

# CITY OF DULUTH



20" Water Main Replacement



New Valve Installed on Existing Gas Main

## Superior Street Reconstruction



CIPP Sewer Patching



Storm Sewer Manhole & Connecting Pipes

**Public Works & Utilities Department  
2018 Annual Report**

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Front cover photos: Superior Street construction

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# OFFICERS OF THE DEPARTMENT

Mayor ..... Emily Larson  
Chief Administrative Officer ..... Noah Schuchman

City Council Public Works & Utilities Committee  
Councilor Arik Forsman

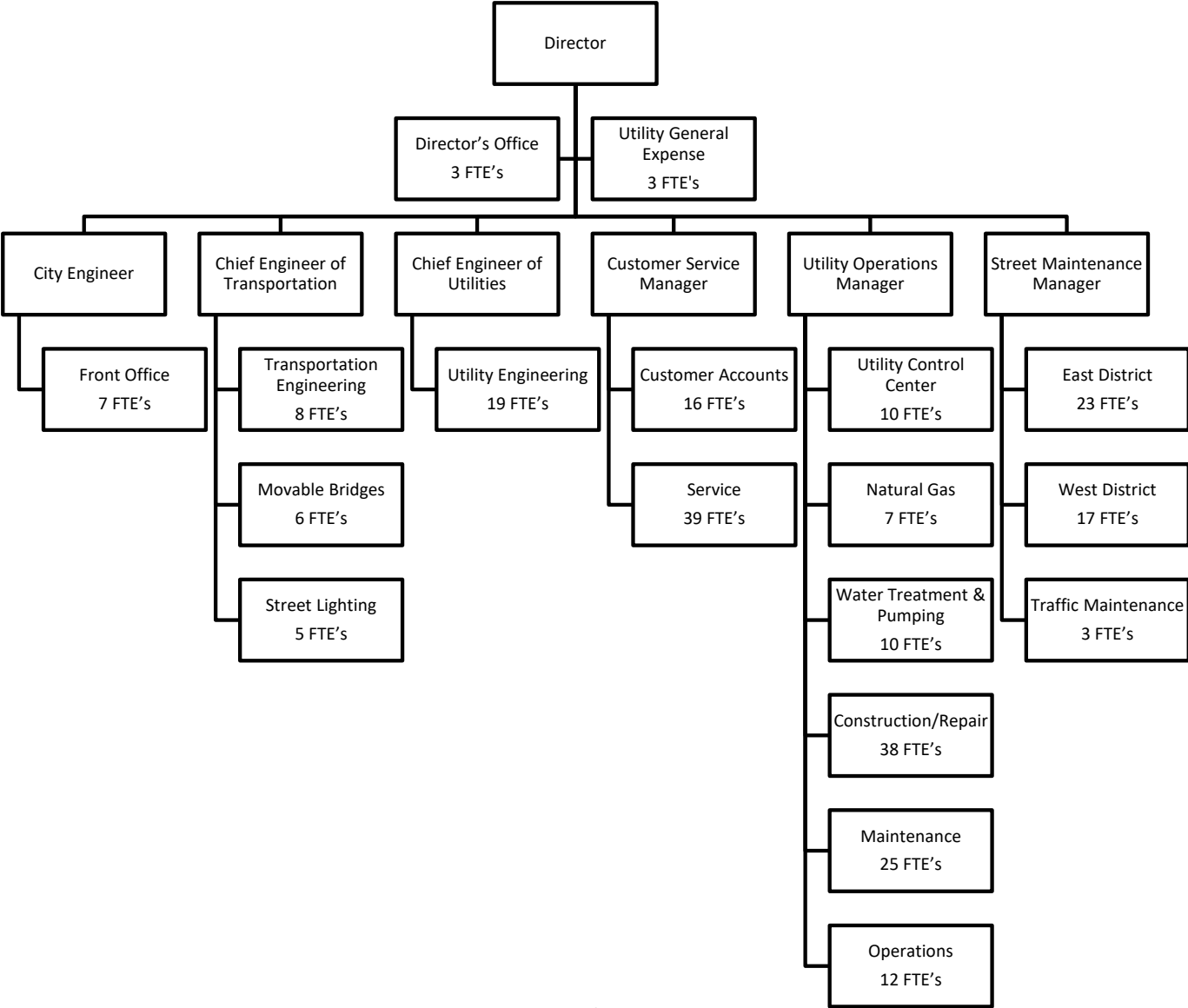
Duluth Public Utilities Commission  
Rob Prusak, President                      Councilor Arik Forsman  
Chris McIntosh, Vice President           Councilor Joel Sipress  
Jen Julsrud                                      Councilor Em Westerlund  
Carrie Ryan

## **DEPARTMENT OF PUBLIC WORKS & UTILITIES**

Director ..... Jim Benning  
City Engineer ..... Cindy Voigt  
Chief Engineer, Transportation ..... Cari Pedersen  
Chief Engineer, Utilities ..... Eric Shaffer  
Manager, Customer Service ..... John Upton  
Manager, Street Maintenance ..... Greg Guerrero  
Manager, Utility Operations ..... Howard Jacobson  
Executive Assistant ..... Leanna Gilbert  
Public Works & Utilities Analyst ..... Glenn Strid  
Budget & Operations Analyst ..... Kerry Venier  
Financial Analyst ..... Ken Taylor

# City of Duluth Public Works & Utilities Department 2018

**Total Budgeted FTE's: 258**



**W  
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**Water Utility  
Statement of Net Income  
For The Year Ended December 31, 2017 and 2018  
(Unaudited)**

	2017	2018
<b><u>Operating Revenue</u></b>		
Metered Water Sales	\$ 14,292,925	\$ 14,743,178
Other	152,459	181,977
<b>Total Operating Revenue</b>	<b>\$ 14,445,384</b>	<b>\$ 14,925,155</b>
<b><u>Operating Expense</u></b>		
Director's Office	77,703	82,457
Capital Related Expenses	1,864,595	2,072,886
Utility General Expense	1,118,427	855,698
Engineering	416,869	549,264
Utility Operations	3,436,142	3,184,334
Water Treatment and Pumping	2,946,163	3,017,617
Customer Service	1,252,982	1,311,531
<b>Total Operating Expense</b>	<b>(11,112,881)</b>	<b>(11,073,787)</b>
<b>Operating Income</b>	<b>3,332,503</b>	<b>3,851,368</b>
<b><u>Other Revenue</u></b>		
Contributed Capital	33,866	13,266
Gain or Loss on the Sale of Fixed Assets	15,762	36,379
Transfer from Other Funds		
Administrative Billing Fee	135,000	135,000
Street Lighting	9,300	9,300
Intergovernmental	16,919	16,919
Interest Income	(2,067)	(34,007)
<b>Total Other Revenue</b>	<b>208,780</b>	<b>176,857</b>
<b><u>Other Expenses and Transfers</u></b>		
Transfer to Other Funds		
Non-Capital Improvements	77,534	97,882
Reimbursement for MIS Programmer	50,450	53,600
Interest on Long Term Debt	182,025	252,071
<b>Total Other Expenses and Transfers</b>	<b>(310,009)</b>	<b>(403,553)</b>
<b>Net Income or Loss</b>	<b>\$ 3,231,274</b>	<b>\$ 3,624,672</b>

**Water Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Assets &amp; Deferred Outflows</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Assets</u></b>		
Cash	\$ 0	\$ 1,988,044
Restricted Cash and Equivalents:		
Minnesota Water Connection Fees	89,818	90,136
Construction	0	2,548,378
Accounts Receivable (Net)	1,431,621	1,379,935
Special Assessments	32,959	26,790
Due from Other Funds	21,295	10,794
Due from Other Governments	131	324
Inventory	1,188,683	1,438,636
Prepays	950,780	0
<b>Total Current Assets</b>	<b>\$ 3,715,287</b>	<b>\$ 7,483,037</b>
<b><u>Utility Plant</u></b>		
In Service	97,713,431	100,414,330
Construction	5,140,204	4,826,830
Less Accumulated Depreciation	(40,218,580)	(41,934,840)
<b>Total Utility Plant Assets</b>	<b>62,635,055</b>	<b>63,306,320</b>
<b><u>Other Assets</u></b>		
Special Assessments Receivable	101,694	92,236
<b>Total Other Assets</b>	<b>101,694</b>	<b>92,236</b>
<b>Total Assets</b>	<b>66,452,036</b>	<b>70,881,593</b>
<b><u>Deferred Outflows</u></b>		
Deferred Loss from Debt Refunding	714	0
Deferred Pension Obligation Outflows	1,636,294	635,588
Deferred OPEB Outflows	0	671,232
<b>Total Deferred Outflows</b>	<b>1,637,008</b>	<b>1,306,820</b>
<b>Total Assets and Deferred Outflows</b>	<b>\$ 68,089,044</b>	<b>\$ 72,188,413</b>

**Water Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Liabilities &amp; Net Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Liabilities</u></b>		
Accounts Payable	\$ 234,224	\$ 369,354
Contracts Payable	69,135	12,121
Notes Payable	1,085,856	866,000
Leases Payable	236,786	245,846
Due to Other Funds	19,105	20,047
Interfund Loan Payable	376,543	0
Due to Other Governments	90,251	90,716
Accrued Interest Payable	66,986	79,395
Accrued Salaries Payable	77,970	96,316
Vacations Payable	239,195	236,462
Unearned Revenue	42,894	45,411
Customer Deposits	10,000	10,000
Bonds Payable	348,851	99,000
<b>Total Current Liabilities (Payable from Current Assets)</b>	<b>\$ 2,897,796</b>	<b>\$ 2,170,668</b>
<b><u>Long Term Liabilities</u></b>		
Notes Payable	6,562,000	5,696,000
Leases Payable	1,473,869	1,228,023
Pension Liability	3,673,795	3,002,049
Net Other Post Employment Benefits	0	1,744,674
Bonds Payable	440,000	4,391,000
Less Unamortized Bond Discount or Premium	19,481	52,018
<b>Total Long Term Liabilities</b>	<b>12,169,145</b>	<b>16,113,764</b>
<b>Total Liabilities</b>	<b>15,066,941</b>	<b>18,284,432</b>
<b><u>Deferred Inflows</u></b>		
Deferred Pension Obligation Inflows	1,365,013	960,177
<b>Total Deferred Inflows</b>	<b>1,365,013</b>	<b>960,177</b>
<b><u>Net Assets</u></b>		
Invested in Capital Assets, Net of Related Debt	52,468,926	53,276,811
Unrestricted	(811,836)	(333,007)
<b>Total Net Assets</b>	<b>51,657,090</b>	<b>52,943,804</b>
<b>Total Liabilities, Deferred Inflows, and Net Assets</b>	<b>\$ 68,089,044</b>	<b>\$ 72,188,413</b>



**City of Duluth**  
**Water Utility Bonds, Notes and Capital Leases Payable**  
**December 31, 2018**

	<u>Issued</u>	<u>Issue Date</u>	<u>Final Maturity</u>	<u>Principal Outstanding 12/31/2017</u>	<u>Issued</u>	<u>Draw Down</u>	<u>Retired</u>	<u>Principal Outstanding 12/31/2018</u>
<b>Water Utility Bonds</b>								
Revenue and General Obligation	\$ 196,000	2/19/2009	2/1/2024	\$ 103,000	\$ 0	\$ 0	\$ 13,000	\$ 90,000
Revenue and General Obligation Refunding	1,625,000	11/23/2010	2/1/2018	250,851	0	0	250,851	0
Revenue and General Obligation Refunding	515,000	11/5/2015	2/1/2022	435,000	0	0	85,000	350,000
Revenue and General Obligation	4,050,000	10/17/2018	2/1/2034	0	4,050,000	0	0	4,050,000
<b>Bond Total</b>				<b>\$ 788,851</b>	<b>\$ 4,050,000</b>	<b>\$ 0</b>	<b>\$ 348,851</b>	<b>\$ 4,490,000</b>
<b>Notes</b>								
Public Facilities Authority	\$ 870,000	8/25/2003	8/20/2018	\$ 70,856	\$ 0	\$ 0	\$ 70,856	\$ 0
Public Facilities Authority	1,971,532	7/2/2004	8/20/2018	158,000	0	0	158,000	0
Public Facilities Authority	1,668,813	10/28/2009	8/20/2019	346,000	0	0	172,000	174,000
Public Facilities Authority	1,293,200	8/31/2010	8/20/2025	709,000	0	0	85,000	624,000
Public Facilities Authority	3,344,131	8/31/2010	8/20/2025	1,902,000	0	0	229,000	1,673,000
Public Facilities Authority	1,221,631	11/18/2011	8/20/2026	731,000	0	0	77,000	654,000
Public Facilities Authority	4,778,806	3/24/2014	8/20/2029	3,731,000	0	0	294,000	3,437,000
<b>Note Total</b>				<b>\$ 7,647,856</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 1,085,856</b>	<b>\$ 6,562,000</b>
<b>Capital Leases</b>								
AMR System	\$ 3,375,986	7/12/2007	2/1/2024	\$ 1,710,656	\$ 0	\$ 0	\$ 236,787	\$ 1,473,869
<b>Capital Lease Total</b>				<b>\$ 1,710,656</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 236,787</b>	<b>\$ 1,473,869</b>
<b>Total Water Utility Bonds, Notes and Capital Leases</b>				<b>\$ 10,147,363</b>	<b>\$ 4,050,000</b>	<b>\$ 0</b>	<b>\$ 1,671,494</b>	<b>\$ 12,525,869</b>

<b>Future Payments:</b>			
<u>Year</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019	\$ 1,210,846	\$ 233,940	\$ 1,444,786
2020	1,239,251	236,113	1,475,364
2021	1,302,017	209,487	1,511,504
2022	1,330,156	181,552	1,511,708
2023	1,264,684	154,208	1,418,892
2024	1,138,915	127,536	1,266,451
2025	995,000	109,018	1,104,018
2026	665,000	93,280	758,280
2027	592,000	81,087	673,087
2028	600,000	69,693	669,693
2029	613,000	58,043	671,043
2030	295,000	46,063	341,063
2031	305,000	36,872	341,872
2032	315,000	26,988	341,988
2033	325,000	16,588	341,588
2034	335,000	5,652	340,652
	<b>\$ 12,525,869</b>	<b>\$ 1,686,120</b>	<b>\$ 14,211,989</b>

**Water Fund**  
**Schedule of Fixed Assets**  
**Year Ending December 31, 2018**

	<u>Balance Jan.</u> <u>1, 2018</u>	<u>Additions</u>	<u>Deductions</u>	<u>Balance Dec.</u> <u>31, 2018</u>	<u>Accumulated</u> <u>Depreciation</u>	<u>Book Value</u>
Lands and Grounds	\$ 208,963	\$ 0	\$ 0	\$ 208,963	\$ 0	\$ 208,963
Infrastructure	66,574,167	2,379,501	0	68,953,668	20,252,197	48,701,471
Buildings and Structures	22,338,952	0	0	22,338,952	15,068,380	7,270,572
Equipment and Tools	8,591,349	423,548	102,150	8,912,747	6,614,263	2,298,484
Work in Progress	<u>5,140,204</u>	<u>2,131,165</u>	<u>2,444,539</u>	<u>4,826,830</u>	<u>0</u>	<u>4,826,830</u>
Total	<u>\$ 102,853,635</u>	<u>\$ 4,934,214</u>	<u>\$ 2,546,689</u>	<u>\$ 105,241,160</u>	<u>\$ 41,934,840</u>	<u>\$ 63,306,320</u>

## COMPARATIVE STATEMENT, OPERATING EXPENSE OF ALL STATIONS

Station	Year	Daily Average Gallons Pumped, Initial Supply	Gallons Pumped	K.W.H. Consumed	Electricity
Lakewood	2018	12,773,000	4,662,150,000	7,817,250	\$ 714,047
	2017	13,427,973	4,901,210,000	8,054,500	\$ 695,357
Middle	2018	2,682,347	979,057,000	1,282,400	\$ 115,822
	2017	2,477,093	904,139,000	1,202,400	\$ 106,044
Woodland	2018	1,625,342	593,250,000	1,328,400	\$ 126,799
	2017	2,002,266	730,827,000	1,412,400	\$ 127,082
West Duluth	2018	4,204,827	1,534,762,000	434,303	\$ 45,532
	2017	4,527,227	1,652,438,000	454,464	\$ 45,517
Orphanage	2018	218,150	79,625,000	54,720	\$ 7,248
	2017	202,526	73,922,000	51,840	\$ 6,902
Highland	2018	1,300,589	474,715,000	403,760	\$ 44,953
	2017	1,154,427	421,366,000	445,632	\$ 45,179
Arlington	2018	1,456,794	531,730,000	869,952	\$ 104,640
	2017	1,328,395	484,864,000	747,456	\$ 83,615
Lakeside	2018	176,731	64,507,000	77,040	\$ 12,128
	2017	172,419	62,933,000	77,040	\$ 11,725
Bay View	2018	393,690	143,697,000	203,840	\$ 25,890
	2017	376,863	137,555,000	194,560	\$ 24,745
Proctor	2018	374,824	136,811,000	196,160	\$ 25,272
	2017	355,466	129,745,000	187,520	\$ 24,149
Airport	2018	-	unmetered	15,936	\$ 2,712
	2017	-	unmetered	20,544	\$ 2,287
<b>TOTALS</b>	<b>2018</b>			<b>12,683,761</b>	<b>\$ 1,225,043</b>
	<b>2017</b>			<b>12,848,356</b>	<b>\$ 1,172,602</b>

## WATER PLANT STATISTICS

	2018	2017	2016	2015	2014	2013	2012
Water Pumped							
Million Cubic Feet	623.28	655.20	666.81	692.43	695.74	695.88	751.10
Water Sold							
Million Cubic Feet	561.94	568.41	565.57	589.84	591.00	605.95	644.40
General & Distribution Operating							
Costs including Maintenance (*)	\$ 9,255,377	\$ 9,285,999	\$ 9,008,318	\$ 8,528,252	\$ 9,529,831	\$ 9,394,544	\$ 8,897,762
Cost per 100 Cubic Feet	\$ 1.6470	\$ 1.6337	\$ 1.5928	\$ 1.4459	\$ 1.6125	\$ 1.5504	\$ 1.3808
Interest charges	\$ 252,071	\$ 182,025	\$ 213,800	\$ 269,225	\$ 274,990	\$ 274,206	\$ 296,162
Cost per 100 Cubic Feet	\$ 0.0449	\$ 0.0320	\$ 0.0378	\$ 0.0456	\$ 0.0465	\$ 0.0453	\$ 0.0460
Depreciation charge	\$ 1,818,410	\$ 1,826,882	\$ 1,776,832	\$ 1,709,522	\$ 1,635,319	\$ 1,576,417	\$ 1,487,132
Cost per 100 Cubic Feet	\$ 0.3236	\$ 0.3214	\$ 0.3142	\$ 0.2898	\$ 0.2767	\$ 0.2602	\$ 0.2308
Total Cost per 100 Cubic Feet	\$ 2.0155	\$ 1.9871	\$ 1.9448	\$ 1.7813	\$ 1.9357	\$ 1.8558	\$ 1.6575
Operating revenue	\$ 14,925,155	\$ 14,445,384	\$ 14,488,756	\$ 14,435,412	\$ 14,539,396	\$ 14,878,380	\$ 13,911,617
Revenue per 100 Cubic Feet Sold	\$ 2.6560	\$ 2.5414	\$ 2.5618	\$ 2.4473	\$ 2.4601	\$ 2.4554	\$ 2.1588
Water meters in service	28,957	28,329	28,253	28,208	28,131	28,069	28,050
Water main miles	429.30	428.40	428.30	433.40	430.70	428.30	426.70
Water meters per mile of main	67.45	66.13	65.97	65.09	65.31	65.54	65.74
Hydrants on system	2,716	2,708	2,699	2,688	2,659	2,671	2,594

(\*) Depreciation not included

## WATER PURIFICATION 2018 LAKEWOOD STATION

Month	Total Number of Gallons Treated (Millions)	Average Water Temperature at Treatment Bldg, Degrees F	Ammonia Lbs. Used	Chlorine Lbs. Used	Alum Gal. Used	Fluoride Gal. Used	Turbidity of Effluent NTU
January	374.19	34.7	1,828	7,419	8,255	1,387	0.029
February	356.49	35.0	1,702	6,632	8,277	1,302	0.029
March	399.00	33.1	1,905	7,006	12,448	1,457	0.027
April	372.10	33.9	1,802	6,771	8,315	1,366	0.027
May	386.55	37.2	1,815	7,078	8,304	1,432	0.026
June	398.40	42.0	1,859	7,560	12,414	1,434	0.028
July	442.83	43.3	2,013	8,340	12,484	1,583	0.029
August	443.62	51.5	2,018	9,208	12,558	1,594	0.029
September	412.81	61.5	1,865	8,652	8,313	1,457	0.031
October	368.25	50.1	1,724	7,866	8,272	1,324	0.035
November	350.08	43.0	1,656	7,157	7,100	1,236	0.036
December	357.83	38.9	1,726	6,800	8,398	1,252	0.028
<b>TOTAL</b>	4,662.15		21,913	90,489	115,138	16,824	
<b>Average/Month</b>	388.51	42.0	1,826	7,541	9,595	1,402	0.030

**2018**  
**LAKE SUPERIOR RAW WATER**  
**AND DULUTH FINISHED WATER (LABORATORY ANALYSES)**

Milligrams per Liter (except pH, Specific Conductance, and Turbidity)

	<b>RAW</b>	<b>FINISHED</b>
	Average	Average
Dissolved Oxygen	12.4	12.52
pH	7.82	9.21
Monthly Specific Conductance, Micromhos/cm	103.8	135.5
Alkalinity	43	46
Sulfates	3	9.8
Fluorides	0.07	0.75
Turbidity, NTU	1.85	0.03
Chlorine	NA	1.35
Total Dissolved Solids	NA	62.8
Iron	NA	0.01
Hardness, as CaCO <sub>3</sub>	NA	41.6
Color, apparent, PtCo	15.9	NA
Color, true, PtCo	3.3	NA

## BACTERIOLOGICAL DATA 2018

Average for	RAW WATER INTAKE		TREATED WATER		DISTRIBUTION	
	Number Samples	Coliform per 100 ml	Number Samples	Number Samples Positive	Number Samples	Number Samples Positive
January	17	1.40	189	0	94	0
February	13	0.44	162	0	91	0
March	17	0.25	194	0	92	0
April	16	0.00	186	0	94	0
May	17	0.00	183	0	91	0
June	16	0.75	190	0	91	0
July	16	6.75	198	0	94	0
August	16	2.50	179	0	91	0
September	15	1.00	189	0	91	0
October	17	2.00	181	0	93	0
November	13	NA	152	0	90	0
December	14	NA	134	0	91	0
<b>TOTAL</b>	187	NA	2,137	0	1,103	0
<b>Average for Month</b>	15.6	1.51	178	0	91.9	0.00

**LENGTH OF WATER MAINS IN FEET**

Diameter Inches	Cast Iron	Ductile Iron	Steel	Copper	Polyvinyl Chloride	High Density Polyethylene	Total	Valves	Vaults
1				885			885	5	
2	33		182	2,587		10,303	13,105	34	
3	1,391					619	2,010	11	
4	10,049	2,802				240	13,091	54	
6	961,260	146,476	569		1,729	12,837	1,122,871	2,480	5
8	80,127	101,933	458		294	171,520	354,332	830	7
10	155,781	52,016	5,970			35,372	249,139	449	11
12	156,888	42,843	1,904			20,279	221,914	387	
14						2,400	2,400		1
16	77,320	24,011	11,018			9	112,358	142	
18	1,390	435				2,092	3,917	5	4
20	14,241	1,790	29,259			3,969	49,259	56	1
24	8,440	6,583	55			5,952	21,030	34	
30			2,673				2,673	2	3
36	25,069	11,722	11,384				48,175	34	
42	181		49,223				49,404	6	
48							0		
<b>TOTALS</b>	<b>1,492,170</b>	<b>390,611</b>	<b>112,695</b>	<b>3,472</b>	<b>2,023</b>	<b>265,592</b>	<b>2,266,563</b>	<b>4,529</b>	<b>32</b>
<b>Total Miles -</b>							<b>429.3</b>		
<b>Change from 2017 -</b>							<b>0.9</b>	<b>33</b>	<b>0</b>

Notes: Pipe and valves in hydrant branches are not included in the above table.

Air valves, valves without gates and valves inside pump stations are not included.

All Main and Hydrant information provided from Geographic Information System.

**HYDRANTS AND BRANCHES**

	Total Hydrants	Valves on Branches	Lineal Feet Main to Hydt.
<b>TOTAL IN SERVICE</b>			
12/31/2017	2,708	2,661	56,374
<b>TOTAL IN SERVICE</b>			
12/31/2018	2,716	2,673	56,257
<b>Changes from 2017:</b>	<b>8</b>	<b>12</b>	<b>-117</b>



## DATA, RESERVOIRS AND TANKS

Location	Capacity (Gallons)	Overflow Elevation (Feet)	Greatest Depth (Feet)	Dimension (Feet)	Remarks
Lakeside Tank	100,000	500.00	23.75	Diameter 27	Built in 1961
34th Avenue East "Reservoir A"	16,320,000	294.00	30.00	284 x 391	Built 1898, Rebuilt 1938
Endion Reservoir	14,140,000	290.00	28.00	240 x 320	Built by G & W Company Rebuilt 1922 New Roof 1966 Lined 1988
West End Reservoirs #1-6	10,200,000	290.00	33.00	Diameter 100	Built 1953
West Duluth Reservoir	10,000,000	290.00	21.00	327.3 x 263.3	Built 1906 Remodeled 1925 New Roof 2014
Middle System - Reservoir #1	5,171,000	560.00	28.00	Diameter 187.38	Built 1913 New Roof 1928 Lined 1988
Middle System - Reservoir #2	5,131,000	560.00	25.00	Diameter 190	Built in 1951
Woodland Reservoir #1	1,021,000	806.00	22.00	Diameter 91.5	Built in 1915 Lined 1939 Refaced 2002
Woodland Reservoir #2	2,015,000	806.00	35.50	Diameter 100	Built in 1950 Lined 2000 Refaced 2002
Arlington Reservoir #1	240,490	806.00	27.00	Diameter 40	Built in 1925
Arlington Reservoir #2	1,534,000	806.00	27.50	Diameter 100	Built in 1950
Orphanage Tank #1	400,000	916.00	129.40	Diameter 51.5	Built 1994
Highland Water Tower	1,000,000	141.60	40.00	Diameter 74.8 1/4	Built 2011
Bay View Heights Steel Tank	100,000	550.00	26.00	Diameter 26	Built 1972
Proctor Tank	400,000	825.00	142.00	Diameter 51.5	Built 1989
<b>TOTAL</b>	<b>67,772,490</b>				

## PUMPING STATIONS - WATER PUMPING EQUIPMENT

Station	Source of Supply	Reservoirs Discharged Into	No. Units and Year Installed	Make of Pump	Type of Pump	Unit No.	Pumps Driven By	R.P.M.	Average Capacity G.P.M. Each Unit
<b>Lakewood Low Lift</b>	Lake Superior	Lakewood	1 – 1992	Patterson	Single Stage Centrifugal	2	1 Unit direct connected to 300 hp, 2300 volt, 60 cycle, GE Induction motor	900	17,400
			1 – 1949	DeLaval		4	1 Unit direct connected to 350 hp, 2300 volt, 60 cycle, GE Induction motor	440	20,800
			1 – 1981	Worthington	Single Stage	1	1 Unit direct connected to 200 hp, 2300 volt, 60 cycle, GE Induction motor	500	11,389
<b>Lakewood High Lift</b>	Lakewood (Detention Basin)	Reservoir A Endion, West End, & West Duluth	1 – 1992	Patterson	Single Stage Centrifugal	2	2 Unit direct connected to 1500 hp, 2300 volt, 60 cycle GE Induction motor with VFD and fixed controller	1,200	17,400
			1 – 1949	DeLaval	Two Stage Centrifugal	4	2 Unit direct connected to 2000 hp, 2300 volt, 60 cycle, GE synchronous motor, with direct exciter	720	20,800
			1 – 1981	Worthington	Single Stage	1	1 Unit direct connected to 1000 hp, 2300 volt, 60 cycle GE capacitor induction motor	1,185	11,389
<b>Middle</b>	Reservoir A and Endion	Middle Service	1 – 1950	Allis-Chalmers	Single Stage, Two Unit, Centrifugal	3	Direct connected to 400 hp, 2300 volt, 60 cycle, Allis-Chalmers synchronous motor, with direct connected exciter	1,800	4,000
			1 – 1969	Aurora	Single Stage, One Unit, Centrifugal	4	Direct connected to 250 hp, 2300 volt, 60 cycle, 3-phase Louis Allis Induction motor	1,750	2,500
			1 – 1986	Fairbanks-Morse	Single Stage, One Unit, Centrifugal	5	Direct connected to 250 hp, 2300 volt, 60 cycle, 3-phase Siemens-Allis motor	1,785	2,600
<b>Woodland</b>	Reservoir A	Woodland & Arlington Reservoir	1 – 1950	Allis-Chalmers	All Units Single Stage, Two Unit, Centrifugal	3	Direct connected to 500 hp, 2300 volt, 60 cycle, Allis-Chalmers synchronous motor, with direct connected exciter	1,800	2,050
			1 – 1986	Fairbanks Morse Co.		4	Direct connected to 300 hp, 2300 volt, 60 cycle, Siemens-Allis Induction motor	1,775	1,720
			1 – 1975	Aurora #421	Two Stage, Centrifugal	5	Direct connected to 240 hp, 2300 volt, 60 cycle, 3-phase Marathon Induction motor	1,750	1,250

## PUMPING STATIONS - WATER PUMPING EQUIPMENT

Station	Source of Supply	Reservoirs Discharged Into	No. Units and Year Installed	Make of Pump	Type of Pump	Unit No.	Pumps Driven By	R.P.M.	Average Capacity G.P.M. Each Unit
<b>West Duluth</b>	Reservoir A, Endion & West	West Duluth Reservoir & West Duluth System	2 -- 2009	Fairbanks-Morse	All Units Single Stage	2	200 hp, 460 volt, 60 cycle 3-phase WEG NEMA Premium Induction motor, with VFD drive	1,200	6,000
<b>Orphanage</b>	Woodland Reservoirs	Orphanage Tanks	1 -- 1961	Worthington Type L-2	Single Stage Centrifugal	5	Direct connected to 40 hp, 440 volt, 60 cycle, U.S. Induction motor	1,750	1,000
			1 -- 1961		Single Stage Centrifugal	6	Direct connected to 40 hp, 440 volt, 60 cycle, U.S. Induction motor	1,750	1,000
<b>Highland</b>	Arlington Reservoirs	Highland Tanks	2 -- 2012	Aurora	Single Stage, Single Suction Centrifugal	3	2-Unit Direct connected to 150 hp, 460 volt, 60 HZ, 3-phase Marathon Electric XRI high efficiency motor	1,800	1,200
<b>Arlington</b>	Middle Reservoirs	Arlington Reservoirs	3 -- 2010	Aurora Type 411 BF Size 6x8x20	Single Stage Centrifugal	3	250 hp, 460 volt, 60 cycle 3-phase Baldor Induction motor with VFD drive	1,750	1,700
<b>Lakeside</b>	Two 10" Mains	Lakeside Tank	2 -- 1961	Worthington Type L-3	Single Stage Centrifugal	1 2	Each unit direct connected to 100 hp, 440 volt, 60 cycle, 3-phase U.S. Induction motor	1,750	1,000
<b>Bay View</b>	West Duluth Reservoir	Bay View Tank	2 -- 1973	Aurora	Single Stage Centrifugal	1	Each unit direct connected to 125 hp, 440 volt, 60 cycle, 3-phase U.S. Induction motor	3,500	1,200
			2 -- 2002			2			
<b>Proctor</b>	Bay View Tank	Proctor Standpipe	2 -- 1973	Aurora	Single Stage Centrifugal	1	Each unit direct connected to 125 hp, 440 volt, 60 cycle, 3-phase Louis Allis motor	3,500	1,200
						2			

## WATER UTILITY ACTIVITIES 2018

### UTILITY OPERATIONS

ACTIVITY	WORK COMPLETED
Repair of water services	17
Repair of valves	172
Repair of main breaks	104
Install services	35
<b>Fire Hydrants</b>	
Replaced hydrants	21
Repaired hydrants	139
New hydrants	5
Inspection	All fire hydrants in the City are inspected by the Fire Department and Utility Operations as part of a preventative maintenance program.

### CUSTOMER SERVICE

ACTIVITY	WORK COMPLETED
<b>Meter Truck</b>	
Gauge water service	134
Applications (water & gas)	9,798
Delinquent account service shut off/restore (water & gas)	2,155
Emergency (water & gas)	878
General (water & gas)	2,463
<b>Meter Shop</b>	
Water meters repaired	395
Water meters tested	308
Plumbing truck orders (water & gas)	617

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**Gas Utility  
Statement of Net Income  
For The Year Ended December 31, 2017 and 2018  
(Unaudited)**

	2017	2018
<b><u>Operating Revenue</u></b>		
Residential Sales	\$ 22,329,445	\$ 24,218,534
Commercial & Industrial - Firm	8,480,881	9,445,680
Commercial & Industrial - Interruptible	3,518,781	3,763,715
Servicing Appliances	826,499	956,165
Other	964,584	720,312
<b>Total Operating Revenue</b>	<b>\$ 36,120,190</b>	<b>\$ 39,104,406</b>
<b><u>Operating Expense</u></b>		
Director's Office	549,724	212,780
Capital Related Expenses	1,481,706	1,592,283
Utility General Expense	1,246,718	1,395,389
Engineering	906,951	929,461
Utility Operations	2,480,581	2,574,980
Natural Gas	19,712,979	21,380,929
Customer Service	4,551,309	4,725,397
<b>Total Operating Expense</b>	<b>(30,929,968)</b>	<b>(32,811,219)</b>
<b>Operating Income</b>	<b>5,190,222</b>	<b>6,293,187</b>
<b><u>Other Revenue</u></b>		
Grants Non-Capital	5,584	0
Contributed Assets	70,901	87,700
Other Revenue	345,994	0
Other Expense	(345,994)	0
Gain or Loss on Sale of Fixed Assets	24,416	27,917
Transfer from Other Funds		
Street Lighting	14,900	14,900
Intergovernmental	23,365	23,365
Interest Income	6,724	(22,494)
<b>Total Other Revenue</b>	<b>145,890</b>	<b>131,388</b>
<b><u>Other Expenses and Transfers</u></b>		
Interest Expense	86,980	58,802
Transfers to Other Funds		
Payment to City in Lieu of Taxes	2,184,557	2,528,413
Non-Capital Improvements	48,459	61,176
Reimbursement for MIS Programmer	50,450	53,600
<b>Total Other Expenses and Transfers</b>	<b>(2,370,446)</b>	<b>(2,701,991)</b>
<b>Net Income or Loss</b>	<b>\$ 2,965,666</b>	<b>\$ 3,722,584</b>

**Gas Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Assets &amp; Deferred Outflows</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Assets</u></b>		
Cash	\$ 331,866	\$ 1,886,098
Restricted Cash and Equivalents:		
Customer Deposits	2,530,585	2,754,100
Accounts Receivable (Net)	6,896,258	5,570,111
Special Assessments	2,037	1,454
Due from Other Funds	6,720	8,942
Interfund Loan Receivable	1,495,783	2,597,498
Due from Other Governments	5,628	108
Inventory	1,176,261	1,287,082
Prepaid Expenses	1,830,403	0
Prepaid Gas	1,200,366	489,328
	<u>\$ 15,475,907</u>	<u>\$ 14,594,721</u>
<b><u>Utility Plant</u></b>		
In Service	77,617,886	80,220,988
Construction	4,231,462	4,918,403
	<u>81,849,348</u>	<u>85,139,391</u>
Less Accumulated Depreciation	(27,108,544)	(28,449,046)
	<u>54,740,804</u>	<u>56,690,345</u>
<b><u>Other Assets</u></b>		
Special Assessments Receivable	5,604	5,604
Advance to Other Funds	750,000	600,000
	<u>755,604</u>	<u>605,604</u>
<b>Total Other Assets</b>	<u>755,604</u>	<u>605,604</u>
<b>Total Assets</b>	<u>70,972,315</u>	<u>71,890,670</u>
<b><u>Deferred Outflows</u></b>		
Deferred Loss from Debt Refunding	17,084	1,375
Deferred Pension Obligation Outflows	2,152,947	874,541
Deferred OPEB Outflows	0	860,316
	<u>2,170,031</u>	<u>1,736,232</u>
<b>Total Deferred Outflows</b>	<u>2,170,031</u>	<u>1,736,232</u>
<b>Total Assets and Deferred Outflows</b>	<u>\$ 73,142,346</u>	<u>\$ 73,626,902</u>

**Gas Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Liabilities &amp; Net Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Liabilities</u></b>		
Accounts Payable	\$ 2,604,498	\$ 2,588,379
Contracts Payable	451,339	297,850
Leases Payable	217,054	225,358
Due to Other Funds	19,323	21,328
Due to Other Governments	86,896	106,424
Accrued Interest Payable	40,822	29,493
Accrued Salaries Payable	108,366	136,054
Accrued Vacations Payable	369,540	356,372
Unearned Revenue	677,908	712,590
Customer Deposits	2,530,585	2,754,100
Bonds Payable	480,000	505,000
<b>Total Current Liabilities (Payable from Current Assets)</b>	<b>\$ 7,586,331</b>	<b>\$ 7,732,948</b>
<b><u>Long Term Liabilities</u></b>		
Leases Payable	1,351,047	1,125,688
Pension Liability	4,833,785	4,130,684
Net Other Post Employment Benefits	0	4,379,221
Bonds Payable	505,000	0
Less Unamortized Bond Discount	36,245	2,919
<b>Total Long Term Liabilities</b>	<b>6,726,077</b>	<b>9,638,512</b>
<b>Total Liabilities</b>	<b>14,312,408</b>	<b>17,371,460</b>
<b><u>Deferred Inflows</u></b>		
Deferred Pension Obligation Inflows	1,796,010	1,321,160
<b>Total Deferred Inflows</b>	<b>1,796,010</b>	<b>1,321,160</b>
<b><u>Net Assets</u></b>		
Invested in Capital Assets, Net of Related Debt	52,168,542	54,832,755
Unrestricted	4,865,386	101,527
<b>Total Net Assets</b>	<b>57,033,928</b>	<b>54,934,282</b>
<b>Total Liabilities, Deferred Inflows, and Net Assets</b>	<b>\$ 73,142,346</b>	<b>\$ 73,626,902</b>



**City of Duluth  
Gas Utility Bonds and Capital Leases Payable  
December 31, 2018**

	<u>Issued</u>	<u>Issue Date</u>	<u>Final Maturity</u>	<u>Principal Outstanding 12/31/2017</u>	<u>Issued</u>	<u>Draw Down</u>	<u>Retired</u>	<u>Principal Outstanding 12/31/2018</u>
<b>Gas Utility</b>								
Bonds								
Revenue and General Obligation Refunding	\$ 3,125,000	11/29/2011	2/1/2019	\$ 985,000	\$ 0	\$ 0	\$ 480,000	\$ 505,000
Bond Total				\$ 985,000	\$ 0	\$ 0	\$ 480,000	\$ 505,000
Capital Leases								
AMR System	\$ 3,094,654	7/12/2007	2/1/2024	\$ 1,568,101	\$ 0	\$ 0	\$ 217,054	\$ 1,351,047
Capital Lease Total				\$ 1,568,101	\$ 0	\$ 0	\$ 217,054	\$ 1,351,047
<b>Total Gas Utility Bonds and Capital Leases</b>				<u>\$ 2,553,101</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 697,054</u>	<u>\$ 1,856,047</u>

<b>Future Payments:</b>			
<u>Year</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019	\$ 730,358	\$ 59,189	\$ 789,547
2020	233,980	40,467	274,447
2021	242,932	31,516	274,448
2022	252,227	22,221	274,448
2023	261,877	12,571	274,448
2024	134,673	2,553	137,226
	<u>\$ 1,856,047</u>	<u>\$ 168,517</u>	<u>\$ 2,024,564</u>

**Gas Fund**  
**Schedule of Fixed Assets**  
**Year Ending December 31, 2018**

	<u>Balance Jan. 1, 2018</u>	<u>Additions</u>	<u>Deductions</u>	<u>Balance Dec. 31, 2018</u>	<u>Accumulated Depreciation</u>	<u>Book Value</u>
Lands and Grounds	\$ 426,078	\$ 0	\$ 0	\$ 426,078	\$ 0	\$ 426,078
Infrastructure	66,209,840	2,275,250	0	68,485,090	20,931,103	47,553,987
Buildings and Structures	2,592,124	0	0	2,592,124	1,013,371	1,578,753
Equipment and Tools	8,389,844	479,249	151,397	8,717,696	6,504,572	2,213,124
Work in Progress	<u>4,231,462</u>	<u>3,010,244</u>	<u>2,323,303</u>	<u>4,918,403</u>	<u>0</u>	<u>4,918,403</u>
<b>Total</b>	<u>\$ 81,849,348</u>	<u>\$ 5,764,743</u>	<u>\$ 2,474,700</u>	<u>\$ 85,139,391</u>	<u>\$ 28,449,046</u>	<u>\$ 56,690,345</u>

## GAS STATISTICS

	2018	2017	2016	2015	2014	2013	2012
Gas sold MCF	5,603,857	5,218,978	4,770,804	4,766,168	5,224,178	5,225,302	4,089,209
Cost of gas sold	\$ 20,731,398	\$ 18,991,411	\$ 15,794,076	\$ 18,713,748	\$ 38,271,381	\$ 24,132,568	\$ 19,376,845
Cost per MCF sold	\$ 3.6995	\$ 3.6389	\$ 3.3106	\$ 3.9264	\$ 7.3258	\$ 4.6184	\$ 4.7385
Other operating costs, including maintenance(*)	\$ 10,587,922	\$ 10,528,802	\$ 9,409,848	\$ 9,543,411	\$ 9,364,188	\$ 9,506,116	\$ 9,314,644
Cost per MCF sold	\$ 1.8894	\$ 2.0174	\$ 1.9724	\$ 2.0023	\$ 1.7925	\$ 1.8192	\$ 2.2779
Interest charges	\$ 58,802	\$ 86,980	\$ 122,540	\$ 179,433	\$ 215,201	\$ 246,635	\$ 274,210
Cost per MCF sold	\$ 0.0105	\$ 0.0167	\$ 0.0257	\$ 0.0376	\$ 0.0412	\$ 0.0472	\$ 0.0671
Depreciation charge(**)	\$ 1,491,899	\$ 1,409,755	\$ 1,376,239	\$ 1,374,853	\$ 1,354,779	\$ 1,313,680	\$ 1,272,122
Cost per MCF sold	\$ 0.2662	\$ 0.2701	\$ 0.2885	\$ 0.2885	\$ 0.2593	\$ 0.2514	\$ 0.3111
Total cost per MCF sold	\$ 5.8656	\$ 5.9431	\$ 5.5971	\$ 6.2548	\$ 9.4188	\$ 6.7363	\$ 7.3945
Operating revenue	\$ 39,104,406	\$ 36,120,190	\$ 31,207,959	\$ 35,494,037	\$ 58,290,408	\$ 40,461,365	\$ 33,941,529
per MCF	\$ 6.9781	\$ 6.9209	\$ 6.5414	\$ 7.4471	\$ 11.1578	\$ 7.7434	\$ 8.3003
Gas meters in service	28,505	28,617	28,313	27,873	27,682	27,435	27,075
Gas main miles	553.40	549.40	543.80	539.40	534.90	527.10	520.00
Gas transmission miles	5.30	5.30	5.30	5.30	5.30	5.30	5.30
Gas meters per mile of main	51.51	52.09	52.07	51.67	51.75	52.05	52.07

(\*) Does not include depreciation for the cost of natural gas

(\*\*) Does not include depreciation due to change in Capital Policy

## LENGTH OF GAS MAINS IN FEET

Diameter - Inches	Polyethylene	Steel	Total	Valves
1/2	1,975		1,975	
1	50,451		50,451	77
1 1/4		3,300	3,300	31
2	1,858,378	22,183	1,880,561	968
3	387,820	4,689	392,509	263
4	2,743	38,782	41,525	60
6	72,142	66,086	138,228	110
8	33,237	139,376	172,613	90
10	5	120,956	120,961	34
12	15,934	10,434	26,368	17
14		1,352	1,352	
16		92,208	92,208	8
<b>Totals</b>	<b>2,422,685</b>	<b>499,366</b>	<b>2,922,051</b>	<b>1,658</b>

**Total Miles Gas Main                    553.4**

**Added in 2018                                4.0**

**Pressure Regulators                        38**

**Gas Valves added in 2018                76**

Note: Valves used only as plugs on end of mains are not included in the above table.  
 Gas main quantities are derived from Geographic Information System.

## GAS UTILITY ACTIVITIES 2018

### UTILITY OPERATIONS

ACTIVITY	WORK COMPLETED
<b>Services and Mains</b>	
Installations	10
Cutoffs	27
Valves inspected and operated	516
Hits	46

### CUSTOMER SERVICE

ACTIVITY	WORK COMPLETED
<b>Service Workorders Completed</b>	
Appliance service	4,349
Furnace cleaning	3,287
Tin shop/venting	502
<b>Meter Truck</b>	
Applications (water & gas)	9,798
Delinquent account service shut off/restore (water & gas)	2,155
Emergency (water & gas)	878
General (water & gas)	2,463
<b>Meter Shop</b>	
Gas meters repaired	648
Gas meters tested	1,125
Plumbing truck orders (water & gas)	617
<b>Other</b>	
Gas leak detection surveys	13,969
Inspect and paint gas meters and risers	2,997

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**Sewer Utility  
Statement of Net Income  
For The Year Ended December 31, 2017 and 2018  
(Unaudited)**

	2017	2018
<b><u>Operating Revenue</u></b>		
General Sewage Revenue	\$ 17,712,950	\$ 17,819,329
Other	210,976	262,142
<b>Total Operating Revenue</b>	\$ 17,923,926	\$ 18,081,471
<b><u>Operating Expense</u></b>		
Director's Office	73,754	78,127
Capital Related Expenses	1,410,539	1,466,389
Utility General Expense	508,259	583,063
Engineering	516,277	549,582
Utility Operations	2,128,689	2,335,695
Wastewater Treatment	9,202,889	9,451,122
Inflow and Infiltration	854,705	844,848
Customer Service	354,352	384,139
<b>Total Operating Expense</b>	(15,049,464)	(15,692,965)
<b>Operating Income</b>	2,874,462	2,388,506
<b><u>Other Revenue</u></b>		
Contributed Assets	692,202	(704)
Gain or Loss on Sale of Fixed Assets	17,735	17,572
Transfer from Clean Water Fund to Cover Restricted Cash	70,265	70,265
Transfer from Other Funds Street Lighting	7,450	7,450
Intergovernmental	8,283	8,283
Interest Income	(6,321)	(2,494)
<b>Total Other Revenue</b>	789,614	100,372
<b><u>Other Expenses and Transfers</u></b>		
Transfer to Other Funds Non-Capital Improvements	48,459	61,176
Reimbursement for MIS Programmer	50,450	53,600
Interest on Long Term Debt	223,971	182,110
<b>Total Other Expenses and Transfers</b>	(322,880)	(296,886)
<b>Net Income or Loss</b>	\$ 3,341,196	\$ 2,191,992

**Sewer Utility  
Statement of Net Assets  
For The Year Ending December 31, 2017 and 2018  
(Unaudited)**

	<b>Assets &amp; Deferred Outflows</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Assets</u></b>		
Cash	\$ 279,605	\$ 1,836,814
Restricted Cash and Equivalents:		
Construction	488,525	608,514
Accounts Receivable (Net)	1,905,446	1,855,343
Special Assessments	40,479	24,460
Due from Other Funds	15,662	5,302
Interfund Loan Receivable	1,495,782	0
Due from Other Governments	636,500	731
Inventory	80,667	105,992
Prepays	321,303	1,279,453
	<u>\$ 5,263,969</u>	<u>\$ 5,716,609</u>
<b><u>Utility Plant</u></b>		
In Service	76,241,588	78,124,717
Construction	2,229,726	2,637,800
	<u>78,471,314</u>	<u>80,762,517</u>
Less Accumulated Depreciation	(19,845,486)	(21,181,068)
	<u>58,625,828</u>	<u>59,581,449</u>
<b>Total Utility Plant Assets</b>	<u>58,625,828</u>	<u>59,581,449</u>
<b><u>Other Assets</u></b>		
Special Assessments Receivable	137,390	100,277
	<u>137,390</u>	<u>100,277</u>
<b>Total Other Assets</b>	<u>137,390</u>	<u>100,277</u>
<b>Total Assets</b>	<u>64,027,187</u>	<u>65,398,335</u>
<b><u>Deferred Outflows</u></b>		
Deferred Loss from Debt Refunding	87,357	52,092
Deferred Pension Obligation Outflows	911,412	378,718
Deferred OPEB Outflows	0	457,219
	<u>998,769</u>	<u>888,029</u>
<b>Total Deferred Outflows</b>	<u>998,769</u>	<u>888,029</u>
<b>Total Assets and Deferred Outflows</b>	<u>\$ 65,025,956</u>	<u>\$ 66,286,364</u>



**Sewer Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Liabilities &amp; Net Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Liabilities</u></b>		
Accounts Payable	\$ 56,279	\$ 31,550
Contracts Payable	94,964	126,918
Notes Payable	403,144	250,000
Leases Payable	203,899	211,700
Due to Other Funds	15,170	22,875
Due to Other Governments	750,055	808,420
Interest Payable	86,133	69,047
Accrued Salaries Payable	46,477	56,898
Vacations Payable	137,839	145,446
Unearned Revenue	46,611	49,122
Bonds Payable	1,276,164	987,011
<b>Total Current Liabilities (Payable from Current Assets)</b>	<b>\$ 3,116,735</b>	<b>\$ 2,758,987</b>
<b><u>Long Term Liabilities</u></b>		
Notes Payable	1,084,383	889,000
Leases Payable	1,269,165	1,057,465
Pension Liability	2,046,295	1,788,787
Bonds Payable	3,683,587	2,696,576
Less Unamortized Bond Discount or Premium	121,320	89,886
<b>Total Long Term Liabilities</b>	<b>8,204,750</b>	<b>6,521,714</b>
<b>Total Liabilities</b>	<b>11,321,485</b>	<b>9,280,701</b>
<b><u>Deferred Inflows</u></b>		
Deferred Pension Obligation Inflows	760,309	572,127
<b>Total Deferred Inflows</b>	<b>760,309</b>	<b>572,127</b>
<b><u>Net Assets</u></b>		
Invested in Capital Assets, Net of Related Debt	50,671,523	53,451,903
Legal Restricted Assets	488,525	608,514
Unrestricted	1,784,114	2,373,119
<b>Total Net Assets</b>	<b>52,944,162</b>	<b>56,433,536</b>
<b>Total Liabilities, Deferred Inflows, and Net Assets</b>	<b>\$ 65,025,956</b>	<b>\$ 66,286,364</b>

**City of Duluth**  
**Sewer Utility Bonds, Notes and Capital Leases Payable**  
**December 31, 2018**

	<u>Issued</u>	<u>Issue Date</u>	<u>Final Maturity</u>	<u>Principal Outstanding 12/31/2017</u>	<u>Issued</u>	<u>Draw Down</u>	<u>Retired</u>	<u>Principal Outstanding 12/31/2018</u>
<b>Sewer Utility</b>								
Bonds								
Revenue and General Obligation	\$ 1,244,000	2/19/2009	2/1/2024	\$ 652,152	\$ 0	\$ 0	\$ 83,565	\$ 568,587
Revenue and General Obligation	905,000	12/17/2009	2/1/2025	540,000	0	0	60,000	480,000
Revenue and General Obligation Refunding	2,025,000	11/23/2010	2/1/2018	312,599	0	0	312,599	0
Revenue and General Obligation Refunding	2,265,000	11/29/2011	2/1/2020	1,005,000	0	0	325,000	680,000
Revenue and General Obligation Refunding	2,000,000	11/27/2012	2/1/2021	1,185,000	0	0	290,000	895,000
Revenue and General Obligation Refunding	1,110,000	11/5/2015	2/1/2023	970,000	0	0	150,000	820,000
Revenue and General Obligation Refunding	350,000	11/5/2015	2/1/2022	295,000	0	0	55,000	240,000
Bond Total				\$ 4,959,751	\$ 0	\$ 0	\$ 1,276,164	\$ 3,683,587
Notes								
Public Facilities Authority	\$ 100,000	8/25/2003	8/20/2018	\$ 8,144	\$ 0	\$ 0	\$ 8,144	\$ 0
Public Facilities Authority	1,179,115	10/17/2003	8/20/2018	93,000	0	0	93,000	0
Public Facilities Authority (Note 1)	1,973,033	7/12/2007	8/20/2022	766,000	0	0	150,000	616,000
Public Facilities Authority (Note 3)	279,117	11/18/2011	8/20/2021	108,000	0	0	26,000	82,000
Public Facilities Authority	1,255,464	9/4/2014	8/20/2024	512,383	0	0	71,383	441,000
Note Total				\$ 1,487,527	\$ 0	\$ 0	\$ 348,527	\$ 1,139,000
Capital Leases								
AMR System	\$ 2,907,099	7/12/2007	2/1/2024	\$ 1,473,064	\$ 0	\$ 0	\$ 203,899	\$ 1,269,165
Capital Lease Total				\$ 1,473,064	\$ 0	\$ 0	\$ 203,899	\$ 1,269,165
<b>Total Sewer Utility Bonds, Notes, and Capital Leases</b>				<b>\$ 7,920,342</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 1,828,590</b>	<b>\$ 6,091,752</b>

<b>Future Payments:</b>					
<u>Year</u>	<u>Principal</u>	\$	<u>Interest</u>	\$	<u>Total</u>
2019	1,448,711		153,922		1,602,633
2020	1,493,118		115,925		1,609,043
2021	1,173,974		81,010		1,254,984
2022	857,705		53,551		911,256
2023	664,216		29,399		693,615
2024	379,028		9,697		388,725
2025	75,000		1,500		76,500
	\$ 6,091,752		\$ 445,004		\$ 6,536,756

**Sewer Fund  
Schedule of Fixed Assets  
Year Ending December 31, 2018**

	<u>Balance Jan. 1, 2018</u>	<u>Additions</u>	<u>Deductions</u>	<u>Balance Dec. 31, 2018</u>	<u>Accumulated Depreciation</u>	<u>Book Value</u>
Lands and Grounds	\$ 161,612	\$ 0	\$ 0	\$ 161,612	\$ 0	\$ 161,612
Infrastructure	62,647,733	1,669,149	0	64,316,882	12,715,135	51,601,747
Buildings and Structures	7,101,150	0	0	7,101,150	3,655,061	3,446,089
Equipment and Tools	6,331,093	310,317	96,337	6,545,073	4,810,872	1,734,201
Work in Progress	<u>2,229,726</u>	<u>2,081,707</u>	<u>1,673,633</u>	<u>2,637,800</u>	<u>0</u>	<u>2,637,800</u>
Total	<u>\$ 78,471,314</u>	<u>\$ 4,061,173</u>	<u>\$ 1,769,970</u>	<u>\$ 80,762,517</u>	<u>\$ 21,181,068</u>	<u>\$ 59,581,449</u>

## PUMPING STATIONS - SEWAGE PUMPING EQUIPMENT

	Station GIS Location	Station Type - Year Updated	Daily Flow - Basin No.	Wet Well Capacity	Pump Cap. GPM each unit	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Force Main Discharge GIS Location	Aux. Power Gen. Set No.
1	PS0880001	Triplex Submersible 6/16/2006	305,280 gal. 1	301,397 gal.	1 - 1700 2 - 1700 3 - 1700	KSB	1 - 83 hp 2 - 83 hp 3 - 83 hp	480 3	105	10"	SA0880119	Permanent Onsite 2779-150kW
2	PS0880002	Duplex Submersible 3/18/2009	2,160 gal. 1	927.6 gal.	1 - 23 2 - 23 1 & 2 - 35	Barnes	1 - 2 hp 2 - 2 hp	230 3	1 - 8 2 - 8	3"	SA0880117	All 60 Amp
3	PD0830003	Triplex Submersible 10/19/1999	397,872 gal. 4	N/A	1 - 265 2 - 1200 3 - 1200	KSB	1 - 10 hp 2 - 34 hp 3 - 34 hp	480 3	1 - 15.1 2 - 47.5 3 - 47.5	16"	SD1210001	Permanent Onsite 125kW
4	PS043004	Duplex Submersible 1/20/2006	3,024 gal. 6	927.52 gal.	1 - 100 2 - 100	KSB	1 - 5 hp 2 - 5 hp	208 3	1 - 15.4 2 - 15.4	4"	SW0430011	All 60 Amp
5	PS043005	Simplex Submersible 1970	720 gal. 6	97.3 gal.	1 - 67.42	Myers	1.9 hp	230 1	5.3	3"	SW0430012	
6	PS0410006	Duplex Submersible 8/12/2012	1,106,064 gal. 16	9,313.8 gal.	1 - 3000 2 - 3000 3 - 3000	RJB	50 hp 50 hp 50 hp C/G 5 hp	480 3	1 - 66.7 2 - 66.7 3 - 66.7 6	24"	CH0460269	Permanent #2772 gen set
6SF	PS0410049	Duplex Submersible		8 mg		KSB	1 - 50 hp 2 - 50 hp	480 3	69.4 69.4	24"		Permanent
7	PS1090007	Duplex Submersible 2006	78,048 gal. 16	N/A	1 - 400 2 - 400	KSB	6.5 hp 6.5 hp	208 3	23 23	6"	SA1090003	All 60 Amp
8	PS1090008	Triplex Submersible 2016	228,960 gal. 15	8,863.8 gal.	1 - 808 2 - 808	KSB	83 hp 83 hp 83 hp	480 3	105 105 105	8"	SA1090003	Permanent SG 250kW
9	PS1090009	Duplex Submersible New motors 2011	165,888 gal. 15	3,941 gal.	1 - 800 2 - 800 3 - 800	KSB Grinder	1 - 7.5 hp 2 - 7.5 hp	208 3	26.3 26.3 17	10"	SA1090015	All 60 Amp
10	PS1100010	Duplex Submersible 1996	N/A 15	N/A	1 - 208 2 - 247.1	KSB	1 - 2.4 hp 2 - 2.4 hp	208 3	8.7	4"	SA0009	All 60 Amp

## PUMPING STATIONS - SEWAGE PUMPING EQUIPMENT

	Station GIS Location	Station Type - Year Updated	Daily Flow - Basin No.	Wet Well Capacity	Pump Cap. GPM each unit	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Force Main Discharge GIS Location	Aux. Power Gen. Set No.
11	PS1110011	Duplex Submersible 1996	N/A 15	N/A	1 - 164.4 2 - 161.4	KSB	1 - 2.4 hp 2 - 2.4 hp	208 3	1 - 8.4 2 - 8.4	4"	SA1110002	All 60 Amp
12	PS1110012	Duplex Submersible 1996	80,640 gal. 15		1 - 170 2 - 170 (approx.)	KSB	1 - 2.4 hp 2 - 2.4 hp	208 3	1 - 6.9 2 - 6.9	4"	SA1110013	All 60 Amp
13	PS0400013	Duplex Submersible 1995	N/A 16	N/A	1 - 650 2 - 650 1 & 2 - 710	KSB	1 - 12.8 hp 2 - 12.8 hp	480 3	1 - 29 2 - 29	12"	SW0400031	2765 2767 200 Amp
14	PS0320014	Duplex Submersible 2013	50,976 gal. 18	1,008 gal.	1 - 230 2 - 230	Flygt	1 - 10 hp 2 - 10 hp	208 3	1 - 9.5 2 - 18.5	8"	SA0310022	2766 2770
15	PS0310015	Triplex Wet well Dry well ~1975	248,688 gal. 18	N/A	1 - 2400 2 - 2400 3 - 2400	Chicago	1 - 40 hp 2 - 40 hp 3 - 40 hp	480 3	54	10"	SW0310030	2765 2767 200 Amp
16	PS0300016	Duplex Submersible 2013	 23		1 - 1400 2 - 1400 1 & 2 - 2300	KSB	32 hp 32 hp	480 3	38.9 38.9	10"	SW0300016	2765 2766 200 Amp
17	PS0290017	Duplex Submersible ~1975 2001	243,072 gal. 23	N/A	1 - 1000 2 - 1000 1 & 2 - 1500	KSB	1 - 10 hp 2 - 10 hp	240 3	1 - 32.5 2 - 32.5	8"	SW0290038	2767 2765 200 Amp
18	PS0180018	Duplex Submersible 1996	N/A 26	N/A	1 - 58.56 2 - 54.92 1 & 2 - 85	KSB	1 - 1.75 hp 2 - 1.75 hp	208 3	1 - 6.9 2 - 6.9	6"	SA0180041	All 60 Amp
19	PS1230019	Duplex Submersible 2012	2,880 gal. 28	409 gal.	1 - 124 2 - 104 1 & 2 - 169	Meyers	1 - 2 hp 2 - 2 hp	240 3	1 - 9.0 2 - 9.0	4"	SW1230034	All 60 Amp
20	PS0090020	Duplex Submersible 2004			1 - 360 2 - 360 1 & 2 - 540	KSB	1 - 5 hp 2 - 5 hp	208 30	1 - 17.7		SA0090036	2765 2767 200 Amp
21	PS0020021	Duplex Submersible 2007	3,600 gal. 30	480 gal.	1 - 125 2 - 125	KSB	1 - 10 hp 2 - 10 hp	208 3	1 - 33.4 2 - 30.1	4"	SA0030035	All 60 Amp

## PUMPING STATIONS - SEWAGE PUMPING EQUIPMENT

	Station GIS Location	Station Type - Year Updated	Daily Flow - Basin No.	Wet Well Capacity	Pump Cap. GPM each unit	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Force Main Discharge GIS Location	Aux. Power Gen. Set No.
22	PS0730022	Duplex Submersible  2002	43,344 gal.  33		1 - 180 2 - 135.3  1-2:337.6	KSB	1 - 10 hp 2 - 3.4 hp	240  3	1 - 29.2 2 - 10.1	4"	SA0730023	2765 2767 200 Amp
23	PS0960023	Duplex Submersible  2014	3,168 gal.  11	295.5 gal.	1 - 100 2 - 100 1 & 2 - 118	KSB	1 - 5 hp 2 - 5 hp	240  1	15.4 15.4	4"	SA0960002	All 60 Amp
24	NEW PIER B	Duplex Submersible  2016			1 - 150 2 - 150 1 & 2 - 165	KSB	1 - 5 hp 2 - 5 hp	208  3	17.7 17.7		SA0400052	60 Amp
25	PS1030025	Duplex Submersible  2001	8,352 gal.  11		1 - 200 2 - 200 1 & 2 - 300	KSB	1 - 15 hp 2 - 15 hp	240  3	1 - 52 2 - 52		SA1000001	2767 2765 200 Amp
26	PS0920026	Duplex Submersible  1999	49,680 gal.  5		1 - 200 2 - 200 1 & 2 - 300	KSB	1 - 16.5 2 - 16.5	240  3	1 - 52 2 - 52	4"	SA0860115	2767  2765
27	PS0420027	Duplex Submersible  1984	4,320 gal.  13	145.9 gal.	1 - 46.8 2 - 49.4 1 & 2 - 73	Myers	1 - 2 hp 2 - 2 hp	240  3	1 - 7.5 2 - 7.5	3"	SA0420086	All 60 Amp
28	PS1170028	Duplex Submersible  1998	17,136 gal.  22	N/A	1 - 159 2 - 159	KSB	1 - 3.4 hp 2 - 3.4 hp	240  3	1 - 10.2 2 - 10.2	4"	SA1170006	All 60 Amp
29	PS0470029	Duplex Submersible  2008	5,184 gal.  13	456.3 gal.	1 - 159 2 - 159 1 & 2 - 238	Barnes	1 - 2 hp 2 - 2 hp	240  3	1 - 9 2 - 9	1.25"	SA0470148	All 60 Amp
30	PS0580030	Duplex Submersible  1989	14,112 gal.  20	377.8 gal.	1 - 120.6 2 - 124.6 1 & 2 - 200	Flygt  CP3102	1 - 5 hp 2 - 5 hp	208  3	1 - 9.2 2 - 9.2	6"	SA0580129	All 60 Amp
31	PS0600031	Duplex Submersible  1989	13,104 gal.  21	658.3 gal.	1 - 200.5 2 - 154.3 1 & 2 - 300	Flygt  CP3102	1 - 5 hp 2 - 5 hp	240  3	1 - 13 2 - 13	6"	SA0600032	All 60 Amp
32	PS0600032	Duplex Submersible  1989	5,472 gal.  21	613.4 gal.	1 - 139 2 - 155 1 & 2 - 300	Flygt  CP3102	1 - 5 hp 2 - 5 hp	240  3	1 - 13 2 - 13	4"	SA0600093	All 60 Amp

## PUMPING STATIONS - SEWAGE PUMPING EQUIPMENT

	Station GIS Location	Station Type - Year Updated	Daily Flow - Basin No.	Wet Well Capacity	Pump Cap. GPM each unit	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Force Main Discharge GIS Location	Aux. Power Gen. Set No.	
33	PS1280033	Duplex Submersible 1995	NA	420 gal.	1 - 140 2 - 140 1 & 2 - 210	KSB	1 - 3.25 hp 2 - 3.25 hp	208	1 - 9.8 2 - 9.8	4"	SA0030061	All 60 Amp	
34	PS0560034	Duplex Submersible 1993	NA 20	433.9 gal.	1 - 166 2 - 156 1 & 2 - 249	Flygt CP3127	1 - 10 hp 2 - 10 hp	480 3	1 - 13 1 - 13	4"	SA0560093	2767 2765 200 Amp	
35	PS0630035	Duplex Submersible 2007			1 - 200 2 - 200 1 & 2 - 300	KSB	1 - 7.5 2 - 7.5	208 3	1 - 26.7 2 - 26.7	4"	SA0610012	All 60 Amp	
36	PS0900036	Duplex Submersible 1992	1,152 gal. 11	980 gal.	1 - 195.4 2 - 196.7	Flygt CP3127X	1 - 10 hp 2 - 10 hp	240 3	1 - 26 2 - 26	Twin 4"	SA0900005	2767 2765 200 Amp	
37	PS0420037	Duplex Submersible 1984	3,888 gal. 13	441.4 gal.	1 - 186.5 2 - 191.9	Flygt CP3085	1 - 3 hp 2 - 3 hp	208 3	1 - 10 2 - 10	4"	SA0420080	All 60 Amp	
38	PS1120038	Duplex Submersible	Operated by Facilities Management										
39	PS0150039	Duplex Submersible 2013	20,880 gal. 23	643.2 gal.	1 - 282 2 - 280 1 & 2 - 359	KSB	1 - 5 hp 2 - 5 hp	208 3	1 - 17.7 2 - 17.7	6"	SA0180001	All 60 Amp	
40	PS0330040	Steel shell dry well with 6' concrete wet well	36,864 gal. 18	534.9 gal.	1 - 286.6 2 - 281.5	Fairbanks Morse	1 - 7.5 hp 2 - 7.5 hp	240 3	1 - 22.6 2 - 22.6	8"	SA0320008	All 60 Amp	
41	PS0680041	Duplex Submersible 2002	8,928 gal. 22		1 - 400 2 - 400	KSB	1 - 15 hp 2 - 15 hp	240 3	1 - 43.5 2 - 43.5	6"	SA0680029	2767 2765 200 Amp	
42	PS1320042	Duplex Submersible 1996	NA 22	NA	NA	KSB	1 - 5 hp 2 - 5 hp	480 3	1 - 7.8 2 - 7.8	4" 6"	SD1180032	2767 2765 200 Amp	
43	PS1280143	Duplex Submersible 2000			1 - 187 2 - 189 3 - 200	KSB	1 - 15 hp 2 - 15 hp	240 3	1 - 43.5 2 - 43.5	6"	SA1280001	2767 2765 200 Amp	

## PUMPING STATIONS - SEWAGE PUMPING EQUIPMENT

	Station GIS Location	Station Type - Year Updated	Daily Flow - Basin No.	Wet Well Capacity	Pump Cap. GPM each unit	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Force Main Discharge GIS Location	Aux. Power Gen. Set No.
44	PS0010144	Duplex Submersible 2000			1 - 179 2 - 173 3 - 200	KSB	1 - 10 hp 2 - 10 hp	208 3	29 29	6"	PS1280143	2767  2765 200 Amp
45	PS0880045	Triplex Submersible 2012		2 MG	1 - 2200 2 - 2200 3 - 2200	KSB	1 - 50 hp 2 - 50 hp 3 - 50 hp	480 3	69 69 69	12"	SW0830136	Permanent on site 2778 100kW
46	PS0090046	Duplex Submersible Grinder ~2005				Barnes	1 - 2 hp 2 - 2 hp	240 3	16 16	1.25"	SA0090132	
47	PS0090047	(in Bethany Crisis Shelter) ~2005				Barnes	1 - 1 hp 2 - 1 hp	240 1	9.2 9.2	1.25"	SA0090083	
48	PS0080048	~2005				Barnes	1 - 2 hp 2 - 2 hp	208 3	9.2 9.2		SW0080024	60 Amp
49	PS0410049	Duplex Submersible		8 MG		KSB	1 - 50 hp 2 - 50 hp	480 3	69.4 69.4	24"		Permanent 2772
50	PW042001	Storage Basin 2007		1 MG	No Pumps	Gravity In Gravity Out						
51	PS0430001	Storage Basin Oct. 2010		3 MG		KSB	1 - 10 hp 2 - 10 hp	208 3	32.7 32.7		SA0930190	Permanent on site 2777
53	PS0060001	Duplex Submersible 2012			1 - 525 2 - 525 1 & 2 - 1100	KSB	1 - 10 hp 2 - 10 hp	208 3	23.2 23.2	6"	SW00800024	2765 2767



## LENGTH OF SANITARY SEWER PIPE IN FEET

### PIPE MATERIAL

Dia. Inches	Force Main	ABS	ACP	BRA	CBR	CI/DI	CIPP	CMP	HDPE	PVC	RCP	UNK	VCP	Totals
1	113													113
1 1/4	330													330
1 1/2	1,575													1,575
2	28,626									651				29,277
3	12,974													12,974
4	25,107					272								25,379
6	12,935						55			1,185		176	5,680	20,031
8	9,211	7,046	5,681			11,722	211,896		1,387	466,445	305	1,887	805,577	1,521,157
9							5,626						20,781	26,407
10	5,452		7,873			3,607	24,513		45	33,901	3,301	638	64,805	144,135
12	4,187		1,724			1,493	14,183		513	21,115	43,738		40,316	127,269
14						163								163
15							7,174			11,872	32,564		25,180	76,790
16	5,972					363			1,000			48		7,383
18				348		79	10,146	1,064		984	12,912		18,514	44,047
20				118		12	1,113				466		2,111	3,820
21						111	439			1,094	6,521	7	654	8,826
22				1,233			1,339						1,223	3,795
24	703			852		747	2,427			693	10,270		4,079	19,771
26				598							984			1,582
27							456				720		530	1,706
28				1,387										1,387
30				499		119	1,284				2,875			4,777
32							1,885				403			2,288
34							561							561
36				1,425		3,059				105	1,760			6,349
42						467			386					853
45				7		460								467
48				191		157	35		1,167		707			2,257
54														0
55						80								80
UNK	5,274									345		312	342	6,273
<b>Total</b>	<b>112,459</b>	<b>7,046</b>	<b>15,278</b>	<b>6,658</b>	<b>1,164</b>	<b>21,782</b>	<b>283,097</b>	<b>1,064</b>	<b>4,498</b>	<b>538,390</b>	<b>117,574</b>	<b>3,020</b>	<b>989,792</b>	<b>2,101,822</b>

Note: The City of Duluth Sanitary Sewer system includes 8,633 manholes.

**Miles of Pipe- 398.1**

ABS - Acrylonitrile Butadiene Styrene  
 ACP - Asbestos Cement Pipe  
 BRA - Brick Arch  
 CBR - Circular Brick Pipe

CI/DI - Cast or Ductile Iron  
 CIPP - Cured in Place Pipe  
 CMP - Corrugated Metal Pipe  
 HDPE - High Density Polyethylene

PVC - Polyvinyl Chloride  
 RCP - Reinforced Concrete Pipe  
 UNK - Unknown  
 VCP - Vitrified Clay Pipe

Note: Pipe quantities are derived from Geographic Information System.

## SANITARY SEWER ACTIVITIES 2018

ACTIVITY	WORK COMPLETED
Sewer calls	168
Cleaning sanitary sewer pipe	485,456 ft
Televising sanitary sewer pipe	165,859 ft
<b>I &amp; I inspections (Inflow and Infiltration Grant Program)</b>	
Homes inspected	1,807
Point of Sale certificates	1,481
Point of Sale waivers	18
Laterals rehabilitated	67
<b>Inspections for connections and disconnections</b>	
Connections	62 services
Disconnections	25 services

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**Clean Water Utility  
Statement of Net Income  
For The Year Ended December 31, 2017 and 2018  
(Unaudited)**

	<u>2017</u>	<u>2018</u>
<b><u>Operating Revenue</u></b>		
Charges for Services	\$ <u>1,625,730</u>	\$ <u>1,637,196</u>
<b>Total Operating Revenue</b>	\$ <u>1,625,730</u>	\$ <u>1,637,196</u>
<b><u>Operating Expense</u></b>		
Clean Water Expense	<u>603,281</u>	<u>813,332</u>
<b>Total Operating Expense</b>	<u>(603,281)</u>	<u>(813,332)</u>
<b>Operating Income</b>	<u>1,022,449</u>	<u>823,864</u>
<b><u>Other Revenue</u></b>		
Interest Income	<u>(240)</u>	<u>(783)</u>
<b>Total Other Revenue</b>	<u>(240)</u>	<u>(783)</u>
<b><u>Other Expenses and Transfers</u></b>		
Transfer to Sewer Fund to Cover Restricted Cash	70,265	70,265
Interest on Long Term Debt	<u>137,301</u>	<u>121,252</u>
<b>Total Other Expenses and Transfers</b>	<u>(207,566)</u>	<u>(191,517)</u>
<b>Net Income or Loss</b>	\$ <u><u>814,643</u></u>	\$ <u><u>631,564</u></u>

**Clean Water Utility  
Statement of Net Assets  
For The Year Ending December 31, 2017 and 2018  
(Unaudited)**

	<b>Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Assets</u></b>		
Cash	\$ 759,616	\$ 805,442
Accounts Receivable (Net)	165,290	159,422
<b>Total Current Assets</b>	<b>\$ 924,906</b>	<b>\$ 964,864</b>
<b><u>Utility Plant</u></b>		
In Service	39,800,499	40,378,099
Construction	577,601	0
Less Accumulated Depreciation	(2,869,428)	(3,432,174)
<b>Total Utility Plant Assets</b>	<b>37,508,672</b>	<b>36,945,925</b>
<b>Total Assets</b>	<b>\$ 38,433,578</b>	<b>\$ 37,910,789</b>

**Clean Water Utility  
Statement of Net Assets  
For The Year Ending December 31, 2017 and 2018  
(Unaudited)**

	<b>Liabilities &amp; Net Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Liabilities</u></b>		
Accounts Payable	\$ 0	\$ 5000
Notes Payable	1,140,000	1,154,000
Interest Payable	46,223	40,345
Unearned Revenue	3,984	3,944
Bonds Payable	13,435	13,989
<b>Total Current Liabilities (Payable from Current Assets)</b>	<b>\$ 1,203,642</b>	<b>\$ 1,217,278</b>
<b><u>Long Term Liabilities</u></b>		
Notes Payable	7,773,000	6,619,000
Bonds Payable	91,413	77,424
<b>Total Long Term Liabilities</b>	<b>7,864,413</b>	<b>6,696,424</b>
<b>Total Liabilities</b>	<b>9,068,055</b>	<b>7,913,702</b>
<b><u>Net Assets</u></b>		
Invested in Capital Assets, Net of Related Debt	28,490,824	29,081,512
Unrestricted	874,699	915,575
<b>Total Net Assets</b>	<b>29,365,523</b>	<b>29,997,087</b>
<b>Total Liabilities and Net Assets</b>	<b>\$ 38,433,578</b>	<b>\$ 37,910,789</b>

**City of Duluth  
Clean Water Utility Bonds and Notes Payable  
December 31, 2018**

	<u>Issued</u>	<u>Issue Date</u>	<u>Final Maturity</u>	<u>Principal Outstanding 12/31/2017</u>	<u>Issued</u>	<u>Draw Down</u>	<u>Retired</u>	<u>Principal Outstanding 12/31/2018</u>
<b>Clean Water Utility</b>								
Bonds								
Revenue and General Obligation	\$ 200,000	2/19/2009	2/1/2024	\$ 104,848	\$ 0	\$ 0	\$ 13,435	\$ 91,413
Bond Total				\$ 104,848	\$ 0	\$ 0	\$ 13,435	\$ 91,413
Notes								
Public Facilities Authority	\$ 796,835	6/17/2009	8/20/2024	\$ 409,000	\$ 0	\$ 0	\$ 55,000	\$ 354,000
Public Facilities Authority	2,414,150	12/10/2009	8/20/2024	1,278,000	0	0	172,000	1,106,000
Public Facilities Authority	3,753,059	8/31/2010	8/20/2025	2,090,000	0	0	250,000	1,840,000
Public Facilities Authority	8,504,224	8/31/2010	8/20/2025	4,663,000	0	0	558,000	4,105,000
Public Facilities Authority	278,149	11/18/2011	8/20/2021	121,000	0	0	30,000	91,000
Public Facilities Authority	265,418	11/30/2011	8/20/2021	113,000	0	0	28,000	85,000
Public Facilities Authority	476,537	9/10/2012	8/20/2022	239,000	0	0	47,000	192,000
Note Total				\$ 8,913,000	\$ 0	\$ 0	\$ 1,140,000	\$ 7,773,000
<b>Total Clean Water Utility Bonds and Notes</b>				<u>\$ 9,017,848</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 1,140,000</u>	<u>\$ 7,864,413</u>

<b>Future Payments:</b>			
<u>Year</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019	\$ 1,167,989	\$ 110,900	\$ 1,278,889
2020	1,185,681	94,426	1,280,107
2021	1,201,236	77,683	1,278,919
2022	1,159,235	60,694	1,219,929
2023	1,125,789	43,989	1,169,778
2024	1,142,483	27,503	1,169,986
2025	882,000	11,096	893,096
	<u>\$ 7,864,413</u>	<u>\$ 426,291</u>	<u>\$ 8,290,704</u>

**Clean Water Fund  
Schedule of Fixed Assets  
Year Ending December 31, 2018**

	<u>Balance Jan. 1, 2018</u>	<u>Additions</u>	<u>Deductions</u>	<u>Balance Dec. 31, 2018</u>	<u>Accumulated Depreciation</u>	<u>Book Value</u>
Lands and Grounds	\$ 525,000	\$ 0	\$ 0	\$ 525,000	\$ 0	\$ 525,000
Infrastructure	39,103,381	577,600	0	39,680,981	3,260,056	36,420,925
Equipment and Tools	172,118	0	0	172,118	172,118	0
Work in Progress	<u>577,601</u>	<u>191</u>	<u>577,792</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>Total</b>	<u>\$ 40,378,100</u>	<u>\$ 577,791</u>	<u>\$ 577,792</u>	<u>\$ 40,378,099</u>	<u>\$ 3,432,174</u>	<u>\$ 36,945,925</u>



# **STORMWATER**

**Stormwater Utility  
Statement of Net Income  
For The Year Ended December 31, 2017 and 2018  
(Unaudited)**

	2017	2018
<b><u>Operating Revenue</u></b>		
Stormwater Charges	\$ 5,254,972	\$ 5,245,031
Other	43,300	40,764
<b>Total Operating Revenue</b>	<b>\$ 5,298,272</b>	<b>\$ 5,285,795</b>
<b><u>Operating Expense</u></b>		
Director's Office	89,934	(94,210)
Capital Related Expenses	502,200	556,170
Utility General Expense	391,040	358,969
Engineering	748,782	727,393
Utility Operations	1,588,749	1,599,699
Customer Service	239,271	255,476
<b>Total Operating Expense</b>	<b>(3,559,976)</b>	<b>(3,403,497)</b>
<b>Operating Income</b>	<b>1,738,296</b>	<b>1,882,298</b>
<b><u>Other Revenue</u></b>		
Transfer from Other Funds		
Street Lighting	5,600	5,600
Interest Income	(5,212)	(4,817)
<b>Total Other Revenue</b>	<b>388</b>	<b>783</b>
<b><u>Other Expenses and Transfers</u></b>		
Bond Interest	15,061	9,291
Transfer to Other Funds		
Non-Capital Improvements	19,383	24,470
Street Sweeping	450,000	450,000
Reimbursement for MIS Programmer	50,450	53,600
<b>Total Other Expenses and Transfers</b>	<b>(534,894)</b>	<b>(537,361)</b>
<b>Net Income or Loss</b>	<b>\$ 1,203,790</b>	<b>\$ 1,345,720</b>

**Stormwater Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Assets &amp; Deferred Outflows</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Assets</u></b>		
Cash	\$ 889,030	\$ 1,509,374
Accounts Receivable	539,700	519,192
Special Assessments	27,987	25,369
Due from Other Funds	12,325	5,456
Inventory	87,563	107,871
Prepays	41,653	1,240,819
<b>Total Current Assets</b>	<b>\$ 1,598,258</b>	<b>\$ 3,408,081</b>
<b><u>Utility Plant</u></b>		
In Service	21,381,274	21,610,518
Construction	554,303	1,253,594
Less Accumulated Depreciation	(4,587,829)	(4,990,327)
<b>Total Utility Plant Assets</b>	<b>17,347,748</b>	<b>17,873,785</b>
<b><u>Other Assets</u></b>		
Special Assessments Receivable	79	0
<b>Total Other Assets</b>	<b>79</b>	<b>0</b>
<b>Total Assets</b>	<b>18,946,085</b>	<b>21,281,866</b>
<b><u>Deferred Outflows</u></b>		
Deferred Loss from Debt Refunding	315	0
Deferred Pension Obligation Outflows	721,003	253,518
Deferred OPEB Outflows	0	256,905
<b>Total Deferred Outflows</b>	<b>721,318</b>	<b>510,423</b>
<b>Total Assets and Deferred Outflows</b>	<b>\$ 19,667,403</b>	<b>\$ 21,792,289</b>

**Stormwater Utility**  
**Statement of Net Assets**  
**For The Year Ending December 31, 2017 and 2018**  
**(Unaudited)**

	<b>Liabilities &amp; Net Assets</b>	
	<b>2017</b>	<b>2018</b>
<b><u>Current Liabilities</u></b>		
Accounts Payable	\$ 49,584	\$ 88,880
Contracts Payable	10,151	189,946
Due to Other Funds	20,602	8,526
Due to Other Governments	1,787	843
Accrued Interest Payable	8,743	6,278
Accrued Salaries Payable	30,245	40,012
Vacations Payable	104,622	112,099
Unearned Revenue	12,361	11,574
Bonds Payable	241,549	130,000
<b>Total Current Liabilities (Payable from Current Assets)</b>	<b>\$ 479,644</b>	<b>\$ 588,158</b>
<b><u>Long Term Liabilities</u></b>		
Pension Liability	1,618,790	1,197,432
Bonds Payable	550,000	420,000
Less Unamortized Bond Discount or Premium	27,015	20,153
<b>Total Long Term Liabilities</b>	<b>2,195,805</b>	<b>1,637,585</b>
<b>Total Liabilities</b>	<b>2,675,449</b>	<b>2,225,743</b>
<b><u>Deferred Inflows</u></b>		
Deferred Pension Obligation Inflows	601,468	382,987
<b>Total Deferred Inflows</b>	<b>601,468</b>	<b>382,987</b>
<b><u>Net Assets</u></b>		
Invested in Capital Assets, Net of Related Debt	16,529,499	17,303,632
Unrestricted	(139,013)	1,879,927
<b>Total Net Assets</b>	<b>16,390,486</b>	<b>19,183,559</b>
<b>Total Liabilities, Deferred Inflows, and Net Assets</b>	<b>\$ 19,667,403</b>	<b>\$ 21,792,289</b>

**City of Duluth  
Stormwater Utility Bonds Payable  
December 31, 2018**

	<u>Issued</u>	<u>Issue Date</u>	<u>Final Maturity</u>	<u>Principal Outstanding 12/31/2017</u>	<u>Issued</u>	<u>Retired</u>	<u>Principal Outstanding 12/31/2018</u>
<b>Stormwater Utility</b>							
Bonds							
Revenue and General Obligation Refunding	\$ 755,000	11/23/2010	2/1/2018	\$ 116,549	\$ 0	\$ 116,549	\$ 0
Revenue and General Obligation Refunding	790,000	11/5/2015	2/1/2022	675,000	0	125,000	550,000
Bond Total				\$ 791,549	\$ 0	\$ 241,549	\$ 550,000
<b>Total Stormwater Utility Bonds</b>				\$ 791,549	\$ 0	\$ 241,549	\$ 550,000

<b>Future Payments:</b>			
<u>Year</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019	\$ 130,000	\$ 13,900	\$ 143,900
2020	135,000	10,575	145,575
2021	140,000	6,450	146,450
2022	145,000	2,175	147,175
	\$ 550,000	\$ 33,100	\$ 583,100

**Stormwater Fund  
Schedule of Fixed Assets  
Year Ending December 31, 2018**

	<u>Balance Jan. 1, 2018</u>	<u>Additions</u>	<u>Deductions</u>	<u>Balance Dec. 31, 2018</u>	<u>Accumulated Depreciation</u>	<u>Book Value</u>
Lands and Grounds	\$ 13,743	\$ 0	\$ 0	\$ 13,743	\$ 0	\$ 13,743
Infrastructure	17,145,021	47,584	0	17,192,605	2,131,874	15,060,731
Buildings and Structures	1,401,897	0	0	1,401,897	406,550	995,347
Equipment and Tools	2,820,613	193,580	11,920	3,002,273	2,451,903	550,370
Work in Progress	<u>554,303</u>	<u>764,042</u>	<u>64,751</u>	<u>1,253,594</u>		<u>1,253,594</u>
<b>Total</b>	<u>\$ 21,935,577</u>	<u>\$ 1,005,206</u>	<u>\$ 76,671</u>	<u>\$ 22,864,112</u>	<u>\$ 4,990,327</u>	<u>\$ 17,873,785</u>

## PUMPING STATIONS - STORMWATER PUMPING EQUIPMENT

	Station Location	Station Type - Year Updated	Pump G.P.M.	Pump Mfg.	Motor HP	Motor Voltage - Phase	Motor F.L.A.	Force Main Size	Discharge Location
1	1801 Minnesota Ave.	Simplex Submersible  1980	760	Flygt CP-3101	5	230  3	13.4	6"	AP1100004
2	13th St. S & St. Louis Ave.	Simplex Submersible  1984	750	Hydromatic S6L	3	230  3	14	6"	AP1090017

## LENGTH OF STORM SEWERS IN FEET

Dia. Inch.	BR	CMP	CPD	CI/DI	HDPE	NCP	PPC	PVC	RCP	STN	TMP	TP	VCP	UNK	Totals
3					5			5				840			850
4			33,340					508,187	1,034			237		134,689	677,487
6		2,860	42	172	9			19,580	76			245	3,121	17,754	43,859
8		262	50	153	33	48		15,066	583			117	794	4,813	21,919
10		1,809	21	304	39		64	4,102	12,663				3,078	17,326	39,406
12		41,455	13,321	1,622	29,974	780		22,270	391,287				1,950	58,386	561,045
13									47						47
14				38					233					301	572
15		6,013	476	25	8,999	170		2,561	169,442				1,218	33,713	222,617
16		89		803	590				212					781	2,475
17														91	91
18		6,925	838		4,910	50		1,972	109,653				1,250	23,632	149,230
20		50		90					1,080					3,116	4,336
21		338		84				49	36,573				1,719	3,593	42,356
22								207	747						954
24	277	2,996	46	184	2,717			612	74,045	160			396	14,794	96,227
26	2,001				160			48	3,864					12,070	18,143
27	75	50			28		84		14,269					936	15,442
28	662								3,531					2,123	6,316
29									336						336
30	155	938	51		2,482				36,782		143			5,334	45,885
31									320						320
32	372				24				2,731					387	3,514
33									711						711
34									666					288	954
36		1,864	232		1,089	460	474		30,993					8,065	43,177
38							43		85						128
40									627	659				56	1,342
42	199	134		304	46		243		10,756				85	260	12,027
44		139							3,641					385	4,165
45							111		331					455	897
46														77	77
48	69	1,238		99	155		568	22	17,414	697	78			3,861	24,201
50	240								284					36	560



## LENGTH OF STORM SEWERS IN FEET

Dia. Inch.	BR	CMP	CPD	CI/DI	HDPE	NCP	PPC	PVC	RCP	STN	TMP	TP	VCP	UNK	Totals
51									996						996
52									393						393
54	94						117		10,494					2,791	13,496
56									89	61				65	215
58									414						414
60	36	745				28	362		4,133	366				1,900	7,570
62									112					58	170
66		110							632	70				265	1,077
72		517					483		2,287	1,533				407	5,227
73														79	79
78									399						399
84	203	478					112	138	616	1,301					2,848
88									128						128
96		106							754	129				224	1,213
108									608						608
120									747	368				258	1,373
122									54						54
128	105	58							63	726				552	1,504
132									170						170
144									127						127
156															0
192									49						49
UNK	725	283	83		109		1,352	2,081	6,451	193				91,914	103,191
<b>Totals</b>	<b>5,213</b>	<b>69,457</b>	<b>48,500</b>	<b>3,878</b>	<b>51,369</b>	<b>1,536</b>	<b>4,013</b>	<b>576,900</b>	<b>954,732</b>	<b>6,263</b>	<b>221</b>	<b>1,439</b>	<b>13,611</b>	<b>445,835</b>	<b>2,182,967</b>

Note: The Storm Sewer system also includes 10,928 catch basins and 5,127 manholes.  
Pipe quantities are derived from Geographic Information System.

**Miles of Pipe 413**

BR - Brick  
 CMP - Corrugated Metal  
 CPD - Corrugated Polyethylene Drainage Pipe  
 CI/DI - Cast or Ductile Iron  
 HDPE - High Density Polyethylene

NCP - Non-Reinforced Concrete Perforated Pipe  
 PPC - Pour-in-Place Concrete  
 PVC - Polyvinyl Chloride  
 RCP - Reinforced Concrete  
 STN - Stone

TMP - Timber Pipe  
 TP - Thermoplastic  
 VCP - Vitrified Clay Pipe  
 UNK - Unknown

## DULUTH CREEKS AND STREAMS

Creek or Stream	Drainage Area (square miles)
Amity	16.60
58th Ave E	0.59
50th Ave E	0.63
47th Ave E	0.36
43rd Ave E	0.59
40th Ave E	0.45
38th Ave E	0.03
37th Ave E	0.13
34th Ave E	0.53
Tischer	7.30
Chester	7.30
Oregon	0.85
Brewery	1.66
Greys	0.63
Clarkhouse	1.00
Buckingham	1.10
Miller	9.70
Coffee	1.76
Merritt	2.30
32nd Ave W	0.73
41st Ave W	0.36
Keene	6.40

Creek or Stream	Drainage Area (square miles)
44th Ave W	0.78
49th Ave W	0.80
62nd Ave W	0.90
Kingsbury	8.60
68th Ave W	0.15
79th Ave W	0.14
82nd Ave W	0.26
Knowlton	1.56
84th Ave W	0.23
86th Ave W	0.08
Gogebic Street	0.34
Lenroot Street	0.61
Stewart Street	1.97
Morgan Park	1.31
U. S. Steel	2.70
Gary Street	0.33
Bowser Street	0.08
Heard Street	0.06
Sargent	3.30
Fond du Lac	0.58
Mission	10.30
Lester River	35.60

## MPCA MS4 CREEK DATA

MS4 Discharge Waterbodies	Water Quality Status	Cause of Impairment	TMDL Development Status	Other
Lake Superior	ORVW Impaired	Mercury (fish tissue) PCB (fish tissue)	Not started	Restricted Discharge Area
St Louis River	Impaired	Mercury (fish tissue and water column) PCB (fish tissue and water column) DDT Dieldrin Dioxin Toxaphene Fecal Coliform Aquatic Macroinvertebrate Bioassessments	TMDL Approved	Area of Concern & Protected Water
Amity Creek	Impaired	Turbidity	Draft TMDL	Trout stream
E Br Amity	Impaired	Turbidity	Draft TMDL	Trout stream
Lester River	Impaired	Mercury (water column) Turbidity	Not started Draft TMDL	Trout stream
Twin Ponds- Buckingham Creek	Impaired (Upper Twin Ponds)	PCB (fish tissue)- Upper Twin Mercury (fish tissue)- South Twin	Not started Not started	Trout stream
Miller Creek	Impaired	Temperature Lack of coldwater assemblage Aquatic Macroinvertebrates E. coli Chloride	TMDL Approved TMDL Approved Draft TMDL Draft TMDL Not started	Trout stream
Chester Creek	Impaired	Mercury E. coli	Not started Draft TMDL	Trout stream
Keene Creek	Impaired	E. coli	Draft TMDL	Trout stream
Kingsbury Creek		Fish Bioassessment Aquatic Macroinvertebrates Turbidity	Not started Draft TMDL	Trout stream
Mission Creek				Trout stream
Sergeant Creek	Impaired	E. coli	Draft TMDL	Trout stream
Stewart Creek	Impaired	E. coli	Draft TMDL	Trout stream
Tischer Creek	Impaired	E. coli	Draft TMDL	Trout stream
58th Ave E				
50th Ave E				

## MPCA MS4 CREEK DATA

MS4 Discharge Waterbodies	Water Quality Status	Cause of Impairment	TMDL Development Status	Other
47th Ave E				
43rd Ave E				
38th Ave E				
37th Ave E				
34th Ave E				
Oregon				
Brewery				
Greys				
Clarkhouse				
Coffee				Trout stream
Merritt	Impaired	E. coli	Draft TMDL	Trout stream
32nd Ave W				
41st Ave W				
44th Ave W				
49th Ave W				
62nd Ave W				
68th Ave W				
79th Ave W				
82nd Ave W				
Knowlton				Trout stream
84th Ave W				
85th Ave W				
Gogebic St				
Lenroot St				
Morgan Park				
U.S. Steel				
Gary St				
Bowser				
Heard St				

\*Not listed as underway in the MPCA status file:

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/impaired-waters-list.html>

## STORMWATER UTILITY ACTIVITIES 2018

ACTIVITY	WORK COMPLETED
Catch basin repair or rehab	103
Culverts repaired or replaced	53
Ditch line (dug or repaired and seeded or sodded)	8,595 ft
Illicit discharges detected and removed	2
Line flushing/cleaning	125,776 ft
Manhole repair or rehab	28
Outfalls inspected	108
Sediment trap cleaning	5,285 cubic yd
Stream restoration	0 project sites
Structural sedimentation basins inspected	100%
Televising storm sewer pipe	124,520 ft
Presentations	73
Radio, television and newspaper articles	165