-11	1,585.724	31.981	1,617.705	1,579.056	6.762	1,572.294	316.112	319.435	936.747
Aug-11	1,293.401	26.407	1,319.808	1,296.430	6.325	1,290.105	264.514	273.063	752.528
Sep-11	1,206.317	16.799	1,223.116	1,211.926	5.774	1,206.152	252.935	242.572	710.645
Oct-11	1,120.549	17.687	1,138.236	1,111.891	6.478	1,105.413	235.059	232.302	638.052
Nov-11	1,054.563	13.264	1,067.827	1,032.351	5.004	1,027.347	220.923	215.159	591.265
Dec-11	1,062.412	12.924	1,075.336	1,052.489	4.557	1,047.932	220.133	216.911	610.888
<b>Annual Total</b>	<b>13,939.618</b>	<b>212.426</b>	<b>14,152.044</b>	<b>13,941.167</b>	<b>71.215</b>	<b>13,869.952</b>	<b>2,920.633</b>	<b>2,866.652</b>	<b>8,082.667</b>

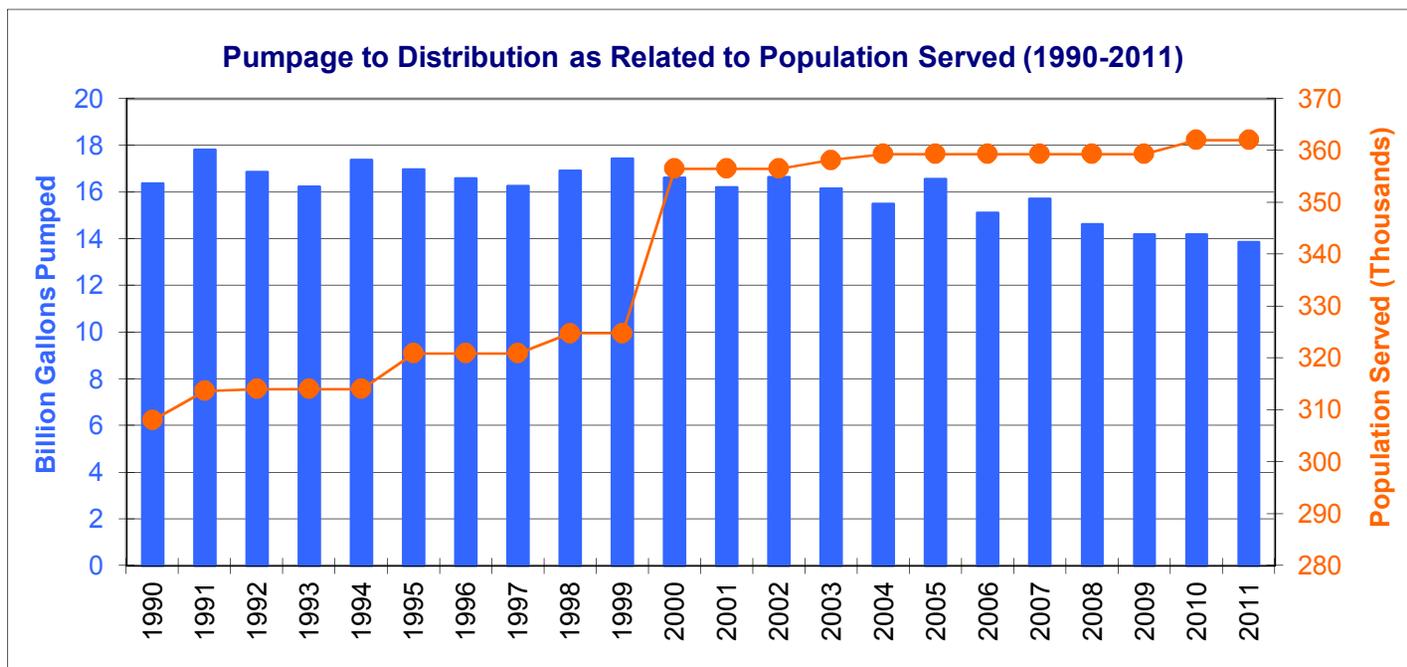
## 2011 Average Daily Pumpage (MGD)

Month	Lake Water Pumpage*	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Plant Use	Pumpage To			
						Distribution	Evanston	Skokie	N.W.C.
Jan-11	35.590	0.520	36.110	36.476	0.154	36.322	7.158	8.124	21.040
Feb-11	34.812	0.509	35.321	35.741	0.205	35.536	7.432	7.570	20.534
Mar-11	34.285	0.484	34.769	34.458	0.151	34.307	7.606	6.933	19.768
Apr-11	34.906	0.428	35.334	34.945	0.173	34.772	7.511	7.083	20.177
May-11	38.116	0.414	34.194	37.787	0.264	37.522	8.337	7.240	21.945
Jun-11	41.568	0.612	42.179	41.253	0.258	40.995	8.713	8.385	23.897
Jul-11	51.152	1.032	52.184	50.937	0.204	50.719	10.197	10.304	30.218
Aug-11	41.723	0.852	42.574	41.820	0.186	41.616	8.533	8.808	24.275
Sep-11	40.211	0.560	40.771	40.398	0.216	40.205	8.431	8.086	23.688
Oct-11	36.147	0.571	36.717	35.867	0.161	35.658	7.583	7.494	20.582
Nov-11	35.152	0.442	35.594	34.412	0.167	34.245	7.364	7.172	19.709
Dec-11	34.271	0.417	34.688	33.951	0.147	33.804	7.101	6.997	19.706
<b>Annual Average</b>	<b>38.191</b>	<b>0.582</b>	<b>38.773</b>	<b>38.195</b>	<b>0.195</b>	<b>38.000</b>	<b>8.002</b>	<b>7.854</b>	<b>22.144</b>

\*Pumpage to distribution > Lake water pumpage for cold months due to changes in water density

## 2011 YEARLY PUMPAGE (MG)

Year	Lake Water Pumpage	Wash Water Recycled	Total Raw Water Pumpage	Finished Water Pumpage	Plant Use	Pumpage To			
						Distribution	Evanston	Skokie	N.W.C.
2011	13,939.618	212.426	14,152.042	13,941.167	71.215	13,869.954	2,920.633	2,866.652	8,082.667
2010	14,087.849	218.251	14,306.100	14,268.257	66.081	14,202.176	2,635.488	3,094.554	8,472.134
2009	14,363.047	193.841	14,556.888	14,350.335	150.804	14,199.531	2,990.094	2,829.824	8,379.613
2008	14,872.552	134.595	15,007.147	14,693.877	67.581	14,626.296	3,089.536	2,961.341	8,589.720
2007	15,905.381	192.088	16,097.469	15,771.451	66.705	15,704.746	3,140.717	3,564.781	8,999.248
2006	15,332.651	160.528	15,493.179	15,174.631	58.810	15,115.821	2,891.989	3,329.305	8,894.627
2005	16,823.362	184.937	17,008.299	16,634.025	61.313	16,572.712	3,303.763	3,544.779	9,724.170
2004	15,760.615	126.348	15,886.963	15,550.728	56.788	15,493.940	3,200.427	3,365.418	8,928.095
2003	16,387.185	152.037	16,539.222	16,204.109	51.259	16,152.850	3,448.090	3,624.902	9,079.858
2002	16,868.610	162.518	17,031.128	16,685.830	46.900	16,638.930	3,428.938	3,761.222	9,448.570



## Average Daily per Capita Consumption

Year	Evanston		Skokie		Northwest Water Commission	
	Population	Gal. Per Capita Use	Population	Gal. Per Capita Use	Population	Gal. Per Capita Use
2011	74,486	107	64,784	121	222,802	99
2010	74,486	97	64,784	131	222,802	104
2009	74,360	110	63,333	122	221,364	104
2008	74,360	114	63,333	128	221,364	106
2007	74,360	116	63,333	154	221,364	111
2006	74,360	107	63,633	143	221,364	110
2005	74,360	122	63,633	153	221,364	120
2004	74,360	118	63,633	145	221,364	110
2003	73,421	129	63,126	157	221,643	112

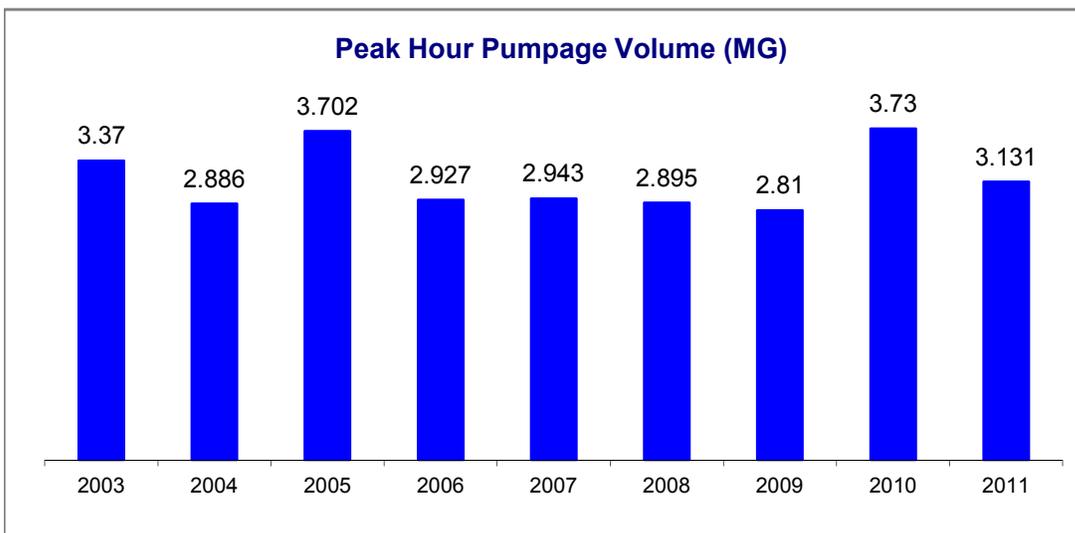
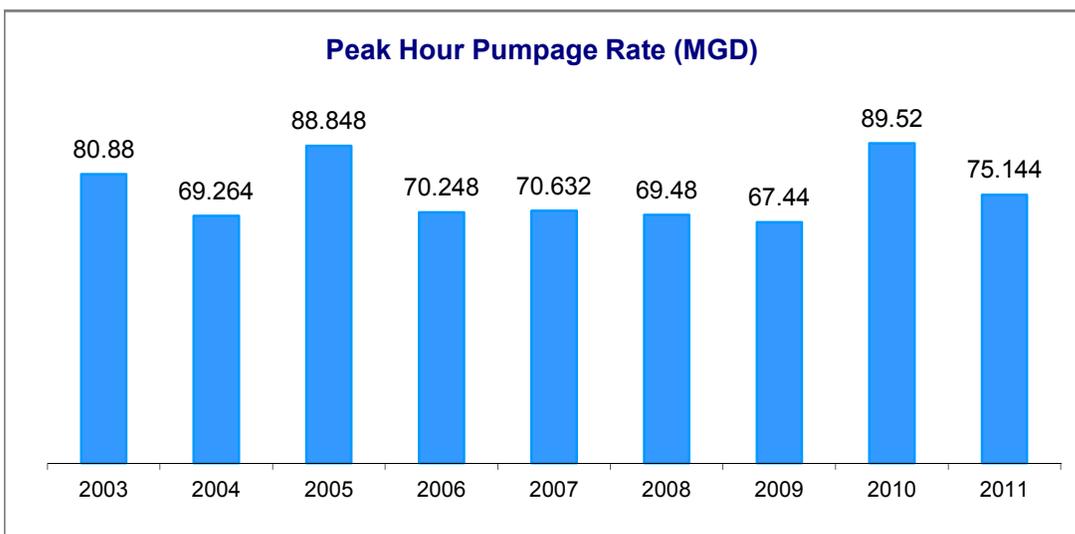
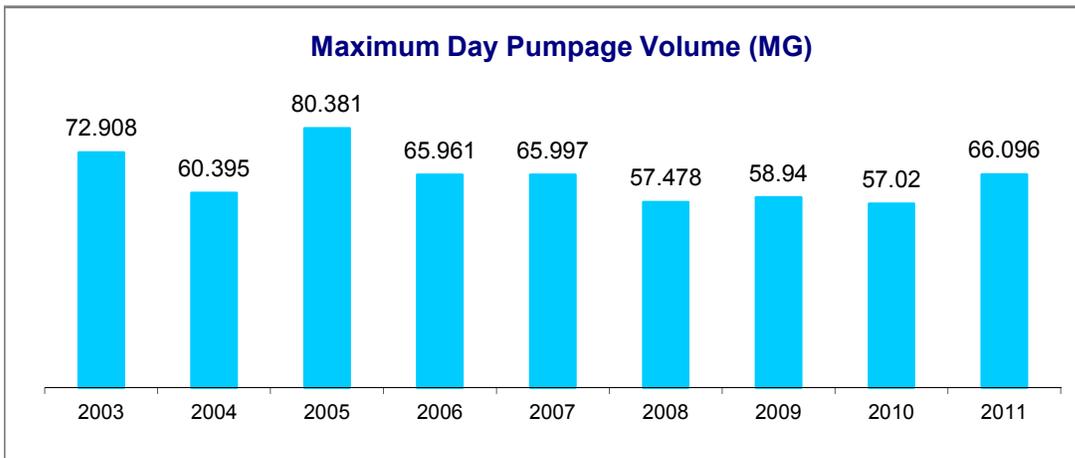
Year	Combined Total	
	Population	Gal. Per Capita Use
2011	362,072	105
2010	362,072	107
2009	359,357	108
2008	359,357	112
2007	359,357	120
2006	359,357	115
2005	359,357	126
2004	359,357	118
2003	358,190	124

## Maximum Pumpage to Distribution

Year	Max Day Pumpage Volume (MG)	Peak Hour Pumpage Rate (MGD)	Peak Hour Pumpage Volume (MG)
2011	66.096	75.144	3.131
2010	57.020	89.520	3.730
2009	58.940	67.440	2.810
2008	57.478	69.480	2.895
2007	65.997	70.632	2.943
2006	65.961	70.248	2.927
2005	80.381	88.848	3.702
2004	60.395	69.264	2.886
2003	72.908	80.880	3.370

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

## Maximum Pumpage to Distribution



## Maximum Pumpage and Demand Days (MGD)

Calendar Year	Evanston Water Plant		City of Evanston		Village of Skokie		Northwest Water Comm.	
	Max Day Pumpage	Max Day Demand						
2011	July 18th 66.096	July 18th 66.536	July 18th 12.614	July 18th 12.993	July 18th 13.724	July 18th 14.282	July 19th 40.820	July 18th 39.570
2010	July 17th 57.020	July 17th 57.249	July 29th 13.643	July 29th 13.643	August 20th 12.957	August 20th 12.960	July 19th 34.661	July 19th 34.760
2009	August 14th 58.940	August 14th 58.668	August 13th 13.992	August 14th 13.588	August 14th 11.495	July 30th 11.327	August 6th 34.725	August 6th 35.225
2008	July 30th 57.478	July 30th 56.649	July 30th 11.788	July 30th 11.667	July 30th 11.495	July 30th 11.327	July 29th 33.670	July 29th 33.178
2007	August 2nd 65.997	August 2nd 65.034	August 2nd 17.774	August 2nd 15.612	June 11th 16.493	June 11th 16.723	August 2nd 35.946	August 2nd 37.136
2006	August 1st 65.961	August 1st 66.486	July 29th 14.127	August 1st 13.115	August 1st 15.236	August 1st 15.236	August 1st 37.221	August 1st 38.221
2005	June 24th 80.381	June 24th 80.457	July 17th 16.926	July 17th 18.176	June 24th 17.268	June 24th 17.075	June 24th 47.233	June 25th 50.309
2004	August 2nd 60.395	August 2nd 60.981	August 3rd 14.497	August 2nd 14.801	July 2nd 11.895	July 2nd 11.297	July 30th 35.471	August 2nd 36.150
2003	July 2nd 72.908	July 2nd 73.165	July 2nd 16.650	July 2nd 16.368	July 2nd 16.269	July 2nd 16.814	July 3rd 40.619	July 2nd 41.557
2002	July 3rd 83.255	July 3rd 75.499	July 2nd 17.136	July 2nd 16.602	July 3rd 16.741	July 3rd 16.887	July 3rd 49.709	July 3rd 47.559
2001	July 16th 75.797	July 16th 75.499	July 21st 15.079	July 21st 14.492	July 16th 16.204	July 16th 16.493	July 16th 45.966	July 16th 45.946
2000	August 15th 69.940	August 15th 69.121	July 28th 14.319	July 28th 13.917	Sept. 1st 16.575	Sept. 1st 16.954	August 15th 39.274	August 15th 37.364

## Energy Costs

### Electric Power - Kilowatt Hours (kWh) Used

Year	Total kWh	High Lift Pumping	Low Lift Pumping	Other Plant Use	Total Cost	Average Cost \$/kWh
2011	13,462,281	8,638,793	2,632,361	2,191,127	\$841,245	\$0.062489
2010	12,009,162	7,560,661	2,254,243	2,194,258	\$821,166	\$0.068378
2009	11,290,087	7,261,345	2,230,893	1,798,049	\$829,181	\$0.073443
2008	13,721,463	7,947,533	2,997,940	2,775,990	\$934,832	\$0.068129
2007	12,390,377	8,196,766	2,513,469	1,683,051	\$955,552	\$0.077120
2006	11,737,729	7,789,013	2,325,846	1,622,870	\$797,307	\$0.067927

### Natural Gas Used for Pumping and Emergency Generator

Year	Therms	Total Cost	Average Cost/Therm
2011*	225,100	\$116,272	\$0.52
2010	51,552	\$32,237	\$0.63
2009	37,203	\$28,274	\$0.76
2008	41,795	\$87,324	\$2.09
2007	43,324	\$50,284	\$1.16
2006	27,938	\$33,381	\$1.19

\*Natural gas service provider was switched in April of 2011, reducing costs.

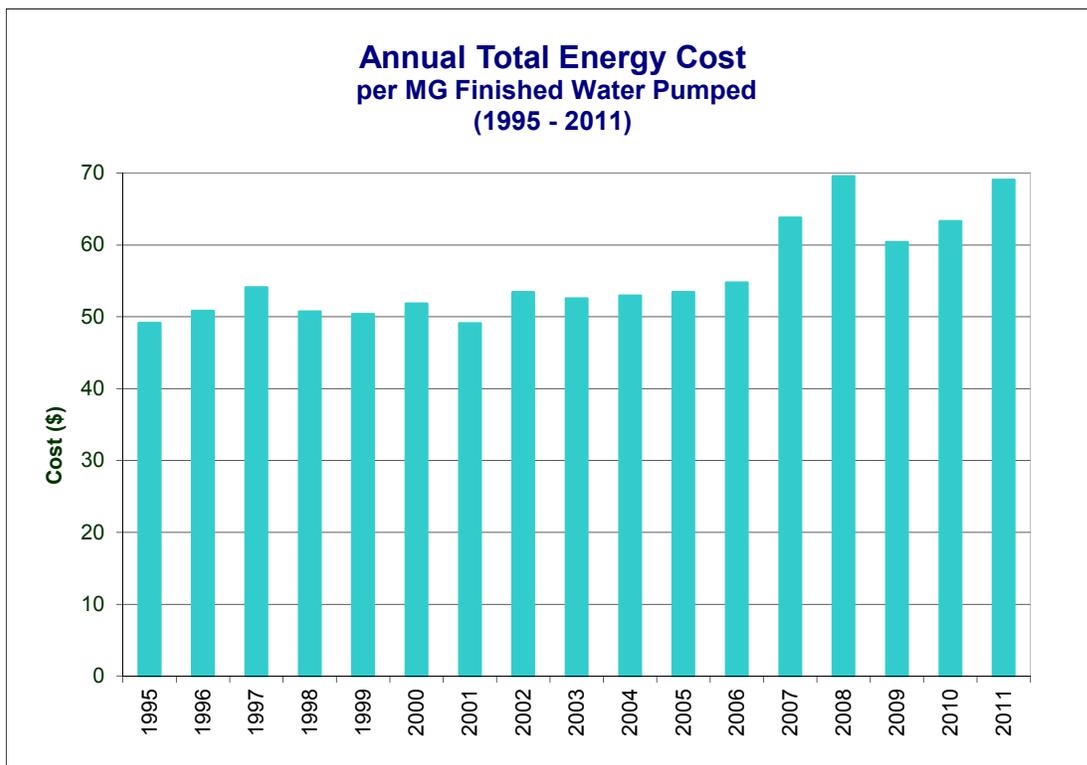
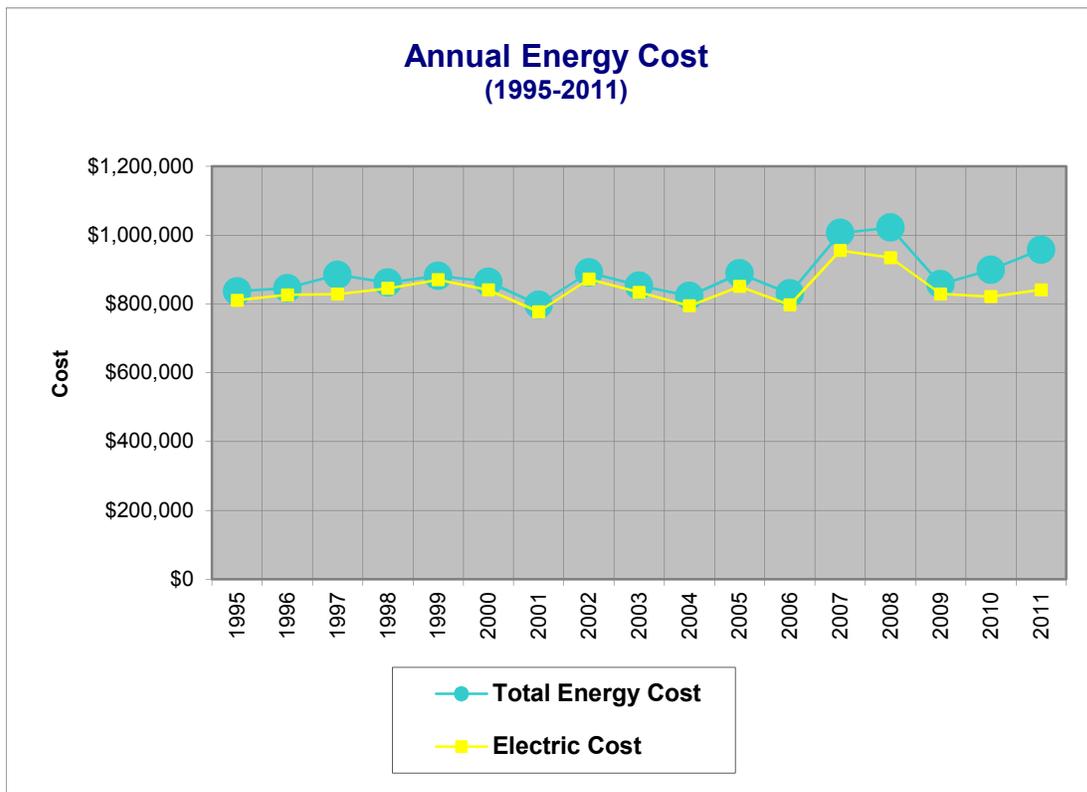
### Total Energy Cost (Electric & Gas)

Year	High Lift	Low Lift	Plant Use	Total
2011	\$614,442	\$187,229	\$155,846	\$957,517
2010	\$547,791	\$201,441	\$150,038	\$899,264
2009	\$551,481	\$169,433	\$136,541	\$857,455
2008	\$592,037	\$223,326	\$206,792	\$1,022,156
2007	\$665,404	\$204,040	\$136,628	\$1,006,072
2006	\$551,234	\$164,602	\$114,852	\$830,688

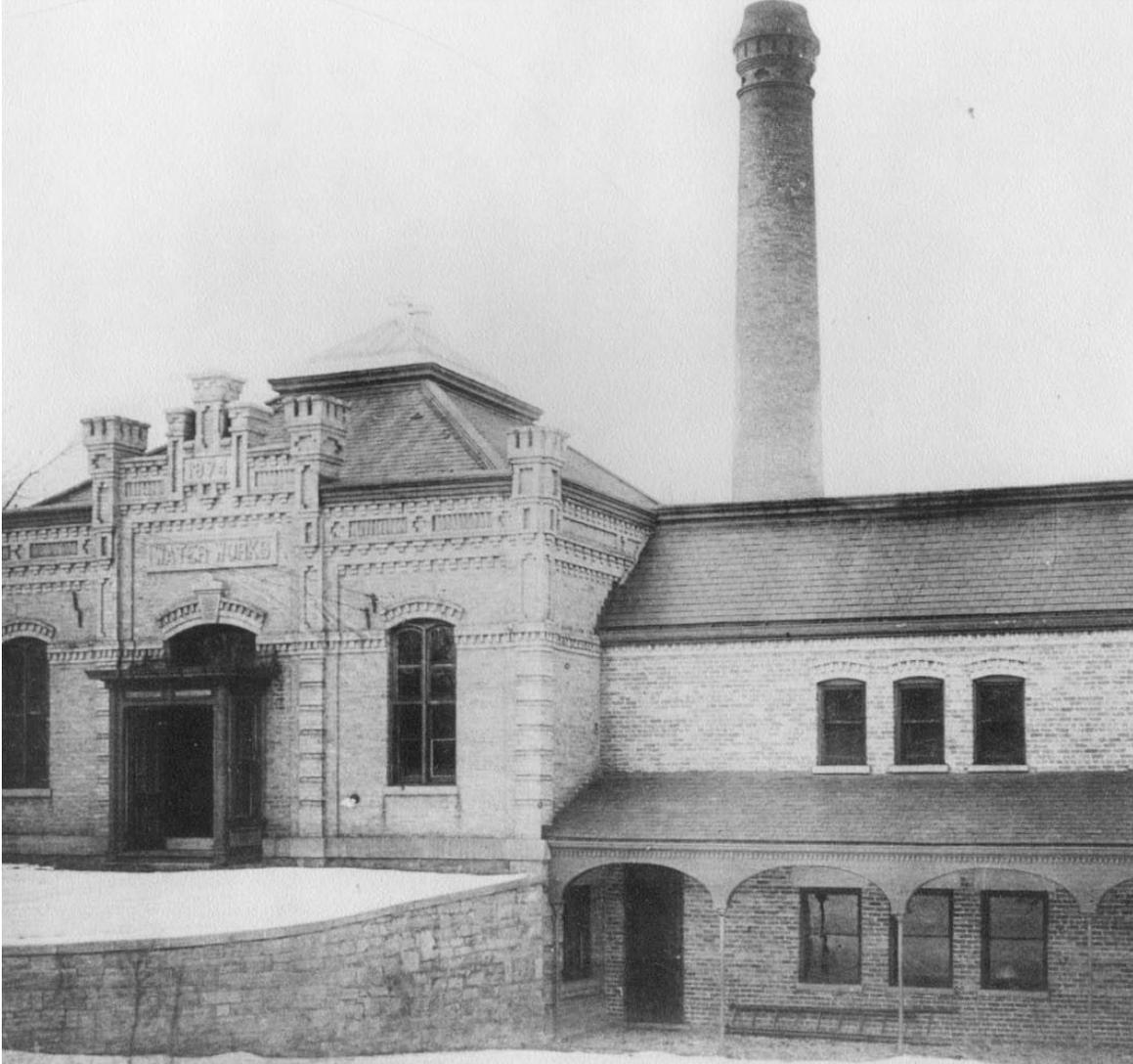
### Total Energy Cost Per Million Gallons of Finished Water Pumped

2011	\$69.04
2010	\$63.32
2009	\$60.38
2008	\$69.56
2007	\$63.79
2006	\$54.74

# Energy Costs



# Filtration



The original plant received an addition in 1888, allowing the installation of a second Holly engine. This was originally intended to replace the first engine, but growing demand kept both engines running. In 1892, the village of South Evanston was annexed, becoming a water user.

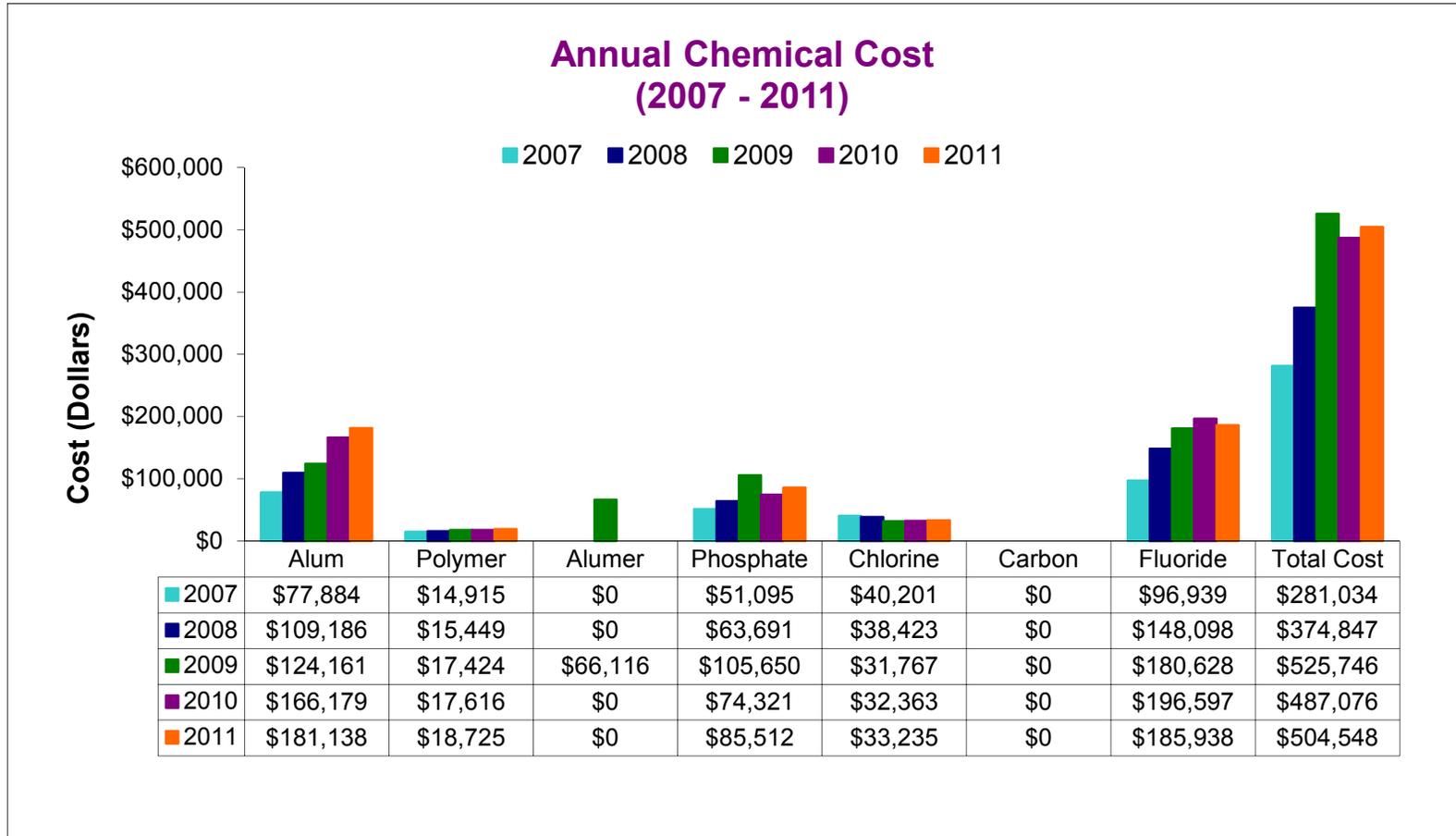
## Chemical Treatment

	Cost per Unit	Pounds per Year	Avg Daily	Max Day	Min Day	Total Cost	Cost per MG Treated
<b>Aluminum Sulfate</b>							
2011	\$413.87 / dry ton	870,836	63.0	103.8	39.6	\$181,138.01	\$12.80
2010	\$400.10 / dry ton	830,688	59.0	103.8	39.3	\$166,179.13	\$11.62
2009	\$440.00 / dry ton	607,724	53.6	100.5	31.7	\$124,160.72	\$12.09
2008	\$261.28 / dry ton	835,780	56.3	92.4	39.2	\$109,186.30	\$ 7.27
2007	\$187.91 / dry ton	828,948	52.0	90.0	16.1	\$ 77,883.81	\$ 4.84
<b>Alumer*</b>							
2009	\$420.00/ dry ton	146,180*	35.5	76.5	24.3	\$66,116.40	\$15.93
2004	\$122.00/ dry ton	476,768	30.1	55.6	18.1	\$66,581.61	\$ 4.19
<b>Chlorine</b>							
2011	\$367.50 / ton	180,870	12.7	18.8	8.4	\$33,234.86	\$2.35
2010	\$367.50 / ton	176,125	12.3	16.2	8.8	\$32,362.97	\$2.26
2009	\$367.00 / ton	172,880	11.9	17.6	7.3	\$31,766.70	\$2.20
2008	\$420.00 / ton	182,965	13.8	16.5	8.2	\$38,422.65	\$2.56
2007	\$423.50 / ton	189,850	11.6	16.8	8.5	\$40,200.74	\$2.50
<b>Activated Carbon**</b>							
2011	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-
<b>Hydrofluosilic Acid (Fluoride)</b>							
2011	\$685.00 / ton	542,886	38.4	53.0	26.5	\$185,938.46	\$13.14
2010	\$685.00 / ton	574,004	40.1	42.8	37.8	\$196,596.97	\$13.75
2009	\$635.00 / ton	568,907	39.4	43.0	23.1	\$180,627.97	\$12.51
2008	\$507.00 / ton	584,214	38.9	64.7	27.6	\$148,098.25	\$ 9.86
2007	\$300.00 / ton	646,259	40.2	45.7	31.4	\$96,938.85	\$ 6.02
<b>Polymer</b>							
2011	\$700.00 / ton	53,499	3.9	6.5	2.3	\$18,724.65	\$1.32
2010	\$700.00 / ton	50,316	3.6	6.2	2.3	\$17,610.60	\$1.23
2009	\$660.00 / ton	52,801	3.7	6.2	2.0	\$17,424.33	\$1.21
2008	\$612.00 / ton	50,488	3.4	5.7	2.2	\$15,449.33	\$1.03
2007	\$596.00 / ton	50,049	3.1	5.4	2.2	\$14,914.60	\$0.93
<b>Post-Treatment Phosphate</b>							
2011	\$4.83 / gallon	203,601	14.7	19.1	10.7	\$ 85,512.42	\$6.04
2010	\$4.83 / gallon	176,954	12.5	18.4	10.7	\$ 74,320.86	\$5.20
2009	\$6.71 / gallon	181,070	12.7	14.9	10.9	\$105,650.41	\$7.32
2008	\$3.58 / gallon	204,336	13.9	14.8	12.4	\$ 63,691.11	\$4.24
2007	\$2.70 / gallon	217,626	13.8	15.0	12.2	\$ 51,094.80	\$3.17

\* Alumer is a combination of Aluminum Sulfate and Polymer that was tested during 2004. Alumer was used from 5/27/2004 to 8/29/2009. No polymer was used during this time.

\*\* Carbon can be fed for control of taste and odor. In the last seven years, taste and odor problems have not occurred.

# Annual Chemical Costs



## Filter Operations

Filter Run	Average Hours / Run / Filter		Total Hours / Year	
	3 MGD	6 MGD	3 MGD	6 MGD
Year				
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
2008	266.7	228.5	97,050	100,601
2007	234.9	200.7	91,395	104,530
2006	245.4	226.9	105,043	105,059
2005	224.7	201.7	104,595	105,031
2004	266.7	249.5	105,965	105,110
2003	231.4	191.4	104,419	105,419

Filter Washes	Total / Year		Maximum Number in One Day	
	3 MGD	6 MGD	3 MGD	6 MGD
Year				
2011	430	486	5	6
2010	452	559	7	7
2009	387	409	6	5
2008	369	460	6	6
2007	425	569	6	7
2006	453	503	5	6
2005	522	614	6	8
2004	404	419	6	7
2003	687	620	7	8

Wash Water	Total	Avg Daily %	Max Daily %
	MG Used		
Year			
2011	211.546	1.49	5.14
2010	223.704	1.53	15.20
2009	149.063	1.02	4.54
2008	145.593	0.95	4.15
2007	192.135	1.15	4.86
2006	160.264	1.01	3.25
2005	184.088	1.03	3.45
2004	127.261	0.79	4.22
2003	151.751	0.88	2.93

# Bacteriological Water Analysis (Membrane Filter Method)

## Report of Water Quality Control Laboratory

The E.P.A. Standard is based on the presence or absence of coliform in a water sample. The E.P.A. requires that no more than 5% of the required monthly samples from the distribution system may be found positive for the presence of total coliform. Evanston is required to collect 80 samples per month.

<b>Distribution System</b>		Positive for	Positive for
Year	Number Sampled	Coliform	Fecal Coliform
2011	993	4	0
2010	994	4	1
2009	965	2	0
2008	992	2	0

### Additional Bacteriological Samples Analyzed for the Village of Skokie

Year	Number Sampled
2011	900
2010	941
2009	918
2008	927

<b>Raw Water</b>	Year	Number Sampled	Colony Count	
			Average	Maximum
	2011	730 (Twice Daily)	102	>200
	2010	730 (Twice Daily)	96	>200
	2009	730 (Twice Daily)	59	>200
	2008	730 (Twice Daily)	46	>200

<b>After Primary Treatment</b>	Year	Number Sampled	Colony Count	
			Average	Maximum
	2011	730 (Twice Daily)	0	0
	2010	730 (Twice Daily)	0	0
	2009	730 (Twice Daily)	0	0
	2008	732 (Twice Daily)	0	0

<b>Plant Tap A.M. and P.M. Samples</b>	Year	Number Sampled	Colony Count	
			Average	Maximum
	2011	1460 (4 times Daily)	0	0
	2010	1460 (4 times Daily)	0	0
	2009	1460 (4 times Daily)	0	0
	2008	1460 (4 times Daily)	0	0

## Taste & Odor, Turbidity, Temperature and Fluoride Report of Water Quality Control Laboratory

### Taste & Odor

Year	Number of Tests*
2011	756
2010	2,190
2009	2,190
2008	2,190
2007	2,196
2006	2,190

### 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
2011	19.66	143.00	0.54	0.98	4.20	0.06	0.08	0.40	0.06
2010	13.50	127.00	0.51	0.79	2.60	0.27	0.09	0.23	0.06
2009	10.07	100.00	0.42	0.72	1.81	0.27	0.08	0.14	0.05
2008	8.27	65.40	0.41	0.68	1.62	0.21	0.08	0.14	0.06
2007	6.90	100.00	0.53	0.80	2.71	0.25	0.10	0.46	0.06
2006	6.99	76.30	0.25	0.88	2.71	0.26	0.10	0.31	0.06

### Temperature

Year	Average	Maximum	Minimum
2011	11.3°C / 52.3°F	25.0°C / 77.0°F	0.8°C / 33.4°F
2010	10.6°C / 51.2°F	22.0°C / 71.6°F	0.8°C / 33.4°F
2009	10.3°C / 50.5°F	22.3°C / 72.1°F	0.8°C / 33.4°F
2008	11.2°C / 52.2°F	24.1°C / 75.4°F	1.0°C / 33.8°F
2007	10.8°C / 51.5°F	25.0°C / 77.0°F	1.0°C / 33.8°F
2006	11.4°C / 52.5°F	26.0°C / 78.8°F	1.0°C / 33.8°F

### Fluoride Content (ppm)

E.P.A. standard is 0.9 to 1.2 ppm.

Year	Plant Tap			Distribution		
	Avg	Max	Min	Avg	Max	Min
2011	0.98	1.09	0.90	0.99	1.13	0.90
2010	0.99	1.11	0.90	1.00	1.11	0.90
2009	0.98	1.11	0.90	0.98	1.09	0.90
2008	1.01	1.20	0.90	1.03	1.19	0.92
2007	1.02	1.14	0.92	1.03	1.14	0.91
2006	0.96	1.08	0.90	0.98	1.11	0.90

\* Taste & Odor testing requirements recently changed (fewer days per week and fewer samples per day).

## Chlorine Residual (ppm)

### Report of Water Quality Control Laboratory

#### Filter Influent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2011	0.67	0.96	0.42	0.81	1.14	0.49
2010	0.63	0.94	0.26	0.78	1.11	0.36
2009	0.59	0.89	0.28	0.76	1.13	0.46
2008	0.65	0.90	0.41	0.82	1.12	0.36
2007	0.70	1.03	0.48	1.13	1.23	0.62
2006	0.80	1.09	0.48	0.97	1.31	0.67

#### Filter Effluent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2011	0.58	0.86	0.36	0.71	0.99	0.48
2010	0.55	0.85	0.23	0.70	0.96	0.48
2009	0.50	0.86	0.22	0.66	1.06	0.39
2008	0.54	0.76	0.27	0.70	0.92	0.43
2007	0.62	0.91	0.41	0.79	1.09	0.55
2006	0.70	1.12	0.40	0.86	1.33	0.50

#### Plant Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2011	0.67	0.94	0.49	0.81	1.17	0.62
2010	0.66	0.83	0.48	0.82	1.05	0.62
2009	0.65	0.89	0.48	0.82	1.11	0.56
2008	0.68	0.91	0.51	0.84	1.08	0.64
2007	0.66	0.92	0.33	0.83	1.08	0.56
2006	0.72	1.19	0.53	0.86	1.37	0.67

#### Distribution Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2011	0.43	0.94	0.15	0.59	0.86	0.28
2010	0.41	0.82	0.07	0.58	0.98	0.20
2009	0.42	0.71	0.10	0.59	0.87	0.23
2008	0.44	0.65	0.02	0.61	0.88	0.11
2007	0.45	0.91	0.12	0.63	1.05	0.26
2006	0.49	0.82	0.09	0.67	1.02	0.20

## pH, Alkalinity and Hardness

### Report of Water Quality Control Laboratory

#### pH

EPA standard is 7.1 - 7.9.

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2011	730	8.3	8.5	8.0	7.6	7.8	7.4
2010	730	8.3	8.6	7.9	7.6	7.8	7.3
2009	729	8.3	8.6	7.6	7.6	7.8	7.1
2008	730	8.2	8.5	7.7	7.6	7.8	7.1
2007	732	8.3	8.7	7.9	7.6	7.8	7.4
2006	730	8.3	8.6	8.0	7.6	7.7	7.3

#### Alkalinity (ppm)

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2011	730	106	116	93	99	110	74
2010	730	103	115	85	97	111	84
2009	730	104	118	91	97	119	80
2008	730	106	134	11	98	130	86
2007	732	108	121	90	100	114	84
2006	730	109	141	98	101	138	90

#### Hardness (ppm as CaCO<sub>3</sub>)

Year	Number of Tests	Raw Water			Finished Water		
		Avg	Max	Min	Avg	Max	Min
2011	730	135	148	120	133	149	118
2010	730	133	151	122	132	151	120
2009	730	132	152	100	130	150	94
2008	730	132	144	123	131	150	120
2007	732	133	148	104	132	155	120
2006	730	134	150	106	132	152	102

## Detected Substances

### 2011 Water Quality Data

Substance	Highest Allowed (MCL)	MCL Goal	Evanston Result	Evanston Minimum	Evanston Maximum	Source of Contamination
Turbidity (NTU)	TT=Monitored by % Exceeding 0.3 NTU and max allowed is 1 NTU	NA	99.87% of samples meet 0.3 NTU	0.06	0.40	Soil runoff
Fluoride (ppm)	4.00	4.00	1.09	0.90	1.09	Added to promote strong teeth
Nitrate (measured as Nitrogen in ppm)	10	10	0.3	0.3	0.3	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium (ppm)	NA	NA	7.1	7.1	7.1	Runoff and natural erosion
Barium (ppm)	2	2	0.021	0.021	0.021	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium, Total (ppm)	0.1	0.1	0.00030	0.00020	0.00030	Discharge from steel and pulp mills; erosion of natural deposits
Total Coliform Bacteria	5% of Monthly Samples are Positive	0	2.2%	NA	NA	Naturally present in the environment
Combined Radium 226/228 (pCi/L)	15	0	3.9	3.9	3.9	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)	15	0	3.9	3.9	3.9	Erosion of natural deposits
Beta/Photon Emitters (mrem/yr)	50	0	7.3	7.3	7.3	Decay of natural and man-made deposits
Lead (ppb)	Action Level = 15	0	<5	<1	6.1	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	Action Level =1.3	1.3	0.1800	0.0023	0.9400	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems

## Disinfectants and Disinfection By-Products

### 2011 Water Quality Data

Substance	MCLG	Highest Allowed (MCL)	Evanston Result	Evanston Minimum	Evanston Maximum	Source of Contamination
Total Trihalomethanes (ppb)	NA	80	25.0	10.8	36.0	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA	60	9.0	5.8	11.8	By-product of drinking water chlorination
Chlorine (ppm)	4 MRDLG	4 MRDL	0.40	0.37	0.50	Water additive used to control microbes

## Non-Detected Contaminants

### 2011 Water Quality Data

<b>Inorganic Contaminants</b>	<b>MCLG</b>	<b>MCL</b>	<b>UL MRL</b>	<b>Level Found</b>
ARSENIC (ppb)	0	50	2	nd
CADMIUM (ppb)	5	5	1	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	0.4	nd
ZINC (ppb)	n/a	5000	5	nd
NITRITE (AS NITROGEN) (ppm)	1	1	0.5	nd

### Synthetic Organic Contaminants

ENDRIN (ppb)	2	2	0.1	nd
BHC- GAMMA (LINDANE)	200	200	0.1	nd
METHOXYCHLOR (ppb)	40	40	0.1	nd
TOXAPHENE (ppb)	0	3	1	nd
DIQUAT (ppb)	20	20	2	nd
DALAPON (ppb)	200	200	5	nd
ENDOTHALL (ppb)	100	100	9	nd
DI(2-ETHYLHEXYL)ADIPATE (ppb)	400	400	0.6	nd
OXAMYL (VYDATE) (ppb)	200	200	2	nd
SIMAZINE (ppb))	4	4	0.35	nd
DI(2-ETHYLHEXYL)PHTHALATE (ppb)	0	6	0.6	nd
PICHLORAM (ppb)	500	500	0.4	nd
DINOSEB (ppb)	7	7	1	nd
HEXACHLOROCYCLOPENTADIENE (ppb)	50	50	0.5	nd
ALDICARB SULFOXIDE	n/a	n/a	1	nd
ALDICARB SULFONE	n/a	n/a	1	nd
CARBOFURAN (ppb)	40	40	0.9	nd
ALDICARB	n/a	n/a	1	nd
ATRAZINE (ppb)	3	3	0.3	nd
ALACHLOR (LASSO)(ppb)	0	2	0.2	nd
HEPTACHLOR	0	100	0.04	nd
HEPTACHLOR EPOXIDE (ppt)	0	100	0.02	nd
DIELDRIN	n/a	1	0.05	nd
2,4-Dichloro-Phenoxyacetic Acid (2,4-D) (ppb)	10	10	1	nd
2,4,5-TP (SILVEX) (ppb)	50	50	1	nd
HEXACHLOROBENZENE (ppb)	0	1	0.1	nd
BENZO (A) PYRENE (ppb)	0	200	0.1	nd
PENTACHLOROPHENOL (PCP) (ppb)	0	1	0.4	nd
ALDRIN (ppb)	n/a	1	0.05	nd
POLYCHLORINATED BIPHENYLS (PCB)(ppb)	0	500		nd

## Non-Detected Contaminants

### 2011 Water Quality Data

<b>Synthetic Organic Contaminants (cont.)</b>	<b>MCLG</b>	<b>MCL</b>	<b>UL MRL</b>	<b>Level Found</b>
DDT TOTAL	n/a	50	1	nd
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)(ppb) same as Dibromochloropropane	0	0.2	0.02	nd
ETHYLENE DIBROMIDE (EDB) (ppb)	0	50	0.01	nd
CHLORDANE (ppb)	0	2	0.2	nd

<b>Volatile Organic Contaminants</b>	<b>MCLG</b>	<b>MCL</b>	<b>UL MRL</b>	<b>Level Found</b>
<b>(sampled every 3 years) last sampled 2011</b>				
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 CHLOROBEN	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

<b>THM/HAAs</b>	<b>MCLG</b>	<b>MCL</b>	<b>UL MRL</b>	<b>Level Found</b>
MONOCHLORACETIC ACID (ppb)	70	70	2.0	nd
MONOBROMOACETIC ACID (ppb)	na	na	1.0	nd
BROMOFORM (ppb)	70	70	0.5	nd

## **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 90<sup>th</sup> 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. In 2011, 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 90<sup>th</sup> percentile level for lead in these samples was 4.2 ppb. The 90<sup>th</sup> percentile level for copper was 0.18 ppm.

## 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 an optimal fluoride range of 0.9 to 1.2 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 90<sup>th</sup> 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. In 2010, Evanston sampled water from thirty homes with lead service lines and analyzed them for lead and copper content. All results were below the action levels. The 90<sup>th</sup> percentile level for Lead was less than detection limit of 5 ppb. The 90th percentile level for copper was 0.36 ppm.

**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<sub>3</sub>/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).

**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).

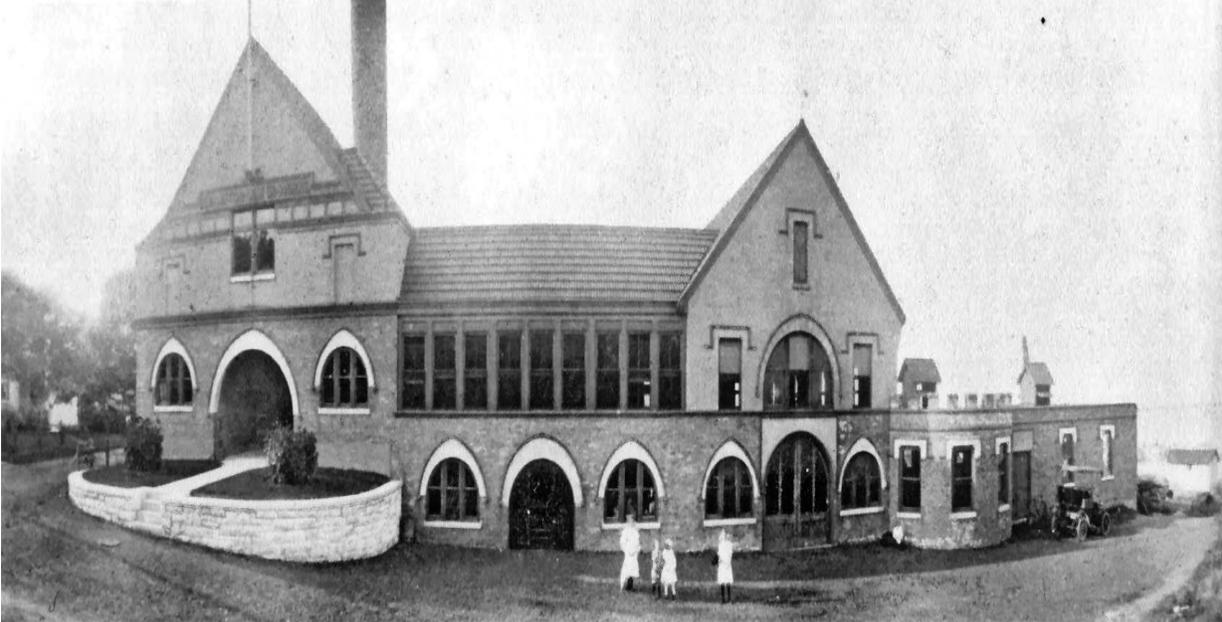
**Sodium** – There is not a state or federal MCL for sodium. Sodium levels below 20 mg/L (ppm) are not considered to be a public health issue.

**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.

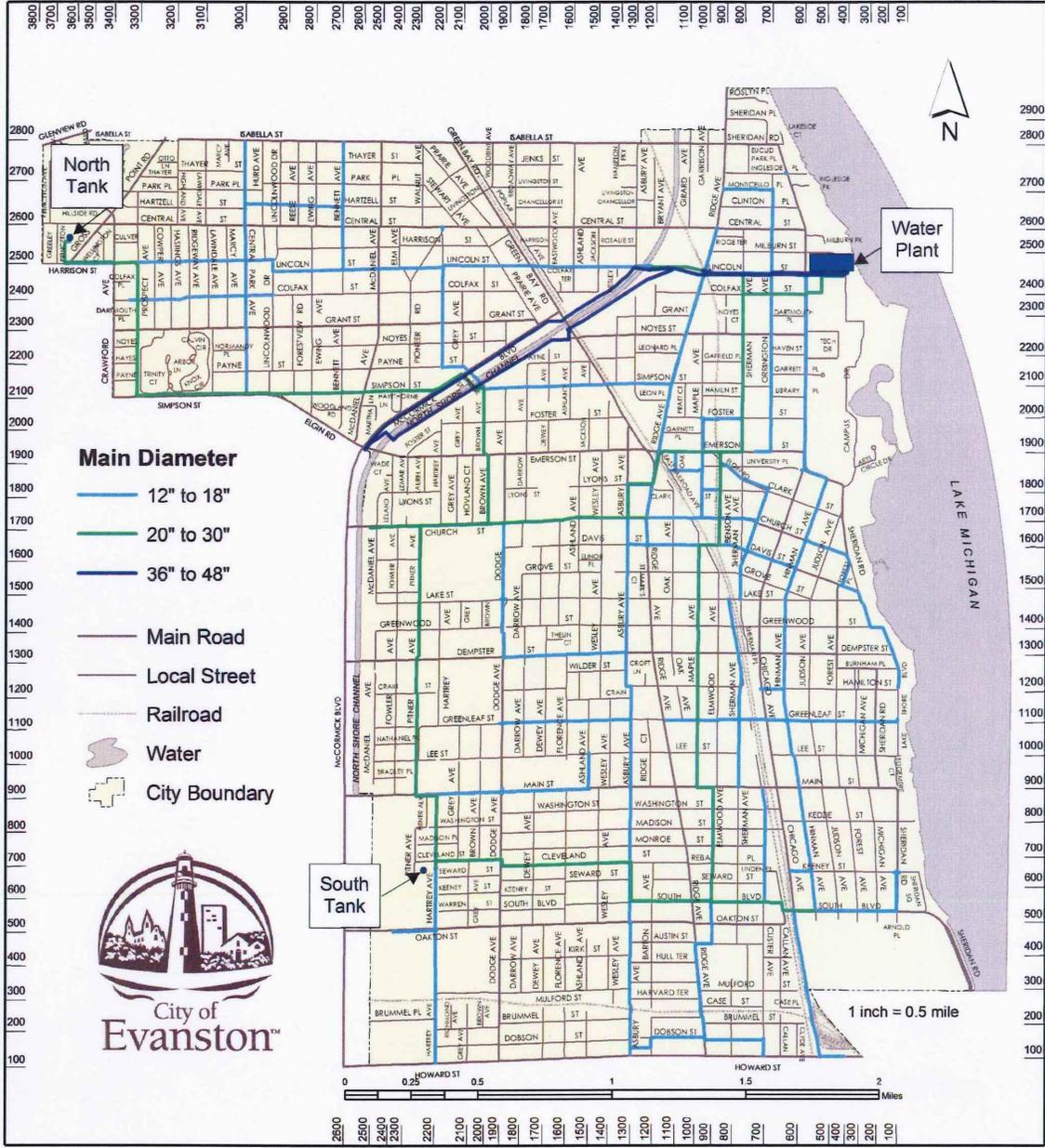
**TOC** – Total Organic Carbon. The Evanston Water Supply monitored the percentage of TOC removal quarterly and met all TOC removal requirements set by the EPA.

# Distribution



In 1897, the plant received a remodeling and enlargement, as well as a third Holly engine with a capacity of 12 million gallons a day. In 1914, a filter plant was built, making Evanston the first city along Lake Michigan with water treatment. The decline in typhoid and dysentery rates as a result of clean water helped spur Evanston's growth in the years to come.

# Major Water System Components

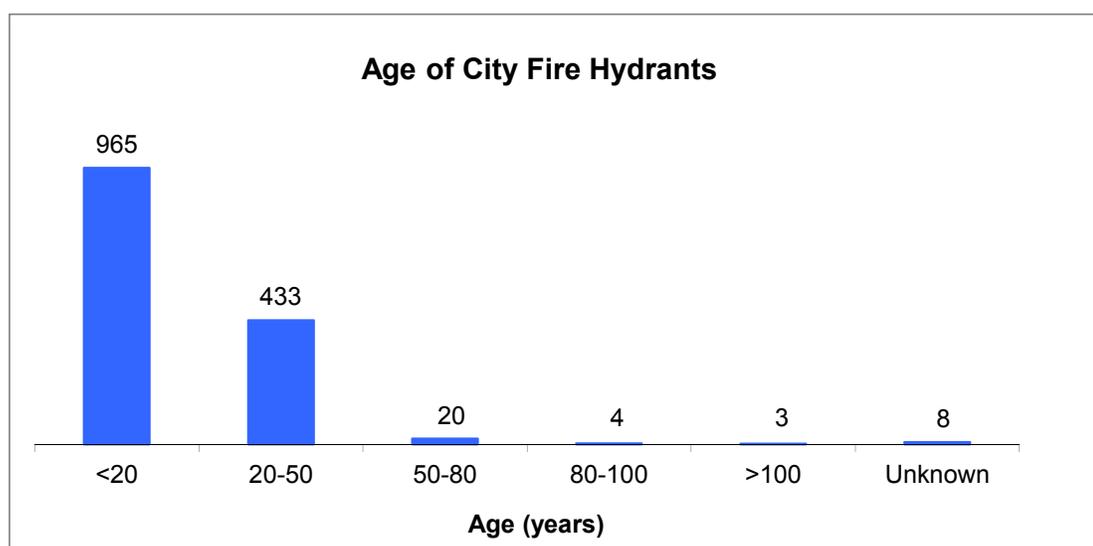
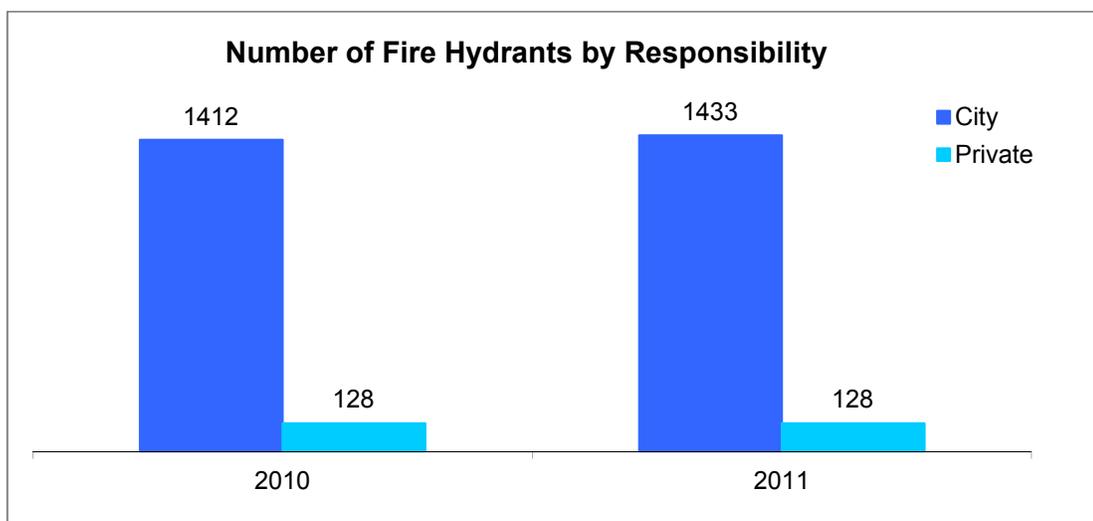


## Fire Hydrants

### System Data and Maintenance

Hydrants Tested for Proper Operation*	2010	2011
Fire Department	1,394	1,410
Utilities Department	92	126

Hydrant Installation and Maintenance*	2010	2011
Installed (new)	11	19
Replaced	19	22
Repaired	114	176



\* All work completed by Utilities Department staff unless otherwise noted.

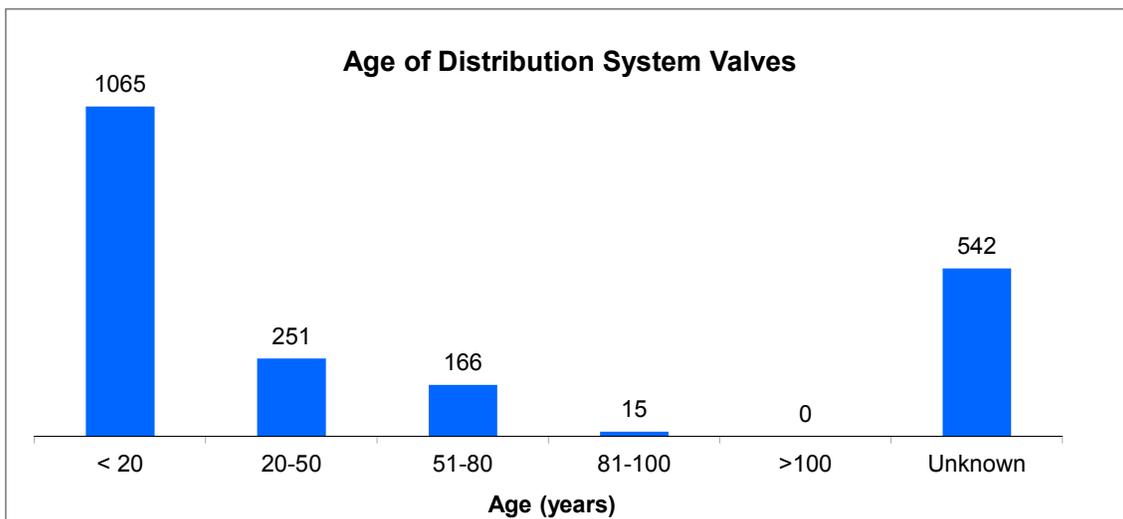
## Valves

### System Data and Maintenance

Valves Turned for Proper Operation*	2010	2011
In-House	1,400	807
Contractor	0	0

Valve Installation and Maintenance*	2010	2011
Installed (new)	12	10
Replaced	36	25
Repaired	44	24

Number of Distribution Valves by Size	2010	2011
3"	1	1
4"	30	30
6"	1,033	1,021
8"	452	469
10"	183	183
12"	222	227
14"	2	2
16"	49	49
18"	4	4
20"	1	1
24"	25	25
30"	11	11
36"	12	12
42"	2	2
48"	2	2
Total	2,029	2,039



\* All work completed by Utilities Department staff unless otherwise noted.

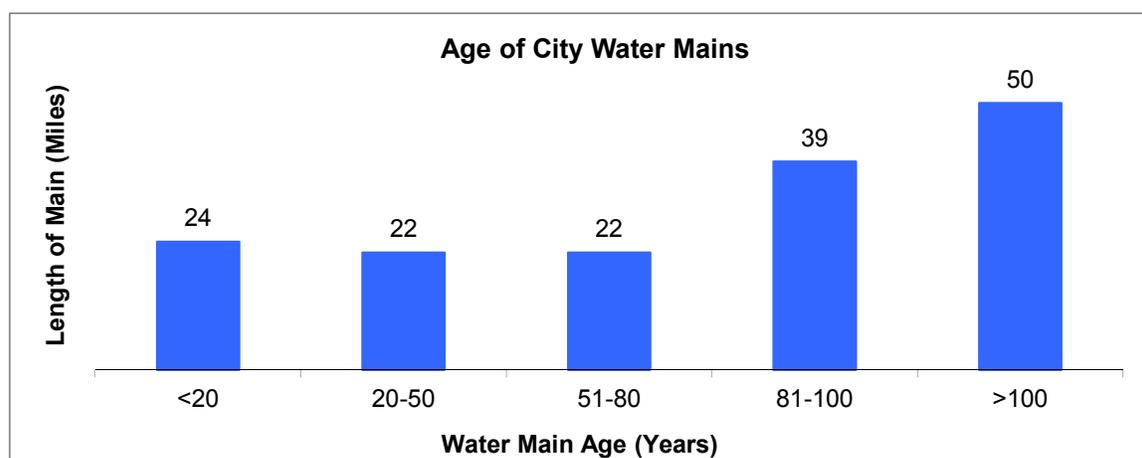
## Water Mains

### System Data and Maintenance

Water Main Installation*	2010	2011
In-House	0	0
Contractor	7,712	7,235

Water Main Break Repairs*	2010	2011
Blow-Out	26	16
Shear Break	10	11
Damage	-	-
Total	36	27

Length of Water Main by Diameter**	2010		2011	
	Feet	Miles	Feet	Miles
3"	784	0.15	784	0.15
4"	10,287	1.95	10,287	1.95
6"	415,324	78.66	409,153	77.49
8"	135,801	25.72	140,937	26.69
10"	65,805	12.46	65,773	12.46
12"	87,362	16.55	89,108	16.88
14"	1,950	0.37	1,950	0.37
16"	33,553	6.35	33,547	6.35
18"	4,389	0.83	4,389	0.83
20"	2,567	0.49	2,960	0.56
24"	43,578	8.25	43,818	8.30
30"	8,927	1.69	8,927	1.69
36"	17,405	3.30	17,405	3.30
42"	186	0.04	186	0.04
48"	3,568	0.68	3,568	0.68
Total	831,486	157.48	832,792	157.73



\* All work completed by Utilities Department staff unless otherwise noted.

\*\* Increase in total water main length from 2010 to 2011 is primarily due to GIS mapping corrections, in which mains of unknown size were field-checked by the Utilities Department and pipe size was then corrected in the City's GIS.

## **Water Services**

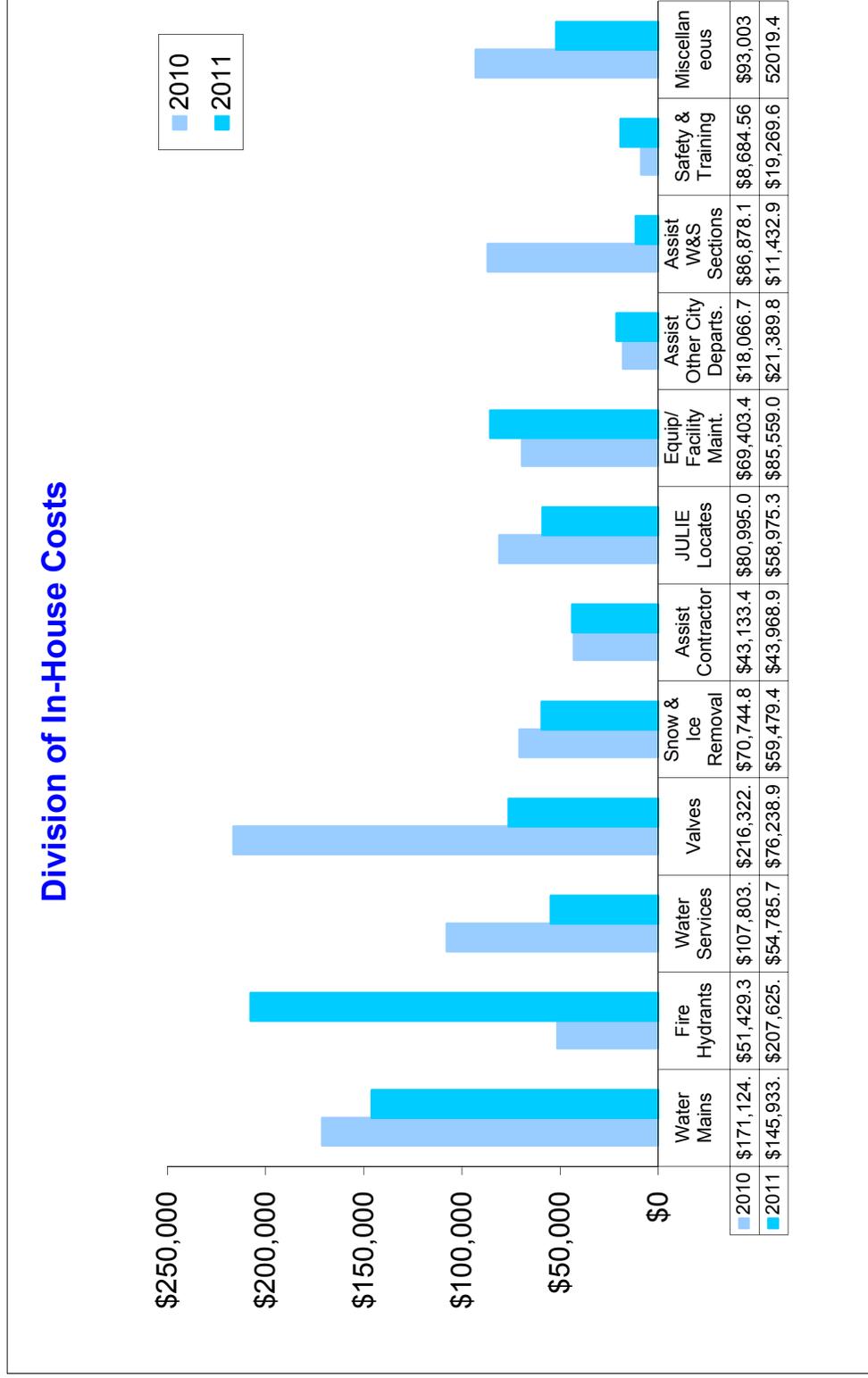
### **System Data and Maintenance**

2011 Total Number of Water Service Connections: 14,838

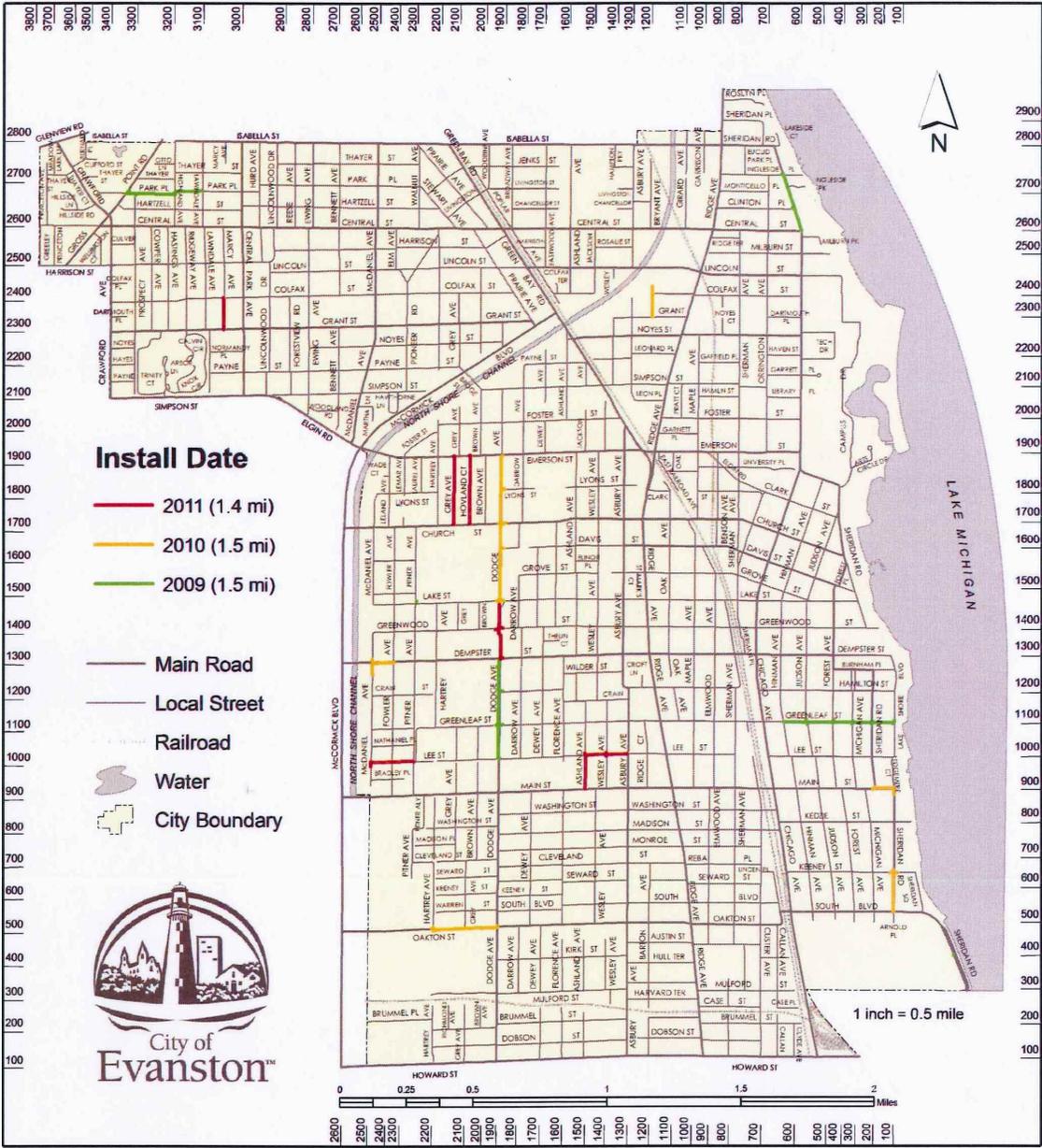
<b>Water Service Installation and Maintenance*</b>	<b>2010</b>	<b>2011</b>
Installed (new)	31	19
Repaired	26	22

\* All work completed by Utilities Department staff unless otherwise noted.

## Division of In-House Costs



# Water Mains Installed (2009-2011)

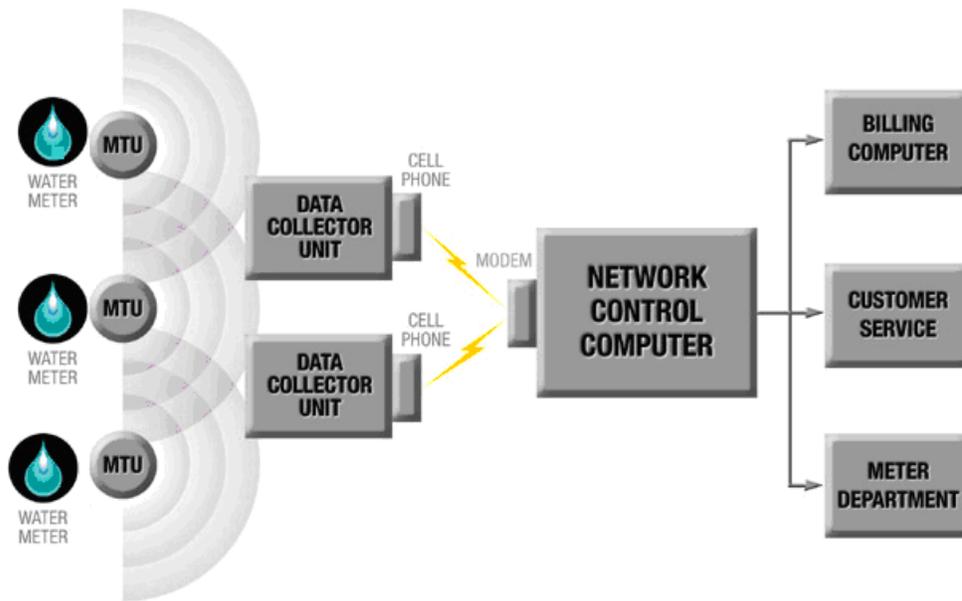


# Meter Section



In 1944, Skokie requested a direct water supply, which Evanston provided in the form of a direct pressure pipeline. By 1948, the growth of Skokie and Evanston made expanding the water plant a necessity. The expansion included a new all-electric high lift pumping station, new mixing and settling basins, a chemical building and laboratory, dry chemical feeders, and the addition of six 4 mgd filters, bringing the total filter capacity to 48 mgd. In 1950, the steam plant was shut down, giving way entirely to electric pumps with two backup gasoline engines.

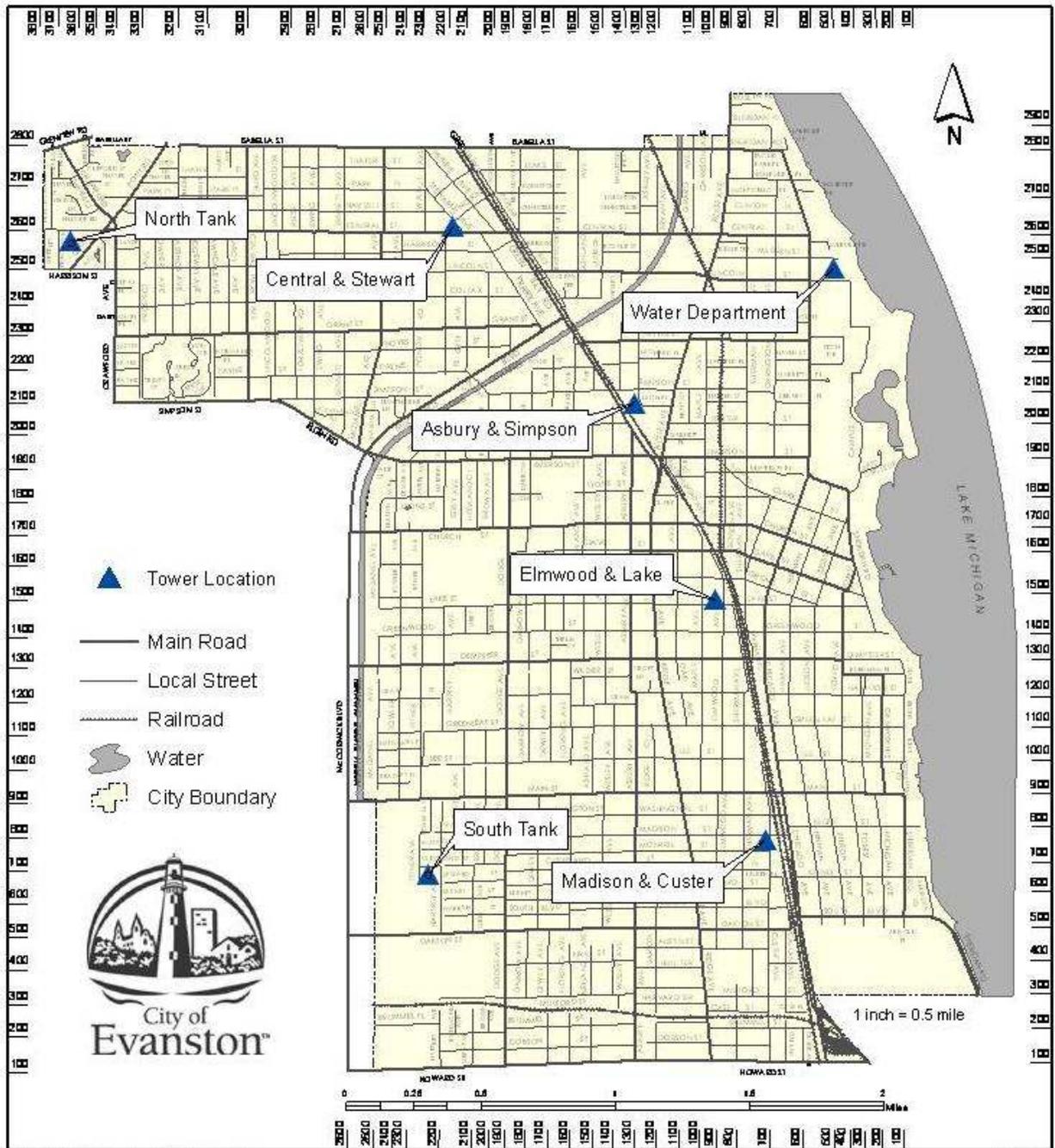
## Fixed Network Meter Reading System



### How it works:

- The Meter Transmission Unit (MTU) is attached to every water meter in Evanston. Each MTU contains a radio transmitter that, twice per day, broadcasts the meter reading.
- The Data Collector Unit (DCU) receives the meter readings from the MTUs and stores this data. Evanston currently has 7 DCUs located on various buildings throughout the community. Daily each DCU sends its meter reading information to the Network Control System at the Water Plant.
- The Network Control System supports customer service and system management activities and transfers the meter readings to the billing system.

# Transmitter Tower Locations



## Water Rates to Evanston Customers

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

<b>Meter Size</b>	<b>Minimum Charge, Effective 1/1/2011</b>
5/8" & 3/4"	\$ 5.94
1"	\$ 11.88
1 1/2"	\$ 22.22
2"	\$ 34.98
3"	\$ 61.60
4"	\$ 98.68
6"	\$174.02
8"	\$294.58

The minimum demand charge includes the first five hundred cubic feet (5 CCF) of water consumed every two months, which is roughly equivalent to 3,740 gallons of water.

Water usage over the minimum is billed at \$1.67 per CCF effective 1/1/2011. This is equivalent to a rate of \$2.23 per 1,000 gallons.

## Meter Inventory by Size

<b>Size of Meter</b>	<b>Count</b>
5/8"	11,890
3/4"	744
1"	1,027
1.5"	232
2"	438
3"	51
4"	25
6"	4
8"	3
<b>Total</b>	<b>14,414</b>

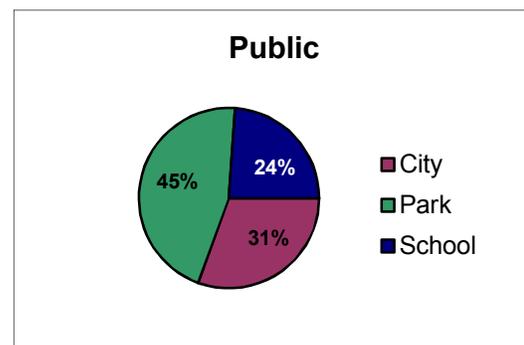
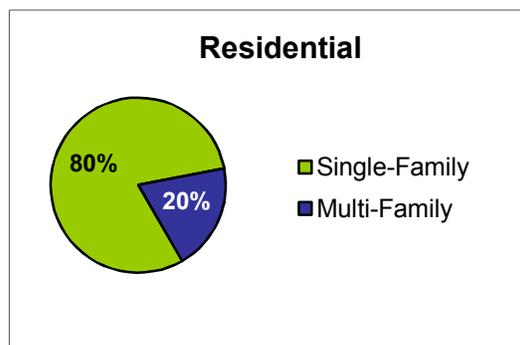
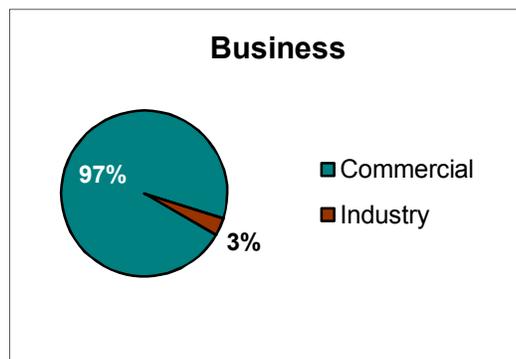
## Metered Water Services

### Billed by Category and Water Usage for 2011

Category	Number of Services	2011 Usage (CCF)*
Single-Family	10,663	977,257
Multi-Family	2,622	1,161,464
Commercial	973	1,100,307
Industry	35	13,069
City	37	13,739
Park	55	2,219
School	29	43,132
<b>Total</b>	<b>14,414</b>	<b>3,311,187</b>

Fire Services: 424\*\*

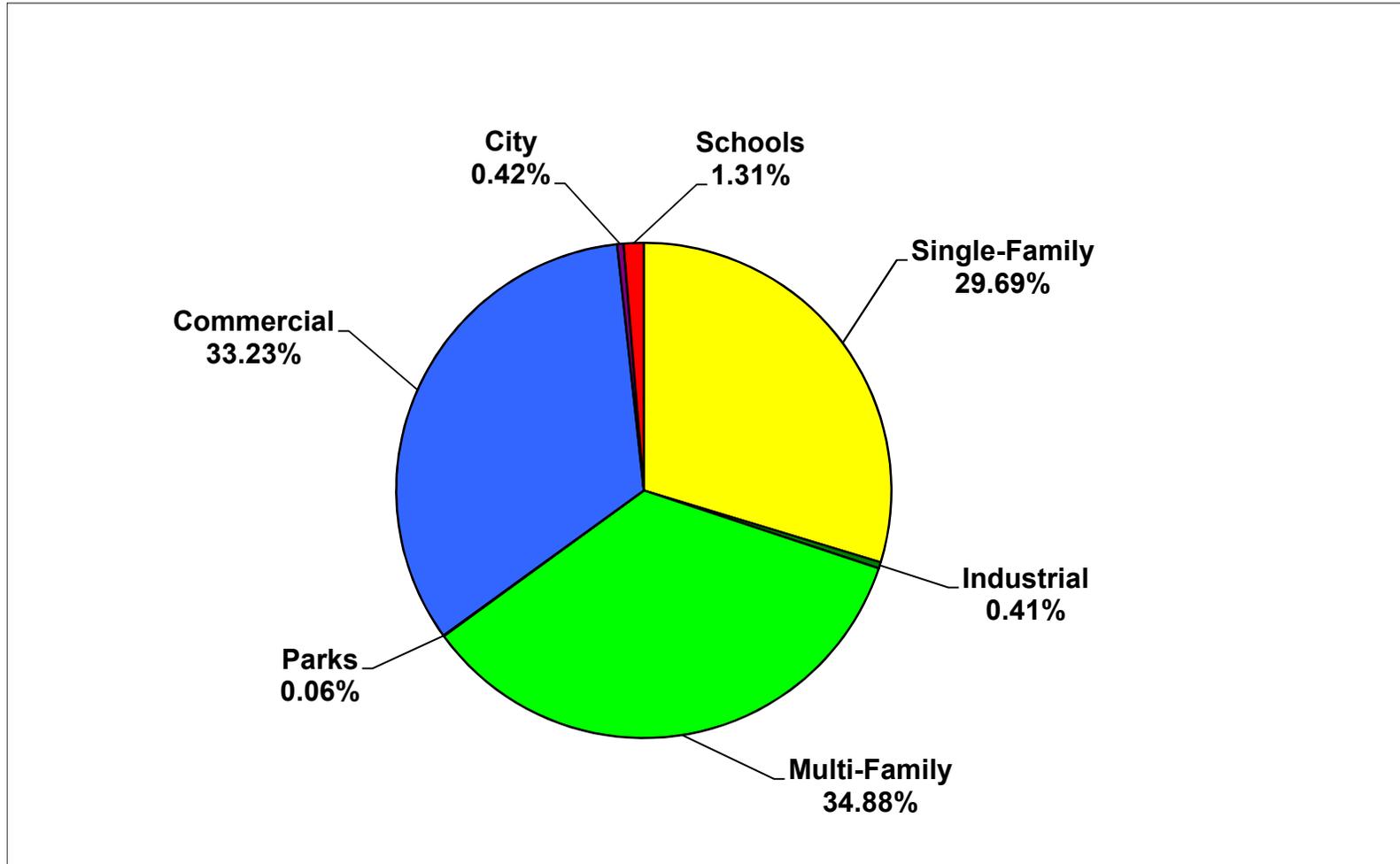
#### Water Services by Category:



\* Data provided is for calendar year 2011 (Jan. - Dec. 2011).

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

## 2011 Water Usage by Evanston Customers

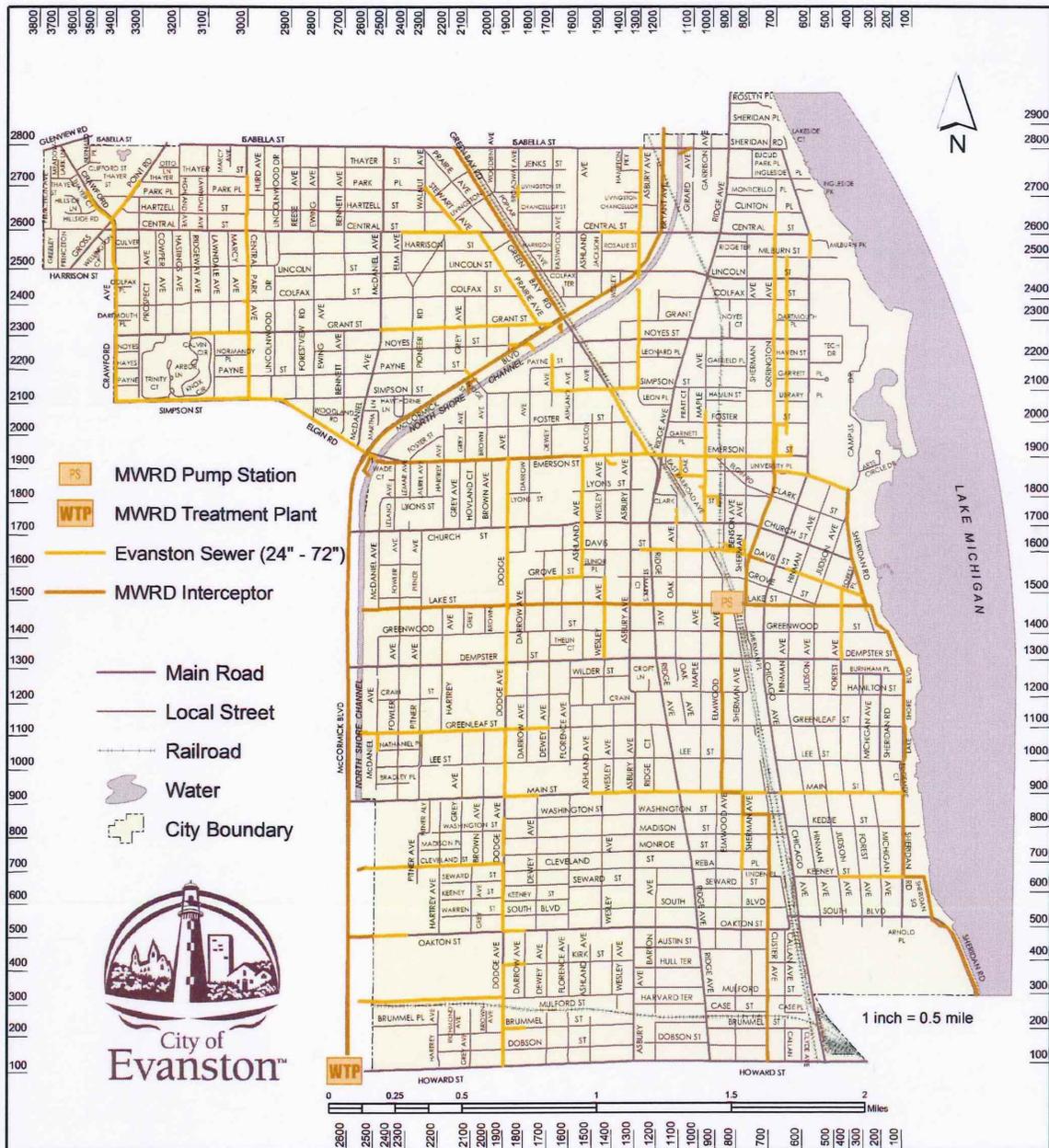


# Sewer Section

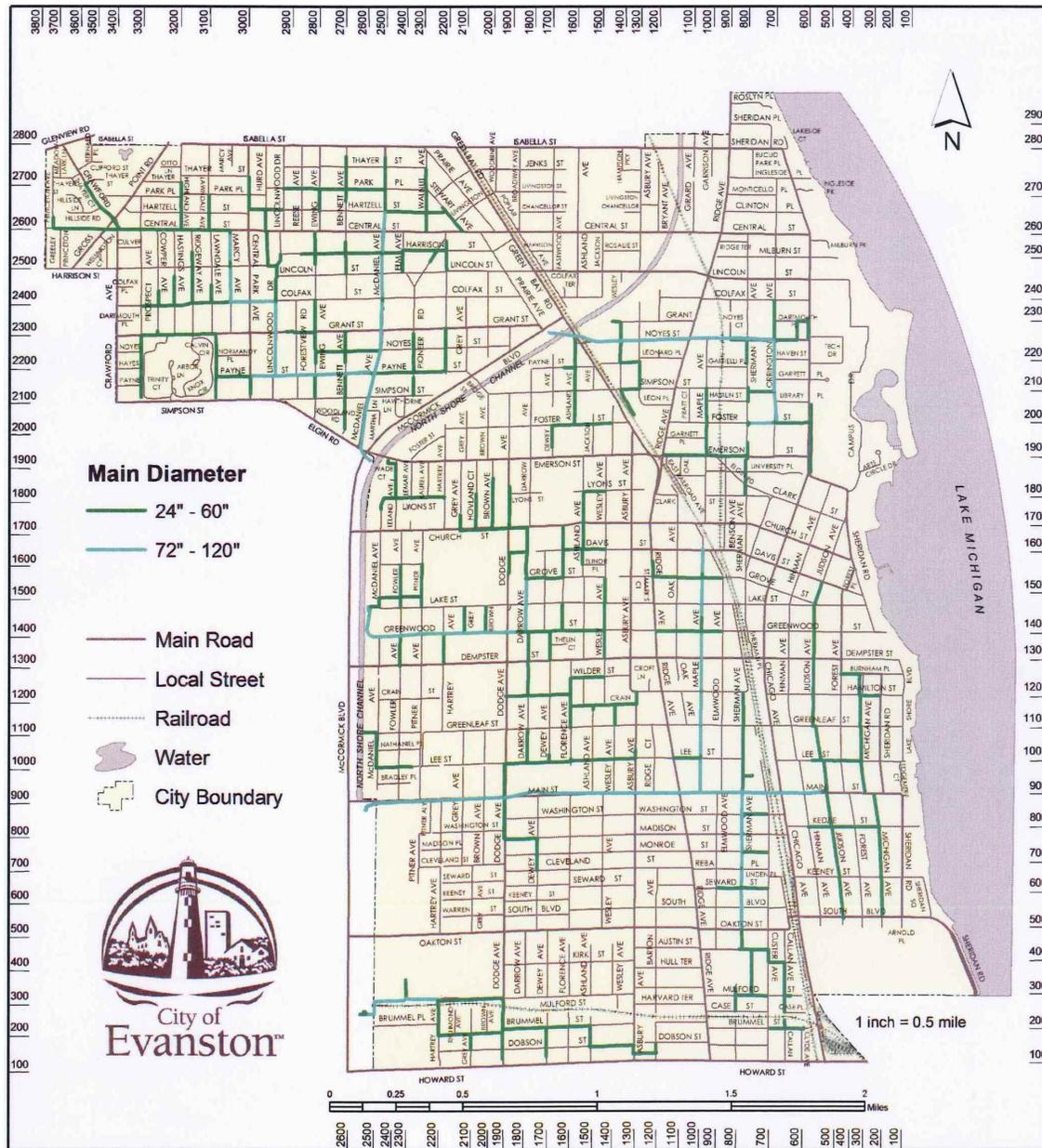


More improvements occurred throughout the 1950s and 1960s, including eliminating all pollution to Lake Michigan from the water treatment plant and increasing the plant's total pumping capacity to 147 mgd. In 1980, Evanston signed a contract to provide water to the Northwest Water Commission, consisting of the municipalities of Arlington Heights, Buffalo Grove, Palatine, and Wheeling. From 1980 to 1985, the Evanston utilities underwent major capital improvements, updating many of the systems and building two standpipes for the northern and southern parts of Evanston.

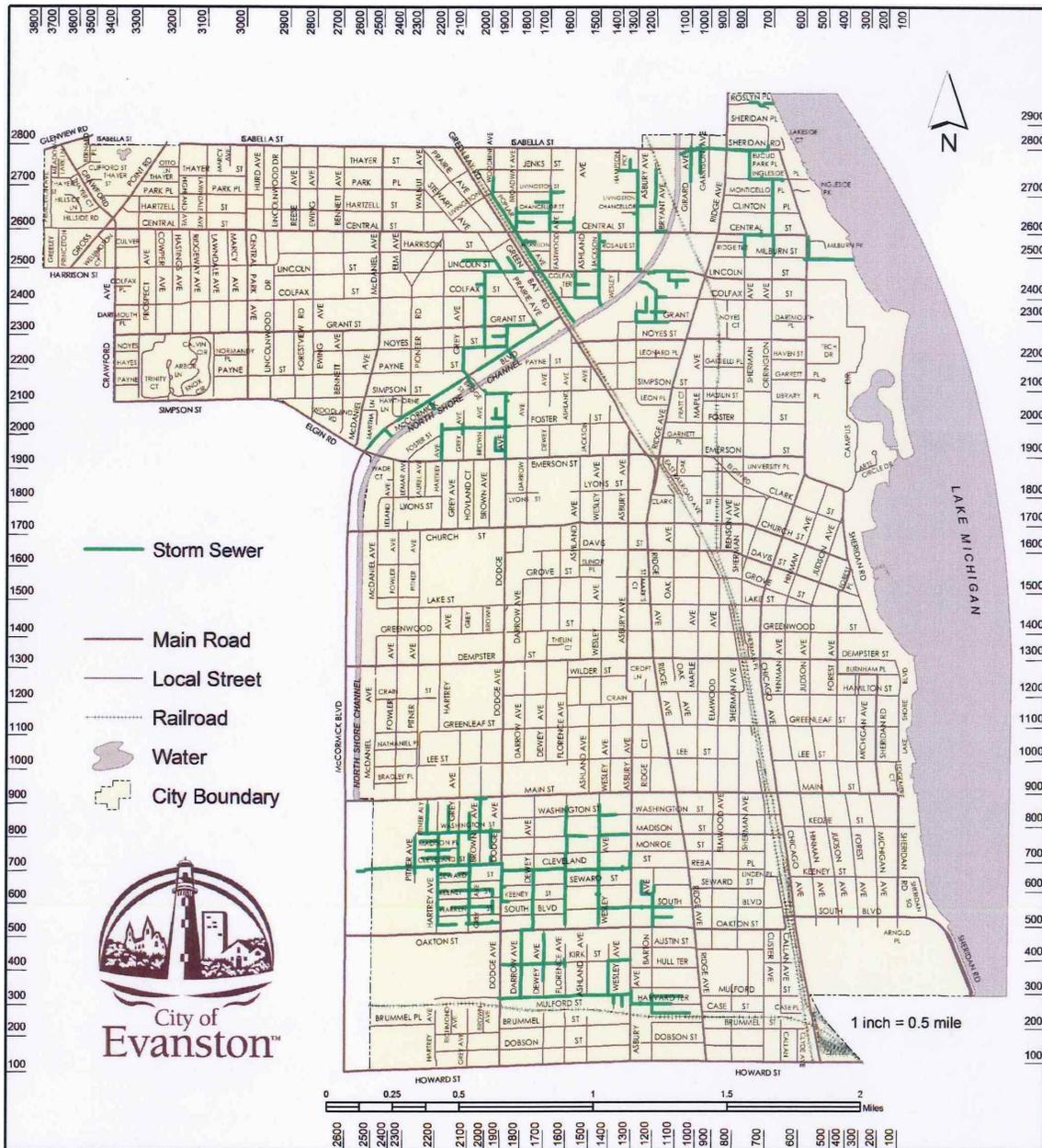
# Major Combined Sewer System



# Major Relief Sewer System



# Major Storm Sewer System



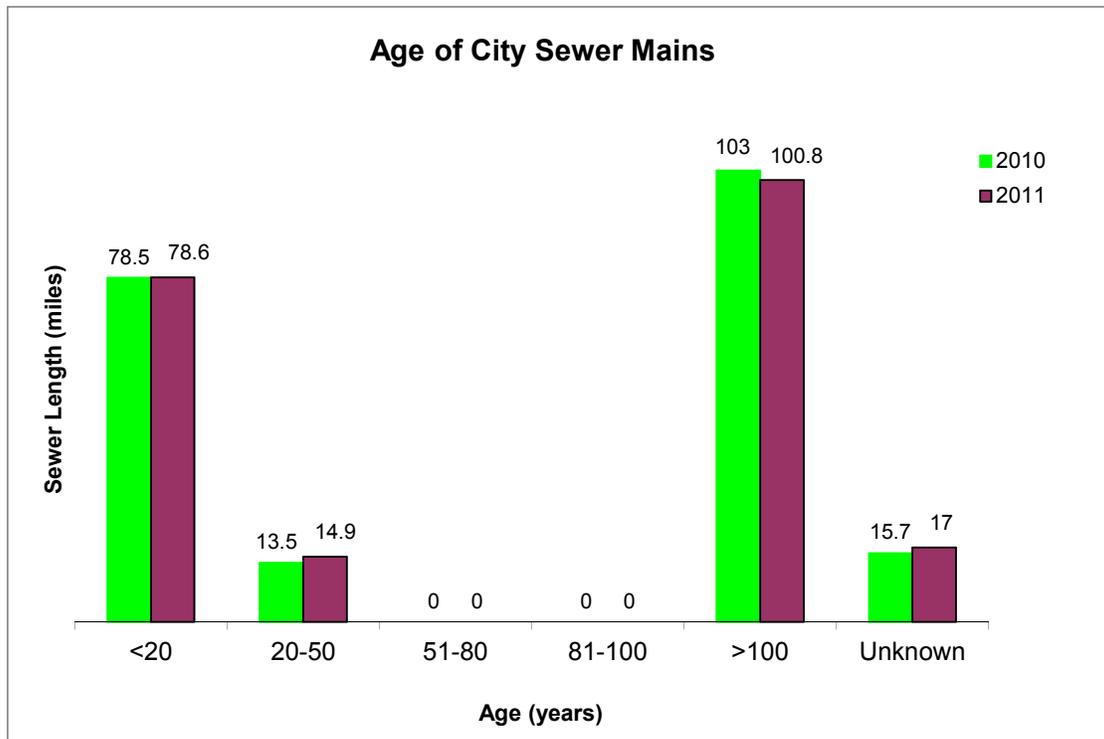
## Sewer Mains

### System Data and Maintenance

Sewer Length by Type*	Feet	Miles
Combined Sewer	758,186	143.60
Relief Sewer	271,977	51.51
Storm Sewer	85,588	16.21
<b>Total Length</b>	<b>1,115,751</b>	<b>211.32</b>

\*For detailed table of Length of Sewer Main by Type and Diameter see page 52

Sewer Installation and Maintenance	Pipe Length (feet)	
	2010	2011
Installed (new)	430	424
Replaced	86	0
Spot Repair	1,845	3,280
Clean - Hydroflush	262,451	247,195
Clean - Root Cut	13,330	17,543
Closed Circuit TV Inspect	65,933	81,502
Inspect	38,527	25,354
Inspect (Storm)	4,043	2,070



## Length of Sewer Mains

### By Type and Diameter

Diameter	Combined Sewer		Relief Sewer		Storm Sewer	
	Feet	Miles	Feet	Miles	Feet	Miles
6"	2,969	0.56	243	0.05	0	0.00
8"	19,347	3.66	9,851	1.87	2,129	0.40
9"	121,869	23.08	6,994	1.32	895	0.17
10"	109,139	20.67	24,902	4.72	9,975	1.89
12"	227,143	43.02	24,181	4.58	9,883	1.87
14"	1,019	0.19	0	0.00	0	0.00
15"	92,276	17.48	5,654	1.07	5,249	0.99
16"	1,881	0.36	6,024	1.14	724	0.14
18"	60,091	11.38	15,339	2.91	7,695	1.46
20"	9,507	1.80	127	0.02	0	0.00
21"	14,783	2.80	2,747	0.52	1,910	0.36
22"	1,081	0.20	0	0.00	0	0.00
24"	20,601	3.90	45,006	8.52	15,959	3.02
27"	6,159	1.17	6,373	1.21	3,240	0.61
30"	7,008	1.33	18,022	3.41	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,771	3.74	18,898	3.58	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	12,266	2.32	3,570	0.68
45"	1,029	0.19	0	0.00	0	0.00
48"	13,103	2.48	22,579	4.28	7,966	1.51
51"	1,532	0.29	0	0.00	0	0.00
54"	1,985	0.38	3,159	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,202	1.36	4,916	0.93	3,633	0.69
72"	4,079	0.77	11,661	2.21	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	2,558	0.48	2,192	0.42	1,025	0.19
<b>Totals</b>	<b>758,186</b>	<b>143.60</b>	<b>271,977</b>	<b>51.51</b>	<b>85,588</b>	<b>16.21</b>

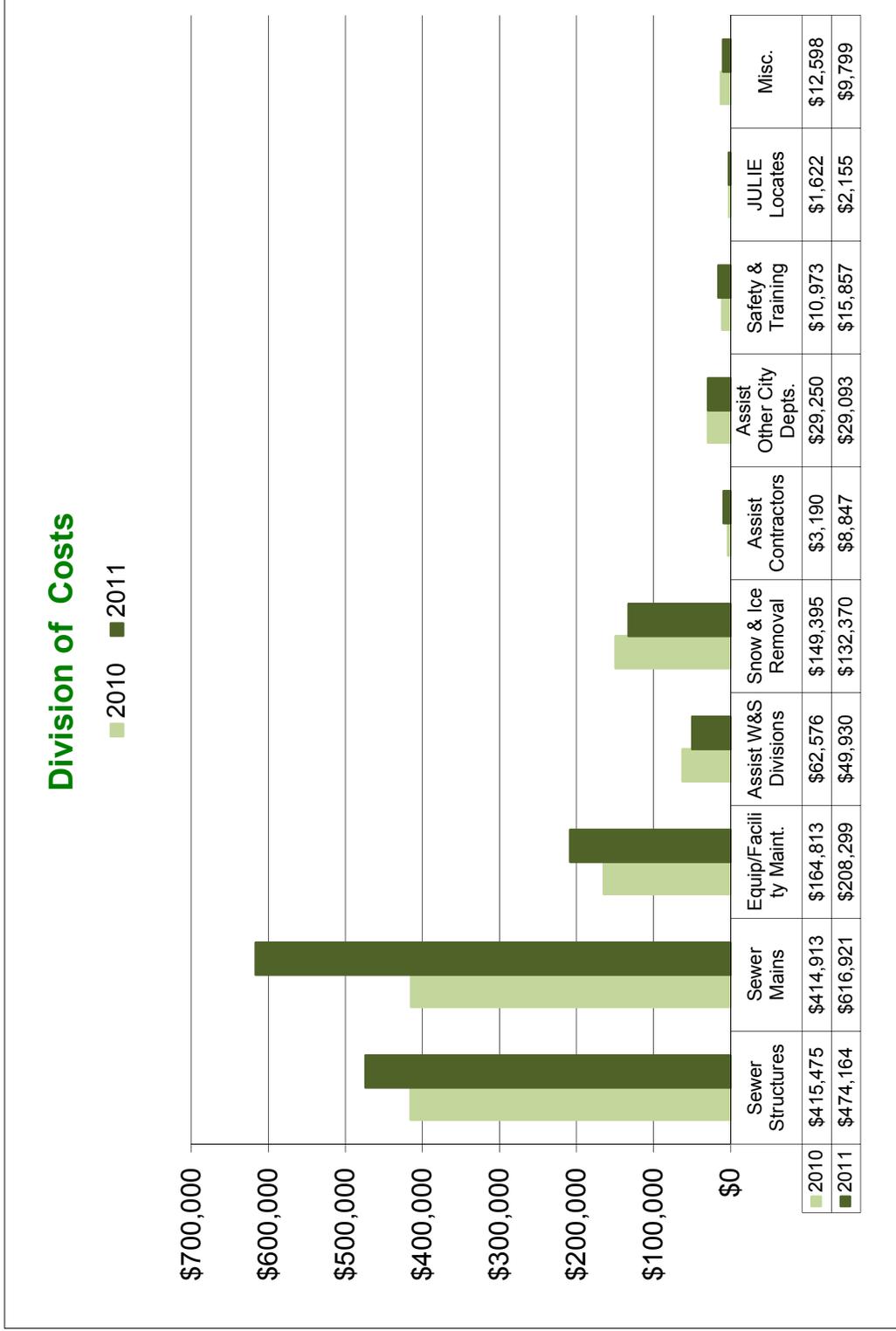
## Sewer Structures

### System Data and Maintenance

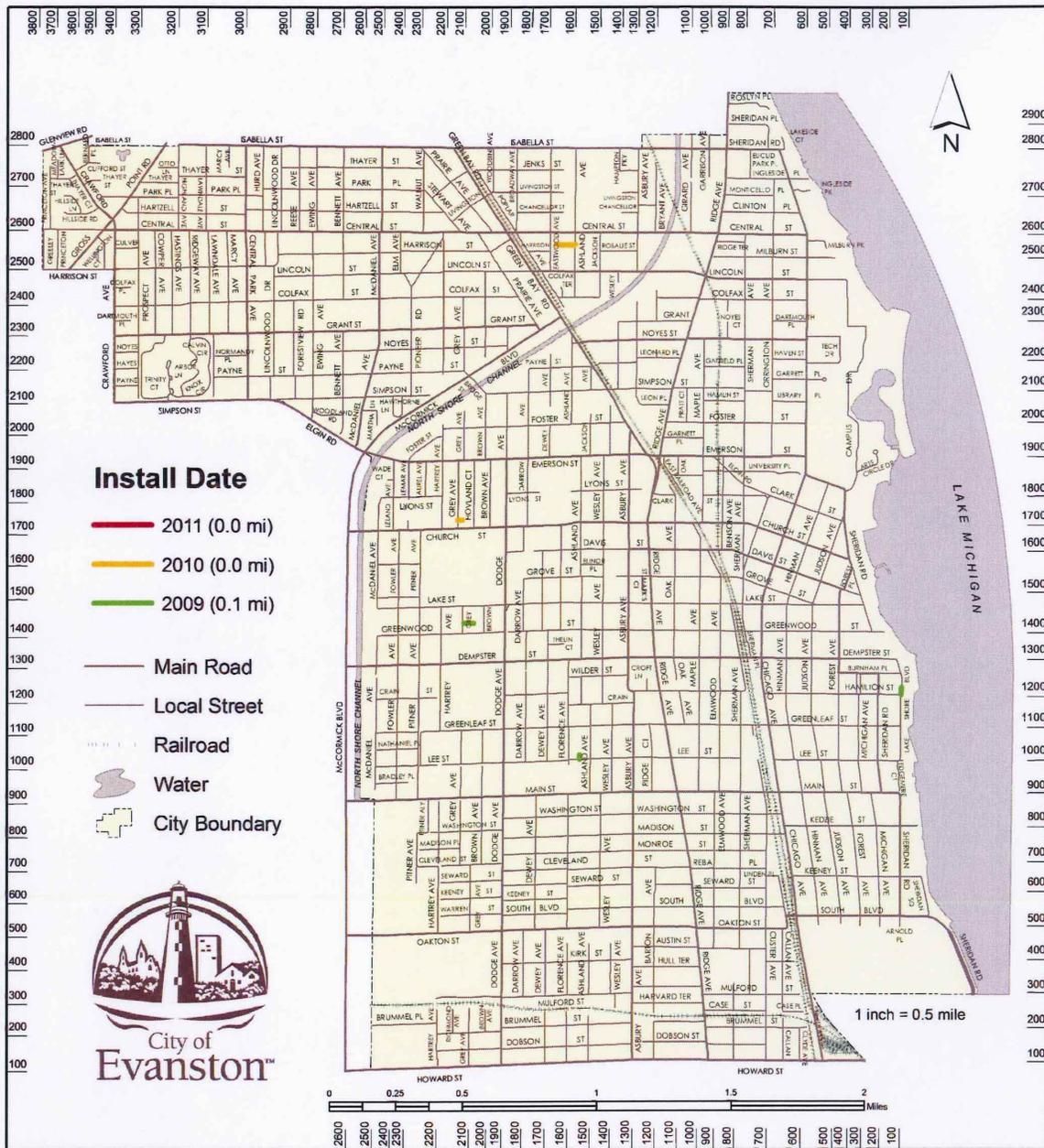
<b>Number of Sewer Structures</b>	2010	2011
Manholes	5,453	5,507
Inlets	2,826	2,902
Catch Basins	6,217	6,159
<b>Total</b>	<b>14,496</b>	<b>14,568</b>

<b>Sewer Structure Installation and Maintenance</b>	2010	2011
Installed (new)	3	7
Replaced	17	12
Repair	119	96
Clean	2,750	2428
Inspect	325	286
Inspect (Storm)	562	835

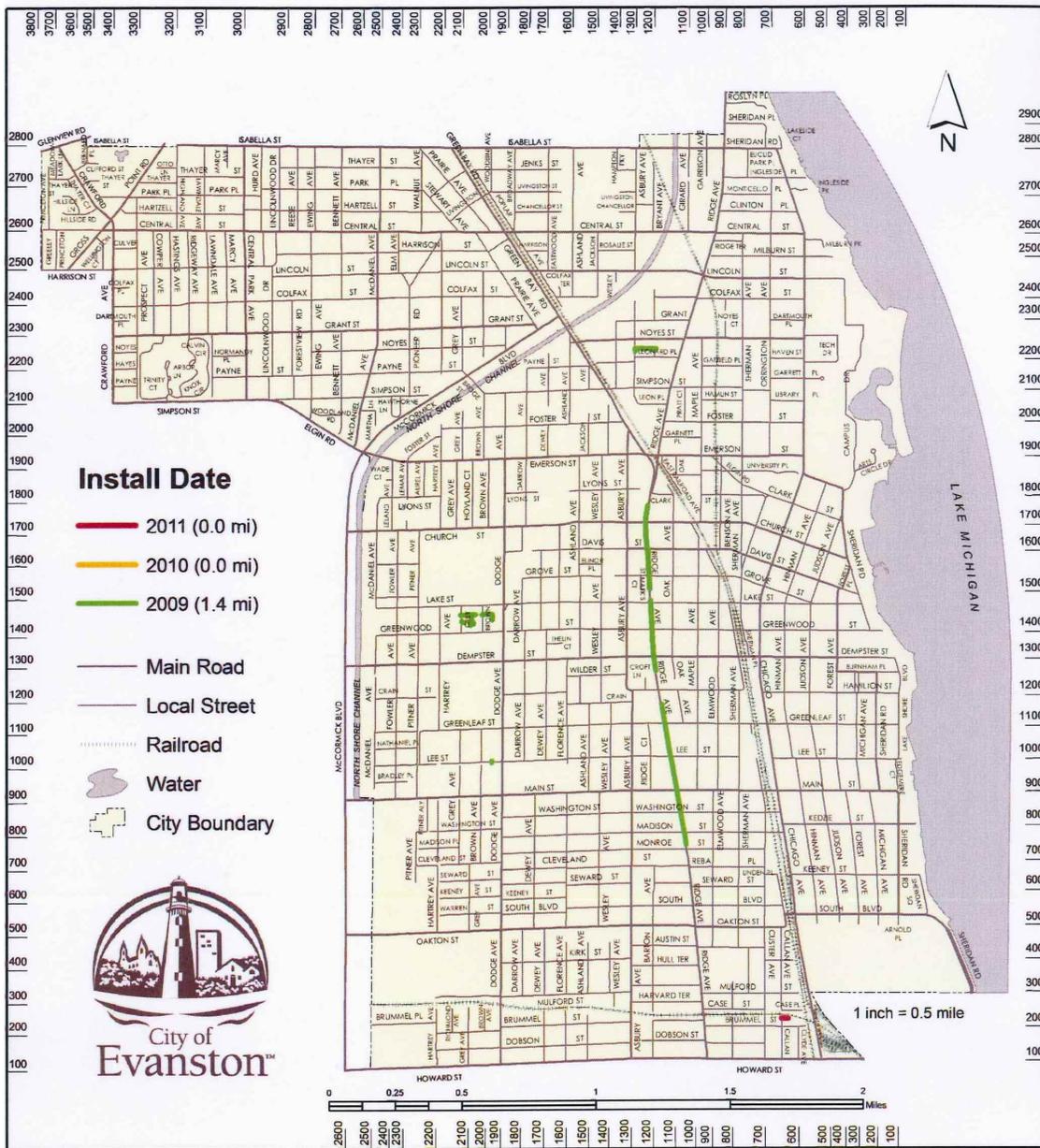
# Division of In-House Costs



# Combined Sewer Mains Installed (2009-2011)



# Relief Sewer Mains Installed (2009-2011)



# Storm Sewer Mains Installed (2009-2011)

