

**TO: HOVMSD COMMISSION**

**FR: KEVIN SKOGMAN  
DIRECTOR OF OPERATIONS & MAINTENANCE**

**RE: CHEMICAL USE REPORT FOR 2018**

**DT: MARCH 4, 2018**

Attached is the Chemical Use Report for 2018, the quantities plus cost of chemicals. The cost and quantities relative to millions of gallons of wastewater treated at the plant are also provided.

Also included is the natural gas, electricity, and water consumption by the Heart of the Valley MSD and the cost associated with each utility.

District staff and crew continue to maintain and improve efficiencies in chemical quantities, as well as cost relative to the quantity of wastewater treated.

In 2018 there was significant increase in the total gallons of ferric sulfate purchased due an increase in influent flow from wet weather events and loadings coming into the plant. However, the overall cost of ferric sulfate was lower.

The polymer for the ACTI-FLO was slightly higher again due to higher influent flow but also because of an order placed later in December which carried the plant well into 2019.

The polymer for the DAFT had a significant increase due to loadings which was also noticed in the amount of bio-solids that had been land applied in 2018. Some of the increase was also due to an order placed later in December.

CHEMICAL USE REPORT - FOR 2018								
GALLONS	2011	2012	2013	2014	2015	2016	2017	2018
TOTAL INFLUENT FLOW	2,359,297,000	1,844,606,000	2,014,148,000	2,101,955,000	1,887,988,000	2,020,671,000	2,094,199,000	2,127,692,000
**FLOW, MAY - SEPTEMBER	901,167,000	729,640,000	808,344,000	905,023,000	780,667,000	769,869,000	902,376,000	923,535,000
TOTAL \$ COST OF PURCHASES								
TREATMENT CHEMICAL	2011	2012	2013	2014	2015	2016	2017	2018
FERRIC SULFATE - ACTIFLO	\$448,904.10	\$388,000.50	\$345,375.00	\$289,797.00	\$282,560.00	\$306,169.00	271,749.00	\$250,405.00
POLYMER - ACTIFLO	52,973.80	52,659.20	## 44,903.57	67,245.65	41,055.00	48,185.00	41,528.00	46,772.00
POLYMER - DAF	23,414.00	20,930.00	23,920.00	23,920.00	20,930.00	26,910.00	26,910.00	39,184.00
SULFURIC ACID - BIOFILTER	49,639.34	32,851.47	43,709.57	20,458.29	34,709.00	35,368.00	26,291.00	26,159.00
SODIUM HYPOCHLORITE**	12,078.67	13,995.34	18,563.48	14,315.34	14,695.00	14,530.00	19,726.00	21,049.00
SODIUM BISULFATE**	4,940.04	3,867.65	2,630.16	2,632.29	2,326.00	3,943.00	2,902.00	4,682.00
TOTAL	\$591,949.95	\$512,304.16	\$479,101.78	\$418,368.57	\$396,275.00	\$435,105.00	\$389,106.00	\$388,251.00
\$ COST / MGD TREATED								
TREATMENT CHEMICAL	2011	2012	2013	2014	2015	2016	2017	2018
FERRIC SULFATE - ACTIFLO	\$190.27	\$210.34	\$171.47	\$137.87	\$149.66	\$151.49	\$129.76	\$117.00
POLYMER - ACTIFLO	22.45	28.55	22.29	31.99	21.75	23.84	19.83	22.00
POLYMER - DAF	9.92	11.35	11.88	11.38	11.08	13.32	12.84	18.00
SULFURIC ACID - BIOFILTER	21.04	17.81	21.70	9.73	18.38	17.50	12.55	12.00
SODIUM HYPOCHLORITE**	13.40	19.18	22.96	15.82	18.82	18.87	21.86	22.80
SODIUM BISULFATE**	5.48	5.30	3.25	2.91	2.98	5.12	3.22	5.00
TOTAL	\$262.56	\$292.53	\$253.55	\$209.70	\$222.67	\$230.14	\$200.06	\$196.80
TOTAL GALLONS PURCHASED								
TREATMENT CHEMICAL	2011	2012	2013	2014	2015	2016	2017	2018
FERRIC SULFATE - ACTIFLO	231,938	201,651	181,300	149,457	142,252	171,981	179,228	214,017
POLYMER - ACTIFLO	5,030	5,000	## 5,225	6,375	4,677	5,502	4,731	5,225
POLYMER - DAF	2,114	1,925	2,200	2,200	1,930	2,476	2,476	3,575
SULFURIC ACID - BIOFILTER	14,238	10,780	14,031	6,914	11,587	13,067	10,062	10,062
SODIUM HYPOCHLORITE**	8,919	9,188	11,832	9,130	9,220	9,116	12,360	13,156
SODIUM BISULFATE**	2,914	2,204	1,542	1,533	1,399	2,396	1,754	2,838

## CHEMICAL USE REPORT - FOR 2018 CONTINUED

### GALLONS OF CHEMICAL / MGD TREATED

TREATMENT CHEMICAL	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
FERRIC SULFATE - ACTIFLO	98.31	109.32	90.01	71.10	75.35	85.10	85.61	100.6
POLYMER - ACTIFLO	2.13	2.71	2.59	3.03	2.48	2.72	2.26	2.5
POLYMER - DAF	0.90	1.04	1.09	1.05	1.02	1.23	1.18	1.7
SULFURIC ACID - BIOFILTER	6.03	5.84	6.97	3.29	6.14	6.47	4.80	4.7
SODIUM HYPOCHLORITE**	9.90	12.59	14.64	10.09	11.81	11.84	13.69	14.2
SODIUM BISULFATE**	3.23	3.02	1.91	1.69	1.79	1.19	1.94	3.0

\*\* May through September chemical use only

## Emptied bulk tank contents and switched to totes. Gallons estimated.

### GAS, ELECTRIC AND WATER CONSUMPTION

NATURAL GAS	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
Therms	87,515	80,140	101,195	104,315	81,752	70,013	76,013	89,690
Cost \$	\$82,357.54	\$57,132.00	\$60,247.96	\$90,580.17	\$51,661.64	\$38,836.02	\$44,583.71	\$47,502.00

POTABLE WATER	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
Cubic Feet	446,600	542,449	519,381	447,992	385,130	380,677	458,500	476,500
Cost \$	\$23,370	\$27,306.64	\$17,715.85	\$21,010.64	\$20,226.56	\$20,436.52	\$22,278.74	\$22,655.00

ELECTRICAL POWER	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
KWH	7,253,463	7,151,221	6,755,637	7,589,498	7,356,888	7,446,624	7,468,201	7,682,476
COST \$	\$485,898.56	\$518,223.94	\$489,531.09	\$527,632.56	\$534,006.19	\$499,300.03	\$509,871.00	\$508,330.00
KWH / MGD Treated	3,074.4	3,876.8	3,354.1	3,610.7	3,896.68	3,684.62	3,566.14	3,610