210 Shafor Water Plant

120 Springhouse Water Plant

2019

WATER PRODUCTION

ANNUAL REPORT
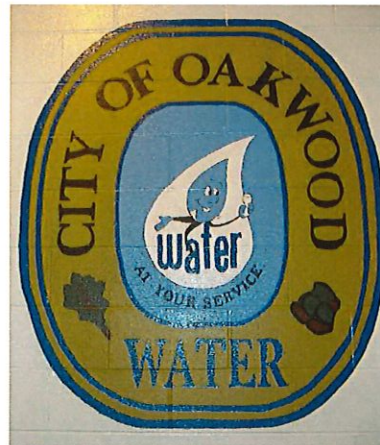
January 31, 2020

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I.   INTRODUCTION/BRIEF HISTORY

This report provides a summary of the operations of the city of Oakwood water system for the year 2019. It includes the following items:

- Water Pumpage Statistics
- Water Monitoring and Testing (OEPA Compliance)
- Water System Maintenance
- Budget Summary

Brief History

Prior to 1954, the city of Oakwood purchased all of its water from outside sources, primarily the city of Dayton. At that time, the Ohio Department of Health regulated public water systems and the rules and regulations were fairly limited, thus the price of water was relatively low. In 1954 Oakwood drilled two wells at 120 Springhouse Road. This site became known as the "Springhouse Wellfield." This was the beginning of Oakwood's quest to become water independent.

From 1954 to 1965 Oakwood pumped water from these two wells. This proved so successful that three new wells (Wells #1, 2 & 3) were drilled to a greater depth so as to sustain heavier pumping. The original two wells were abandoned. This increased water production lowered Oakwood's reliance on Dayton water. The water was chlorinated to ensure that it was free from bacteria.

In 1978 a second well field was developed at the south end of Firwood Drive off Irving Avenue in Dayton. It was referred to as the "Firwood Wellfield." Between 1978 and 1988 three production wells (Wells #4, 5 & 6) were drilled at this location. The groundwater resources in this area proved to be abundant. In 1985 Oakwood purchased land on the north side of Irving Avenue to build a soccer field. In 1986 Well #7 was drilled adjacent to the soccer field. This site became known as the "Soccer Field Wellfield".

Prior to using water from the Firwood Wellfield, the Ohio EPA required the City to construct an Iron and Manganese Removal Plant due to elevated levels of iron and manganese in Well #5. The plant was constructed in 1980 at the 210 Shafor Boulevard Service Yard. This plant also housed the chlorination system for Wells #4, 5, 6 & 7.

In 1987 Oakwood explored the possibility of softening the City water. In 1988 plans were completed for the water softening plant at 210 Shafor Boulevard. The plant was constructed in 1989. In 1991 plans were completed for the water softening plant at 120 Springhouse Road and the plant was built in 1992. Both water softening plants use the "Ion Exchange" softening process. This is the same process used in most private home water softening units. The softening system removes hardness, primarily calcium and magnesium. Periodically the softening units require backwashing and regenerating of the resin bed filters.

In 2004, Oakwood drilled Well #8 in the Firwood Wellfield and placed it into service. This well was needed to further enhance Oakwood's water independence.

Water Pumpage Statistics

The reports and tables in Sections III & IV provide monthly and yearly totals of the city of Oakwood's 2019 water pumpage. They include monthly and yearly totals for all wells, the Shafor plant, Springhouse plant and water purchased from outside sources (i.e., city of Dayton and Montgomery County). In 2019, Oakwood was able to provide 100% of its own water for daily usage, even for fire responses.

II. Water Monitoring and Testing (OEPA Compliance)

The following samples were collected at the entry points of the water system at the 120 Springhouse and the 210 Shafor Water Treatment Plants as required by the Ohio EPA:

- Nitrates, collected June 11, 2019
- Total Trihalomethanes (TTHM), collected July 1, 2019
- Total Haloacetic Acids (HAA5), collected July 1, 2019

Samples for Lead and Copper were collected from 20 Oakwood properties between June 8 and June 19, 2019.

All samples tested as required by the Ohio EPA and under the 2019 Ohio EPA Chemical Monitoring schedule were in compliance with the Safe Drinking Water Act. Table1 on page 5 lists the results of the lead and copper sampling program. Table 2 on pages 6 – 7 compares Oakwood's water with EPA standards. All results are from the most recent samples taken. Some samples are only required to be taken every three years. The monthly routine sampling consists of the following tests:

- *10 bacteriological samples per month from Distribution System.*
- *2 sodium samples per month from Distribution System.*
- *1 sodium sample per month from each Plant.*
- *1 iron and manganese sample per week from each Plant.*
- *Hardness samples daily from each Plant and Distribution System.*
- *Free and total chlorine samples daily from each Plant as well as from the Distribution System.*
- *1 chloride and pH sample per month from each Plant (NPDES Stormwater Permit requirement).*
- *1 Total Dissolved Solids sample per month from each Plant (NPDES Stormwater Permit requirement).*

General test results include:

- **All 120 bacteriological samples tested negative for coliform bacteria.**
- **Raw water sodium averaged 98 mg/L at 210 Shafor, down from 107 mg/L in 2018; and 131 mg/L at 120 Springhouse, down from 137 mg/L in 2018.**
- **System water sodium averaged 300 mg/L, down from 352 mg/L in 2018.**
- **Iron at both plant effluents averaged <0.1 mg/L.**
- **Manganese at both plant effluents averaged <0.01 mg/L.**
- **System water hardness at 210 Shafor averaged 169 mg/L (9.9 GPG).**
- **System water hardness at 120 Springhouse averaged 170 mg/L (9.9 GPG).**

TABLE 1
OAKWOOD 2018 LEAD & COPPER TESTING RESULTS

	EPA Copper Action Level (ug/L)	1,350
	SAMPLE NUMBER	COPPER RESULTS (ug/L)
1	LC228	40.5
2	LC201	50.5
3	LC225	56
4	LC223	78
5	LC218	92.9
6	LC224	106
7	LC210	114
8	LC222	117
9	LC226	132
10	LC229	134
11	LC213	152
12	LC221	166
13	LC216	171
14	LC202	183
15	LC203	204
16	LC229	214
17	LC214	229
18	LC205	233
19	LC209	236
20	LC227	287

	EPA Lead Action Level (ug/L)	15.5
	SAMPLE NUMBER	LEAD RESULTS (ug/L)
1	LC226	BDL
2	LC201	0.85
3	LC214	0.99
4	LC225	1.0
5	LC229	1.1
6	LC228	1.1
7	LC224	1.2
8	LC210	1.4
9	LC205	1.5
10	LC216	1.7
11	LC203	1.7
12	LC223	2.0
13	LC209	2.6
14	LC221	2.8
15	LC222	2.8
16	LC213	3.6
17	LC229	4.4
18	LC202	8.2
19	LC218	8.9
20	LC227	12.4

BDL: Below Detectible Limits

To be in compliance with the OEPA Lead & Copper Rule, sample results must be below the set action level for lead and copper, as listed in the table above, at the 90th percentile. Oakwood's 90th percentile is highlighted in light blue above.

TABLE 2
OAKWOOD 2018 WATER TESTING RESULTS

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
VOLATILE ORGANIC COMPOUNDS	ug/L	ug/L	ug/L	
Benzene	<0.5	<0.5	5.0	6/19/18
Carbon tetrachloride	<0.5	<0.5	5.0	6/19/18
1,1-Dichloroethane	<0.5	<0.5	7.0	6/19/18
1,2-Dichloroethane	<0.5	<0.5	5.0	6/19/18
cis-1,2-Dichloroethene	<0.5	<0.5	70.0	6/19/18
Dichloromethane	<0.5	<0.5	5.0	6/19/18
1,2-Dichloropropane	<0.5	<0.5	5.0	6/19/18
Ethylbenzene	<0.5	<0.5	700.0	6/19/18
Styrene	<0.5	<0.5	100.0	6/19/18
Toluene	<0.5	<0.5	1000.0	6/19/18
1,1,1-Trichloroethane	<0.5	<0.5	200.0	6/19/18
Tetrachloroethene	<0.5	<0.5	5.0	6/19/18
1,2,4-Trichlorobenzene	<0.5	<0.5	70.0	6/19/18
Trichloroethene	<0.5	<0.5	5.0	6/19/18
1,1,2-Trichloroethane	<0.5	<0.5	5.0	6/19/18
Vinyl chloride	<0.5	<0.5	2.0	6/19/18
Xylenes, Total	<0.5	<0.5	10000.0	6/19/18
Bromodichloromethane	<0.5	<0.5	TTHM*	6/19/18
Bromoform	<0.5	0.52	TTHM	6/19/18
Chloroform	<0.5	<0.5	TTHM	6/19/18
Dibromochloromethane	<0.5	0.73	TTHM	6/19/18
Bromobenzene	<0.5	<0.5	NR**	6/19/18
Bromochloromethane	<0.5	<0.5	NR	6/19/18
Bromomethane	<0.5	<0.5	NR	6/19/18
n-Butylbenzene	<0.5	<0.5	NR	6/19/18
sec-Butylbenzene	<0.5	<0.5	NR	6/19/18
tert-Butylbenzene	<0.5	<0.5	NR	6/19/18
Chlorobenzene	<0.5	<0.5	NR	6/19/18
Chloroethane	<0.5	<0.5	NR	6/19/18
Chloromethane	<0.5	<0.5	NR	6/19/18
2-Chlorotoluene	<0.5	<0.5	NR	6/19/18
4-Chlorotoluene	<0.5	<0.5	NR	6/19/18
Dibromomethane	<0.5	<0.5	NR	6/19/18
1,2-Dichlorobenzene	<0.5	<0.5	NR	6/19/18
1,3-Dichlorobenzene	<0.5	<0.5	NR	6/19/18
1,4-Dichlorobenzene	<0.5	<0.5	NR	6/19/18
Dichlorodifluoromethane	<0.5	<0.5	NR	6/19/18
1,1-Dichloroethene	<0.5	<0.5	NR	6/19/18
trans-1,2-Dichloroethene	<0.5	<0.5	NR	6/19/18
1,3-Dichloropropane	<0.5	<0.5	NR	6/19/18
2,2-Dichloropropane	<0.5	<0.5	NR	6/19/18
1,1-Dichloropropene	<0.5	<0.5	NR	6/19/18
1,3-Dichloropropene	<0.5	<0.5	NR	6/19/18
Hexachlorobutadiene	<0.5	<0.5	NR	6/19/18
Isopropylbenzene	<0.5	<0.5	NR	6/19/18
Naphthalene	<0.5	<0.5	NR	6/19/18

*   TTHM: Trihalomethanes regulated separately as Disinfection Byproducts
** NR: Not Regulated

TABLE 2 (cont.)

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
SYNTHETIC ORGANIC CHEMICALS	ug/L	ug/L	ug/L	
Alachlor	<0.2	<0.2	2.0	6/27/17
Atrazine	<0.3	<0.3	3.0	6/27/17
Simazine	<0.35	<0.35	4.0	6/27/17

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
INORGANIC COMPOUNDS	ug/L	ug/L	ug/L	
Antimony, total	<4.0	<4.0	6.0	6/5/18
Barium, total	0.0793	0.0581	2.0	6/5/18
Beryllium, total	<1.0	<1.0	4.0	6/5/18
Cadmium, total	<1.0	0.780	5.0	6/5/18
Chromium, total	<10.0	<10.0	100.0	6/5/18
Cyanide, total	<5.0	<5.0	200.0	6/5/18
Fluoride,total	0.2	0.2	4.0	6/5/18
Mercury, total	<0.5	<0.5	2.0	6/5/18
Nickel, total	<20.0	<20.0		6/5/18
Selenium, total	<5.0	<5.0	50.0	6/5/18
Thallium, total	<1.5	<1.5	2.0	6/5/18

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Wonderly	Ridgeway		
TOTAL TRIHALOMETHANES	ug/L	ug/L	ug/L	
Chloroform	0.85	<0.5		7/1/19
Bromoform	3.3	1.3		7/1/19
Bromodichloromethane	2.5	1.3		7/1/19
Dibromochloromethane	4.9	2.5		7/1/19
Total TTHM's	11.5	5.1	80.0	7/1/19

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Wonderly	Ridgeway		
FIVE HALOACETIC ACIDS	ug/L	ug/L	ug/L	
Dibromoacetic Acid	1.6	<1.00		7/1/19
Dichloroacetic Acid	<1.00	<1.00		7/1/19
Monobromoacetic Acid	<1.00	<1.00		7/1/19
Monochloroacetic Acid	<2.00	<2.00		7/1/19
Trichloroacetic Acid	<1.00	<1.00		7/1/19
Total HAA5's	1.6	1.0	60.00	

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
MISCELLANEOUS	mg/L	mg/L	mg/L	
Nitrate	1.2	1.5	10	6/11/19

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
RADIOLOGICAL	pci/L	pci/L	pci/L	
Alpha, total	<3	<3	15	6/5/18
Radium-228	<1.0	<1.0	5	6/5/18

The Oakwood water plants reduced the hardness level by 56% on the average while the sodium content of the water increased by 136% on the average during 2019. Both of these percentages are within normal operating ranges.

III.   WELL PUMPAGE REPORT AND CHARTS

The eight production wells produced 506,086,000 gallons of water in 2020, which is an average of 1,387,000 gallons per day.   In 2019, the eight production wells produced 507,833,000 gallons of water. This represents a .35% decrease in raw water produced in 2020. The 2020 maximum day well production was on July 6 at 2,632,000 gallons. It is common that our highest usage occurs during the summer months when many property owners irrigate their lawns. The 2020 minimum day well production was on September 29 at 682,000 gallons. The minimum day production normally occurs in the fall or winter.

Out of the 506,086,000 gallons pumped in 2020, 33,613,000 gallons were used to either backwash the iron and manganese filters or regenerate the softening units at 210 Shafor and 120 Springhouse. This represents 6.64% of the total water pumped for the year, a 2.56% decrease from 2019. The primary flow meters were replaced in 2020 and accurately report plant production.

Chart 1 below and Chart 2 on the next page show the 2020 water table draw down compared to 2017, 2018 and 2019.
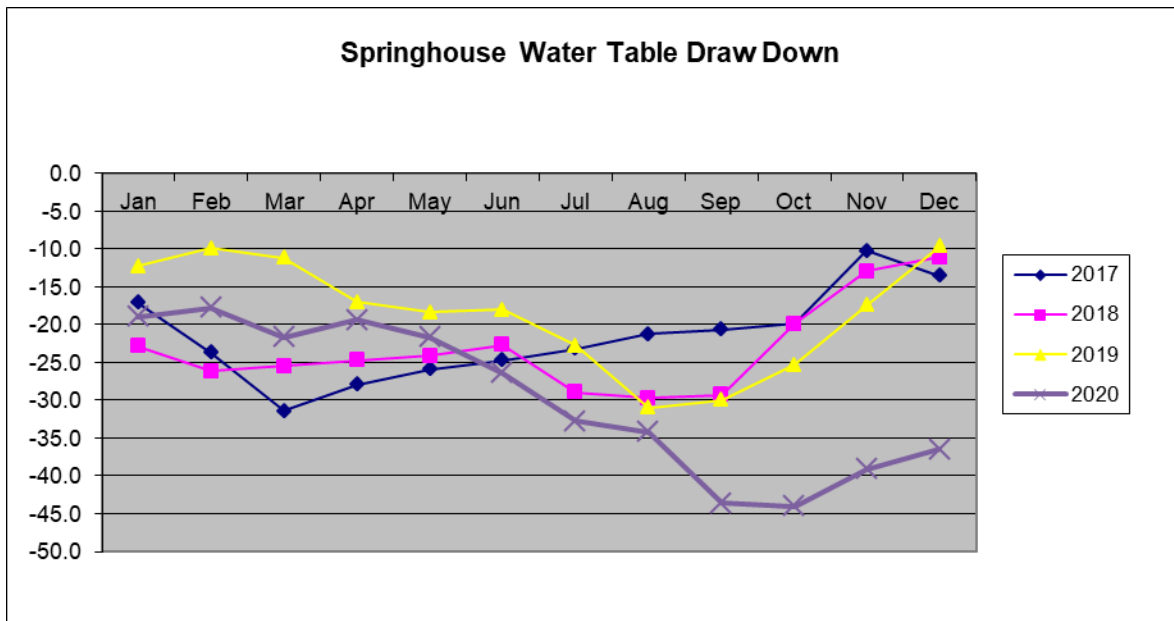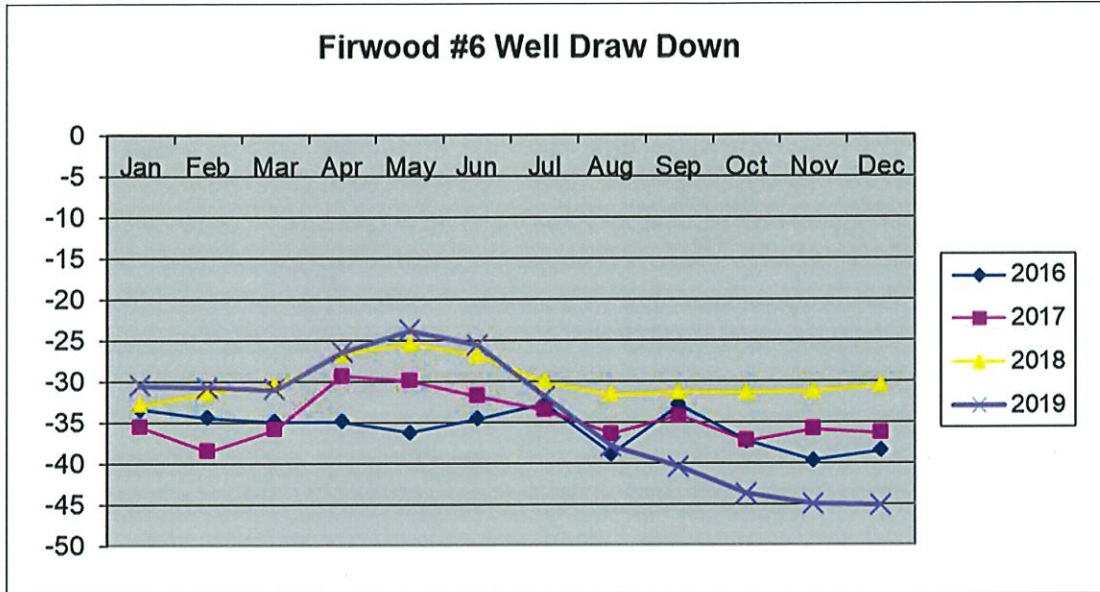
CHART 1

CHART 2

Firwood #6 Well Draw Down

The aquifer water levels in the wells have not been heavily stressed for many years due to relatively mild summers with plenty of rain. At the end of 2019 we experienced a mild drought for several months resulting in the drop in the water table at the end of 2019. The rest of the wells at Firwood (Wells #4, #7 and #8) experienced drawdowns similar to Well #6.

Table 3 on the next page shows a comparison of total well production in gallons per well per month for 2018 and 2019.

IV.   TOTAL PUMPAGE TO SYSTEM REPORT AND CHARTS

The City was able to produce water to meet 100% of the total demand of 461,177,000 gallons (1,263,000 avg/day). The maximum day system usage was on August 4 at 2,167,000 gallons and the minimum day system usage was on January 11 at 716,000 gallons. No fire events (i.e., extra demand) occurred in 2019 that required city of Dayton or Montgomery County water.

TABLE 3

CITY OF OAKWOOD WATER DEPARTMENT
MONTHLY WELL PUMPAGE RECORD

Oakwood, Ohio

YEAR: 2019
MONTH: December

MONTH	WELL #1		WELL #2		WELL #3		WELL #4		WELL #5		WELL #6		WELL #7		WELL #8		MONTHLY TOTAL		ANNUAL TOTAL	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
JANUARY	23.768	16.433	0.104	0.173	0.731	0.000	0.000	9.701	0.000	4.292	12.218	5.043	0.180	0.000	0.240	0.000	37.241	35.642	37.241	35.642
FEBRUARY	22.238	14.744	0.000	0.000	1.784	0.000	0.000	12.591	0.000	9.611	12.053	0.000	0.580	0.000	0.000	0.000	36.655	36.946	73.896	72.588
MARCH	25.185	20.284	0.000	0.049	0.643	0.057	0.000	13.547	0.000	0.861	12.217	5.142	1.877	0.000	0.000	0.000	39.922	39.940	113.818	112.528
APRIL	24.213	24.643	0.043	0.104	1.656	0.340	0.000	10.723	0.000	0.115	12.060	2.959	1.365	0.000	0.204	0.000	39.541	38.884	153.359	151.412
MAY	25.264	25.138	0.268	0.141	2.152	0.442	0.000	7.457	0.000	1.839	14.410	6.410	2.175	0.000	0.836	0.000	45.105	41.427	198.464	192.839
JUNE	24.835	23.918	0.245	0.472	1.792	0.371	0.000	0.015	0.000	8.045	14.840	14.309	3.724	0.000	0.946	0.000	46.382	47.130	244.846	239.969
JULY	23.667	24.852	0.000	2.073	4.420	1.252	0.000	4.444	0.000	5.293	15.205	14.857	5.378	0.000	3.225	0.000	51.895	52.771	296.741	292.740
AUGUST	23.554	24.236	0.000	2.254	2.141	4.529	0.000	7.056	0.000	7.755	15.151	7.179	4.218	0.000	0.933	0.000	45.997	53.009	342.738	345.749
SEPTEMBER	20.432	22.542	0.000	0.604	1.120	4.092	0.000	7.623	2.092	8.435	12.489	6.433	2.838	0.000	1.029	4.308	40.000	54.037	382.738	399.786
OCTOBER	14.918	18.756	0.045	0.057	0.246	0.878	0.000	6.907	21.586	4.011	1.223	1.615	0.000	0.000	0.000	9.369	38.018	41.593	420.756	441.379
NOVEMBER	13.256	2.500	0.121	0.000	0.001	0.000	0.000	8.781	20.006	6.079	0.871	3.942	0.000	0.000	0.000	10.224	34.255	31.526	455.011	472.905
DECEMBER	15.260	17.307	0.031	0.051	0.000	0.159	0.000	4.708	2.286	1.822	13.585	0.000	0.000	0.000	0.000	10.931	31.162	34.978	486.173	507.883
ANNUAL	256.590	235.353	0.857	5.978	16.686	12.120	0.000	93.553	45.970	58.158	136.322	67.889	22.335	0.000	7.413	34.832	486.173	507.883	486.173	507.883
TOTALS	52.78%	46.34%	0.18%	1.18%	3.43%	2.39%	0.00%	18.42%	9.46%	11.45%	28.04%	13.37%	4.59%	0.00%	1.52%	6.86%	100.00%	100.00%		

AVG. DAY (2018 YTD): _____1.332_ M.G.D.

AVG. DAY (2019 YTD): _____1.391_ M.G.D.

	2018				2019		
	Springhouse wells	274.133 MGD	56.39%		Springhouse wells	253.451 MGD	49.90%
	Firwood wells	212.040 MGD	43.61%		Firwood wells	254.432 MGD	50.10%

Table 4 below shows a comparison of the water resources needed to meet the City's demands in 2018 and 2019.

TABLE 4
WATER RESOURCE RECORD

Location	2018 Gallons	2018%	2019 Gallons	2019%
Oakwood WTPs	422,963,000	99.58%	426,781,000	100%
Dayton/Shroyer	1,798,000	0.419%	0	0%
Dayton/Springhouse	19,000	0.004%	0	0%
County/Fairmont	0	0%	0	0%
TOTALS:	424,780,000	100%	426,781,000	100%

There was an increase in demand of 2,001,000 gallons of water in 2019 compared to 2018 (0.47%). Table 5 on the next page shows the comparison in total gallons pumped to the system per month for 2018 and 2019.

V. MAINTENANCE

The following is a summary of the larger maintenance projects that took place in 2019.

January:	Replace motor on #4 well
	Install starter timers on #4, #5 and #8 wells
February:	Replace old lights with LED lighting at 120 Springhouse WTP
	Rebuild #3 softening stager at 120 Springhouse
March:	Replace chlorine injector and curb stop at 120 Springhouse WTP
	Replace chlorine injector and curb stop at 210 Shafor WTP
April:	Cleaned both salt bins at 210 Shafor
	Repair chlorine leak at 210Shafor WTP
May:	Replaced chlorine tank and containment at 120 Springhouse WTP
	Replaced potassium permanganate tank and containment at filter plant
	Cleaned #1 salt bin at 120 Springhouse
June:	Replaced chlorine tank and containment at 210 Shafor WTP
July:	New electric transformer for Shroyer Road Pump Station
	Cleaned brine headers #2 salt bin at 120 Springhouse WTP
August:	New pump and motor for #5 Well
September:	New pump and motor for #8 Well
	Installed 2 new VFD's at water tower pump station
October:	Cleaned sediment from bottom of standpipe
November:	Painted inside of all 3 softeners at 120 Springhouse
	Replaced resin in all 3 softeners at 120 Springhouse
December:	New pump and motor for #7 Well

All preventive maintenance was performed on schedule and all day-to-day repairs were performed as needed. All parts inventories are up-to-date in case of emergencies.

TABLE 5

CITY OF OAKWOOD WATER DEPARTMENT
MONTHLY PUMPAGE TO SYSTEM RECORD

Oakwood, Ohio

YEAR: 2019
MONTH: December

MONTH	SPRINGHOUSE		FIRWOOD		DAYTON/SHROYER		FAIRMONT		DAYTON/SPRING.		MONTHLY TOTAL		ANNUAL TOTAL	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
JANUARY	21.825	15.721	11.107	14.971	0.286	0.000	0.000	0.000	0.000	0.000	33.218	30.692	33.218	30.692
FEBRUARY	20.328	13.854	10.664	15.812	0.000	0.000	0.000	0.000	0.000	0.000	30.992	29.666	64.210	60.358
MARCH	21.441	19.158	12.267	16.120	0.000	0.000	0.000	0.000	0.000	0.000	33.708	35.278	97.918	95.636
APRIL	21.141	23.021	12.256	11.399	0.000	0.000	0.000	0.000	0.000	0.000	33.397	34.420	131.315	130.056
MAY	22.371	23.765	16.109	14.506	0.000	0.000	0.000	0.000	0.000	0.000	38.480	38.271	169.795	168.327
JUNE	21.217	23.356	18.451	18.040	0.000	0.000	0.000	0.000	0.000	0.000	39.668	41.396	209.463	209.723
JULY	26.394	27.046	22.664	21.425	0.453	0.000	0.000	0.000	0.019	0.000	49.530	48.471	258.993	258.194
AUGUST	24.227	29.806	18.909	20.376	0.000	0.000	0.000	0.000	0.000	0.000	43.136	50.182	302.129	308.376
SEPTEMBER	20.320	26.141	16.919	25.084	0.000	0.000	0.000	0.000	0.000	0.000	37.239	51.225	339.368	359.601
OCTOBER	14.429	18.561	16.851	20.551	0.305	0.000	0.000	0.000	0.000	0.000	31.585	39.112	370.953	398.713
NOVEMBER	12.282	2.344	12.891	27.461	0.754	0.000	0.000	0.000	0.000	0.000	25.927	29.805	396.880	428.518
DECEMBER	14.375	16.382	13.525	16.277	0.000	0.000	0.000	0.000	0.000	0.000	27.900	32.659	424.780	461.177
ANNUAL	240.350	239.155	182.613	222.022	1.798	0.000	0.000	0.000	0.019	0.000	424.780	461.177	424.780	461.177
TOTALS	56.58%	56.04%	42.99%	52.02%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	108.06%		

2018 Summary		
	M.G.	
Oakwood:	422.963	99.57%
Dayton:	1.817	0.43%
County:	0.000	0.00%
TOTAL:	424.780	100%

2019 Summary		
	M.G.	
Oakwood:	426.781	100.00%
Dayton:	0.000	0.00%
County:	0.000	0.00%
TOTAL:	426.781	100%

2018 Avg. per day ___1.164___ MGD

2019 Avg. per day: ___1.263___ MGD

VI. BUDGET/FINANCES

The 2019 budget allocation for Oakwood Water Production was $649,565.58. In 2019, the Oakwood Water Production Unit spent $591,091.89 toward the production of the City's drinking water. This computes to an average cost of $1,163.83 per million gallons pumped from the city's eight wells in 2019, up from $1,138.67 per million gallons in 2018. The cost per million gallons will fluctuate up or down depending on the total water demand for the year. 2019 had an average water demand higher than 2018 due to a warmer and drier end to the summer. We continually strive to bring down the cost of water by optimizing our treatment process.

The water production unit budget consists of five main categories: personnel, utilities, chemicals, maintenance and miscellaneous. The following charts show what percentage of the budget goes to each of these categories and shows a comparison from the year before.
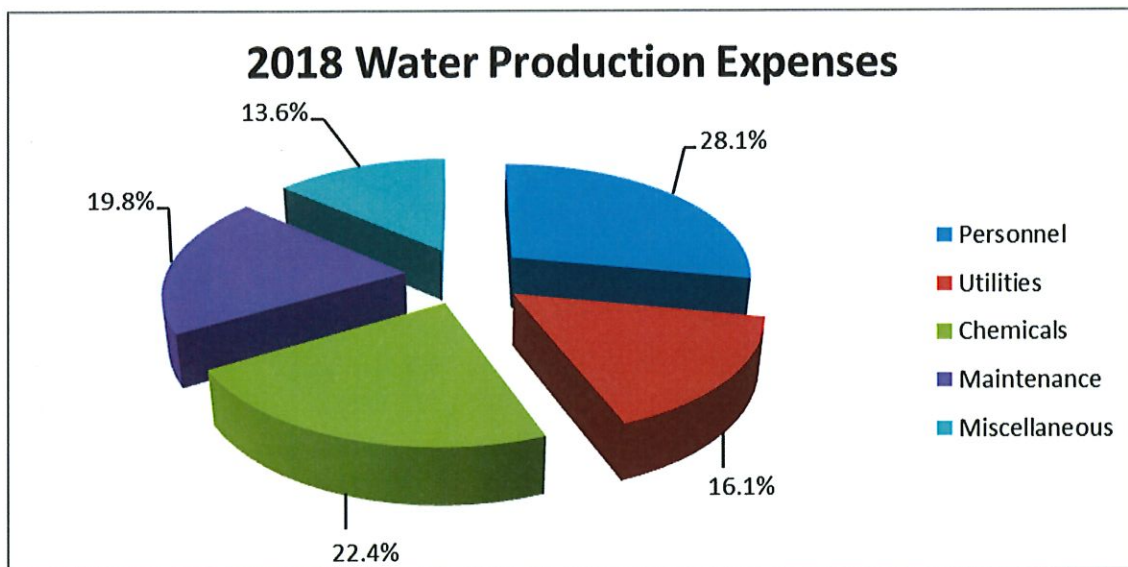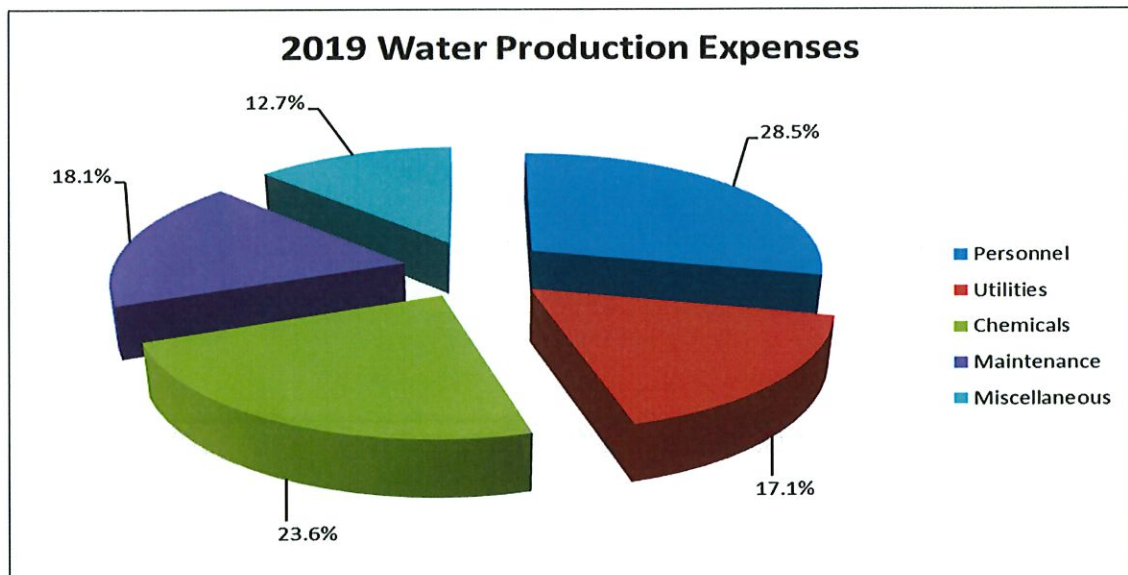
CHART 3

2018 Water Production Expenses

- 28.1% Personnel
- 16.1% Utilities
- 22.4% Chemicals
- 19.8% Maintenance
- 13.6% Miscellaneous

CHART 4

2019 Water Production Expenses

- 28.5% Personnel
- 17.1% Utilities
- 23.6% Chemicals
- 18.1% Maintenance
- 12.7% Miscellaneous

Personnel costs were $168,313.68 for the year representing a 8.03% increase from 2018. Utility costs were $89,338.52 which includes electric and natural gas representing a 13.39% increase from 2018. Chemical costs were $139,268.87 representing a 12.47% increase over 2018. 1,038 tons of salt compared to 952 tons in 2018 and 3,815 gallons of sodium hypochlorite compared to 3,630 gallons in 2018 were used to treat the water.

Maintenance costs were $109,460.48 representing a 2.2% decrease compared to 2018.

VII. CONCLUSION

In reviewing our water system, 2019 was another successful year. All monthly and annual reports to the Ohio EPA and Ohio Department of Natural Resources were submitted on time. All lab testing was completed as required. We met or exceeded all Ohio and Federal EPA requirements and regulations. Our OEPA NPDES Surveys were conducted in February 2019 and no violations were found. The next survey will be conducted in 2024

We continually look at ways to optimize our treatment process in order to maintain high water quality at the lowest cost. Some recent accomplishments include replacing faulty micro-switches, rebuilding process valves, adjusting treatment sequences, and more closely monitoring regeneration cycles on the softeners. We replaced the system controls at 210 Shafor and 120 Springhouse which allows us to better monitor and adjust the treatment process. In 2017 we continued to improve our water treatment plants by replacing the original softening media in the four filters at 210 Shafor Boulevard. All process valves on these four units were completely rebuilt to assure accurate operation. In November 2019 we replaced the original softening media in the three filters at 120 Springhouse Road. All process valves on these three units will be completely rebuilt to assure accurate operation in early 2020.

In looking forward to 2019 and beyond, we will continue to seek ways to operate the water plants in the most efficient manner producing the highest quality water possible.

Respectfully submitted,
Gary L. Dursch Sr.
Water Plant Superintendent