



## Water and Sewer Rate Study

- January 2019 -



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## EXECUTIVE SUMMARY

The City of Wheatland engaged ClearSource to complete a rate study for its water and sewer utilities. The purpose of this study is to design an updated schedule of water and sewer rates that promotes the financial sustainability of the utilities and recovers system costs in a fair manner from utility customers. The study focused on the five-year period, FY 2018/19 through FY 2022/23.

The key objectives and outcomes of this study are a culmination of industry best practice, consultant recommendations, and City policy direction. The key objectives are to:

- Design water and sewer rate structures in line with industry standards for cost-based rates,
- Set rate levels sufficient to sustain ongoing operations and maintenance, pay existing debt service obligations, and build adequate cash reserves, and
- Safeguard system sustainability, while providing fair and reasonable rates for customers

The proposed rates do not provide for additional capital investment in the utility systems.

To accomplish the above-stated objectives, this study evaluated current water and sewer rate structures, incorporated cost-based rate setting principals in the design of proposed modifications to current rate structures, and developed five-year financial plans and rate adjustment strategies to recover the costs of water and sewer system operations. A five-year schedule of water and sewer rates is presented for Council approval and implementation through the public rate adoption process.

Rate study findings indicate a need for water and sewer rate restructuring to better align the City's utility pricing structures with current customer demands and best practice trends in utility rate setting. Additionally, annual rate revenue increases are necessary for the water and sewer utilities to meet the ongoing financial obligations of each utility system.

### Water Utility

Water rate revenues are projected to increase 6.75% annually for FY 2018/19 through FY 2021/22, followed by an additional 3.0% increase in FY 2022/23. The proposed increases represent the overall increase needed in water utility revenues to break-even with operating and maintenance costs, existing debt service, and contribution to minimum cash reserves. Impacts to individual customer bills will vary based on the size of meter and monthly water usage.

### Sewer Utility

Sewer rate revenues are projected to increase 3.0% annually for FY 2018/19 through FY 2022/23. The proposed increases represent the overall increase needed in sewer utility revenues to break-even with operating and maintenance costs, existing debt service, and contribution to minimum cash reserves.

Impacts to individual customer bills will vary based on number of residential dwelling units and the number of assigned commercial equivalent dwelling units.

The proposed five-year schedule of water and sewer rates are presented below.

### Five-Year Schedule of Proposed Water Rates

Fiscal Year Ending June 30,						
Water Rate Schedule	Current	Proposed				
		2019	2020	2021	2022	2023
<b>Effective Date:</b>		Apr-19	Oct-19	Oct-20	Oct-21	Oct-22
<u>Fixed Charge - \$/Month</u>						[1]
<u>Usage Allowance in Fixed Charge</u>	<i>First 15 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>
3/4-inch	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82
1-inch	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82
1-1/2-inch	\$102.10	\$48.96	\$52.27	\$55.80	\$59.56	\$61.35
2-inch	\$163.36	\$58.30	\$62.23	\$66.43	\$70.91	\$73.04
3-inch	\$326.69	\$99.48	\$106.19	\$113.36	\$121.01	\$124.64
4-inch	\$510.49	\$128.33	\$136.99	\$146.24	\$156.11	\$160.79
6-inch	\$1,020.95	\$198.75	\$212.16	\$226.48	\$241.77	\$249.02
8-inch	\$1,633.53	\$281.83	\$300.85	\$321.16	\$342.84	\$353.12
10-inch	\$2,858.70	\$384.71	\$410.68	\$438.40	\$468.00	\$482.04
<u>Variable Charge - \$/ccf</u>						
First 15 ccf	\$0.00					
Next 30 ccf	\$0.48					
Over 45 ccf	\$0.64					
First 12 ccf		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Over 12 ccf		\$2.15	\$2.30	\$2.45	\$2.62	\$2.70

**Notes:**

[1] Rates for October 2022 will increase by the greater of 3.0% or the ENR CCI Index. Rates shown reflect a 3.0% increase.

### Five-Year Schedule of Proposed Sewer Rates

Fiscal Year Ending June 30,						
Sewer Rate Schedule	Current	Proposed				
		2019	2020	2021	2022	2023
<b>Effective Date:</b>		Apr-19	Oct-19	Oct-20	Oct-21	Oct-22
<u>Fixed Charge - \$/Unit/Month</u>			[1]	[1]	[1]	[1]
Residential	\$ 53.05	\$56.33	\$58.02	\$59.77	\$61.56	\$63.40
Apartments						
First 4 Units	\$ 53.05					
Each Add'l 4 Units	0.578 EDU \$ 30.66					
All Units	0.583 EDU	\$32.82	\$33.81	\$34.82	\$35.86	\$36.94
Commercial	\$ 53.05	\$56.33	\$58.02	\$59.77	\$61.56	\$63.40

**Notes:**

[1] Rates for October 2019 through October 2022 will increase by the greater of 3.0% or the ENR CCI index. Rates shown reflect 3.0% increases.

Supporting analyses of the proposed water and sewer rate schedules are provided in the following study report.

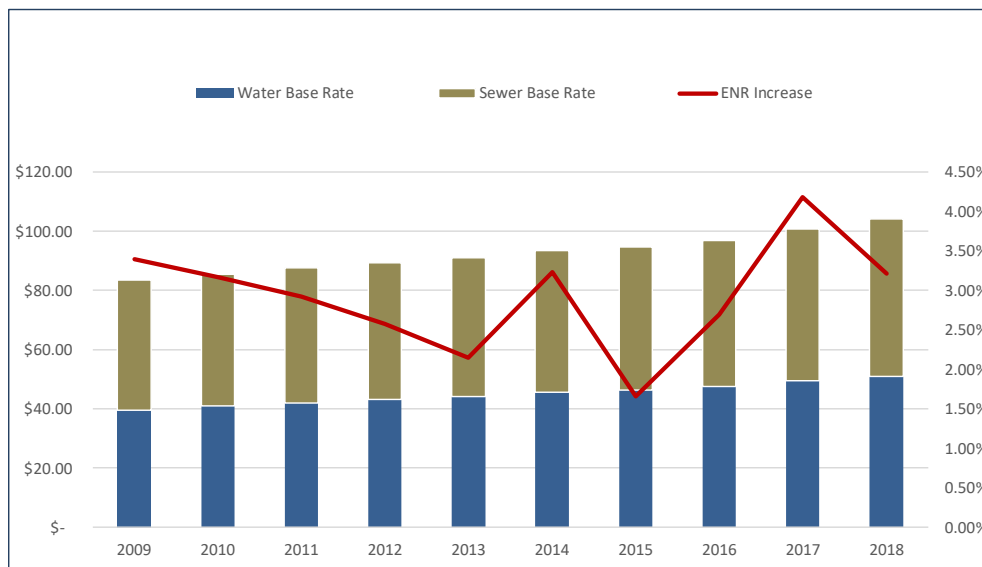
## INTRODUCTION

The City of Wheatland engaged ClearSource to complete a rate study for its water and sewer utilities. The purpose of this study is to design an updated schedule of water and sewer rates that promotes the financial sustainability of the utilities and recovers system costs in a fair manner from utility customers. The study focused on the five-year period, FY 2018/19 through FY 2022/23.

## Historical Perspective

The current structure of the City's water and sewer rates was established decades ago. Rates have historically increased on an annual basis in proportion to the **Engineering News Record Construction Cost Index (ENR CCI)**. Based on the annual percentage change in the ENR CCI, water and sewer rates have increased an average of three percent (3.0%) per year over the past 10 years. The last water and sewer rate increase was implemented in October 2018. Exhibit 1 presents the annual change in the water and sewer base rates over this time period.

**Exhibit 1 – Historical Water and Sewer Rates**



The historical rate increases were intended to primarily fund the day-to-day operations of the water and sewer systems. Minimal revenue has been generated to build operating reserves or to invest in new capital infrastructure. Ratemaking trends have evolved over the past 10 years, warranting an evaluation of current utility rate structures, system costs, and revenues required for system sustainability.

## Study Objectives

The overall objectives and outcomes of this rate study are based on detailed analyses, consultant findings and recommendations, and policy direction received via multiple meetings with City staff and ad-hoc committee members and presentations to City Council. The key objectives are to:

- Design water and sewer rate structures in line with industry standards for cost-based rates,
- Set rate levels sufficient to sustain ongoing operations and maintenance, pay existing debt service obligations, and build adequate cash reserves, and
- Safeguard system sustainability, while providing fair and reasonable rates for customers

The proposed rates do not provide for additional capital investment in the utility systems.

## Methodology

The objectives of the study, the methodology used to complete the study, and the proposed schedule of water and sewer rates were significantly influenced by legislative guidance and analytical principles that are generally accepted and widely followed throughout the industry. Resources included:

- Articles 13C and 13D of the California Constitution
- Proposition 218
- American Water Works Association, Manual of Water Supply Practices, *Principles of Water Rates, Fees, and Charge* (AWWA Manual M1)
- American Water Works Association, Manual of Water Supply Practices, *Developing Rates for Small Systems* (AWWA Manual M54)

The study involved comprehensive data analysis and the development of alternative rate structures and rate adjustment scenarios for City consideration. ClearSource worked closely with the City to arrive at rate recommendations that achieve near term City goals, consider industry best practice, and comply with legal requirements. Meetings were held with City staff and Committee members to validate input parameters, review interim findings, and receive policy direction. From these meetings, final scenarios were presented to City Council for selection of the preferred water and sewer rate schedules.

## Report Organization

The outcomes for the study are presented separately for each utility to address the following major study elements:

- Rate Structure Evaluation
- Revenue Requirement Forecast
- Schedule of Proposed Rates
- Customer Bill Impacts

## **WATER UTILITY**

### **Water Rate Structure Evaluation**

The principal considerations in designing utility rate structures are to establish rates for customers that generate sufficient revenues for the utility and that are reasonably commensurate with the cost of providing utility service. Other considerations in rate design should include City pricing objectives, ease of understanding and implementation, and impact on customer bills.

#### **Existing Water Rate Structure**

The existing water rate structure is comprised of both fixed charge and volume charge components. The fixed (base) charge increases with the size of meter and includes a 1,500 cubic foot monthly usage allowance. The volume charge includes a two-tier increasing block structure, applied to water usage over the base charge allowance. The current water rate structure generates about 92% of the utility's rate revenue from the base charge. The remaining 8% of revenue is generated from volume charges.

The cost of service analysis, as well as industry practice, indicates that the existing water rate structure recovers a disproportionate share of utility costs from the fixed base charge. The relatively high fixed charges over-recover costs from low water users. In addition, the current ratios used to scale up the meter charges by size are significantly higher than industry standards. This results in an over-recovery of fixed costs for customers with larger than 1-inch meters. Due to the high fixed charge, the current usage charges are set well below the indicated cost of service for water demand. The relatively low water use charges under-recover costs from higher water users.

Industry best practice suggests that cost recovery for small water systems should be about 60% from fixed charges and 40% from volume charges. This suggested ratio of revenue generation is intended to balance the needs of the utility for adequate revenue stability and a customer's ability to control its water bill through water conservation efforts. Other ratemaking trends include eliminating usage allowances from the fixed charge component and applying the volume charge component to total actual usage and, in some cases, collapsing multiple usage blocks to a single rate per unit of water in order to simplify customer understanding.

#### **Proposed Water Rate Structure**

ClearSource recommends that the City move to a revenue generation ratio closer to 60% fixed and 40% volume. This can be accomplished by aligning the fixed cost rate component with the cost allocation results, and reducing the water usage allowance included in the base charge.

City Council selected a water rate structure that incrementally moves the City toward the ultimate goal of a 60% fixed / 40% volume rate structure, while striving to balance rate payer impacts and revenue stability for the water utility. The proposed water rate structure incorporates the following changes:

- Realigns cost recovery between the fixed and variable rate components
- Realigns base charges by meter size with published industry standard ratios
- Reduces the 1,500 cubic foot allowance to a 1,200 cubic foot allowance, and
- Collapses the multiple water usage tiers to a single rate per unit of water over the 1,200 cubic foot allowance

The combination of proposed changes enhances customer equity and achieves significant progress toward the ultimate pricing structure. Under the proposed water rate structure, 70% of revenues are forecasted to be generated from fixed charges and 30% of revenue from volume charges.

## Development of Cost-Based Water Rates

### *Water System Customer Base*

The water system customer base is comprised of single family residential (SFR), multi-family residential (MFR), and commercial customers. SFR customers represent about 85% of total system customers, with MFR and commercial customers equally representing the remaining 15%. The City applies the same schedule of water rates to all customers on the system. For a small water system of Wheatland's size, potential demand differences between residential and non-residential customers are presumed immaterial to the cost of providing water service, and as such, a single schedule of rates achieves reasonable equity.

### *Cost Allocation*

FY 2018/19 total utility costs were allocated to water service functions to serve as the building blocks for designing the fixed and variable rate structure components. Water service functions include:

- **Customer** – Costs associated with services that do not vary by water consumptions, such as account billing and servicing
- **Meters & Services** – Costs associated with installation, maintenance, and repairs of meters and services
- **Fire Protection** – Costs associated with the water system's delivery of direct fire protection
- **Water Demand** – Costs associated with the delivery of water to customers

The fixed charge component of restructured water rates was designed to recover costs for the customer, meters & services, and fire protection functions, in addition to the cost of the water allowance to be included in the base charge. The volume charge recovers costs for water demand.

Exhibit 2 presents the results of the cost allocation process.



## Exhibit 2 – Water System Cost Allocation

	Functions of Utility Service					Total
	Customer	Meters & Services	Fire Protection	Water Demand		
Total Utility Costs to be Recovered:	\$ 102,398	\$ 70,025	\$ 68,023	\$ 629,662	\$ 870,107	
Charge Basis	No. of Customers	No. of MSEs [1]	No. of MCEs [2]	Total Billed Use (ccf)		
Total Utility Units of Service	1,196	1,274	1,316	312,058		
Total Utility Unit Costs - \$ / Unit	\$ 7.13	\$ 4.58	\$ 4.31	\$ 2.02		

**Notes:**

[1] MSE = Meters & service equivalents, using industry standard cost ratios for larger meters

[2] MCE = Meter capacity equivalents, using industry standard capacity ratios for larger meters.

The proposed base charge adds together the unit costs for customer (\$7.13), meters & services (\$4.58) fire protection (\$4.31), and the unit cost of water demand (\$2.02) multiplied by the 12 hundred cubic foot usage allowance. The volume charge is set equal to cost of water demand (\$2.02).

Exhibit 3 presents a comparison of the existing water rate structure and proposed restructured water rates, prior to incorporating proposed rate revenue increases (discussed in the next section).

## Exhibit 3 – Current and Proposed Restructured Water Rates

Water Rate Schedule	Current	Restructured
<u>Fixed Charge - \$/Month</u>		
<i>Usage Allowance in Fixed Charge</i>	<i>First 15 Ccf</i>	<i>First 12 Ccf</i>
3/4-inch	\$51.04	\$40.23
1-inch	\$51.04	\$40.23
1-1/2-inch	\$102.10	\$45.87
2-inch	\$163.36	\$54.61
3-inch	\$326.69	\$93.19
4-inch	\$510.49	\$120.21
6-inch	\$1,020.95	\$186.18
8-inch	\$1,633.53	\$264.01
10-inch	\$2,858.70	\$360.39
<u>Variable Charge - \$/ccf</u>		
First 15 ccf	\$0.00	
Next 30 ccf	\$0.48	
Over 45 ccf	\$0.64	
First 12 ccf		\$0.00
Over 12 ccf		\$2.02

### **Water Rate Restructuring Implications**

The rate restructuring itself is intended to be revenue neutral for the water utility as a whole. The fixed charge revenue is expected to be lower due to reducing the allowance from 1,500 cubic feet to 1,200 cubic feet. Assuming customers use the same amount of water as currently used, the volume charge revenue is expected to be higher due to charging for more water at the higher volume charge. Water usage patterns must be carefully monitored over the next few years to evaluate potential reductions in water use resulting from the new rate structure. The City intends to re-evaluate customer usage patterns and the level of usage allowance in the base charge during the next five-year rate cycle.

### **Water Revenue Requirement Forecast**

The revenue requirement analysis forms the basis for a multi-year financial plan and rate adjustment strategy for the utility. It also forms the basis for establishing a water rate structure that recovers the total costs of operating the system. Linking utility rate levels to a financial plan helps to enable sound financial performance for the utility, and establishes a clear and reasonable relationship between the costs imposed on utility customers and the costs incurred to provide them service.

### **Financial Policies**

In order to establish adequate rates, a utility must define its benchmarks for financial performance. The purpose of establishing financial policies for the City's utilities is to promote the financial integrity and stability of the utilities, and to provide for the sustainability of essential utility services. This section describes the financial policies selected for inclusion in the Water Utility Financial Plan.

### *Operating Reserves*

An operating reserve is designed to provide a liquidity cushion. It protects the financial viability of the utility from the risk of short-term variation in revenues and expenses - primarily caused by seasonal fluctuations in billings and receipts, unanticipated operating expenses, or lower than expected revenue collections. Target funding levels are generally expressed in number of days' operating and maintenance (O&M) expense, with the minimum requirement varying with the expected risk of unanticipated needs or revenue volatility. Industry practice ranges from 30 days to 120 days of O&M, with the lower end more appropriate for utilities with very stable revenue streams and the higher end more appropriate for utilities with significant seasonal variations. A total of 180 days of O&M is suggested when taking into account total cash on hand (operating and capital reserves). Consistent with general industry guidelines, this study established a minimum water operating reserve of 90 days of O&M – ranging from about \$175,000 to \$215,000. Any excess reserves above the established threshold are transferred to the capital fund to build reserves for future capital needs.

### *Capital Reserves*

In addition to protecting against variations in operating costs and revenues, it is prudent to maintain a capital reserve to meet unexpected emergency capital outlays. Common industry practice is to maintain a minimum balance in the capital account equal to 1%-2% of system fixed assets. This study established a minimum water capital reserve of 2% of fixed assets— about \$112,000 based on current water utility assets of \$5.6 million. This reserve was phased in over the study period to generate a total combined water operating and capital reserve minimum target of 180 days of O&M. The water capital fund is projected to have a cash balance of about \$345,000 by the end of the five-year study period. Total operating and capital cash reserves reach \$560,000 by the end of the study period.

### *Debt Reserve*

A restricted debt reserve is often a requirement associated with the issuance of revenue bonds and some other forms of debt. The reserve is typically set equal to annual or maximum annual debt service payments (principal and interest). This study recommends a water debt reserve target equal to maximum annual debt service payments on all outstanding debt. The water utility has three outstanding debt instruments with annual principal and interest payments averaging about \$180,000 over the study period. The current water debt reserve account is funded at about \$175,000.

### *Debt Service Coverage*

Debt service coverage is also a requirement associated with revenue bonds and some other forms of debt. Under this requirement, the agency agrees to collect sufficient annual system revenues to meet all operating expenses, pay annual debt service, and collect an additional multiple of that debt service. Debt coverage ratios typically range from 1.10 to 1.50 times annual debt service payments. For example, a coverage requirement of 1.25 means the agency will collect an additional 25% of annual debt service payments. The extra revenue is a cushion that makes creditors more confident that debt service will be paid on time. The extra revenue can be used for capital expenditures and/or to build cash reserves. This study assumes a minimum water debt service coverage requirement of 1.0, with a target coverage of 1.25 by the end of the study period. Rates were not impacted by this policy; cash needs are the driver of proposed water rate increases.

### *Debt-to-Fixed Assets Ratio*

Another useful measurement in assessing the debt burden of a utility is the capital structure: the outstanding debt as a percentage of net capital assets (original cost less accumulated depreciation). Industry best practice suggests that a target capital structure of no more than 60% debt is appropriately conservative. A debt percentage lower than 60% suggests that the utility has the financial capacity to issue more debt if needed. Conversely, ratios above 60% may limit the City's ability to secure new debt. The water utility's capital structure is currently 88% debt, and projected to climb to over 100% debt by the end of the study period. The utility's debt is forecasted to be greater than the book value of the

system since infrastructure assets are declining in value at a faster pace than outstanding debt is being paid down. The debt ratio will continue to climb until such time as debt is paid off and/or new investments are made in capital to offset currently depreciating infrastructure.

### **Operating Forecast**

The operating forecast focuses on annual expenses incurred to operate, maintain, and manage the utility systems and annual revenue collections to meet those expenses. The baseline for the expense forecast is the adopted FY 2016/17 budget, adjusted for future years to incorporate cost escalation, growth, and known or anticipated future expenditures.

### *Key Assumptions*

The following assumptions were used in preparing the operating forecast:

- Customer revenue growth: 0.25% per year
- Penalties and miscellaneous revenue: maintained at current levels
- Interest earnings on cash balances: 0.33% per year (5-year average California Local Agency Investment Fund (LAIF))
- General cost inflation: 2.5% per year
- Labor cost inflation: 3.0% per year
- Electricity and benefits cost inflation: 5.0% per year
- Additional staffing salaries and benefits: \$100,000 split between water and sewer utilities (beginning in FY 2018/19)
- Water repayment of \$250,00 loan from sewer utility: \$64,000 per year “expense” to water and “revenue” to sewer (repaid over 4-year period starting in FY 2019/20)

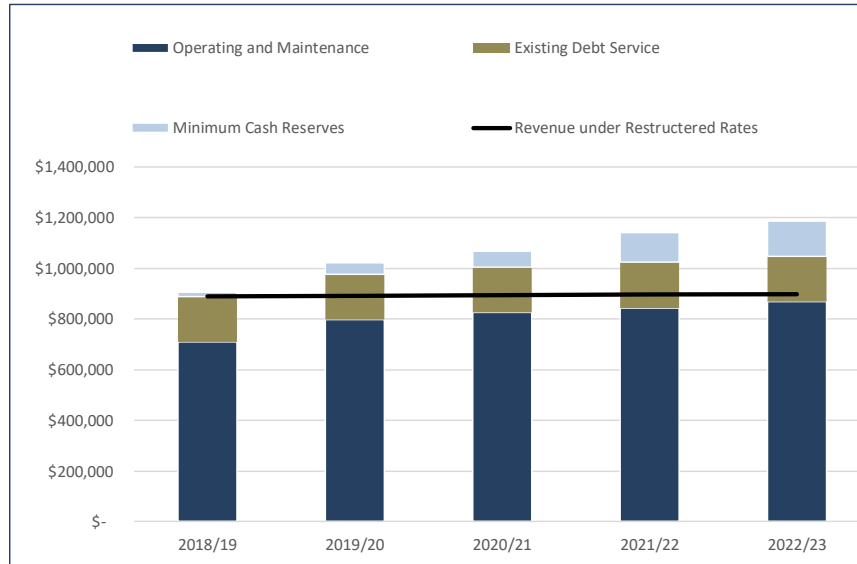
### *Results*

Water utility O&M expense is forecasted at \$709,000 in FY 2018/19, increasing to \$869,000 by the end of the study period. Incorporating annual debt service payments and contributions to cash reserves, brings the total revenue requirement to just under \$1.2 million by the end of the study period.

Water operating revenues are categorized as rate revenue and non-rate revenue. Rate revenue under the existing level of rates uses historical 2016 customer billing system data reconciled with actual reported revenue, and forecasted to incorporate assumed customer growth and CCI rate increases through FY 2017/18. Total operating revenue is currently projected at about \$890,000, increasing slightly, with assumed customer growth, to just under \$900,000 by the end of the study period.

Exhibit 4 presents the results of the water utility operating forecast.

#### Exhibit 4 – Water Operating Forecast



#### Revenue Needs Assessment

The revenue needs assessment evaluates the sufficiency of current water utility revenues in meeting forecasted obligations of the utility, and designs a rate adjustment strategy to close any revenue shortfall over the study period.

To close the revenue gap illustrated in Exhibit 4, total water utility rate revenues need to increase 6.75% annually for FY 2018/19 through FY 2021/22, followed by an additional 3.0% increase in FY 2022/23. The proposed increases represent the overall increase needed in water utility revenues to break-even with operating and maintenance costs, existing debt service, and contribution to minimum cash reserves. As noted previously, the proposed rate increases do not provide for additional system capital investment.

#### Schedule of Proposed Water Rates

Exhibit 5 presents the current water rate structure and proposed five-year schedule of water rates, incorporating the revised water rate structure and utility-wide annual rate revenue increases.

## Exhibit 5 – Proposed Five-Year Water Rate Schedule

Fiscal Year Ending June 30,						
Water Rate Schedule	Current	Proposed				
		2019	2020	2021	2022	2023
<b>Effective Date:</b>		Apr-19	Oct-19	Oct-20	Oct-21	Oct-22
<u>Fixed Charge - \$/Month</u>						[1]
<u>Usage Allowance in Fixed Charge</u>	<i>First 15 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>	<i>First 12 Ccf</i>
3/4-inch	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82
1-inch	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82
1-1/2-inch	\$102.10	\$48.96	\$52.27	\$55.80	\$59.56	\$61.35
2-inch	\$163.36	\$58.30	\$62.23	\$66.43	\$70.91	\$73.04
3-inch	\$326.69	\$99.48	\$106.19	\$113.36	\$121.01	\$124.64
4-inch	\$510.49	\$128.33	\$136.99	\$146.24	\$156.11	\$160.79
6-inch	\$1,020.95	\$198.75	\$212.16	\$226.48	\$241.77	\$249.02
8-inch	\$1,633.53	\$281.83	\$300.85	\$321.16	\$342.84	\$353.12
10-inch	\$2,858.70	\$384.71	\$410.68	\$438.40	\$468.00	\$482.04
<u>Variable Charge - \$/ccf</u>						
First 15 ccf	\$0.00					
Next 30 ccf	\$0.48					
Over 45 ccf	\$0.64					
First 12 ccf		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Over 12 ccf		\$2.15	\$2.30	\$2.45	\$2.62	\$2.70

**Notes:**

[1] Rates for October 2022 will increase by the greater of 3.0% or the ENR CCI Index. Rates shown reflect a 3.0% increase.

## Water Customer Bill Impacts

Exhibit 6 provides a comparison of existing and proposed water base charges for up to a 1-inch meter.

### Exhibit 6 – Comparison of Water Base Charges

Fiscal Year	Current	2018/19	2019/20	2020/21	2021/22	2022/23	Cumulative
<b>Effective Date:</b>		<b>Apr-19</b>	<b>Oct-19</b>	<b>Oct-20</b>	<b>Oct-21</b>	<b>Oct-22</b>	
<b>Utility-Wide Rate Revenue Increase</b>							
Rate Adjustment		6.75%	6.75%	6.75%	6.75%	3.00%	33.75%
<b>Monthly Base Charge</b>							
Monthly Base charge	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	
Monthly Dollar Difference		(\$8.09)	\$2.90	\$3.09	\$3.30	\$1.57	\$2.78
Rate Adjustment		-15.85%	6.75%	6.75%	6.75%	3.00%	5.44%

[1] Current rate includes up to 1-inch meter and usage allowance of 1500 cubic feet

[2] Restructured rate includes 1-inch meter and usage allowance of 1200 cubic feet

Customers under this usage profile will experience an increase of only \$2.78 a month over the five-year period - a cumulative increase of about 5% compared to the system average increase of about 34%. This usage profile encompasses about 61% of average annual residential customer bills. Individual customer water bills will vary based on size of meter and actual monthly water use above the 1,200 cubic foot allowance. In general, as meter size and water use increases, the corresponding monthly water bill increases.

Exhibit 7 provides a sample comparison of existing and proposed monthly water bills at varying units of water usage for customers with up to a 1-inch meter. The highlighted cells represent the point at which proposed water bills exceed the current water base rate.

### Exhibit 7 – Sample Water Bill Impacts

Water Units (ccf)	[1]						% of Residential Bills [2]
	Current	Apr-19	Oct-19	Oct-20	Oct-21	Oct-22	
0	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	5.1%
1	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	7.7%
2	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	11.2%
3	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	16.4%
4	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	22.3%
5	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	28.4%
6	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	34.3%
7	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	40.1%
8	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	45.3%
9	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	49.8%
10	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	54.2%
11	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	58.0%
12	\$51.04	\$42.95	\$45.85	\$48.94	\$52.25	\$53.82	61.4%
13	\$51.04	\$45.10	\$48.15	\$51.40	\$54.87	\$56.51	64.3%
14	\$51.04	\$47.26	\$50.45	\$53.85	\$57.49	\$59.21	67.2%
15	\$51.04	\$49.41	\$52.75	\$56.31	\$60.11	\$61.91	70.0%
16	\$51.52	\$51.57	\$55.05	\$58.76	\$62.73	\$64.61	72.3%
17	\$52.00	\$53.72	\$57.35	\$61.22	\$65.35	\$67.31	74.6%
18	\$52.48	\$55.87	\$59.65	\$63.67	\$67.97	\$70.01	76.6%
19	\$52.96	\$58.03	\$61.94	\$66.13	\$70.59	\$72.71	78.6%
20	\$53.44	\$60.18	\$64.24	\$68.58	\$73.21	\$75.41	80.6%
21	\$53.92	\$62.34	\$66.54	\$71.04	\$75.83	\$78.11	82.1%
22	\$54.40	\$64.49	\$68.84	\$73.49	\$78.45	\$80.80	83.4%
23	\$54.88	\$66.64	\$71.14	\$75.94	\$81.07	\$83.50	84.6%
24	\$55.36	\$68.80	\$73.44	\$78.40	\$83.69	\$86.20	85.8%
25	\$55.84	\$70.95	\$75.74	\$80.85	\$86.31	\$88.90	86.8%
26	\$56.32	\$73.11	\$78.04	\$83.31	\$88.93	\$91.60	87.8%
27	\$56.80	\$75.26	\$80.34	\$85.76	\$91.55	\$94.30	88.8%
28	\$57.28	\$77.41	\$82.64	\$88.22	\$94.17	\$97.00	89.7%
29	\$57.76	\$79.57	\$84.94	\$90.67	\$96.79	\$99.70	90.6%
30	\$58.24	\$81.72	\$87.24	\$93.13	\$99.41	\$102.39	91.4%
31	\$58.72	\$83.88	\$89.54	\$95.58	\$102.03	\$105.09	92.1%
32	\$59.20	\$86.03	\$91.84	\$98.04	\$104.65	\$107.79	92.8%
33	\$59.68	\$88.18	\$94.14	\$100.49	\$107.27	\$110.49	93.4%
34	\$60.16	\$90.34	\$96.44	\$102.94	\$109.89	\$113.19	94.0%
35	\$60.64	\$92.49	\$98.73	\$105.40	\$112.51	\$115.89	94.5%
36	\$61.12	\$94.65	\$101.03	\$107.85	\$115.13	\$118.59	94.9%
37	\$61.60	\$96.80	\$103.33	\$110.31	\$117.75	\$121.29	95.2%
38	\$62.08	\$98.95	\$105.63	\$112.76	\$120.37	\$123.99	95.6%
39	\$62.56	\$101.11	\$107.93	\$115.22	\$122.99	\$126.68	95.9%
40	\$63.04	\$103.26	\$110.23	\$117.67	\$125.61	\$129.38	96.2%
41	\$63.52	\$105.42	\$112.53	\$120.13	\$128.24	\$132.08	96.5%
42	\$64.00	\$107.57	\$114.83	\$122.58	\$130.86	\$134.78	96.7%
43	\$64.48	\$109.72	\$117.13	\$125.04	\$133.48	\$137.48	97.0%
44	\$64.96	\$111.88	\$119.43	\$127.49	\$136.10	\$140.18	97.2%
45	\$65.44	\$114.03	\$121.73	\$129.94	\$138.72	\$142.88	97.4%
46	\$66.08	\$116.19	\$124.03	\$132.40	\$141.34	\$145.58	97.5%
47	\$66.72	\$118.34	\$126.33	\$134.85	\$143.96	\$148.28	97.7%
48	\$67.36	\$120.49	\$128.63	\$137.31	\$146.58	\$150.97	97.8%
49	\$68.00	\$122.65	\$130.93	\$139.76	\$149.20	\$153.67	98.0%
50	\$68.64	\$124.80	\$133.23	\$142.22	\$151.82	\$156.37	98.1%

**Notes:**

[1] Represents illustrative 3.0% increase based on 10-year average historical ENR CCI index. Actual ENR CCI will be used.

[2] Represents % of customer bills over the course of the year with water usage in the corresponding water units columns, or less.

For example, 61.4% of customer bills include water usage of 12 ccf or less.

## **SEWER UTILITY**

### **Sewer Rate Structure Evaluation**

#### **Existing Sewer Rate Structure**

The existing sewer rate structure consists of a monthly fixed charge per equivalent residential dwelling unit (EDU). The single-family residential charge is equal to one (1) EDU. Multi-family residential customers are assigned 1 EDU for the first four dwelling units and 0.578 EDU for each additional four dwelling units. Commercial customers are assigned number of EDUs based on type of business.

The cost of service analysis indicates that the existing sewer rate structure recovers a reasonable share of costs for single family residential customers. The current base charge plus additional unit charge for apartments over-recovers costs for the multi-family class as a whole. About 30 % of apartment dwelling units are charged at the single-family rate. This does not adequately recognize that apartments contribute less sewer to the system on a per unit basis than single family customers. Based on an analysis of average winter-period water usage, per unit sewer contribution for multiple family customers is about 60% of single family residential. The commercial class as a whole recovers reasonable cost of service. However; in many instances, assigned EDUs for individual commercial customers do not correlate to estimated sewer contribution.

Industry best practice has trended toward volume-based rates for all customers, plus an account servicing charge. For administrative practicality, many utilities maintain flat rates per dwelling unit for residential customers, and charge commercial customers based on water usage – either actual monthly water usage or average winter-period usage. Since sewer contribution is not measured for individual customers, winter-period water usage is often used as a surrogate for estimated sewer contribution, especially for residential customers. This approach discounts usage for assumed outdoor watering that does not enter the sewer system.

#### **Proposed Sewer Rate Structure**

ClearSource recommends that the City ultimately move to a volume-based sewer rate structure for commercial customers. Prior to implementation of this change, an audit of individual commercial water use should be performed to ensure reliability of revenues from a volume-based structure. In the near term, ClearSource recommends an incremental approach that moves the City in that direction. This is accomplished by realigning individual commercial customer EDUs to reflect estimated sewer contribution based on actual winter-period water usage. The proposed sewer rate structure incorporates the following changes:

- Realigns the per EDU charge with single family residential estimated sewer contribution based on average winter-period water use - one (1) EDU is set equal to 900 cubic feet



- Eliminates the apartment class additional per unit charge and applies a single per unit charge to all units, set at about 60% of the single-family charge
- Realigns commercial sewer EDUs with current actual winter period water usage for each customer

The combination of proposed changes achieves customer equity and maintains revenue stability for the utility.

## Development of Cost-Based Sewer Rates

### *Sewer System Customer Base*

The sewer system customer base is comprised of single family residential (SFR) multi-family residential (MFR), and commercial customers. While there are minor differences in customers served by the water and sewer systems, the distribution of customers is about the same: SFR = 87%, MFR = 7%, and commercial = 6%. (excludes water system irrigation customers). For a small sewer system of Wheatland's size, potential differences in strength contribution from commercial customers is considered immaterial to the cost of providing treatment services. As such, a flow-based EDU charge achieves reasonable equity.

### *Cost Allocation*

Since proposed sewer rates are designed on a flow-based equivalent dwelling basis, a detailed cost allocation process was not performed.

Exhibit 8 presents a comparison of the existing sewer rate structure and proposed restructured sewer rates, prior to incorporating proposed rate revenue increases (discussed in the next section).

**Exhibit 8 – Current and Proposed Restructured Sewer Rates**

Sewer Rate Schedule		Current	Restructured
<b><u>Fixed Charge - \$/Unit/Month</u></b>			
Residential		\$ 53.05	\$ 54.69
Apartment			
First 4 Units		\$ 53.05	
Each Add'l 4 Units	0.578 EDU	\$ 30.66	
All Units	0.583 EDU		\$ 31.86
Commercial		\$ 53.05	\$ 54.69

### **Sewer Rate Restructuring Implications**

The rate restructuring itself is intended to be revenue neutral for the sewer utility as a whole. Individual customer bills will vary based on number of residential dwelling units and assigned commercial EDUs.

## Sewer Revenue Requirement Forecast

Consistent with the water revenue requirement analysis, this study developed a multi-year financial plan and rate adjustment strategy for the sewer utility.

### Financial Policies

This section describes the financial policies selected for inclusion in the Sewer Utility Financial Plan.

#### *Operating Reserves*

Consistent with general industry guidelines, this study established a minimum sewer operating reserve of 60 days of O&M – ranging from about \$125,000 to \$140,000. The sewer utility has a lower target threshold than water due to greater revenue stability realized from the flat sewer rate structure. Any excess reserves above the established threshold are transferred to the capital fund to build reserves for future capital needs.

#### *Capital Reserves*

Consistent with the water utility, a minimum sewer capital reserve was established at 2% of fixed assets– about \$140,000 based on current sewer utility assets of \$7 million. This reserve was phased in over the study period to generate a total combined sewer operating and capital reserve minimum target of 180 days of O&M. The sewer capital fund is projected to have a cash balance of about \$390,000 by the end of the five-year study period. Total operating and capital cash reserves reach \$530,000 by the end of the study period.

#### *Debt Reserve*

Consistent with the water utility, a sewer debt reserve target was set equal to maximum annual debt service payments on all outstanding debt. The sewer utility has two outstanding debt instruments with annual principal and interest payments of about \$215,000 over the study period. The current sewer debt reserve account is funded at about \$165,000.

#### *Debt Service Coverage*

Consistent with the water utility, a minimum sewer debt service coverage requirement was set at 1.0, with a target coverage of 1.25 by the end of the study period. Rates were not impacted by this policy; cash needs are the driver of proposed sewer rate increases.

#### *Debt-to-Fixed Assets Ratio*

The sewer utility's capital structure is currently over 100% debt, and projected to climb to about 150% debt by the end of the study period. Similar to the water utility, sewer utility debt is forecasted to be greater than the book value of the system since infrastructure assets are declining in value at a faster pace than outstanding debt is being paid down. The debt ratio will continue to climb until such time as

debt is paid off and/or new investments are made in capital to offset currently depreciating infrastructure.

### Operating Forecast

The sewer utility operating forecast relies on the same key assumptions as previously described for the water utility.

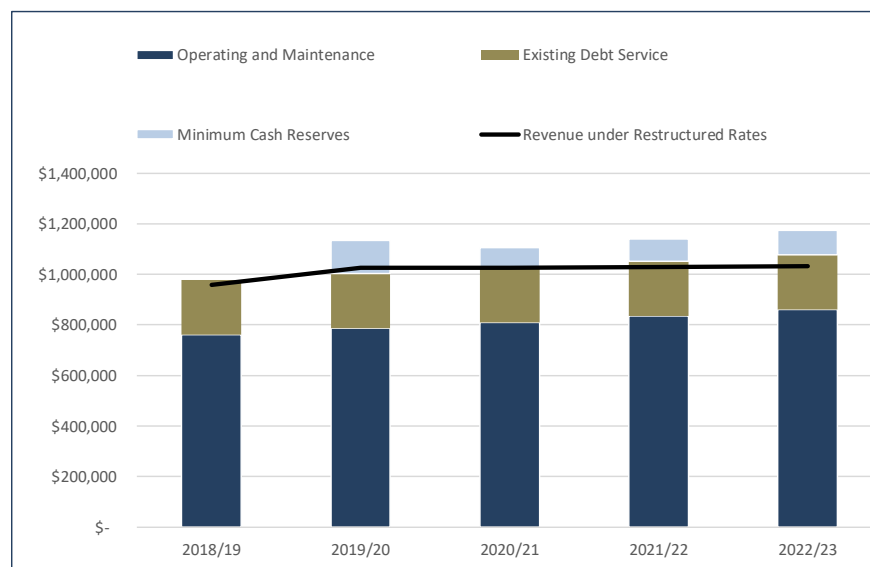
### Results

Sewer utility O&M expense is forecasted at \$761,000 in FY 2018/19, increasing to \$862,000 by the end of the study period. Incorporating annual debt service payments and contributions to cash reserves, brings the total revenue requirement to just under \$1.2 million by the end of the study period.

Sewer operating revenues are categorized as rate revenue and non-rate revenue. Rate revenue under the existing level of rates uses historical 2016 customer billing system data reconciled with actual reported revenue, and forecasted to incorporate assumed customer growth and CCI rate increases through FY 2017/18. Total operating revenue is currently projected at about \$960,000, increasing slightly, with assumed customer growth, to just over \$1 million by the end of the study period.

Exhibit 9 presents the results of the sewer utility operating forecast.

**Exhibit 9 – Sewer Operating Forecast**



### Revenue Needs Assessment

The revenue needs assessment evaluates the sufficiency of current sewer utility revenues in meeting forecasted obligations of the utility, and designs a rate adjustment strategy to close any revenue shortfall over the study period.

To close the revenue gap illustrated in Exhibit 9, total sewer utility rate revenue needs to increase 3.0% per year over the five-year study period (FY 2018/19 through FY 2021/22). The proposed increases represent the overall increase needed in sewer utility revenues to break-even with operating and maintenance costs, existing debt service, and contribution to minimum cash reserves. As noted previously, the proposed rate increases do not provide for additional system capital investment.

## Schedule of Proposed Sewer Rates

Exhibit 10 presents the current sewer rate structure and proposed five-year schedule of sewer rates, incorporating the revised sewer rate structure and utility-wide annual rate revenue increases.

**Exhibit 10 – Proposed Five-Year Sewer Rate Schedule**

Sewer Rate Schedule		Current	Fiscal Year Ending June 30,				
			Proposed				
			2019	2020	2021	2022	2023
Effective Date:			Apr-19	Oct-19	Oct-20	Oct-21	Oct-22
Fixed Charge - \$/Unit/Month				[1]	[1]	[1]	[1]
Residential		\$ 53.05	\$56.33	\$58.02	\$59.77	\$61.56	\$63.40
Apartments							
First 4 Units		\$ 53.05					
Each Add'l 4 Units	0.578 EDU	\$ 30.66					
All Units	0.583 EDU		\$32.82	\$33.81	\$34.82	\$35.86	\$36.94
Commercial		\$ 53.05	\$56.33	\$58.02	\$59.77	\$61.56	\$63.40

Notes:

[1] Rates for October 2019 through October 2022 will increase by the greater of 3.0% or the ENR CCI index. Rates shown reflect 3.0% increases.

## Sewer Customer Bill Impacts

Exhibit 11 provides a comparison of existing and proposed sewer rates for one (1) EDU.

**Exhibit 11 – Comparison of Sewer Rates**

Fiscal Year	Current	2018/19	2019/20	2020/21	2021/22	2022/23	Cumulative
<b>Effective Date:</b>		<b>Apr-19</b>	<b>Oct-19</b>	<b>Oct-20</b>	<b>Oct-21</b>	<b>Oct-22</b>	
<b>Utility-Wide Rate Revenue Increase</b>							
Rate Adjustment		3.00%	3.00%	3.00%	3.00%	3.00%	15.93%
<b>Monthly Bill per EDU</b>							
Monthly Bill per EDU	\$53.05	\$56.33	\$58.02	\$59.77	\$61.56	\$63.40	
Monthly Dollar Difference		\$3.28	\$1.69	\$1.74	\$1.79	\$1.85	\$10.35
Rate Adjustment		6.19%	3.00%	3.00%	3.00%	3.00%	19.52%

Notes:

one (1) EDU = 900 cubic feet per month

Customers under this usage profile will experience an increase of about \$10 a month over the five-year period - a cumulative increase of about 19.5% compared to the system average increase of about 16%. This usage profile encompasses all single-family residential customers. Individual apartment and commercial sewer bills will vary based on number of dwelling units or assigned number of EDUs.