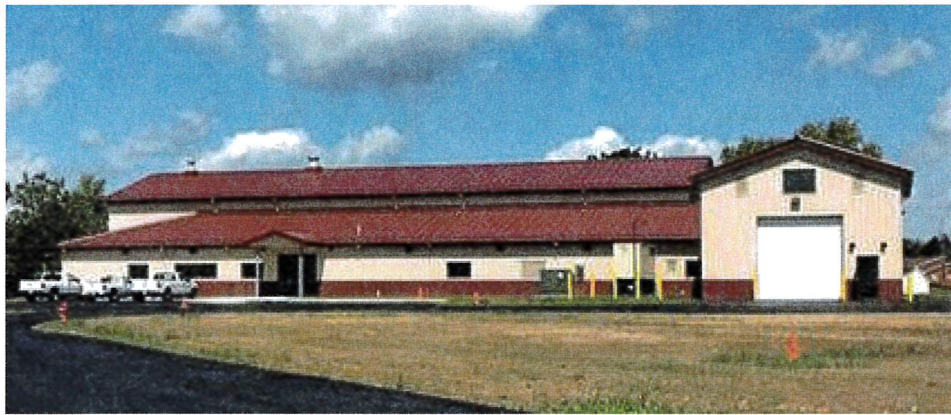


# Technical Evaluation of Water & Wastewater Operations/Rates

◀ Summary Report ▶



*prepared for the*

## Village of Mt. Sterling

August 2018

*Prepared by:*

**ENVIRONMENTAL  
ENGINEERING SERVICE**  
3575 Columbia Road  
Lebanon, OH 45036-9690  
513•934•1512



## A. Background

The Village of Mt. Sterling owns, operates and maintains both water and wastewater systems for its residents, businesses and industries.

Previous decisions related to the design and construction of its systems has resulted in a debt burden and system operations requirements well in excess of current utilization requirements and existing rate structures.

In order to meet its obligations, the Village Council must adopt user charges sufficient to meet its current obligations, support the proper operation of the system and provide funds for necessary system capital improvements.

A review of information provided by the Village and debt service schedules secured from funding Agencies forms the basis for the documentation of probable annual costs and revenues for the two (2) utilities.

## B. Documentation of Current Expenditures

Mt. Sterling's financial obligation for its water and wastewater utilities is comprised of two (2) elements: Debt Service and Operations Costs.

### ◆ Debt Service

The Village has utilized the Ohio Water Development Authority (OWDA) to finance multiple water and wastewater projects. The loans range in length from 5 – 30 years at varying interest rates. Those loans are at fixed rates and are not callable (cannot be pre-paid and/or refinanced). As such they, in effect, are a fixed cost to the Village. The summary of these loans and the annual debt service costs are as follows (details of each loan are attached as Appendix A):

Loan Number	Project	Annual Payment	Loan Completion
7304	Water Tank Replacement Design	\$ 4,640	2022 <sup>1</sup>
7243	WTP/Well Field	\$ 452,172	2047
7037	Storage Tank Painting	\$ 17,430	2046 <sup>2</sup>
4792	Main/Columbus Water Main	\$ 25,966	2034
<b>Subtotal Water:</b>		<b>\$ 500,200</b>	
6339	Wastewater Treatment Plant	\$ 305,220	2034
7143	High Street Storm – Phase 2	\$ 10,280	2046
<b>Subtotal Wastewater:</b>		<b>\$ 315,500</b>	
<b>Total Annual Debt Service:</b>		<b>\$ 815,700</b>	

**Notes:** 1. Balloon payment of approximately \$55,000 due 1/1/2022  
2. Debt Service Payments include \$106,195 not borrowed (approximately \$4,200/year)



## ◆ Operations

Based on historical data, the Village (in conjunction with the State Auditor's office) established Appropriations for 2018 as follows:

- Water (excluding debt service) – \$345,600.00
- Sewer (excluding debt service) – \$356,200.00

The Village's Appropriation Status Report by Fund (UAN) shows actual expenditures through June 2018 at \$132,200.00 (Water) and \$114,900.00 (Sewer). Extrapolating to a full year, expenses for Water Operating would be 23.5% below appropriated funds; Sewer expenses would be 35.5% below appropriations.

It remains to be seen whether second half 2018 operation expense mirrors first half results; however, it can be safely documented that, at a minimum, water and wastewater annual revenue base requirements are as follows:

### Water

• Debt Service	\$ 500,200.00
• Operations	\$ 264,500.00
Subtotal:	\$ 764,700.00
• Projected Revenue	\$ 458,200.00
• Balance	<b>(\$ 306,500.00)<sup>1</sup></b>

### Sewer

• Debt Service	\$ 315,500.00
• Operations	\$ 229,800.00
Subtotal:	\$ 545,300.00
• Projected Revenue	\$ 429,100.00
• Balance	<b>(\$ 116,200.00)<sup>2</sup></b>

- Notes:
1. This deficit increases to **(\$387,600.00)** if actual operations expenditures reflect appropriations.
  2. This deficit increases to **(\$242,600.00)** if actual operations expenditures reflect appropriations.





### C. Current Rate Structure

The current rate structure is comprised of three (3) primary categories:

- ♦ Residential (with both inside and outside rates),
- ♦ Commercial,
- ♦ Industrial.

These rates generate estimated annual revenue of \$458,200 for Water and \$429,100 for Sewer.

The current rates by category are as follows:

	<u><i>Residential - Inside</i></u>		<u><i>Residential - Outside</i></u>	
	<u>1<sup>st</sup> 1,000</u>	<u>Each 1,000 Thereafter</u>	<u>1<sup>st</sup> 1,000</u>	<u>Each 1,000 Thereafter</u>
<b>Water</b>	\$20.40 +	\$4.90	\$21.85 +	\$6.35
<b>Sewer</b>	\$12.08 +	\$9.08	\$14.80 +	\$11.80
 <u><i>Commercial – Inside/Outside</i></u>				
	<u>1<sup>st</sup> 1,000</u>	<u>Each 1,000 Thereafter</u>		
<b>Water</b>	\$21.25 +	\$5.75		
<b>Sewer</b>	\$13.62 +	\$10.62		
 <u><i>Industrial*</i></u>				
	<u>1<sup>st</sup> 10,000</u>	<u>Each 1,000 Thereafter</u>		
<b>Water</b>	\$99.00 +	\$8.35		
<b>Sewer</b>	\$92.50 +	\$8.95		
 <i>*Revenue from Keihin @ \$1.50/1,000 is generated for retiring debt for the West Sewer Project.</i>				

#### D. Required Minimum Basic Rate Adjustments

To eliminate the short-falls and meet the Village's financial obligations, the following minimum basic rate increases must be adopted. It should be noted that the modified rates are calculated to equally distribute increases in proportion to current revenues.

##### ♦ Residential Inside (Modify Base Rate – No Change in Volume Charges)

	<u>Current Rate</u>	<u>Add</u>	<u>New Total</u>
Water	\$20.40	\$29.00	\$49.40
Sewer	\$12.08	\$12.40	\$24.48

##### ♦ Residential Outside (Modify Base Rate – No Change in Volume Charges)

	<u>Current Rate</u>	<u>Add</u>	<u>New Total</u>
Water	\$21.85	\$29.00	\$50.85
Sewer	\$14.80	\$12.40	\$27.20

##### ♦ Commercial Inside/Outside (Modify Base Rate – No Change in Volume Charges)

	<u>Current Rate</u>	<u>Add</u>	<u>New Total</u>
Water	\$21.25	\$29.00	\$50.25
Sewer	\$13.62	\$12.40	\$26.02

##### ♦ Industrial (No Change in Base Rate – Modify Volume Charges)

	<u>Current Volume Rate</u>	<u>Add</u>	<u>New Total</u>
Water	\$8.35	\$5.85	\$14.20
Sewer	\$8.95	\$4.20	\$12.15

## E. Estimated Monthly User Charges and Resultant Revenue

Based on billing information and usage, Mt. Sterling users can anticipate the following average water and sewer rates based on the new required minimum basic rate:

Category	Existing Rates (per month)		New Rates (per month)		New Rates Monthly Total
	<u>Water</u>	<u>Sewer</u>	<u>Water</u>	<u>Sewer</u>	<u>(Water &amp; Sewer)</u>
♦ Residential (Inside)	\$39.00	\$33.00	\$68.00	\$45.00	\$113.00
♦ Residential (Outside)	\$46.00	\$41.00	\$75.00	\$53.00	\$128.00
♦ Commercial	\$43.00	\$37.00	\$72.00	\$50.00	\$122.00
♦ Industrial	Varies by Volume – approximately 60% increase Water and 45% Sewer.				

Anticipated annual revenue from the proposed rate increase will approximate **\$1.325 M**, sufficient to cover historical expenses (2017 – 2018).

The last set of rate increases for Mt. Sterling was effective January 1, 2015. The rates were purported to be sufficient to fund the water and sewer systems, including the major upgrade to the WWTP and the new WTP. They were in fact insufficient and the failure to adjust rates in the subsequent four (4) years now necessitates a major rate adjustment.

For comparative purposes, according to OEPA's 2016 Sewer and Water Rate Survey the current combined annual water and sewer rates for Mt. Sterling residential users (approximately \$885) is only 68.6% of the statewide average of (approximately \$1,289).

Extrapolating from the OEPA Report, the average combined annual water and sewer rates for Ohio through 2018 will be approximately \$1,401, while Mt. Sterling users will be \$1,356 (3.2% below the statewide average). Excerpts of the OEPA Report are attached hereto as Appendix B.

## F. Additional Considerations

A comprehensive evaluation of Water/Wastewater Systems, and subsequent revenue requirements, should also include the following two (2) components:

- 1.) An appropriate reserve account which protects against unforeseen circumstances (ideally 10% of annual operating appropriations); and
- 2.) Identification of required/desired Capital Improvements Projects; with establishment of appropriate revenues to either fund the improvements directly or provide funding sufficient to retire debt financing. (Assumptions regarding potential grant funding will directly input to this element).





The provision of a Reserve Account component to the Village's rates (10%) would require \$26,500.00 for water (\$3.30/month/user) and \$23,900.00 for sewer (\$3.00/month/user).

Site visits to the WWTP/WTP and discussions with Village staff have identified a variety of improvements which still remain to be completed including, but not limited to:

- ◆ New Water Tower
- ◆ Water System Line Replacement
- ◆ New Water Meters
- ◆ Green Sand Filter Replacement
- ◆ RO Membrane (Every 5 Years)
- ◆ Sludge Press – Building/Equipment
- ◆ I/I Improvements and MH Improvements
- ◆ WWTP Retaining Wall
- ◆ EQ Upgrades
- ◆ Digester Capacity

In the Village's current financial situation, careful planning to facilitate the financing and timing of the projects will be essential.

The provision of a CIP component to the Village's rates must be funded at a level which will define the phasing of improvements.

A \$1.30/month/user in each of Water and Sewer rates will finance one (1) \$200,000 – \$300,000 project in each system (dependent on the interest rate and term). Successful pursuit of grant funds can extend the project size several-fold.

Village Council must identify the amount of rate increase to be provided for Capital Improvements.

Regardless of the Rate Adjustments adopted by Village Council, it would be prudent for the Rate Legislation to authorize automatic rate adjustments tied to the Consumer Price Index (CPI).

## G. Summary

1. Current financial obligations require adjustment to existing water and wastewater revenues by a minimum of approximately \$422,700.00;
2. To achieve these revenue goals, rates to users must increase approximately 60 – 70% for water and 35 – 40% for wastewater;
3. The proposed adjustments contained in Section D – “Required Minimum Basic Rate Adjustments” adjust Residential and Commercial base rates while volume charges are not modified. For Industrial users, the base rate remains unchanged while the volume charge is modified. The Village may choose a different allocation of these adjustments so long as resultant revenue is not diminished;
4. Village Council must determine the level of Section F – “Additional Considerations” for reserves and CIP which will be included in the new rates;
5. Village Council should consider an automatic CPI-Adjustment in its rate legislation;
6. Village Council should consult with its financial and legal counsel prior to finalizing the new rate revisions and legislation.



## **Appendix A**

# **Debt Service Details**





**Loan Summary**  
**As Of 06/08/2018**

Agency: Mount Sterling

Account#: 7304

Project Description: Water Tank Replacement Design

	Fresh Water Fund at 3.030% for 5 Years From 07/01/2017 to 01/01/2022
<u>Amount Financed Summary</u>	
Undisbursed Funds:	\$24,500.00
Disbursed Funds:	\$68,300.00
Total Encumbered Funds:	\$92,800.00
Capitalized Interest:	\$3,968.65
Loan Adjustments:	\$0.00
Total Amount Financed:	\$96,768.65
<u>Loan Balance Summary</u>	
Disbursements:	\$68,300.00
Capitalized Interest:	\$3,968.65
Principal Payments:	(\$4,640.00)
Principal Adjustments:	\$0.00
Loan Adjustment Payments:	\$0.00
Late Fees Charged:	\$0.00
Late Fees Paid:	\$0.00
Total Loan Balance:	\$67,628.65

Payment History Summary

	Interest	Principal	Late Fees	Total
Amount Billed:	\$0.00	\$6,960.00	\$0.00	\$6,960.00
Amount Paid:	\$0.00	(\$4,640.00)	\$0.00	(\$4,640.00)
Balance Due:	\$0.00	\$2,320.00	\$0.00	\$2,320.00

**Loan Summary**  
**As Of 06/08/2018**

Agency: Mount Sterling

Account#: 7243

Project Description: Water Treatment Plant and Wellfield

<u>Amount Financed Summary</u>	Fresh Water Fund at 0.960% for 30 Years From 01/01/2018 to 07/01/2047	Fresh Water Fund at 2.960% for 30 Years From 01/01/2018 to 07/01/2047	Total
Undisbursed Funds:	\$0.00	\$8,321.30	\$8,321.30
Disbursed Funds:	\$3,000,000.00	\$6,549,581.73	\$9,549,581.73
Total Encumbered Funds:	\$3,000,000.00	\$6,557,903.03	\$9,557,903.03
Capialized Interest:	\$14,511.23	\$97,789.99	\$112,301.22
Loan Adjustments:	\$0.00	\$0.00	\$0.00
Total Amount Financed:	\$3,014,511.23	\$6,655,693.02	\$9,670,204.25

<u>Loan Balance Summary</u>			
Disbursements:	\$3,000,000.00	\$6,549,581.73	\$9,549,581.73
Capialized Interest:	\$14,511.23	\$97,789.99	\$112,301.22
Principal Payments:	(\$43,473.48)	(\$69,638.84)	(\$113,112.32)
Principal Adjustments:	\$0.00	\$0.00	\$0.00
Loan Adjustment Payments:	\$0.00	\$0.00	\$0.00
Late Fees Charged:	\$0.00	\$0.00	\$0.00
Late Fees Paid:	\$0.00	\$0.00	\$0.00
Total Loan Balance:	\$2,971,037.75	\$6,577,732.88	\$9,548,770.63

Payment History  
Summary

	Interest	Principal	Late Fees	Total
Amount Billed:	\$224,708.50	\$227,463.96	\$0.00	\$452,172.46
Amount Paid:	(\$112,973.91)	(\$113,112.32)	\$0.00	(\$226,086.23)
Balance Due:	\$111,734.59	\$114,351.64	\$0.00	\$226,086.23

**Loan Summary**  
**As Of 06/08/2018**

Agency: Mount Sterling

Account#: 7037

Project Description: Storage Tank Painting

	Fresh Water Fund at 1.090% for 30 Years From 01/01/2017 to 07/01/2046
<u>Amount Financed Summary</u>	
Undisbursed Funds:	\$106,195.00
Disbursed Funds:	\$336,860.00
Total Encumbered Funds:	\$443,055.00
Capitalized Interest:	\$1,900.92
Loan Adjustments:	\$0.00
Total Amount Financed:	\$444,955.92

<u>Loan Balance Summary</u>	
Disbursements:	\$336,860.00
Capitalized Interest:	\$1,900.92
Principal Payments:	(\$18,971.23)
Principal Adjustments:	\$0.00
Loan Adjustment Payments:	\$0.00
Late Fees Charged:	\$0.00
Late Fees Paid:	\$0.00
Total Loan Balance:	\$319,789.69

Payment History Summary

	Interest	Principal	Late Fees	Total
Amount Billed:	\$9,493.62	\$25,364.02	\$0.00	\$34,857.64
Amount Paid:	(\$7,172.00)	(\$18,971.23)	\$0.00	(\$26,143.23)
Balance Due:	\$2,321.62	\$6,392.79	\$0.00	\$8,714.41



## Amortization Schedule

**Project:** Mount Sterling - Main St/Columbus St Water Main Replacement  
**Account**  
**Number:** 4792

Community Assistance Fund		
at 2.000%		
for 25 Years From		
01/01/2010 to		
07/01/2034		
Cash		Totals
Disbursed:	500,000.00	500,000.00
Capitalized		
Interest:	8,893.12	8,893.12
Loan Adj.		
Commitments:	0.00	0.00
Financed		
Amount:	508,893.12	508,893.12

Payment Date	Interest	Principal	Total Payment	Principal Balance Outstanding
				\$508,893.12
01/01/2010	\$5,088.93	\$7,894.32	\$12,983.25	\$500,998.80
07/01/2010	\$5,009.99	\$7,973.26	\$12,983.25	\$493,025.54
01/01/2011	\$4,930.25	\$8,053.00	\$12,983.25	\$484,972.54
07/01/2011	\$4,849.73	\$8,133.52	\$12,983.25	\$476,839.02
01/01/2012	\$4,768.39	\$8,214.86	\$12,983.25	\$468,624.16
07/01/2012	\$4,686.24	\$8,297.01	\$12,983.25	\$460,327.15
01/01/2013	\$4,603.27	\$8,379.98	\$12,983.25	\$451,947.17
07/01/2013	\$4,519.47	\$8,463.78	\$12,983.25	\$443,483.39
01/01/2014	\$4,434.83	\$8,548.42	\$12,983.25	\$434,934.97
07/01/2014	\$4,349.35	\$8,633.90	\$12,983.25	\$426,301.07
01/01/2015	\$4,263.01	\$8,720.24	\$12,983.25	\$417,580.83
07/01/2015	\$4,175.81	\$8,807.44	\$12,983.25	\$408,773.39
01/01/2016	\$4,087.74	\$8,895.51	\$12,983.25	\$399,877.88
07/01/2016	\$3,998.78	\$8,984.47	\$12,983.25	\$390,893.41
01/01/2017	\$3,908.94	\$9,074.31	\$12,983.25	\$381,819.10
07/01/2017	\$3,818.19	\$9,165.06	\$12,983.25	\$372,654.04
01/01/2018	\$3,726.54	\$9,256.71	\$12,983.25	\$363,397.33
07/01/2018	\$3,633.98	\$9,349.27	\$12,983.25	\$354,048.06
01/01/2019	\$3,540.48	\$9,442.77	\$12,983.25	\$344,605.29
07/01/2019	\$3,446.05	\$9,537.20	\$12,983.25	\$335,068.09
01/01/2020	\$3,350.68	\$9,632.57	\$12,983.25	\$325,435.52
07/01/2020	\$3,254.35	\$9,728.90	\$12,983.25	\$315,706.62
01/01/2021	\$3,157.06	\$9,826.19	\$12,983.25	\$305,880.43
07/01/2021	\$3,058.80	\$9,924.45	\$12,983.25	\$295,955.98
01/01/2022	\$2,959.56	\$10,023.69	\$12,983.25	\$285,932.29
07/01/2022	\$2,859.32	\$10,123.93	\$12,983.25	\$275,808.36
01/01/2023	\$2,758.08	\$10,225.17	\$12,983.25	\$265,583.19
07/01/2023	\$2,655.83	\$10,327.42	\$12,983.25	\$255,255.77
01/01/2024	\$2,552.56	\$10,430.69	\$12,983.25	\$244,825.08
07/01/2024	\$2,448.26	\$10,535.00	\$12,983.25	\$234,290.08
01/01/2025	\$2,342.90	\$10,640.35	\$12,983.25	\$223,649.73
07/01/2025	\$2,236.50	\$10,746.75	\$12,983.25	\$212,902.98
01/01/2026	\$2,129.03	\$10,854.22	\$12,983.25	\$202,048.76

07/01/2026	\$2,020.49	\$10,962.76	\$12,983.25	\$191,086.00
01/01/2027	\$1,910.86	\$11,072.39	\$12,983.25	\$180,013.61
07/01/2027	\$1,800.14	\$11,183.11	\$12,983.25	\$168,830.50
01/01/2028	\$1,688.31	\$11,294.94	\$12,983.25	\$157,535.56
07/01/2028	\$1,575.35	\$11,407.90	\$12,983.25	\$146,127.66
01/01/2029	\$1,461.28	\$11,521.97	\$12,983.25	\$134,605.69
07/01/2029	\$1,346.06	\$11,637.19	\$12,983.25	\$122,968.50
01/01/2030	\$1,229.69	\$11,753.56	\$12,983.25	\$111,214.94
07/01/2030	\$1,112.15	\$11,871.10	\$12,983.25	\$99,343.84
01/01/2031	\$993.44	\$11,989.81	\$12,983.25	\$87,354.03
07/01/2031	\$873.54	\$12,109.71	\$12,983.25	\$75,244.32
01/01/2032	\$752.45	\$12,230.80	\$12,983.25	\$63,013.52
07/01/2032	\$630.14	\$12,353.11	\$12,983.25	\$50,660.41
01/01/2033	\$506.61	\$12,476.64	\$12,983.25	\$38,183.77
07/01/2033	\$381.84	\$12,601.41	\$12,983.25	\$25,582.36
01/01/2034	\$255.82	\$12,727.43	\$12,983.25	\$12,854.93
07/01/2034	\$128.32	\$12,854.93	\$12,983.25	\$0.00

## Amortization Schedule

**Project:** Mount Sterling - WWTP Improvements

**Account** 6339

**Number:**

Water Pollution Control  
Loan Fund  
at 0.000%  
for 20 Years From  
01/01/2015 to  
07/01/2034

		<b>Totals</b>
Cash		
Disbursed:	6,104,411.63	6,104,411.63
Capitalized		
Interest:	0.00	0.00
Loan Adj.		
Commitments:	0.00	0.00
Financed		
Amount:	6,104,411.63	6,104,411.63

Payment Date	Interest	Principal	Total Payment	Principal Balance Outstanding
				\$5,341,360.18
07/01/2017	\$0.00	\$152,610.29	\$152,610.29	\$5,188,749.89
01/01/2018	\$0.00	\$152,610.29	\$152,610.29	\$5,036,139.60
07/01/2018	\$0.00	\$152,610.29	\$152,610.29	\$4,883,529.31
01/01/2019	\$0.00	\$152,610.29	\$152,610.29	\$4,730,919.02
07/01/2019	\$0.00	\$152,610.29	\$152,610.29	\$4,578,308.73
01/01/2020	\$0.00	\$152,610.29	\$152,610.29	\$4,425,698.44
07/01/2020	\$0.00	\$152,610.29	\$152,610.29	\$4,273,088.15
01/01/2021	\$0.00	\$152,610.29	\$152,610.29	\$4,120,477.86
07/01/2021	\$0.00	\$152,610.29	\$152,610.29	\$3,967,867.57
01/01/2022	\$0.00	\$152,610.29	\$152,610.29	\$3,815,257.28
07/01/2022	\$0.00	\$152,610.29	\$152,610.29	\$3,662,646.99
01/01/2023	\$0.00	\$152,610.29	\$152,610.29	\$3,510,036.70
07/01/2023	\$0.00	\$152,610.29	\$152,610.29	\$3,357,426.41
01/01/2024	\$0.00	\$152,610.29	\$152,610.29	\$3,204,816.12
07/01/2024	\$0.00	\$152,610.29	\$152,610.29	\$3,052,205.83
01/01/2025	\$0.00	\$152,610.29	\$152,610.29	\$2,899,595.54
07/01/2025	\$0.00	\$152,610.29	\$152,610.29	\$2,746,985.25
01/01/2026	\$0.00	\$152,610.29	\$152,610.29	\$2,594,374.96
07/01/2026	\$0.00	\$152,610.29	\$152,610.29	\$2,441,764.67
01/01/2027	\$0.00	\$152,610.29	\$152,610.29	\$2,289,154.38
07/01/2027	\$0.00	\$152,610.29	\$152,610.29	\$2,136,544.09
01/01/2028	\$0.00	\$152,610.29	\$152,610.29	\$1,983,933.80
07/01/2028	\$0.00	\$152,610.29	\$152,610.29	\$1,831,323.51
01/01/2029	\$0.00	\$152,610.29	\$152,610.29	\$1,678,713.22
07/01/2029	\$0.00	\$152,610.29	\$152,610.29	\$1,526,102.93
01/01/2030	\$0.00	\$152,610.29	\$152,610.29	\$1,373,492.64
07/01/2030	\$0.00	\$152,610.29	\$152,610.29	\$1,220,882.35
01/01/2031	\$0.00	\$152,610.29	\$152,610.29	\$1,068,272.06
07/01/2031	\$0.00	\$152,610.29	\$152,610.29	\$915,661.77
01/01/2032	\$0.00	\$152,610.29	\$152,610.29	\$763,051.48
07/01/2032	\$0.00	\$152,610.29	\$152,610.29	\$610,441.19
01/01/2033	\$0.00	\$152,610.29	\$152,610.29	\$457,830.90
07/01/2033	\$0.00	\$152,610.29	\$152,610.29	\$305,220.61



01/01/2034	\$0.00	\$152,610.29	\$152,610.29	\$152,610.32
07/01/2034	\$0.00	\$152,610.32	\$152,610.32	\$0.00

## Amortization Schedule

**Project:** Mount Sterling - High Street Storm Sewer Phase 2

**Account** 7143

**Number:**

Fresh Water Fund  
at 1.150%  
for 30 Years From  
07/01/2016 to  
01/01/2046

Cash		Totals
Disbursed:	260,172.65	260,172.65
Capitalized		
Interest:	17.29	17.29
Loan Adj.		
Commitments:	0.00	0.00
Financed		
Amount:	260,189.94	260,189.94

Payment Date	Interest	Principal	Total Payment	Principal Balance Outstanding
				\$252,881.56
07/01/2017	\$1,454.07	\$3,685.74	\$5,139.81	\$249,195.82
01/01/2018	\$1,432.88	\$3,706.93	\$5,139.81	\$245,488.89
07/01/2018	\$1,411.56	\$3,728.25	\$5,139.81	\$241,760.64
01/01/2019	\$1,390.12	\$3,749.69	\$5,139.81	\$238,010.95
07/01/2019	\$1,368.56	\$3,771.25	\$5,139.81	\$234,239.70
01/01/2020	\$1,346.88	\$3,792.93	\$5,139.81	\$230,446.77
07/01/2020	\$1,325.07	\$3,814.74	\$5,139.81	\$226,632.03
01/01/2021	\$1,303.14	\$3,836.67	\$5,139.81	\$222,795.36
07/01/2021	\$1,281.07	\$3,858.74	\$5,139.81	\$218,936.62
01/01/2022	\$1,258.88	\$3,880.93	\$5,139.81	\$215,055.69
07/01/2022	\$1,236.57	\$3,903.24	\$5,139.81	\$211,152.45
01/01/2023	\$1,214.12	\$3,925.69	\$5,139.81	\$207,226.76
07/01/2023	\$1,191.55	\$3,948.26	\$5,139.81	\$203,278.50
01/01/2024	\$1,168.85	\$3,970.96	\$5,139.81	\$199,307.54
07/01/2024	\$1,146.02	\$3,993.79	\$5,139.81	\$195,313.75
01/01/2025	\$1,123.05	\$4,016.76	\$5,139.81	\$191,296.99
07/01/2025	\$1,099.96	\$4,039.85	\$5,139.81	\$187,257.14
01/01/2026	\$1,076.73	\$4,063.08	\$5,139.81	\$183,194.06
07/01/2026	\$1,053.36	\$4,086.45	\$5,139.81	\$179,107.61
01/01/2027	\$1,029.87	\$4,109.94	\$5,139.81	\$174,997.67
07/01/2027	\$1,006.24	\$4,133.57	\$5,139.81	\$170,864.10
01/01/2028	\$982.47	\$4,157.34	\$5,139.81	\$166,706.76
07/01/2028	\$958.56	\$4,181.25	\$5,139.81	\$162,525.51
01/01/2029	\$934.52	\$4,205.29	\$5,139.81	\$158,320.22
07/01/2029	\$910.34	\$4,229.47	\$5,139.81	\$154,090.75
01/01/2030	\$886.02	\$4,253.79	\$5,139.81	\$149,836.96
07/01/2030	\$861.56	\$4,278.25	\$5,139.81	\$145,558.71
01/01/2031	\$836.96	\$4,302.85	\$5,139.81	\$141,255.86
07/01/2031	\$812.22	\$4,327.59	\$5,139.81	\$136,928.27
01/01/2032	\$787.34	\$4,352.47	\$5,139.81	\$132,575.80
07/01/2032	\$762.31	\$4,377.50	\$5,139.81	\$128,198.30
01/01/2033	\$737.14	\$4,402.67	\$5,139.81	\$123,795.63
07/01/2033	\$711.82	\$4,427.99	\$5,139.81	\$119,367.64

01/01/2034	\$686.36	\$4,453.45	\$5,139.81	\$114,914.19
07/01/2034	\$660.76	\$4,479.05	\$5,139.81	\$110,435.14
01/01/2035	\$635.00	\$4,504.81	\$5,139.81	\$105,930.33
07/01/2035	\$609.10	\$4,530.71	\$5,139.81	\$101,399.62
01/01/2036	\$583.05	\$4,556.76	\$5,139.81	\$96,842.86
07/01/2036	\$556.84	\$4,582.97	\$5,139.81	\$92,259.89
01/01/2037	\$530.50	\$4,609.31	\$5,139.81	\$87,650.58
07/01/2037	\$503.99	\$4,635.82	\$5,139.81	\$83,014.76
01/01/2038	\$477.34	\$4,662.47	\$5,139.81	\$78,352.29
07/01/2038	\$450.52	\$4,689.29	\$5,139.81	\$73,663.00
01/01/2039	\$423.56	\$4,716.25	\$5,139.81	\$68,946.75
07/01/2039	\$396.44	\$4,743.37	\$5,139.81	\$64,203.38
01/01/2040	\$369.17	\$4,770.64	\$5,139.81	\$59,432.74
07/01/2040	\$341.74	\$4,798.07	\$5,139.81	\$54,634.67
01/01/2041	\$314.15	\$4,825.66	\$5,139.81	\$49,809.01
07/01/2041	\$286.40	\$4,853.41	\$5,139.81	\$44,955.60
01/01/2042	\$258.50	\$4,881.31	\$5,139.81	\$40,074.29
07/01/2042	\$230.42	\$4,909.39	\$5,139.81	\$35,164.90
01/01/2043	\$202.20	\$4,937.61	\$5,139.81	\$30,227.29
07/01/2043	\$173.80	\$4,966.01	\$5,139.81	\$25,261.28
01/01/2044	\$145.25	\$4,994.56	\$5,139.81	\$20,266.72
07/01/2044	\$116.54	\$5,023.27	\$5,139.81	\$15,243.45
01/01/2045	\$87.65	\$5,052.16	\$5,139.81	\$10,191.29
07/01/2045	\$58.60	\$5,081.21	\$5,139.81	\$5,110.08
01/01/2046	\$29.73	\$5,110.08	\$5,139.81	\$0.00



## **Appendix B**

# **OEPA 2016 Sewer & Water Rate Survey**





# 2016 Sewer and Water Rate Survey



**Office of Fiscal Administration**  
**Economic Analysis Unit**  
**October 2017**

## ***2016 Ohio EPA Sewer and Water Rate Survey***

### **Introduction**

The Sewer and Water Rate Survey's central purpose is to collect and publish Ohio residential sewer and water rates. 2016 rates were collected for the twenty-ninth annual Sewer and Water Rate Survey, conducted by the Ohio Environmental Protection Agency. Ohio EPA sent survey questionnaires to 630 municipalities and districts and received 500 responses (79%).

The 2016 Sewer and Water Rate Survey also gathered information regarding the following:

- Sewer Tap-in Fees
- Water Tap-in Fees

Historic survey data and sewer and water rates for over 500 cities, villages, and districts are available online at Ohio EPA's Office of Fiscal Administration web page located at: <http://epa.ohio.gov/DivisionsandOffices/FiscalAdministration.aspx>.

Contact [economic.analysis@epa.ohio.gov](mailto:economic.analysis@epa.ohio.gov) to receive a copy of the survey by e-mail or call Ohio EPA, Office of Fiscal Administration, Economic Analysis Unit at 614-644-3760 to request additional information.

## ***2016 Ohio EPA Sewer and Water Rate Survey***

### **Sewer and Water Rate Calculations**

Sewer and water charges usually depend on consumption measured in gallons or cubic feet, and are billed monthly, bimonthly or quarterly. In order to standardize sewer and water rates across Ohio and to allow for comparisons among systems, the 2016 Sewer and Water Rate Survey presents rates calculated for an assumed level of consumption.

Annual rates were calculated for residential customers within municipal limits, assuming that a household consists of three (3) people individually consuming 85 gallons of water each day. Community annual sewer and water rate calculations assumed one of the following as the average water consumption per household:

- 7,756 gallons per month (1,037 cubic feet per month)
- 15,512 gallons bi-monthly (2,074 cubic feet bi-monthly)
- 23,268 gallons per quarter (3,111 cubic feet per quarter)

The rates in Appendices 2 and 3 include charges levied for direct use of sewer and water systems. Charges unrelated to sewer and water use, such as income and property taxes, have not been included in rate calculations.

Privately owned sewer and water systems may be funded differently than some public systems. As a result, the sewer and water rates charged by privately owned companies may be higher than some public systems.

Actual sewer and water charges for individual households will be higher (or lower) than those listed in Appendices 2 and 3 for those households with average, metered water use of more or less than 7,756 gallons per month.

## 2016 Ohio EPA Sewer and Water Rate Survey

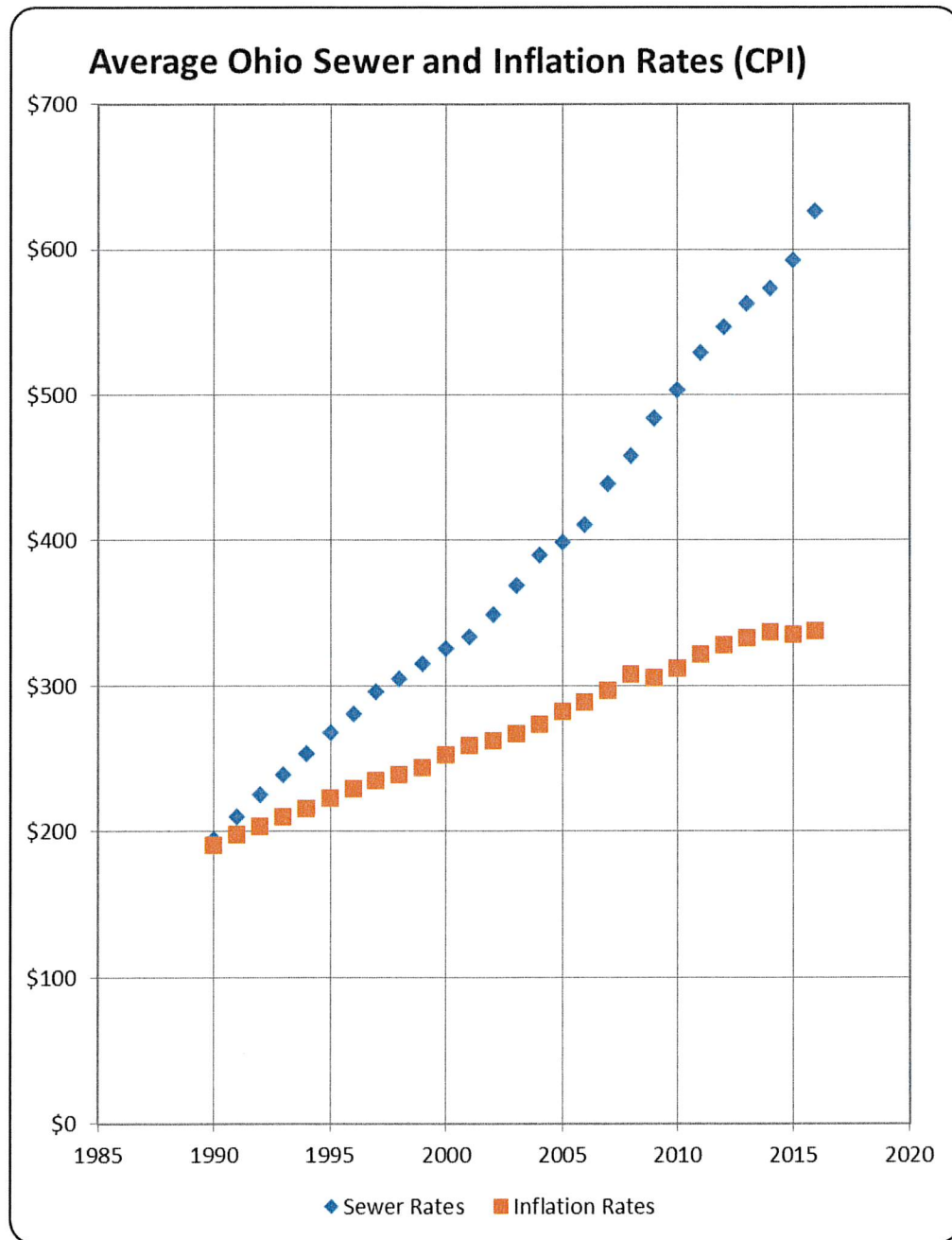
### Sewer Rates

The 2016 average annual residential sewer rate in Ohio was \$661, approximately 1.5% increase over the 2015 rates. Table 1 shows annual sewer rate averages for 1990 through 2016, along with the percentage change in average rates and the consumer price index (CPI-U: Midwest urban prices for all items). Figure 1 displays average annual sewer rate data and a trend line adjusting the base year (1990) average sewer rate for inflation. Figure 2 displays the range of sewer rates charged by communities in 2016.

**Table 1: Annual Average Residential Sewer Rate and CPI Change 1990-2016**

Year	Average Rate	% Rate Increase	CPI
1990	\$232	6.9%	4.9%
1991	\$247	6.5%	3.9%
1992	\$259	4.9%	2.8%
1993	\$276	6.6%	2.9%
1994	\$286	3.6%	2.9%
1995	\$297	3.8%	3.1%
1996	\$311	4.7%	3.1%
1997	\$324	4.2%	2.4%
1998	\$335	3.4%	1.7%
1999	\$343	2.4%	2.1%
2000	\$354	3.2%	3.4%
2001	\$371	4.8%	2.7%
2002	\$382	3.0%	1.2%
2003	\$397	3.9%	1.9%
2004	\$414	4.3%	2.4%
2005	\$427	2.9%	3.2%
2006	\$444	4.0%	2.4%
2007	\$466	5.0%	2.7%
2008	\$492	5.6%	3.7%
2009	\$514	4.5%	-0.6%
2010	\$536	4.3%	2.0%
2011	\$557	3.9%	3.2%
2012	\$581	4.3%	2.0%
2013	\$606	4.3%	1.4%
2014	\$626	3.2%	1.2%
2015	\$651	4.0%	-0.5%
2016	\$661	1.5%	0.8%

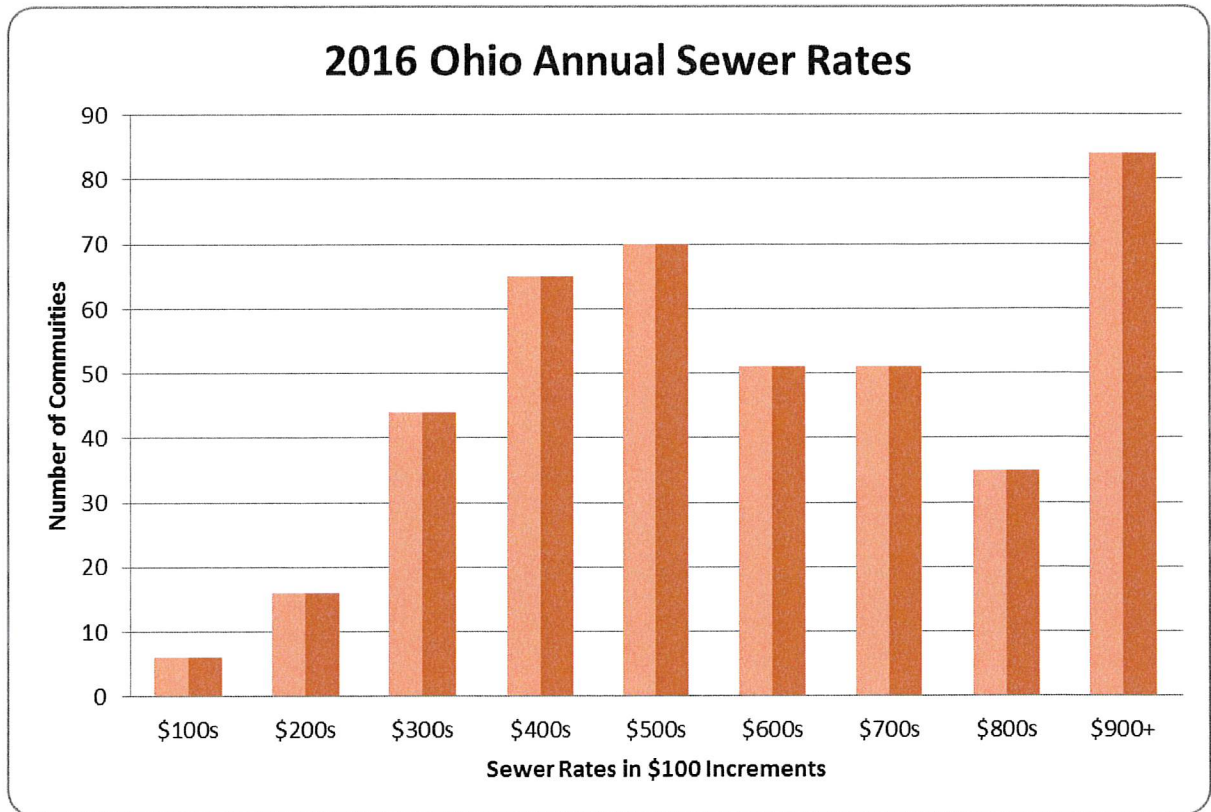
*2016 Ohio EPA Sewer and Water Rate Survey*



**Figure 1: Annual Average Sewer and Inflation Rates 1990-2016**



*2016 Ohio EPA Sewer and Water Rate Survey*



**Figure 2: Sewer Rate Distribution in 2016**

## 2016 Ohio EPA Sewer and Water Rate Survey

### Water Rates

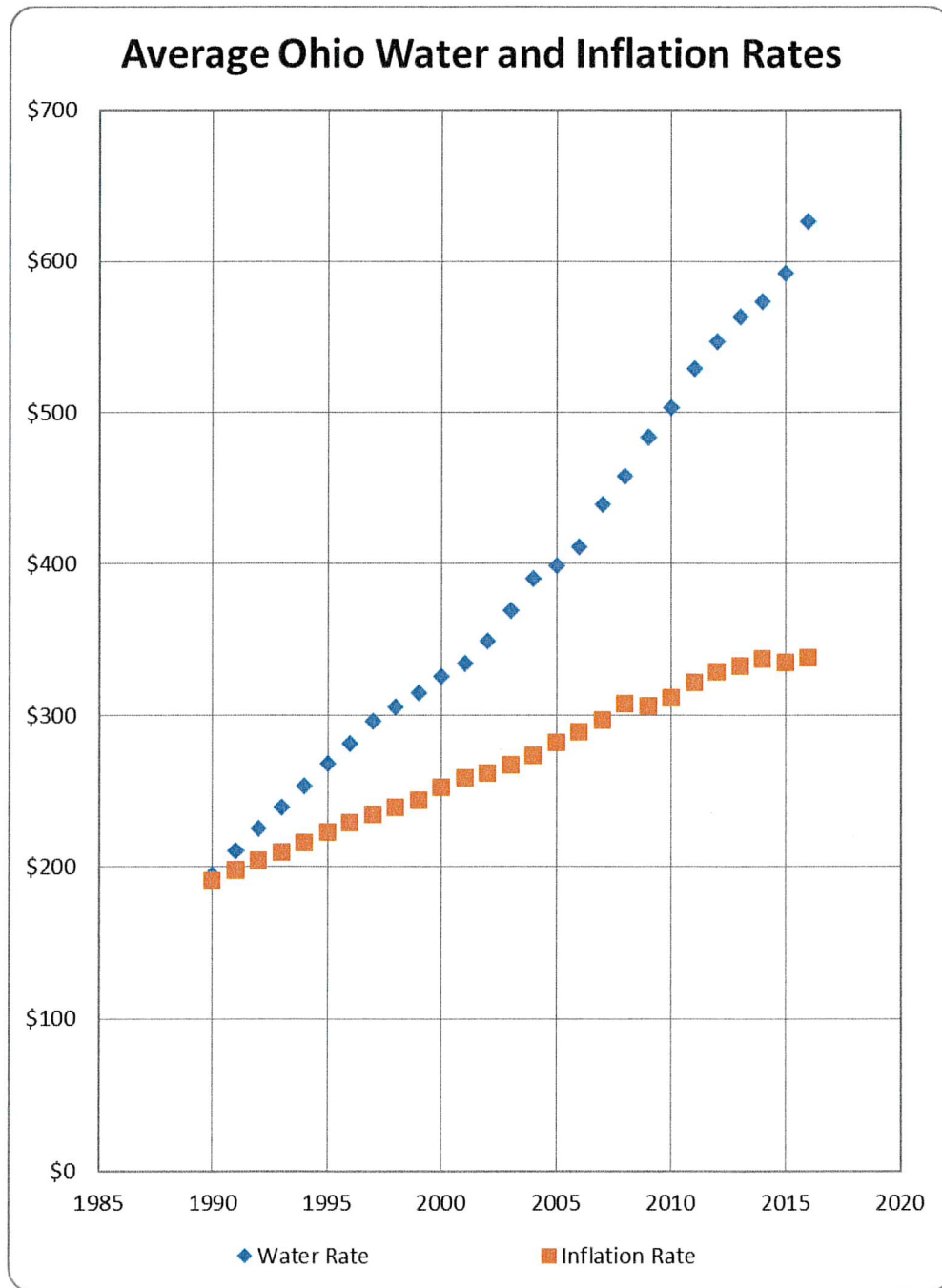
The 2016 average annual residential water rate in Ohio was \$628, approximately 6.1% increase over the 2015 rates. Table 2 displays annual water rate data for 1990 through 2016, along with the percentage change in average rates and the consumer price index (CPI-U: Midwest urban prices for all items). Figure 3 displays average annual water rate data and a trend line adjusting the base year (1990) average water rate for inflation. Figure 4 displays the range of water rates charged by communities in 2016.

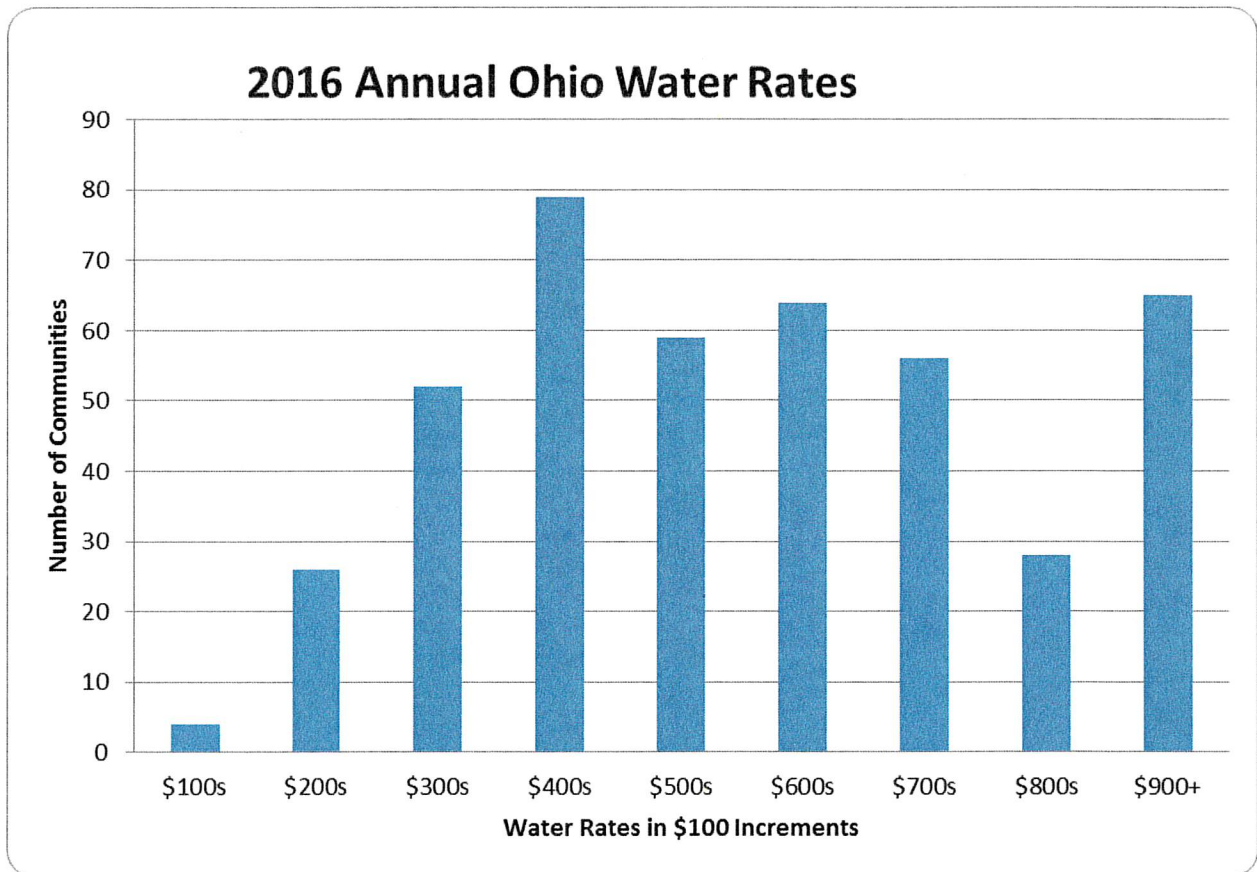
**Table 2: Annual Average Residential Water Rate and CPI Change 1990-2016**

Year	Average Rate	% Rate Increase	CPI
1990	\$195	3.7%	4.9%
1991	\$210	7.7%	3.9%
1992	\$225	7.1%	2.8%
1993	\$239	6.2%	2.9%
1994	\$253	5.9%	2.9%
1995	\$268	5.9%	3.1%
1996	\$281	4.9%	3.1%
1997	\$296	5.3%	2.4%
1998	\$305	3.0%	1.7%
1999	\$315	3.3%	2.1%
2000	\$326	3.5%	3.4%
2001	\$334	2.5%	2.7%
2002	\$349	4.5%	1.2%
2003	\$369	5.7%	1.9%
2004	\$390	5.7%	2.4%
2005	\$399	2.3%	3.2%
2006	\$411	3.0%	2.4%
2007	\$439	6.8%	2.7%
2008	\$458	4.3%	3.7%
2009	\$484	5.2%	-0.6%
2010	\$503	3.9%	2.0%
2011	\$529	5.2%	3.2%
2012	\$547	3.4%	2.0%
2013	\$563	2.9%	1.4%
2014	\$573	1.8%	1.2%
2015	\$592	3.3%	-0.5%
2016	\$628	6.1%	0.8%

## 2016 Ohio EPA Sewer and Water Rate Survey

Figure 3: Annual Average Water Rates and Inflation 1990-2016





**Figure 4: Water Rate Distribution in 2016**

### **Sewer and Water Rate Increases**

In 2016, of the 429 sewer systems that completed the survey, 173, or approximately 40% of the survey population, reported rate increases.

In 2016, of the 435 water systems that completed the survey, 174, or approximately 40% of the survey population, reported rate increases.