

**TO: HOVMSD COMMISSION**

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

**RE: CHEMICAL USE REPORT FOR 2022**

**DT: MAY 6, 2023**

Attached is the Chemical Use Report for 2022; quantities plus cost of chemicals. The cost and quantities relative to millions of gallons of wastewater treated at the plant are also provided.

Included is the natural gas, electricity, and water consumption and the cost associated with each utility. Also included is Removal Efficiency (page 3); influent & effluent pounds on solids, phosphorus, ammonia and BOD along with total pounds removed prior to discharge and the percent removed on a yearly basis.

The increases to some of the chemical prices for 2022 made quite a difference in cost of chemicals purchased. The increase in cost of ferric sulfate and sodium hypochlorite were the two main factors. The plant went from 48 truckloads in 2021 to 50 truckloads of ferric in 2022. With these increases the cost per million gallons treated changed substantially.

Overall, the numbers turned out well for 2022 even with the increases in chemical costs.

## 2022 CHEMICAL USE REPORT

GALLONS	2015	2016	2017	2018	2019	2020	2021	2022
TOTAL INFLUENT FLOW	1,887,988,000	2,020,671,000	2,094,199,000	2,127,692,000	2,493,211,300	2,170,385,000	2,302,155,000	2,324,470,000
**FLOW, MAY - SEPTEMBER	780,667,000	769,869,000	902,376,000	923,535,000	1,015,345,000	911,676,000	1,101,997,000	1,028,457,000
<b>TOTAL \$ COST OF PURCHASES</b>								
TREATMENT CHEMICAL	2015	2016	2017	2018	2019	2020	2021	2022
FERRIC SULFATE - ACTIFLO	\$282,560.00	\$306,169.00	271,749.00	\$250,405.00	\$327,298.00	\$379,168.00	\$329,078.00	\$416,948.00
POLYMER - ACTIFLO	41,055.00	48,185.00	41,528.00	46,772.00	39,909.00	44,871.00	\$49,107.00	\$44,965.00
POLYMER - DAF	20,930.00	26,910.00	26,910.00	39,184.00	30,997.00	37,257.00	\$41,034.00	\$41,561.00
SULFURIC ACID - BIOFILTER	34,709.00	35,368.00	26,291.00	26,159.00	36,122.00	31,631.00	\$57,259.00	\$50,078.00
SODIUM HYPOCHLORITE**	14,695.00	14,530.00	19,726.00	21,049.00	29,565.00	35,922.00	\$31,117.00	\$47,538.00
SODIUM BISULFATE**	<u>2326.00</u>	<u>3,943.00</u>	<u>2902.00</u>	<u>4682.00</u>	<u>5455.00</u>	<u>5641.00</u>	<u>\$10,466.00</u>	<u>\$9,520.00</u>
TOTAL	\$396,275.00	\$435,105.00	\$389,106.00	\$388,251.00	\$469,346.00	\$534,490.00	\$518,061.00	\$610,610.00
<b>\$ COST / MGD TREATED</b>								
TREATMENT CHEMICAL	2015	2016	2017	2018	2019	2020	2021	2022
FERRIC SULFATE - ACTIFLO	\$149.66	\$151.49	\$129.76	\$117.00	\$131.28	\$174.70	\$142.94	\$179.37
POLYMER - ACTIFLO	21.75	23.84	19.83	22.00	16.01	20.67	\$21.33	\$19.34
POLYMER - DAF	11.08	13.32	12.84	18.00	12.43	17.17	\$17.82	\$17.87
SULFURIC ACID - BIOFILTER	18.38	17.50	12.55	12.00	14.49	14.57	\$24.87	\$21.54
SODIUM HYPOCHLORITE**	18.82	18.87	21.86	22.80	29.12	39.40	\$28.24	\$46.22
SODIUM BISULFATE**	<u>2.98</u>	<u>5.12</u>	<u>3.22</u>	<u>5.10</u>	<u>5.37</u>	<u>6.19</u>	<u>\$9.50</u>	<u>\$9.26</u>
TOTAL	\$222.67	\$230.14	\$200.06	\$196.90	\$208.70	\$272.70	\$244.70	\$293.60
<b>TOTAL GALLONS PURCHASED</b>								
TREATMENT CHEMICAL	2015	2016	2017	2018	2019	2020	2021	2022
FERRIC SULFATE - ACTIFLO	142,252	171,981	179,228	178,333	217,049	205,853	173,953	178,525
POLYMER - ACTIFLO	4,677	5,502	4,731	5,225	4,402	4,952	5,225	4,677
POLYMER - DAF	1,930	2,476	2,476	3,575	2,751	3,301	3,575	3,577
SULFURIC ACID - BIOFILTER	11,587	13,067	10,062	10,062	13,336	11,729	15,022	13,497
SODIUM HYPOCHLORITE**	9,220	9,116	12,360	13,156	16,628	18,360	13,816	14,726
SODIUM BISULFATE**	1,399	2,396	1,754	2,838	3,078	3,051	4,486	3,205

## 2022 CHEMICAL USE REPORT

GALLONS OF CHEMICAL / MGD TREATED									
TREATMENT CHEMICAL	2015	2016	2017	2018	2019	2020	2021	2022	
FERRIC SULFATE - ACTIFLO	75.35	85.10	85.61	85.2	87.1	94.8	75.6	76.80	
POLYMER - ACTIFLO	2.48	2.72	2.26	2.5	1.77	2.28	2.27	2.01	
POLYMER - DAF	1.02	1.23	1.18	1.7	1.10	1.52	1.55	1.54	
SULFURIC ACID - BIOFILTER	6.14	6.47	4.80	4.7	5.36	5.4	6.53	5.81	
SODIUM HYPOCHLORITE**	11.81	11.84	13.69	14.2	16.38	20.14	12.54	14.32	
SODIUM BISULFATE**	1.79	1.19	1.94	3.0	3.03	3.35	4.07	3.12	
** May through September chemical use only									
## Emptied bulk tank contents and switched to totes. Gallons estimated.									
<b>GAS, ELECTRIC AND WATER CONSUMPTION</b>									
NATURAL GAS	2015	2016	2017	2018	2019	2020	2021	2022	
Therms	81,752	70,013	76,013	89,690	82,885	200,826	200,641	141,855	
Cost \$	\$51,661.64	\$38,836.02	\$44,583.71	\$47,502.00	\$42,814.71	\$36,413.73	\$35,034.20	\$49,789	
\$ Cost / MGD Treated	-	-	-	\$22.33	\$17.00	\$16.78	\$15.22	\$21.42	
Therms / MGD Treated	-	-	-	-	-	92.53	87.15	61.03	
POTABLE WATER	2015	2016	2017	2018	2019	2020	2021	2022	
Cubic Feet	385,130	380,677	458,500	476,500	491,400	464,900	502,581.00	359,324	
Cost \$	\$20,226.56	\$20,436.52	\$22,278.74	\$22,655.00	\$24,437.90	\$21,920.54	\$24,462.34	\$19,996	
\$ Cost / MGD Treated	-	-	-	\$10.65	\$9.80	\$10.10	\$10.63	\$8.60	
Cubic Feet / MGD Treated	-	-	-	224	197	214	218	155	
ELECTRICAL POWER	2015	2016	2017	2018	2019	2020	2021	2022	
KWH	7,356,888	7,446,624	7,468,201	7,682,476	8,051,500	7,957,863	8,189,111	8,307,941	
COST \$	\$534,006.19	\$499,300.03	\$509,871.00	\$508,330.00	\$504,393.43	\$494,540.75	\$537,709.43	\$598,456	
KWH / MGD Treated	3,896.68	3,684.62	3,566.14	3,610	3,229.38	3,664.85	3,557.08	3,574.08	
\$ Cost / MGD Treated	-	-	-	\$238.91	\$202.31	\$227.86	\$233.56	\$257.46	

## 2022 CHEMICAL USE REPORT

### **REMOVAL EFFICIENCY**

					<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<b>SOLIDS</b>								
Raw Influent					-	-	3,792,868	3,702,791
Final Effluent					-	-	131,927	179,960
Total Pounds Removed					-	-	3,660,941	3,522,831
Percent Removed					-	-	97%	95%

					<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<b>PHOSPHORUS</b>								
Raw Influent					75,998	84,460	91,720	88,454
Final Effluent					3,648	5,006	3,434	3,695
Total Pounds Removed					72,350	79,454	88,286	84,759
Percent Removed					95%	94%	96%	96%

					<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<b>AMMONIA</b>								
Raw Influent					-	-	705,049	653,175
Final Effluent					-	-	4,789	7,348
Total Pounds Removed					-	-	700,260	645,827
Percent Removed					-	-	99%	99%

					<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<b>BOD</b>								
Raw Influent					-	-	5,006,411	5,129,073
Final Effluent					-	-	110,270	130,962
Total Pounds Removed					-	-	4,896,141	4,998,111
Percent Removed					-	-	98%	97%
