



Town of Castle Rock

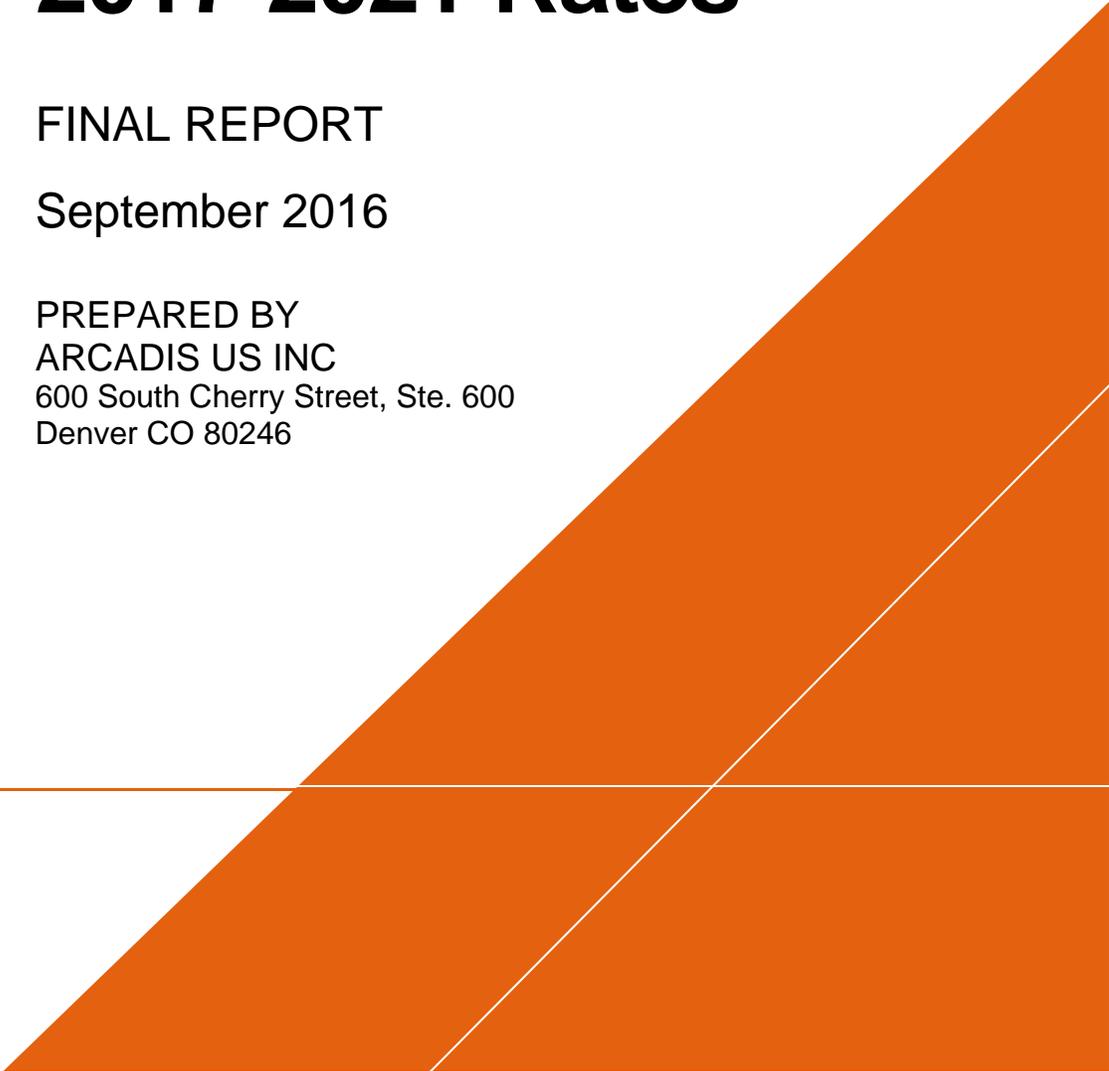
Utilities Department • 175 Kellogg Court • Castle Rock, CO 80109

2016 Utilities Rates and Fees Study Update – Vol. 1 of 2 2017-2021 Rates

FINAL REPORT

September 2016

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- F. Water Fund Cost-of-Service Study
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1 Executive Summary

1.1 PURPOSE

The Town of Castle Rock, Colorado (the Town) engaged Arcadis to conduct comprehensive rates and fees studies for water, water resources, wastewater, and stormwater utilities funds. The purpose of the rates and fees study is to provide the Town with a thorough review of annual revenue requirements and determine cost-of-service (COS) based rates for each utility enterprise fund. The Town's financial objectives must be met while at the same time being defensible and promoting water conservation.

This report presents the results of the financial plans and COS rates and fees study for the water, water resources, wastewater, and stormwater utilities funds for the 2016 Study Update. Occasionally, totals presented in the tables of this report will calculate to slightly different numbers due to rounding.

Financial plans, COS analyses, and rate designs for the water and water resources funds take into account the Town's Hybrid 3,500 acre feet (AF) renewable water project costs. The impact of the Hybrid 3,500 AF plan on user charge revenue requirements began in 2013. The 2016 Annual Rates and Fees Study Update (the Study) is informed by the financial terms of negotiated agreements and revised capital and operating expenditure projections. This update also aims to be in line with Castle Rock Water's Financial Management Plan goals, one of which is to minimize future rates at or below the 2013 Hybrid Model levels.

1.2 FINANCIAL MANAGEMENT PLAN

Castle Rock Water prepared its Financial Management Plan (FMP) in 2015 and will update this plan on an annual basis. The FMP was completed to help the utility achieve the following goals:

1. To minimize future rates at or below the 2013 Hybrid Model levels
2. To minimize debt carrying costs at or below industry standards
3. To minimize risk by balancing fixed versus variable revenues and expenses equal or matching as appropriate
4. To keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations
5. To keep our rates and fees competitive with surrounding communities
6. To keep adequate reserves and maintain fund balances between minimums and maximums
7. To keep rates and fees affordable within various national affordability indices
8. To develop regional partnerships to provide economies of scale to reduce total costs of infrastructure to our customers
9. To be an industry leader in the application of financial management benchmarking ourselves against others locally and nationally

1.3 COST-OF-SERVICE ANALYSIS RESULTS

1.3.1 Revenue Requirements

Arcadis prepared a long-term financial plan to project the revenues required for each of Town's utilities funds. The financial plans allow the integration of debt, accumulation/use of reserves, and other assumptions to finance the Town's utility system operations and maintenance (O&M) expenses and capital improvements for each respective utility. For each utility fund, the financial plan calculates the annual user charge revenue requirements. The projection period developed for each utility financial plan was driven by the length of the capital improvement program (CIP) and ends in 2055.

While the projection period extends many years, in this report revenue requirements and capital improvement programs are presented only for the 2017 through 2021 study period for all the Town's utility funds.

1.3.1.1 Utility Revenue Requirements

Utility rates and charges are based on the Town's projected revenue requirements to operate and maintain the respective utility system along with the utility's CIP.

- The Town's 2017 total water revenue requirement from rates is estimated to be \$13.7 million.
- The Town's 2017 total water resources revenue required from charges is estimated to be \$8.6 million.
- The Town's 2017 total wastewater revenue required from rates is estimated to be \$10.7 million.
- The Town's 2017 total stormwater revenue required from fees is estimated to be \$3.0 million.

1.3.1.2 Utility Fund Summaries

A summary of fund revenue requirements for the rates and fees study period of 2017 through 2021 is presented in Appendix A.

1.3.2 Current Rates

The Town's current utility rates are listed in Tables 1-1 through 1-5. Volumetric rates are presented per 1,000 gallons (kgal).

Table 1-1:
Water
Existing 2016 Monthly Service Charges

| Meter Size | Monthly Charge |
|-----------------|----------------|
| 5/8" x 3/4" | \$9.54 |
| 3/4" | \$9.54 |
| 1" | \$13.72 |
| 1.5" | \$18.78 |
| 2" | \$26.00 |
| 3" | \$41.78 |
| 4" | \$94.12 |
| 6" | \$147.26 |
| Bulk Customers* | \$9.54 |

*Bulk monthly service charge is equivalent to a 3/4" meter monthly service charge per bill.

Table 1-2:
Water
Existing 2016 Volumetric Rates by Tier

| Irrigation Season (April through October 31 Consumption) | | | | |
|---|----------------|----------------------|------------------|--------------------------------------|
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.75 | \$5.39 | \$8.08 | \$8.08 |
| Multi-family Indoor Use Only | \$2.75 | N/A | \$3.48 | N/A |
| Multi-family w/Irrigation | \$2.75 | \$4.58 | \$6.87 | N/A |
| Commercial Indoor Use Only | \$2.75 | N/A | \$3.71 | N/A |
| Commercial w/Irrigation | \$2.75 | \$4.63 | \$6.95 | N/A |
| Irrigation | N/A | \$7.39 | \$11.08 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |
| Winter Season – (November 1 through March 31 Consumption) | | | | |
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.75 | N/A | \$5.39 | \$8.08 |
| Multi-family Indoor Use Only | \$2.75 | N/A | \$3.48 | N/A |
| Multi-family w/Irrigation | \$2.75 | N/A | \$4.58 | N/A |
| Commercial Indoor Use Only | \$2.75 | N/A | \$3.71 | N/A |
| Commercial w/Irrigation | \$2.75 | N/A | \$4.63 | N/A |
| Irrigation | N/A | N/A | \$11.08 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |

Table 1-3:
Water Resources
Existing 2016 Monthly and Volumetric Rates

| Meter Size | Monthly Charge |
|-----------------------------|----------------|
| 5/8" x 3/4" | \$17.52 |
| 3/4" | \$26.15 |
| 1" | \$99.11 |
| 1.5" | \$187.50 |
| 2" | \$313.54 |
| 3" | \$588.90 |
| 4" | \$1,502.32 |
| 6" | \$2,429.34 |
| Volumetric Rate Bulk | |
| Customer, Per Kgal | \$0.23 |

Table 1-4:
Wastewater
Existing 2016 Monthly and Volumetric Rates

| Meter Size | Monthly Charge |
|-------------------------|----------------|
| 5/8" x 3/4" | \$9.30 |
| 3/4" | \$9.30 |
| 1" | \$14.80 |
| 1.5" | \$21.46 |
| 2" | \$30.96 |
| 3" | \$51.72 |
| 4" | \$120.58 |
| 6" | \$190.48 |
| Volumetric Rate | |
| All Customers, Per Kgal | \$6.59 |

Table 1-5:
Stormwater
Existing 2016 Monthly Service Charges

| Monthly Stormwater Fee | | |
|---|--|--------|
| All Customers, per Single Family Equivalent (SFE) | | \$6.85 |
| SFE Assignment | | |
| Customer Class | Impervious Sq. Ft. | SFE |
| Single Family Attached & Detached | 3,255 | 1 |
| Non-Single Family (Multi Family & Commercial) | Parcel size times 80% imperviousness divided by 3,255 impervious sq. ft. per SFE = # of SFEs | |

1.4 RATES AND FEES ANALYSIS

Arcadis updated COS based rates for the water and wastewater utilities and user charges for the water resources and stormwater utilities that meet the annual user charge revenue requirements. The rates and fees meet the Town’s financial objectives while being defensible. The Town’s rates and fees goals as described in the FMP include:

- Keep rates and fees competitive with surrounding communities
- Keep rates and fees affordable within various national affordability indices

These are based on the cost of providing utility service and the Town’s comprehensive review of current customer service characteristics. A summary of the customer service characteristics analysis is presented in Section 4 of the full report.

1.5 RECOMMENDED RATE SCHEDULES

1.5.1 Water

The water rate structure includes a monthly service charge by meter size. This monthly charge comprises a customer charge per account and a charge for meters and services that varies by meter size. Water volumetric rates are presented for the Town’s water budget rate structure where AWMC means Average Winter Monthly Consumption.

Based on the cost of service analysis, no changes were recommended to the 2016 water rates. Table 1-6 and Table 1-7 present the recommended water rates for 2017.

Recommended rate schedules for the full study period (2017 through 2021) are presented in Section 1.5 and attached as Appendix B.

Table 1-6:
Water
Proposed 2017 Monthly Service Charges

| Meter Size | Monthly Charge |
|-----------------|----------------|
| 5/8" x 3/4" | \$9.54 |
| 3/4" | \$9.54 |
| 1" | \$13.72 |
| 1.5" | \$18.78 |
| 2" | \$26.00 |
| 3" | \$41.78 |
| 4" | \$94.12 |
| 6" | \$147.26 |
| Bulk Customers* | \$9.54 |

*Bulk monthly service charge is equivalent to a ¾" meter monthly service charge per bill.

Table 1-7:
Water
Proposed 2017 Volumetric Rates by Tier

| Irrigation Season (April through October 31 Consumption) | | | | |
|---|----------------|----------------------|------------------|--------------------------------------|
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.82 | \$5.53 | \$8.29 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | N/A | \$3.57 | N/A |
| Multi-family w/Irrigation | \$2.82 | \$4.70 | \$7.04 | N/A |
| Commercial Indoor Use Only | \$2.82 | N/A | \$3.80 | N/A |
| Commercial w/Irrigation | \$2.82 | \$4.75 | \$7.13 | N/A |
| Irrigation | N/A | \$7.58 | \$11.36 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |
| Winter Season – (November 1 through March 31 Consumption) | | | | |
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.82 | N/A | \$5.53 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | N/A | \$3.57 | N/A |
| Multi-family w/Irrigation | \$2.82 | N/A | \$4.70 | N/A |
| Commercial Indoor Use Only | \$2.82 | N/A | \$3.80 | N/A |
| Commercial w/Irrigation | \$2.82 | N/A | \$4.75 | N/A |
| Irrigation | N/A | N/A | \$11.36 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |

1.5.2 Water Resources

The Town currently assesses all water resources customers a monthly service charge per SFE. A small increase of 3 percent is needed in Water Resources in 2017. This 3 percent will be collected thru an increase in the proposed 2017 volumetric rates by tier, with the revenue going to the Water Resources Fund. This is in lieu of increasing the Water Resources fixed monthly charge, thus giving customers more control over the variable rate and conservation efforts. The proposed 2017 water resources charge calculated per SFE by meter size is presented in Table 1-8.

Table 1-8:
Water Resources
Proposed 2017 Monthly and Volumetric Rates

| Meter Size | Monthly Charge |
|-------------------------|----------------|
| 5/8" x 3/4" | \$17.52 |
| 3/4" | \$26.15 |
| 1" | \$99.11 |
| 1.5" | \$187.50 |
| 2" | \$313.54 |
| 3" | \$588.90 |
| 4" | \$1,502.32 |
| 6" | \$2,429.34 |
| Volumetric Rate | |
| Bulk Customer, Per Kgal | \$0.24 |

1.5.3 Wastewater

The Town currently charges wastewater customers a monthly service charge that consists of a fixed monthly charge, plus a volumetric rate for wastewater flow that has been estimated using the account's AWMC. Based on the cost of service analysis, no changes are proposed to the 2016 wastewater rates. The proposed 2017 wastewater rates consist of a monthly charge that includes the demand charge by meter size, plus a uniform volume rate for all customers.

Table 1-9:
Wastewater
Proposed 2017 Monthly and Volumetric Rates

| Meter Size | Monthly Charge |
|-------------------------|----------------|
| 5/8" x 3/4" | \$9.30 |
| 3/4" | \$9.30 |
| 1" | \$14.80 |
| 1.5" | \$21.46 |
| 2" | \$30.96 |
| 3" | \$51.72 |
| 4" | \$120.58 |
| 6" | \$190.48 |
| Volumetric Rate | |
| All Customers, Per Kgal | \$6.59 |

1.5.4 Stormwater

Arcadis reviewed the existing assumptions used for determining the stormwater monthly utility fee. Arcadis was asked to verify the assumptions used in determining the fee and update as necessary. The primary assumption in determining stormwater utility fees is the definition of an SFE. The Town's existing 2016 and proposed 2017 fees are based on one SFE being equal to 3,255 square feet (sq. ft.) of impervious area. For non-residential accounts, all properties were assumed to be 80 percent impervious unless otherwise indicated in the billing system.

Given updates to the revenue requirements and the number of SFEs billed for stormwater, Arcadis calculated the fees shown in Table 1-10. An increase of 4 percent is proposed for the 2017 stormwater fee.

Table 1-10:
Stormwater
Proposed 2017 Monthly service Charges

| Monthly Stormwater Fee | | |
|---|--|--------|
| All Customers, per Single Family Equivalent (SFE) | | \$7.12 |
| SFE Assignment | | |
| Customer Class | Impervious Sq. Ft. | SFE |
| Single Family Attached & Detached | 3,255 | 1 |
| Non-Single Family (Multi Family & Commercial) | Parcel size times 80% imperviousness divided by 3,255 impervious sq. ft. per SFE = # of SFEs | |

1.6 PROPOSED RATES FOR 2017 THROUGH 2021

Rates for the five-year study period (2017 through 2021) were projected using the water, water resources, wastewater, and stormwater COS model results and the percentage rate revenue increases projected by the financial plans. Table 1-11 presents proposed rate revenue changes for 2017 through 2021. Tables 1-12 through 1-16 and Appendix B contain the rate schedules for the years 2017 through 2021.

Table 1-11:
Proposed Rate Revenue Changes
2017 - 2021

| Year | Water | Water Resources | Wastewater | Stormwater |
|------|-------|-----------------|------------|------------|
| 2017 | 0.0% | 3.0% | 0.0% | 4.0% |
| 2018 | 0.0% | 3.0% | 0.0% | 4.0% |
| 2019 | 0.0% | 3.0% | 0.0% | 4.0% |
| 2020 | 0.0% | 3.0% | 0.0% | 4.0% |
| 2021 | 0.0% | 3.5% | 0.0% | 4.0% |

Table 1-12:
Water
Proposed Monthly Service Charges 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|----------------|----------|----------|----------|----------|----------|
| 5/8" x 3/4" | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |
| 3/4" | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |
| 1" | \$13.72 | \$13.72 | \$13.72 | \$13.72 | \$13.72 |
| 1.5" | \$18.78 | \$18.78 | \$18.78 | \$18.78 | \$18.78 |
| 2" | \$26.00 | \$26.00 | \$26.00 | \$26.00 | \$26.00 |
| 3" | \$41.78 | \$41.78 | \$41.78 | \$41.78 | \$41.78 |
| 4" | \$94.12 | \$94.12 | \$94.12 | \$94.12 | \$94.12 |
| 6" | \$147.26 | \$147.26 | \$147.26 | \$147.26 | \$147.26 |
| Bulk Customers | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |

Table 1-13:
Water
Proposed Volume Rates 2017 - 2021

| Irrigation Season – April through October 31 Consumption | | | | | | | | | | | | | | | |
|---|--------------------|---------------|---------------|---------------|---------------|--------------------------|---------------|---------------|---------------|---------------|----------------------|---------------|---------------|---------------|---------------|
| Class | Tier 1 AWMC | | | | | Tier 2 Irrigation | | | | | Tier 3 Excess | | | | |
| | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Residential | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$8.29 | \$8.29 | \$8.29 | \$8.29 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.57 | \$3.57 | \$3.57 | \$3.57 | \$3.57 |
| Multi-family with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$7.04 | \$7.04 | \$7.04 | \$7.04 | \$7.04 |
| Commercial – Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.80 | \$3.80 | \$3.80 | \$3.80 | \$3.80 |
| Commercial with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$7.13 | \$7.13 | \$7.13 | \$7.13 | \$7.13 |
| Irrigation | N/A | N/A | N/A | N/A | N/A | \$7.58 | \$7.58 | \$7.58 | \$7.58 | \$7.58 | \$11.36 | \$11.36 | \$11.36 | \$11.36 | \$11.36 |
| Winter Season – November 1 through March 31 Consumption | | | | | | | | | | | | | | | |
| Residential | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$5.53 |
| Multi-family Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.57 | \$3.57 | \$3.57 | \$3.57 | \$3.57 |
| Multi-family with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$4.70 |
| Commercial - Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.80 | \$3.80 | \$3.80 | \$3.80 | \$3.80 |
| Commercial with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$4.75 |
| Irrigation | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | \$11.36 | \$11.36 | \$11.36 | \$11.36 | \$11.36 |
| Bulk | \$5.07 | \$5.07 | \$5.07 | \$5.07 | \$5.07 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Table 1-14:
Water Resources
Proposed Monthly and Volumetric Rates 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---------------------------------------|------------|------------|------------|------------|------------|
| 5/8" x 3/4" | \$17.52 | \$18.05 | \$18.59 | \$19.15 | \$19.82 |
| 3/4" | \$26.15 | \$26.93 | \$27.74 | \$28.57 | \$29.57 |
| 1" | \$99.11 | \$102.08 | \$105.14 | \$108.30 | \$112.09 |
| 1.5" | \$187.50 | \$193.12 | \$198.91 | \$204.88 | \$212.05 |
| 2" | \$313.54 | \$322.94 | \$332.63 | \$342.61 | \$354.60 |
| 3" | \$588.90 | \$606.56 | \$624.76 | \$643.50 | \$666.03 |
| 4" | \$1,502.32 | \$1,547.39 | \$1,593.81 | \$1,641.62 | \$1,699.08 |
| 6" | \$2,429.34 | \$2,502.22 | \$2,577.28 | \$2,654.60 | \$2,747.51 |
| Bulk Customers Volumetric Rate | | | | | |
| Per Kgal | \$0.24 | \$0.24 | \$0.25 | \$0.26 | \$0.27 |

Table 1-15:
Wastewater
Proposed Monthly and Volumetric Rates 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------|----------|----------|----------|----------|----------|
| 5/8" x 3/4" | \$9.30 | \$9.30 | \$9.30 | \$9.30 | \$9.30 |
| 3/4" | \$9.30 | \$9.30 | \$9.30 | \$9.30 | \$9.30 |
| 1" | \$14.80 | \$14.80 | \$14.80 | \$14.80 | \$14.80 |
| 1.5" | \$21.46 | \$21.46 | \$21.46 | \$21.46 | \$21.46 |
| 2" | \$30.96 | \$30.96 | \$30.96 | \$30.96 | \$30.96 |
| 3" | \$51.72 | \$51.72 | \$51.72 | \$51.72 | \$51.72 |
| 4" | \$120.58 | \$120.58 | \$120.58 | \$120.58 | \$120.58 |
| 6" | \$190.48 | \$190.48 | \$190.48 | \$190.48 | \$190.48 |
| Volumetric Rate | | | | | |
| All Customers, Per Kgal | \$6.59 | \$6.59 | \$6.59 | \$6.59 | \$6.59 |

Table 1-16:
Stormwater
Proposed Monthly Service Charges 2017 - 2021

| Description | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---|--------|--------|--------|--------|--------|
| All Customers, per Single Family Equivalent (SFE) | \$7.12 | \$7.41 | \$7.71 | \$8.01 | \$8.33 |

2 Introduction

2.1 PROJECT PURPOSE

The purpose of the rates and fees study update is to provide the Town with cost-of-service (COS) based rates for each utility fund that meet the Town's financial goals while being defensible and promoting water conservation. The study update informs the Town of changes in assumptions on customer service characteristics and annual revenue requirements.

2.2 ORGANIZATION OF REPORT

This report consists of an Executive Summary, a main body comprising five sections, and appendices.

- *Section 1, Executive Summary* contains a summary of the report and may be read or distributed separately. The main body contains more details of the study than the Executive Summary.
- *Section 2, Introduction*, provides details about the report organization.
- *Section 3, Long-Term Financial Planning*, describes steps taken by the project team to update critical assumptions in each utility fund, update growth assumptions, and complete a projection of the sources and uses of funds required in this study period.
- *Section 4, Customer Service Characteristics*, provides information regarding the review of customer characteristics such as current number of accounts and projected growth for each of the four funds. It also discusses maintenance of the equivalency schedules that are used to determine single-family residential equivalents for use in calculating the rates and fees.
- *Section 5, Water and Wastewater Cost-of-Service Analysis*, provides the information regarding the results of the COS water and wastewater rate study.
- *Section 6, Rate Design*, provides results of the rate design process for all four utilities funds.
- *Section 7, Findings and Recommendations*, provides an overall review of the findings and recommendations from the study.

The appendices attached to this report provide detailed analysis and paper copies of the completed COS rate models.

2.3 LIST OF ACRONYMS

The following provides a list of acronyms used throughout the report and its meaning:

- AF: Acre Feet
- AWMC: Average Winter Monthly Consumption
- BOD: Biochemical Oxygen Demand
- CIM: Conservation Impact Model
- CIP: Capital Improvement Program
- COP: Certificates of Participation
- COS: Cost of Service
- ET: Evapotranspiration Rates
- FMP: Financial Management Plan
- FY: Fiscal Year
- GPM: Gallons per minute
- GIS: Geographical Information System
- Kgal : Thousand (1,000) gallons
- O&M: Operations and Maintenance
- PCWRA: Plum Creek Water Reclamation Authority
- SDF: System Development Fee
- SFE: Single Family Equivalent
- Sq. Ft.: Square Feet
- TSS: Total Suspended Solids

3 Long-Term Financial Planning

3.1 BACKGROUND

The Town engaged Arcadis to assist in updating the comprehensive utility-specific financial plans that examine revenues, expenditures, debt service requirements, cash flows, reserve requirements, fund balances, and capital project costs for the study period. The financial plans can be found in Appendix C through F. The financial plan is used as the basis for projecting utility-specific revenue requirements for the water, water resources, wastewater, and stormwater utilities. Assumptions used in the development of the long-term financial plans play a critical role in the results of this study. A full understanding of the assumptions used is therefore vitally important in qualifying study results. The following sections provide both the planning assumptions and calculation of revenue requirements used for the purposes of the study.

3.2 FINANCIAL PLANNING OVERVIEW

The main function of the financial plan is to balance the sources of funds with the uses of funds. Sources of funds include revenues from water sales (or water resources charges, wastewater charges, stormwater fees), miscellaneous fee revenue, interest/investment earnings, use of cash reserves, debt proceeds, and contributions (including grants, developer contributions, etc.). Uses of funds include expenditures for operating expenses, repairs and replacements, debt service, increases in reserves, and cash-financed capital expenditures. The Town has an explicit financial goal to minimize risk by balancing fixed versus variable revenues and expenses as appropriate. By identifying all of the planned uses of funds, the Town developed financial plans to balance the sources of funds while minimizing the impact on rates to the greatest extent possible.

The financial plan is a forward-looking model, meaning that all values reported are for future periods. For the purposes of this study, the first year in the model is fiscal year 2017. The model includes projections of sources and uses of funds throughout the study period. Figure 3-1 provides a visual overview of the financial planning process followed by the Town and reviewed by Arcadis. Each step of the financial planning process is described individually in greater detail in the following sections.

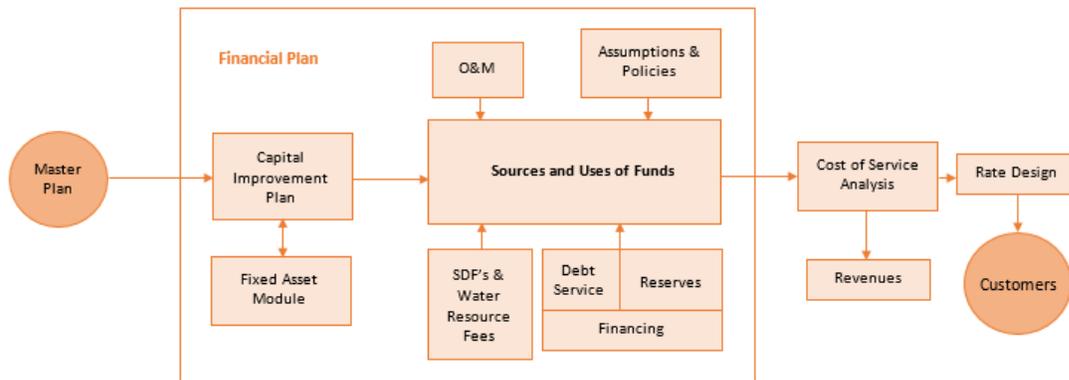


Figure 3-1: Financial Planning Flowchart

3.2.1 Capital Improvements

Capital improvements are the planned capital expenditures specific to each fund that are projected for the term of the corresponding utility’s financial plan. Capital items are physical assets and infrastructure with a useful life greater than one year that meet all of the Town’s established capitalization policy criteria. The Town also established a measurable goal to keep costs at or under budget for capital budgets each year by fund. Detailed CIPs were developed by Utilities Department engineers and can be found in Appendix C through F.

3.2.2 Operating Expenditures

Operating expenditures are planned annually as part of the operating budget. The majority of operating costs are fixed as opposed to variable, meaning that increases or decreases in usage will have little effect on the total costs of operations. Similar to capital expenses, the Town also aims to keep costs at or under budget for operational budgets each year by fund and continuously strives towards more efficient operations.

3.2.3 Other Capital Funding Costs

Planned capital expenditures project monies that will be needed to fund the major infrastructure projects for each fund through the term of the study period. Capital funding costs are expenditures that the respective utility fund will need to make in order to fund capital projects. These expenditures include the annual costs of debt service (principal and interest payments), the cost of cash financing a given portion of the project’s costs, and the cost of funding repair and replacement reserves. A critical assumption for the water, water resources, wastewater, and stormwater funds during the study period is that no new debt will be issued to fund capital improvements. The capital funding costs presented in this report include the impacts of the 3,500 AF Hybrid renewable water supply option which Town Council approved in October 2012.

3.2.4 Revenue Requirements

Revenue requirements define the total amount of income the utility must earn in order to operate on a day-to-day basis, conduct any necessary repairs, and respond to the needs of growth in the system. Two major requirements are measured as revenue requirements: 1) the total revenue requirements needed, and 2) the revenues required from rates (also called user charge revenue requirements).

The revenue requirements of each utility fund include O&M costs, cash-financed capital improvements, debt service payments, and funding of operations and capital reserves. The water fund requires additional funding of rate revenue stabilization reserves.

3.2.5 Calibration of Financial Plan

In general, there are five major tools one can utilize in optimizing the financial plan to meet revenue requirements while remaining aligned with Town policies and objectives. These include:

1. Additional income from rate revenue increases,
2. Proceeds from new debt issuance,
3. Contributions from system development fees,
4. The use of reserve funds, and
5. Interfund loans.

As the Town has determined no new debt will be issued for the water, water resources, wastewater, and stormwater utilities in the near term, only four main sources of revenues exist for these utility funds.

3.3 ASSUMPTIONS SHARED ACROSS FUNDS

Some of the assumptions and inputs used in the development of the long-term financial plans are shared across all four funds.

System growth – customer growth in the system increases total system revenues due to the nature of its relationship to water consumption, wastewater usage, and increases in the number of SFEs.

Table 3-1 presents projected system growth for each of the Town's four utility funds. These assumptions were developed by Town staff and take into account the type of customers, meter size, lot size, and irrigation characteristics.

Table 3-1:
Projected SFEs and Percentage Growth by Fund

| Year | Water Fund | | Water Resources Fund | | Wastewater Fund | | Stormwater Fund | |
|--------|------------|-------------------|----------------------|-------------------|-----------------|-------------------|-----------------|-------------------|
| | SFEs | Percentage Growth | SFEs | Percentage Growth | SFEs | Percentage Growth | SFEs | Percentage Growth |
| FY2017 | 800 | 2.94% | 800 | 2.96% | 800 | 3.49% | 1,186 | 3.59% |
| FY2018 | 800 | 2.85% | 800 | 2.88% | 800 | 3.37% | 970 | 2.83% |
| FY2019 | 800 | 2.77% | 800 | 2.80% | 800 | 3.26% | 1,058 | 3.01% |
| FY2020 | 800 | 2.70% | 800 | 2.72% | 800 | 3.16% | 837 | 2.31% |
| FY2021 | 800 | 2.63% | 800 | 2.65% | 800 | 3.06% | 1,062 | 2.86% |

Escalation Factors – As part of the projections of O&M costs for the study period, the Town has provided a 5-year O&M budget. Arcadis relied on the Town budget documents for O&M projections within the 5-year budget period. After the five years O&M costs were escalated at 2.80 percent. This escalation represents Arcadis’ expectation of future cost escalations based on the average Engineering News Record (ENR) index increase from 2007 through July of 2016.

3.4 WATER FUND

The water fund financial plan projects the water utility’s sources and uses of funds from 2017 through 2055. The water utility financial model developed for this study contains four sub-funds:

- Operating
- Capital Reserve
- Catastrophic Failure Reserve
- Rate Revenue Stabilization Reserve

3.4.1 Sources of Funds

Sources of funds include all cash inflows to the water fund. These range from user charge revenues to miscellaneous income to contributed capital and interest earnings. The major assumptions for specific sources of funding are provided below:

System growth – customer growth in the system increases total system revenues because of its relationship to water consumption and increases in the number of SFEs. Table 3-1 presents the projected system growth for each of Utilities’ four funds.

Rate revenue increases – system revenues are derived primarily from user charges, or rates. Revenue is a function of price and the current water fund financial plan assumes no rate revenue increases from 2017 through 2021.

System Development Fee (SDF) Revenues – SDFs are one-time charges to new connections to the system that are intended to recover the Town’s investments in capacity to serve new customers. SDF revenue is directly related to the SFE and growth assumptions. SDF

revenues are used to fund the growth related CIP. Arcadis updated the Town’s SDFs and results are presented in a separate report.

Revenue bonds – Within the study period 2017 through 2021, no new debt is planned.

Interfund loans –The interfund loan from water to transportation will be paid back by the end of 2017 and the 2014 interfund loan from water to stormwater will be paid back in 2019.

Other revenues – This source of funds includes non-rate related revenues, miscellaneous revenues, fines, leases, intergovernmental agreements, and interest earnings. Arcadis applied the miscellaneous revenues projected in the Town’s 5-year budget. Interest earnings are calculated based on the average operating fund balance with an assumed interest rate of approximately 0.40 percent. For the period 2017 through 2021, the water fund other revenues are presented in Table 3-2.

Table 3-2:
Water Fund Other Revenues

| Other Revenues | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Meter Services | \$ 640,026 | \$ 665,026 | \$ 690,026 | \$ 690,026 | \$ 690,026 |
| Customer Billing | \$ 329,500 | \$ 329,500 | \$ 329,500 | \$ 329,500 | \$ 329,500 |
| Tower Lease | \$ 70,310 | \$ 70,310 | \$ 70,310 | \$ 70,310 | \$ 70,310 |
| Bulk Water | \$ 277,441 | \$ 291,313 | \$ 305,879 | \$ 321,172 | \$ 337,231 |
| Interest Earnings | \$ 10,100 | \$ 24,008 | \$ 33,819 | \$ 41,169 | \$ 45,828 |
| Miscellaneous Revenues | \$ 6,795 | \$ 6,926 | \$ 7,059 | \$ 7,195 | \$ 7,404 |
| Total | \$ 1,334,172 | \$ 1,387,083 | \$ 1,436,592 | \$ 1,459,372 | \$ 1,480,298 |

Fund balances – The water fund is projected to have a reserve fund balance of approximately \$5.7 million at the beginning of 2017, not including capital reserve funds. Each of the sub-funds in the water utility financial plan has a minimum fund balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub funds are:

- Operating – 60-days of O&M; increasing from approximately \$1.5 million to \$1.8 million throughout the study period.
- Capital Reserve – obligated reserves vary from year to year, depending on the CIP. The fund maintains an unobligated reserve of \$1.0 million throughout the study period.
- Catastrophic Failure Reserve – approximately 2 percent of fixed asset value, averaging \$4.1 million throughout the study period
- Rate Revenue Stabilization Reserve – based upon the percent increase in revenues; increasing from \$1.7 million to \$2.1 million throughout the study period.

The financial plan calls for maintaining the fund balance requirements presented above while subsequently using the net available reserve fund balance in capital reserves over time to offset short-term capital needs. The goal is to balance the need for rate increases and, if necessary, additional debt.

3.4.2 Uses of Funds

Uses of funds include all expenditures, either operating or capital, and any reserve requirement or increase in fund balance the Town plans to achieve. The major assumptions for uses of funds are as follows.

Operating expenses – Represents the basic costs of operating the system. Projection of O&M expenses varies depending on the degree of fixed versus variable costs for each budgeted line item. Most of the costs of the water system are fixed and therefore do not escalate with increased system use. Meanwhile, variable costs escalate both with increased system use and the expected inflation rate. Town staff have made a reasonable effort to separate the two for projection purposes. O&M expenses during the rate period were provided by the Town. The Utility’s goal is to keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations.

Personnel services are one of the most important cost drivers in operating expenses. Staff additions over the next five years are included in the Town’s 5-year financial planning document.

Energy costs are a major component in plant operations and an important cost driver in variable operating expenses. Over the next five years energy costs are expected to increase at a rate higher than inflation.

Capital improvements – Capital improvement projections are provided in Appendix C by year, as indicated. Total water system capital improvement costs from 2017 through 2021 are expected to be \$22.1 million in today’s dollars. Capital improvement costs were provided by the Town for years 2017 through 2055. Arcadis recommends capital improvements assumptions, including annual escalation, are reviewed annually.

Interfund loans – The water fund does not have an interfund loan balance at this time.

Fund balances – When funds are drawn down from initial balances, the use of those funds is a *source* of funding for the water operating fund. Alternatively, when fund balances are building, it is a *use* of funds from the water operating fund. For planning purposes, it is generally a poor idea to allow a fund balance to decline below an acceptable level of working capital.

For the purposes of this study, it is assumed the Town will not allow its water fund balances to dip below the requirements presented in the above section. This conforms to the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums.

Debt service – The debt service sub-fund currently carries debt service obligations of the water fund. As stated in the FMP, the Town aims to minimize debt carrying costs at or below industry standards. The water fund currently has two outstanding revenue bond issues (2012 and 2015). The 2012 bond issue was a refinancing of 2003 and 2004 bonds, and the 2015 bond issue was a refinancing of 2006 bonds. The water fund debt service amounts to

approximately \$1.7 million annually for 2017 through 2023 and then declines to approximately \$700,000 annually for 2024 through 2026.

Debt Service Coverage – The water fund outstanding revenue bonds require operating revenues to be 1.2 times the total annual debt service amount. As a more conservative target, the water fund financial plan was developed to meet debt service coverage of 1.25 times annual debt service.

3.4.3 User Charge Revenue Requirements

The portion of annual system revenue requirements to be recovered through rates depends on a utility’s financing policy and its other sources of income. To determine the amount of revenue rates the water enterprise must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except those derived from water rates. Table 3-3 presents the water fund user charge revenue requirements for the period 2017 through 2021. The Plum Creek Water Purification Facility (PCWPF) opened in 2013. Operating costs (PCWPF Water Treatment Charges) for the facility and functions supporting PCWPF operation are recovered via the water system volumetric rates, and revenues generated from these operating costs are transferred to the Water Resources fund where the assets reside.

Table 3-3:
Water Fund User Charge Revenue Requirements

| Item | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Operating and Maintenance | \$ 8,705,180 | \$ 9,057,141 | \$ 9,520,448 | \$ 10,221,945 | \$ 10,679,897 |
| PCWPF Water Treatment Charges | \$ 1,528,166 | \$ 1,607,369 | \$ 1,704,115 | \$ 1,811,221 | \$ 1,994,905 |
| Debt Service | \$ 1,740,767 | \$ 1,746,879 | \$ 1,752,251 | \$ 1,733,994 | \$ 1,740,790 |
| Transfers Out | \$ 200,643 | \$ 225,861 | \$ 272,052 | \$ 339,856 | \$ 238,710 |
| Minor Capital Outlay | \$ 984,182 | \$ 1,017,882 | \$ 1,040,682 | \$ 1,048,282 | \$ 1,082,482 |
| Cash Funded Capital | \$ 5,378,920 | \$ 2,764,951 | \$ 4,475,356 | \$ 8,290,897 | \$ 2,683,562 |
| Total Expenditures | \$ 18,537,857 | \$ 16,420,084 | \$ 18,764,905 | \$ 23,446,195 | \$ 18,420,346 |
| Non-Rate Revenues | \$ (1,384,581) | \$ (1,431,391) | \$ (1,476,728) | \$ (1,484,296) | \$ (1,493,899) |
| Capital Adjustments | \$ (3,463,962) | \$ (908,837) | \$ (2,817,779) | \$ (7,100,959) | \$ (1,674,965) |
| Revenues Required from Rates | \$ 13,689,314 | \$ 14,079,856 | \$ 14,470,398 | \$ 14,860,940 | \$ 15,251,482 |

3.5 WATER RESOURCES

The water resources fund financial plan projects the fund’s sources and uses of funds from fiscal year 2017 through fiscal year 2055. As noted previously, the results presented for the

water resources fund include the impacts of the renewable water supply review for the 3,500 AF Hybrid proposal authorized by Town Council in October 2012. The water resources utility financial model developed in this study contains three sub-funds:

- Operating
- Capital Reserve
- Catastrophic Failure Reserve

The major assumptions for specific sources of funding are provided below:

3.5.1 Sources of Funds

The sources of funds include all cash inflows to the operating fund. These range from user charge revenues to miscellaneous income to contributed capital and interest earnings. The major assumptions for specific sources of funding are provided below:

System growth – Table 3-1 presents the projected system growth by fund.

Rate revenue increases – System revenues are derived from system development fees and user charges. Revenue is a function of price and number of SFEs; growth is expected to remain strong during the five-year period, and price becomes the other major variable in total revenues. The current financial plan assumes 3.0 percent increases annually in 2017 through 2020 and an increase of 3.5 percent in 2021. Higher projected increases further in the planning horizon are driven by timing and magnitude of capital improvements; specifically, subscription fees, water delivery charges, and corresponding treatment, transmission, and storage infrastructure investment.

System Development Fee (SDF) Revenues – SDF revenue is directly related to the SFE and growth assumptions. Arcadis updated the Town’s water resources SDF and results are presented in a separate report.

Revenue bonds – Within the study period 2017 through 2021, no new debt is planned.

Interfund loans – There were no loans payable to the water resources fund.

Other revenues – This source of funds includes non-rate related revenues, miscellaneous revenues, leases, fines, water conservation surcharges, intergovernmental agreements, and interest earnings. Arcadis applied the miscellaneous revenues projected in the Town’s five-year budget. Interest earnings are calculated based on the average operating fund balance with an assumed interest rate of approximately 0.4 percent. PCWPF reimbursement revenue represents the PCWPF operating costs recovered through water fund rate revenues, subsequently transferred to the water resources fund. For the period 2017 through 2021, the water resources fund other revenues are presented in Table 3-4.

Table 3-4:
Water Resources Fund Other Revenues

| Other Revenues | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Water Surcharges | \$ 45,000 | \$ 45,000 | \$ 45,000 | \$ 45,000 | \$ 45,000 |
| Misc Revenues | \$ 135,740 | \$ 135,740 | \$ 4,403,490 | \$ 6,740 | \$ 6,740 |
| Interest Earnings | \$ 137,411 | \$ 94,596 | \$ 106,035 | \$ 116,972 | \$ 118,873 |
| PCWPF Reimbursement Revenue | \$ 1,528,166 | \$ 1,607,369 | \$ 1,704,115 | \$ 1,811,221 | \$ 1,994,905 |
| Total | \$ 1,846,317 | \$ 1,882,706 | \$ 6,258,640 | \$ 1,979,933 | \$ 2,165,518 |

Fund balances – The water resources fund was projected to have a reserve of approximately \$47.9 million at the beginning of 2017, not including capital reserve funds. Each of the sub-funds in the water resources financial plan has a minimum balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub fund are:

- Operating – 60-days of O&M; increasing from approximately \$866,000 to \$1.5 million throughout the study period
- Capital Reserve – obligated reserves vary from year to year, depending on the CIP. The fund maintains an unobligated reserve of \$500,000 throughout study period.
- Catastrophic Failure Reserve – approximately 2 percent of original fixed asset value; increasing from \$2.5 million to \$3.0 million throughout the study period

The financial plan calls for maintaining the fund balance requirements presented above and subsequently using net available reserve fund balance in capital reserves over time to offset short-term capital needs. As stated for the water utility, the goal is to balance the need for rate increases and additional debt.

3.5.2 Uses of Funds

Uses of funds include all expenditures, either operating or capital, and any reserve requirement or increase in fund balance the Town plans to achieve. The major assumptions for uses of funds are as follows.

Operating costs – Represents the basic costs of operating the system. Projection of O&M expenses varies depending on the degree of fixed versus variable costs for each budgeted line item. Most of the costs of the water resources system are fixed and therefore do not escalate based on system use. Meanwhile, variable costs escalate both with increased system use and the expected inflation rate. Town staff have made a reasonable effort to separate the two for projection purposes. O&M expenses during the rate period were provided by the Town. The Utility’s goal is to keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations.

Personnel services are one of the most important cost drivers in operating expenses. Staff additions over the next five years are included in the Town provided five-year financial planning document.

Energy costs are a major component in plant operations and an important cost driver in operating expenses. Over the next five years energy costs are expected to increase at a rate higher than inflation.

Capital improvements – Capital improvements are assumed at the levels provided in Appendix D in the years indicated. Total capital improvement costs are expected to exceed \$84.9 million from 2017 through 2021. Capital improvement costs were provided by the Town for years 2017 through 2055. Arcadis recommends capital improvements assumptions, including annual escalation, are reviewed annually.

Interfund loans – There are currently no interfund loans.

Fund balances –For the purposes of this study, it is assumed the Town will not allow its water resources fund balances to drop below the requirements presented in the above section. This conforms to the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums.

Debt service –The water resources fund had one outstanding debt issue- the 2008 Certificates of Participation (COP). The Town recently secured revenue bonds at a lower fixed interest rate of 2.505 percent, replacing the COP, with the objective of minimizing debt carrying costs at or below industry standard. The water resources fund existing debt service amounts to an average of \$3.7 million annually for 2017 through 2034. This includes principal, interest, remarketing, and other associated fees.

Debt Service Coverage – The water resources fund outstanding COP debt did not require a specific coverage ratio. The revenue bonds require a 1.25 debt coverage ratio.

3.5.3 User Charge Revenue Requirements

Table 3-5 presents the water resources fund user charge revenue requirements for the study period, 2017 through 2021.

Table 3-5:
Water Resources Fund User Charge Revenue Requirements

| Item | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------------------|----------------------|----------------------|----------------------|---------------------|----------------------|
| Operating and Maintenance | \$ 5,193,463 | \$ 6,506,812 | \$ 7,287,181 | \$ 7,905,423 | \$ 8,873,006 |
| Debt Service | \$ 3,665,025 | \$ 3,679,475 | \$ 3,701,975 | \$ 3,728,975 | \$ 3,741,975 |
| Transfers Out | \$ 4,707 | \$ 248,974 | \$ 189,976 | \$ 66,311 | \$ 28,764 |
| Minor Capital Outlay | \$ 36,405 | \$ 36,521 | \$ 36,639 | \$ 36,749 | \$ 37,201 |
| Cash Funded Capital | \$ 56,664,897 | \$ 13,618,625 | \$ 10,457,166 | \$ 4,016,706 | \$ 2,021,888 |
| Total Expenditures | \$ 65,564,497 | \$ 24,090,407 | \$ 21,672,937 | \$15,754,165 | \$ 14,702,835 |
| Non-Rate Revenues | \$ (355,019) | \$ (281,288) | \$ (4,575,739) | \$ (226,549) | \$ (284,185) |
| PCWPF Reimbursement | \$ (1,528,166) | \$ (1,607,369) | \$ (1,704,115) | \$ (1,811,221) | \$ (1,994,905) |
| Capital Adjustments | \$(55,047,172) | \$(13,052,715) | \$ (5,706,030) | \$ (3,467,279) | \$ (1,534,956) |
| Revenues Required from Rates | \$ 8,634,140 | \$ 9,149,035 | \$ 9,687,052 | \$10,249,116 | \$10,888,789 |

3.6 WASTEWATER

The wastewater fund financial plan projects the fund’s sources and uses of funds from fiscal year 2017 through fiscal year 2055. The wastewater utility financial model includes three sub-funds:

- Operating
- Capital Reserve
- Catastrophic Failure Reserve

3.6.1 Sources of Funds

The sources of funds include all cash inflows to the wastewater operating fund. These range from user charge revenues to miscellaneous income to contributed capital and interest earnings. The major assumptions for specific sources of funding are provided below:

System growth – Customer growth in the system increases total system revenues because of its relationship to wastewater usage and increase in the number of SFEs.

Table 3-1 presents the projected system growth by fund.

Rate revenue increases – Due to adjustment in flow estimates and growth in the system and customer base, the current financial plan assumes no rate revenue increases from 2017 through 2021.

SDF Revenues –Arcadis updated the Town’s wastewater SDF and results are presented in a separate report.

Revenue bonds – No debt issues were assumed in the calibration of the wastewater fund financial plan.

Interfund loans – There were no loans payable to the wastewater fund.

Other revenues –For the study period 2017 through 2021, the wastewater fund other revenues are presented in Table 3-6.

Table 3-6:
Wastewater Fund Other Revenues

| Other Revenues | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------|------------------|------------------|------------------|------------------|------------------|
| Developer Contributions | \$ 21,469 | \$ 21,469 | \$ 21,469 | \$ 21,469 | \$ 21,469 |
| Other Revenues | \$138,435 | \$138,435 | \$138,435 | \$138,435 | \$138,435 |
| Interest Earnings | \$ 11,314 | \$ 32,501 | \$ 54,334 | \$ 57,328 | \$ 56,788 |
| Total | \$171,218 | \$192,405 | \$214,238 | \$217,232 | \$216,692 |

Fund balances – The wastewater fund is projected to have total reserve fund balances of approximately \$2.0 million at the beginning of 2017, not including capital reserve funds. Each of the sub-funds in the wastewater utility financial plan has a minimum balance requirement. The requirements by sub fund are:

- Operating – 60-days of O&M; increasing from approximately \$861,000 to \$1.0 million throughout the study period
- Capital Reserve Fund – obligated reserves vary from year to year, depending on the CIP. The fund maintains an unobligated reserve of \$1.0 million throughout study period.
- Catastrophic Failure Reserve – between \$1.8 million and \$2.7 million throughout the study period

The financial plan calls for maintaining the fund balance requirements presented above and subsequently using the net available reserve fund balance in capital reserves over time to offset short-term capital needs and balance the need for rate increases and additional debt.

3.6.2 Uses of Funds

Uses of funds include all expenditures, either operating or capital, and any reserve requirement or increase in fund balance the Town plans to achieve. The major assumptions for the wastewater utility are as follows:

Operating costs – Represents the basic costs of operating the system. Projection of O&M expenses varies depending on the degree of fixed versus variable costs for each budgeted line item. Most of the costs of the wastewater system are fixed and therefore do not escalate with increased system use. Meanwhile, variable costs escalate both with increased system use and the expected inflation rate. Town staff have made a reasonable effort to separate

the two for projection purposes. O&M expenses during the rate period were provided by the Town. The Utility's goal is to keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations.

Personnel services are one of the most important cost drivers in operating expenses. Staff additions over the next 5 years are included in the Town provided 5-year financial planning document.

Energy costs are a major component in plant operations and an important cost driver in operating expenses. Over the next 5 years energy costs are expected to increase at a rate higher than inflation.

Capital improvements – Capital improvements are assumed at the levels provided in Appendix E in the years indicated. Total capital improvement costs are expected to exceed \$42.8 million from 2017 through 2021. Capital improvement costs were provided by the Town for years 2017 through 2055. Arcadis recommends capital improvements assumptions, including annual escalation, are reviewed annually.

Interfund loans – There are currently no interfund loans payable to other funds.

Fund balances –For the purposes of this study, it is assumed the Town will not allow its wastewater fund balances to dip below the requirements presented in the above section. This conforms to the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums.

Debt service – The debt service sub-fund currently carries the debt service obligations of the wastewater fund. As stated in the FMP, the Town aims to minimize debt carrying costs at or below industry standards. The wastewater fund currently has one outstanding revenue bond issue, the 2012 revenue bond, which is a refinancing of a 2004 revenue bond series. The 2012 series principal and interest equals approximately \$333,000 annually from 2017 through 2024. No future revenue bond debt is anticipated in the financial plan.

Debt Service Coverage – The wastewater fund outstanding revenue bonds require operating revenues to be 1.2 times the total debt service amount. The wastewater fund financial plan was developed to meet debt service coverage of 1.25 times.

3.6.3 User Charge Revenue Requirements

Table 3-7 presents the wastewater fund user charge revenue requirements for the period 2017 through 2021.

Table 3-7:
Wastewater Fund User Charge Revenue Requirements

| Item | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------------------|---------------------|---------------------|----------------------|----------------------|---------------------|
| Operating and Maintenance | \$ 5,167,766 | \$ 5,392,772 | \$ 5,604,147 | \$ 5,888,586 | \$ 6,114,891 |
| Debt Service | \$ 333,258 | \$ 333,546 | \$ 335,274 | \$ 331,356 | \$ 333,660 |
| Transfers Out | \$ 67,001 | \$ 138,404 | \$ 156,470 | \$ 10,302,620 | \$ 2,139,363 |
| Minor Capital Outlay | \$ 76,750 | \$ 84,750 | \$ 79,750 | \$ 79,750 | \$ 79,750 |
| Cash Funded Capital | <u>\$ 5,636,243</u> | <u>\$ 4,339,389</u> | <u>\$ 5,059,692</u> | <u>\$ 25,406,647</u> | <u>\$ 5,603,132</u> |
| Total Expenditures | \$11,281,018 | \$10,288,861 | \$ 11,235,333 | \$ 42,008,959 | \$14,270,796 |
| Non-Rate Revenues | \$ (244,251) | \$ (257,088) | \$ (272,304) | \$ (227,217) | \$ (216,731) |
| Capital Adjustment | \$ (340,506) | \$ 1,024,999 | \$ 454,253 | \$20,327,970) | \$ 65,068 |
| Revenues Required from Rates | \$10,696,262 | \$11,056,772 | \$11,417,282 | \$21,453,773 | \$14,119,134 |

3.7 STORMWATER

The stormwater fund financial plan projects the fund’s sources and uses of funds from fiscal year 2017 through fiscal year 2055. Arcadis recommends that to ensure the long-term sustainability of the stormwater enterprise, a review of the timing of CIP expenditures, O&M expenses, and sources and uses of funds among sub-funds be thoroughly performed. The stormwater utility financial model contains three sub-funds:

- Operating
- Capital Reserve
- Catastrophic Failure Reserve

3.7.1 Sources of Funds

The sources of funds include all cash inflows to the stormwater operating fund. These range from user charge revenues to miscellaneous income to contributed capital and interest earnings. The major assumptions for specific sources of funding are provided below:

System growth – Table 3-1 presents the projected system growth by fund.

Rate revenue increases – The current financial plan assumes an annual increase of 5 percent from 2017 through 2021.

Stormwater Development Impact Fee Revenues – Arcadis updated the Town’s stormwater development impact fee and results are presented in a separate report.

Revenue bonds – The stormwater fund is permitted to issue debt. However, no bond issues were assumed in the calibration of the stormwater financial plan.

Interfund loans – There are currently no loans payable to the stormwater fund.

Other revenues – For the period 2017 through 2021, the stormwater fund other revenues are presented in Table 3-8.

Table 3-8:
Stormwater Other Revenues

| Other Revenues | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|------------------------|------------------|--------------------|--------------------|--------------------|--------------------|
| Miscellaneous Revenues | \$ 7,384 | \$ 7,451 | \$ 7,588 | \$ 7,729 | \$ 7,867 |
| DESC/GESC Fees | \$303,645 | \$ 303,645 | \$ 303,645 | \$ 303,645 | \$ 303,645 |
| Stormwater Cap Charge | \$670,174 | \$ 693,730 | \$ 717,621 | \$ 724,736 | \$ 750,102 |
| Interest Earnings | \$ 12,292 | \$ 15,003 | \$ 14,441 | \$ 14,231 | \$ 16,694 |
| Total | \$993,495 | \$1,019,829 | \$1,043,295 | \$1,050,341 | \$1,078,308 |

Fund balances – The stormwater fund is projected to have a fund balance reserve of approximately \$3.7 million at the beginning of 2017. Each of the sub-funds in the stormwater utility financial plan has a minimum balance requirement. The requirements by sub fund are:

- Operating – 60-days of O&M; increasing from approximately \$361,000 to \$462,000 throughout the study period
- Capital Reserve – obligated reserves vary from year to year, depending on the CIP. The fund maintains an unobligated reserve of \$500,000 throughout the study period.
- Catastrophic Failure Reserve – There are minimal reserves during the study period, increasing from \$10,000 in 2017 to \$61,000 in 2021.

The financial plan calls for maintaining fund balance requirements presented above and subsequently using the net reserve available capital reserves over time to offset short-term capital needs and reduce the need for rate increases. The financial plan was developed in accordance to the FMP goals, including to keep adequate reserves and maintain fund balances between minimums and maximums.

3.7.2 Uses of Funds

The major assumptions for uses of funds are as follows.

Operating costs – – Represents the basic costs of operating the system. Projection of O&M expenses varies depending on the degree of fixed versus variable costs for each budgeted line item. Most of the costs of the stormwater system are fixed. Variable costs escalate both with increased system use and the expected inflation rate. Town staff have made a reasonable effort to separate the two for projection purposes. O&M expenses during the rate period were provided by the Town. The Utility’s goal is to keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations.

Personnel services are one of the most important cost drivers in operating expenses. Staff additions over the next five years are included in the Town’s five-year financial planning document.

Capital improvements – Capital improvements are assumed at the levels provided in Appendix F in the years indicated. Total capital improvement costs are expected to exceed \$15.0 million from 2017 through 2021. Capital improvement costs were provided by the

Town for years 2017 through 2055. Arcadis recommends capital improvements assumptions, including annual escalation, are reviewed annually.

Fund balances – For the purposes of this study, it is assumed that the Town will not allow its fund balances to dip below the requirements presented in the above section.

Debt service – The stormwater fund does not have existing debt service and the financial plan does not assume new debt issues.

Interfund loans –The 2014 interfund loan to stormwater from water is scheduled to be repaid in 2019.

3.7.3 User Charge Revenue Requirements

To determine the amount of revenue the utility fees must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except revenues derived from stormwater utility fees. Table 3-9 presents the stormwater fund user charge revenue requirements for the period 2017 through 2021.

Table 3-9:
Stormwater Fund User Charge Revenue Requirements

| Item | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Operating and Maintenance | \$ 2,164,123 | \$ 2,311,947 | \$ 2,407,899 | \$ 2,675,132 | \$ 2,773,663 |
| Transfers Out | \$ 202,283 | \$ 2,032,557 | \$ 2,133,591 | \$ 2,033,724 | \$ 1,012,145 |
| Minor Capital Outlay | \$ 5,500 | \$ 5,500 | \$ 5,500 | \$ 5,500 | \$ 5,500 |
| Cash Funded Capital | \$ 2,180,161 | \$ 2,480,611 | \$ 2,593,161 | \$ 3,366,845 | \$ 2,385,567 |
| Total Expenditures | \$ 4,552,067 | \$ 6,830,615 | \$ 7,140,151 | \$ 8,081,201 | \$ 6,176,875 |
| Non-Rate Revenues | \$ (997,102) | \$(1,019,828) | \$(1,043,295) | \$(1,050,341) | \$(1,078,484) |
| Capital Adjustment | \$ (555,723) | \$(1,424,103) | \$(1,342,960) | \$(1,439,313) | \$ (235,532) |
| Revenues Required from Rates | \$ 2,999,242 | \$ 4,386,684 | \$ 4,753,895 | \$ 5,591,546 | \$ 4,862,859 |

4 Customer Service Characteristics

In preparation for this cost-of-service 2016 Study Update, Town staff completed the analysis of usage data for all customers and customer classes. The approach used for this analysis is consistent with the analysis that Arcadis performed in previous years. It is best practice to have the Utilities Department prepare this analysis on an annual basis as they maintain the data and can monitor the accounts and usage throughout the year.

Data was analyzed to determine assumptions such as number of accounts by meter size and customer class.¹ The Town has updated its calculations on meter equivalency ratios for 2016, calculated the representative customer by class to be used in presenting the comparison of adopted and proposed rates on a representative customer's total utility bill, and prepared a table to review over time the water consumption by rate tier. Appendix I contains the full analysis prepared by the Town, including the calculation of the average representative customer by class used in presenting the proposed effect of 2017 rates on a representative customer's bill. A portion of the analysis and tables prepared by Town Staff are reproduced in this section.

4.1 WATER UTILITY CUSTOMERS BY METER SIZE

Table 4-1 shows meters by meter size using 12 months of data (Jan15-Dec15). This shows that 18,737 customers were receiving Town water services during this capture period. The FY2014 accounts based on 12 months of data (Jan14-Dec14) showed 17,961 customers were receiving Town water services. There are 776 more accounts in the 2016 study versus the 2015 study.

¹ Latigo Multifamily Indoor Only 1.5-inch meter customers have been moved to 1-inch meter size for the customer characteristics analysis.

Table 4-1:
Water Utility Meters by Meter Size
FY2015 Accounts Based on 12 Months of Data (Jan 15 – Dec 15)

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 502 | - | 4 | - | 19 | - | - | 525 |
| 3/4" | 16,794 | 14 | 127 | 27 | 118 | 100 | 108 | 17,288 |
| 1" | 12 | 25 | 71 | - | 85 | 64 | 71 | 328 |
| 1.5" | - | 55 | 48 | - | 115 | 86 | 54 | 358 |
| 2" | - | 15 | 24 | - | 82 | 40 | 40 | 201 |
| 3" | - | 2 | 5 | 2 | 8 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 17,308 | 112 | 280 | 29 | 429 | 290 | 289 | 18,737 |

Table 4-2:
Water Utility Meters by Meter Size
FY2014 Accounts based on 12 months of data (Jan14-Dec14)

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 331 | - | 3 | - | 16 | - | - | 350 |
| 3/4" | 16,224 | 14 | 127 | 28 | 116 | 100 | 105 | 16,714 |
| 1" | 9 | 25 | 72 | - | 84 | 64 | 69 | 323 |
| 1.5" | - | 54 | 48 | - | 109 | 79 | 48 | 338 |
| 2" | - | 15 | 24 | - | 81 | 39 | 39 | 198 |
| 3" | - | 2 | 5 | 3 | 8 | - | 13 | 31 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 16,564 | 111 | 280 | 31 | 416 | 282 | 277 | 17,961 |

The difference in accounts is primarily due to an additional 744 residential accounts reported in the FY2015 billing data.

Table 4-3:
Water Utility Meters by Meter Size
FY2017 Projected Accounts Based on 12 Months of Data (Jan 15 – Dec15) Plus Projected
Growth for 2016 & 2017

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 694 | - | 4 | - | 21 | 416 | - | 1,135 |
| 3/4" | 18,202 | 14 | 127 | 55 | 122 | 100 | 108 | 18,728 |
| 1" | 12 | 25 | 79 | - | 85 | 64 | 71 | 336 |
| 1.5" | - | 55 | 48 | - | 115 | 86 | 54 | 358 |
| 2" | - | 15 | 30 | - | 82 | 40 | 40 | 207 |
| 3" | - | 2 | 5 | 2 | 8 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 18,908 | 112 | 294 | 57 | 435 | 706 | 289 | 20,801 |

Table 4-3 shows FY2017 projected water utility accounts using 2015 billing data plus projected growth for 2016 and 2017. The FY2017 water accounts are projected to equal 20,801. Growth is projected for the following classes:

2016:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 28 Bulk 3/4" x 3/4" accounts
- 1,154 Total

2017:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 910 Total

Total growth of 1,154 accounts is projected for 2016 and 910 accounts for 2017 for a total of 2,064 projected for the water fund thru FY2017.

4.2 WASTEWATER UTILITY CUSTOMERS BY METER SIZE

Table 4-4 shows customer meters by meter size using 12 months of data (Jan15-Dec15). This shows that 18,099 customers are receiving Town wastewater services. The FY2014 accounts based on 12 months of data (Jan14-Dec14) shows that 17,335 customers received Town wastewater services. There are 764 more accounts in the 2016 study versus the 2015 study.

Table 4-4:
Wastewater Utility Meters by Meter Size
FY2015 Accounts Based on 12 Months of Data (Jan15-Dec15)

| Meter Size | Residential | Multifamily | Commercial | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 502 | - | 4 | - | - | 506 |
| 3/4" | 16,639 | 14 | 124 | 100 | 101 | 16,978 |
| 1" | 11 | 25 | 68 | 64 | 66 | 234 |
| 1.5" | - | 55 | 47 | 86 | 53 | 241 |
| 2" | - | 15 | 24 | 40 | 38 | 117 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 17,152 | 112 | 273 | 290 | 272 | 18,099 |

Table 4-5:
Wastewater Utility Meters by Meter Size
FY2014 Accounts Based on 12 Months of Data (Jan14-Dec14)

| Meter Size | Residential | Multifamily | Commercial | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 331 | - | 3 | - | - | 334 |
| 3/4" | 16,070 | 14 | 124 | 100 | 99 | 16,407 |
| 1" | 8 | 25 | 69 | 64 | 64 | 230 |
| 1.5" | - | 54 | 47 | 79 | 46 | 226 |
| 2" | - | 15 | 24 | 39 | 37 | 115 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 16,409 | 111 | 273 | 282 | 260 | 17,335 |

Similar to the Water Fund, an additional 743 residential accounts were reported in the most recent billing data.

Table 4-6:
Wastewater Utility Meters by Meter Size
FY2017 Projected Accounts Based on 12 Months of Data (Jan15-Dec15) Plus Projected
Growth for 2016 & 2017

| Meter Size | Residential | Multifamily | Commercial | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 694 | - | 4 | 416 | - | 1,114 |
| 3/4" | 18,047 | 14 | 124 | 100 | 101 | 18,386 |
| 1" | 11 | 25 | 76 | 64 | 66 | 242 |
| 1.5" | - | 55 | 47 | 86 | 53 | 241 |
| 2" | - | 15 | 30 | 40 | 38 | 123 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 18,752 | 112 | 287 | 706 | 272 | 20,129 |

Table 4-6 shows projected wastewater utility accounts using billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 wastewater accounts are projected to equal 20,129. Growth is projected for the following classes:

2016:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1,123 Total

2017:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 907 Total

Total growth of 1,123 accounts is projected for 2016 and 907 for 2017 for a total of 2,030 projected for the wastewater fund thru FY2017.

4.3 WATER RESOURCES UTILITY CUSTOMERS BY METER SIZE

Table 4-7 shows Water Resources customer meters by meter size based on 12 months of billing data (Jan15-Dec15). Table 8 shows Water Resources customer meters by meter size

based on 12 months of billing data (Jan14-Dec14). There are 773 more accounts in the 2016 study versus the 2015 study.

Table 4-7:
Water Resources Utility Meters by Meter Size
FY2015 Accounts Based on 12 Months of Data (Jan15-Dec15)

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 502 | - | 4 | - | 19 | - | - | 525 |
| 3/4" | 16,793 | 14 | 127 | 27 | 118 | 100 | 108 | 17,287 |
| 1" | 12 | 25 | 71 | - | 85 | 64 | 70 | 327 |
| 1.5" | - | 55 | 48 | - | 110 | 86 | 54 | 353 |
| 2" | - | 15 | 24 | - | 77 | 40 | 40 | 196 |
| 3" | - | 2 | 5 | 2 | 7 | - | 13 | 29 |
| 4" | - | 1 | - | - | 3 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 17,307 | 112 | 280 | 29 | 418 | 290 | 287 | 18,723 |

Table 4-8:
Water Resources Utility Meters by Meter Size
FY2014 Accounts Based on 12 Months of Data (Jan14-Dec14)

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 331 | - | 3 | - | 16 | - | - | 350 |
| 3/4" | 16,223 | 14 | 127 | 28 | 116 | 100 | 105 | 16,713 |
| 1" | 9 | 25 | 72 | - | 84 | 64 | 68 | 322 |
| 1.5" | - | 54 | 48 | - | 106 | 79 | 48 | 335 |
| 2" | - | 15 | 24 | - | 77 | 39 | 39 | 194 |
| 3" | - | 2 | 5 | 3 | 7 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 16,563 | 111 | 280 | 31 | 408 | 282 | 275 | 17,950 |

Table 4-9:
Water Resources Utility Meters by Meter Size
FY2017 Projected Accounts Based on 12 Months of Data (Jan15-Dec15) Plus Projected
Growth for 2016 & 2017

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------------------|----------------------------|---------------|
| 5/8" | 694 | - | 4 | - | 21 | 416 | - | 1,135 |
| 3/4" | 18,201 | 14 | 127 | 27 | 122 | 100 | 108 | 18,699 |
| 1" | 12 | 25 | 79 | - | 85 | 64 | 70 | 335 |
| 1.5" | - | 55 | 48 | - | 110 | 86 | 54 | 353 |
| 2" | - | 15 | 30 | - | 77 | 40 | 40 | 202 |
| 3" | - | 2 | 5 | 2 | 7 | - | 13 | 29 |
| 4" | - | 1 | - | - | 2 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 18,907 | 112 | 294 | 29 | 424 | 706 | 287 | 20,759 |

Table 4-9 shows FY2017 projected water resources fund accounts based on billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 water resources accounts are projected to equal 20,787. Growth is projected for the following classes:

2016:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 1,126 Total

2017:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 910 Total

Total growth of 1,126 accounts is projected for 2016 and 910 for 2017 for a total of 2,036 projected for the water resources fund thru FY2017.

4.4 STORMWATER UTILITY SFES

Table 4-10 shows stormwater average monthly SFES accounts based on 12 months of billing data (Jan15-Dec15). Table 4-11 shows stormwater average monthly SFES accounts based on 12 months of billing data (Jan14-Dec14).

Table 4-10:
Stormwater Utility Average Monthly SFES for Billing Purposes
FY2015 Accounts Based on 12 Months of Billing Data (Jan15-Dec15)

| Average Monthly SFE | |
|-----------------------------------|---------------|
| Residential | 17,142 |
| Non-Residential | 13,747 |
| Total Stormwater Customers | 30,889 |

Table 4-11:
Stormwater Utility Average Monthly SFES for Billing Purposes
FY2014 Accounts Based on 12 Months of Billing Data (Jan14-Dec14)

| Average Monthly SFE | |
|-----------------------------------|---------------|
| Residential | 16,388 |
| Non-Residential | 13,441 |
| Total Stormwater Customers | 29,828 |

Table 4-12:
Stormwater Utility Average Monthly SFES for Billing Purposes
FY2017 Projected Accounts Based on 12 Months of Billing Data
(Jan15-Dec15) Plus Growth Projections for 2016 & 2017

| Average Monthly SFE | |
|-----------------------------------|---------------|
| Residential | 19,158 |
| Non-Residential | 14,087 |
| Total Stormwater Customers | 33,245 |

Table 4-12 shows 2017 projected stormwater accounts based on 12 months of billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 stormwater SFE's are projected to equal 33,245. Growth is projected for the following classes:

2016:

- 1,116 Residential SFES accounts
 - 80 Detached SFES in Cherry Creek Basin
 - 1,036 Detached SFES in Plum Creek Basin
- 170 Commercial SFES in the Plum Creek Basin

2017:

- 900 Residential SFEs accounts
 - 112 Detached SFEs in Cherry Creek Basin
 - 788 Detached SFEs in Plum Creek Basin
- 170 Commercial SFEs in the Plum Creek Basin

Total growth of 1,286 SFEs is projected for the stormwater fund in 2016 and 1,070 is projected for 2017; SFE counts in Tables 4-10 through 4-12 have been rounded.

4.5 METER EQUIVALENCY SCHEDULE FOR MONTHLY SERVICE CHARGES

The Town implemented an actual use meter equivalency schedule for assessing monthly service charges for water, wastewater, and water resources in 2010. Analysis of three years of water consumption by meter size serves as the basis for the actual use equivalencies. Equivalency factors were calculated by establishing the average use for all ¾-inch meters as the base unit and dividing the average use for larger meter sizes by the average use for ¾-inch meters.

Table 4-13 shows average water consumption by class and meter size for the updated 2016 analysis. Our analysis includes a three-year rolling average of water utility billing data. The latest data includes years 2013, 2014 and 2015. Table 4-14 shows the same data for years 2012, 2013, and 2014.

Table 4-13:
Actual Use Equivalency Factors (2016 Rate Study Update)
(2013, 2014, and 2015 Calendar Year Billing Data)

| Meter Size | Residential | Multifamily | Commercial | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Equivalency Factor |
|------------|-------------|-------------|------------|------------|-----------------------------|----------------------------|--------------------|
| 5/8" | 1.00 | 3.14 | 1.16 | 2.35 | 0.58 | 1.04 | 1.00 |
| 1" | 1.90 | 5.31 | 4.75 | 4.41 | 2.15 | 4.66 | 4.06 |
| 1.5" | - | 11.36 | 8.40 | 11.82 | 6.41 | 5.73 | 9.18 |
| 2" | - | 13.13 | 13.39 | 14.31 | 12.34 | 11.85 | 13.19 |
| 3" | - | 52.93 | 22.58 | 29.05 | - | 12.29 | 19.92 |
| 4" | - | 76.40 | - | 76.77 | - | 83.58 | 81.19 |
| 6" | - | - | 189.06 | - | - | 16.28 | 102.67 |

Table 4-14:
Actual Use Equivalency Factors (2015 Rate Study)
(2012, 2013, 2014 Calendar Year Billing Data)

| Meter Size | Residential | Multifamily | Commercial | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Equivalency Factor |
|------------|-------------|-------------|------------|------------|-----------------------------|----------------------------|--------------------|
| 3/4" | 1.00 | 2.98 | 1.04 | 2.15 | 0.55 | 1.03 | 1.00 |
| 1" | 1.57 | 5.04 | 4.33 | 4.77 | 2.06 | 3.48 | 3.82 |
| 1.5" | - | 10.22 | 8.17 | 11.07 | 6.07 | 5.40 | 8.55 |
| 2" | - | 12.51 | 14.35 | 15.31 | 10.89 | 11.57 | 13.22 |
| 3" | - | 49.70 | 23.26 | 29.37 | - | 12.19 | 20.43 |
| 4" | - | 71.67 | - | 104.12 | - | 66.53 | 68.25 |
| 6" | - | - | 179.20 | - | - | 16.74 | 97.97 |

While the actual meter equivalencies are slightly higher for most meter sizes, Arcadis does not see a significant difference in meter equivalencies that substantiates changing meter equivalency ratios used in the Town’s rates and fees update. Arcadis acknowledges a significant difference in meter equivalency factors in the 4-inch meter size. These differences are due to small sample sizes within the meter size. Arcadis recommends the Town continue to monitor meter equivalencies in the future for any changes that may materialize as a result of increased conservation efforts or water budget rate structure outcomes.

Table 4-15 shows the existing equivalency schedule recommended for the Town.

Table 4-15:
Existing 2015 Equivalency Schedules for Monthly Service Charges

| Meter Size | Actual Use Equivalency Schedule |
|-------------|---------------------------------|
| 5/8" x 3/4" | 1.00 |
| 3/4" | 1.00 |
| 1" | 4.06 |
| 1.5" | 9.18 |
| 2" | 13.19 |
| 3" | 19.92 |
| 4" | 81.19 |
| 6" | 102.67 |

The full discussion of SDFs and associated equivalency schedules is further documented in Arcadis’ report on the system development fee analysis, conducted as part of the 2016 Utilities Rates and Fees Study Update.

5 Water and Wastewater Cost-of-Service Analysis

5.1 INTRODUCTION

Arcadis' scope of services includes updating the water and wastewater cost-of-service (COS) analysis to implement the rate revenue requirements determined in the financial plans. The results of the COS analysis are monthly service charges and volume rates by customer class that equitably distribute the Town's ongoing water and wastewater costs across customer classes.

5.2 COST-OF-SERVICE METHODOLOGY

The basic philosophy behind a COS methodology is that utilities should be self-sustaining enterprises that are adequately financed with rates that are based on sound engineering and economic principles. In addition, rates should be equitable and proportionate to the costs of providing service to a given type of customer. The guidelines of water ratemaking are established by the American Water Works Association (AWWA) in the Manual M1. The guidelines for wastewater ratemaking are established by the Water Environment Federation (WEF) in the Manual of Practice No. 27.

Figure 5-1 illustrates the flow of information involved in developing COS rates. More specifically, the steps required to develop COS rates include:

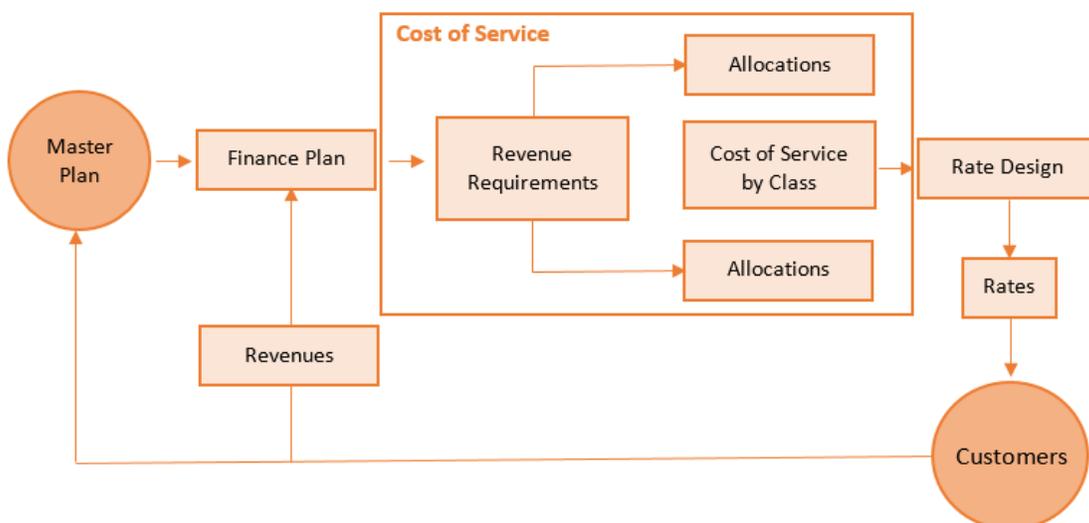


Figure 5-1: Cost-of-Service Process

- Determination of the system's annual revenue requirements (i.e., costs)
- Determination of user charge revenue requirements
- Analysis of customer demands and usage characteristics
- Allocation of user charge revenue requirements by type to customer classes
- Design of rates

The COS process utilizes information generated in the financial plan, as discussed in Section 3. The CIP is a particularly critical component of the financial plan because the way in which the utility plans to meet its capital costs has major implications on the level of rates that customers pay. Indeed, a major function of the finance plan is to give management a tool to evaluate the impact of the costs of capital projects on user charges, debt, fund balances, etc. A major result of the financial plan is the annual user charge revenue requirements: the amount of revenue the utility must earn from the assessment of water and wastewater rates in order to meet all of its financial needs and obligations. The COS analysis allocates user charge revenue requirements among the Town's customer classes to determine the cost of service by class.

The financial plan attempts to balance cash sources and uses through 2055; however, Arcadis' COS analysis focuses on the water and wastewater system revenue requirements for a single test year with two projected years. Arcadis' goal was to determine rates for recommendation in 2017. Revenue requirements for 2017 through 2021, therefore, were obtained from the financial plans developed for the Town. The actual rate design step in the study is described in Section 6 of this report.

The steps of the COS process follow below.

5.2.1 Determination of Annual System Revenue Requirements

Revenue requirements are total operating and capital costs of the system for a single year to be recovered from all available revenue sources. Under a cash-needs approach followed by most governmental-type entities, total revenue requirements typically equal:

- O&M expenses
- Debt service
- Cash-financed capital expenditures
- Transfers to reserves

5.2.2 Determination of User Charge Revenue Requirements

The portion of annual system revenue requirements to be recovered through rates depends on a utility's financing policy and its other sources of income. To determine the amount of revenue that rates must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except those derived from water and wastewater rates.

5.2.3 Analysis of Flows and Usage Characteristics

Analyzing annual consumption and flows in the Town's system and other usage characteristics begins with a review of the Town's customer classes. The Town currently serves seven retail customer classes for water:

- Residential
- Multi-family (with indoor and outdoor consumption)
- Multi-family Indoor Use Only
- Commercial (with indoor and outdoor consumption)
- Commercial Indoor Use Only
- Irrigation Only
- Bulk

The Town serves five classes for wastewater:

- Residential
- Multi-family (with indoor and outdoor consumption)
- Multi-family Indoor Use Only
- Commercial (with indoor and outdoor consumption)
- Commercial Indoor Use Only

The Commercial class includes such customers as schools, churches, and the Town's non-irrigation accounts. The Irrigation Only class includes all irrigation-only accounts.

To equitably allocate the user charge revenue requirements of the system, an analysis of each customer class' consumption and flow characteristics is necessary. Characteristics such as annual and monthly consumption in millions of gallons, average winter monthly consumption, summer monthly consumption, and the number of customers are determined for each class.

5.2.4 Customer Service Characteristics

The Town's customer service characteristics analyzed in this study include the following for the water system:

- Base Water Demand
- Maximum-Day Extra Capacity
- Maximum-Hour Extra Capacity
- Meters & Services
- Number of Customers

Base Water Demand represents the average annual water consumption in thousand gallons for each customer class. This information was obtained from the Town's Customer Characteristics

Analysis – 2016 memo. The analysis summarized billing records for the most recent twelve months ending December 2015.

Maximum-day and maximum-hour extra capacity demands represent water demands that exceed average levels of water usage by system customers. Maximum-day and maximum-hour extra capacity demands are calculated by applying the class peaking factors to the base demand.

Meters & Services represent the total number of equivalent meters. Equivalent meters are derived by applying the average actual usage meter equivalency schedule to the number of meters of each size by class.

Number of Customers equals the projected total number of customers by class for the test year.

For wastewater the analyzed customer service characteristics are:

- Flow Demand
- Biochemical Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- Meters & Services
- Number of Customers

Flow Demand represents the quantity discharged from customers directly to the wastewater system. Because wastewater discharge is not metered, wastewater flows are measured by the average winter monthly consumption (AWMC) of each customer. AWMC was provided by the Town's Customer Characteristics Analysis – 2016 memo which summarized billing data for the most recent twelve months ending December 2015.

Pollutant strength including BOD and TSS represents total pounds of loadings expected from each customer class. Pounds of loadings by customer class are calculated assuming domestic strength concentrations and volume of flow for each customer class.

Meter & Services represents the total number of equivalent meters for each class. Equivalent meters are derived by applying the average actual use meter equivalency schedule to the number of meters of each size by class.

Number of Customers is simply the projected total number of customers by class for the test year.

The percentage of each customer class' share of each characteristic above forms the basis for allocating costs of service to each customer class.

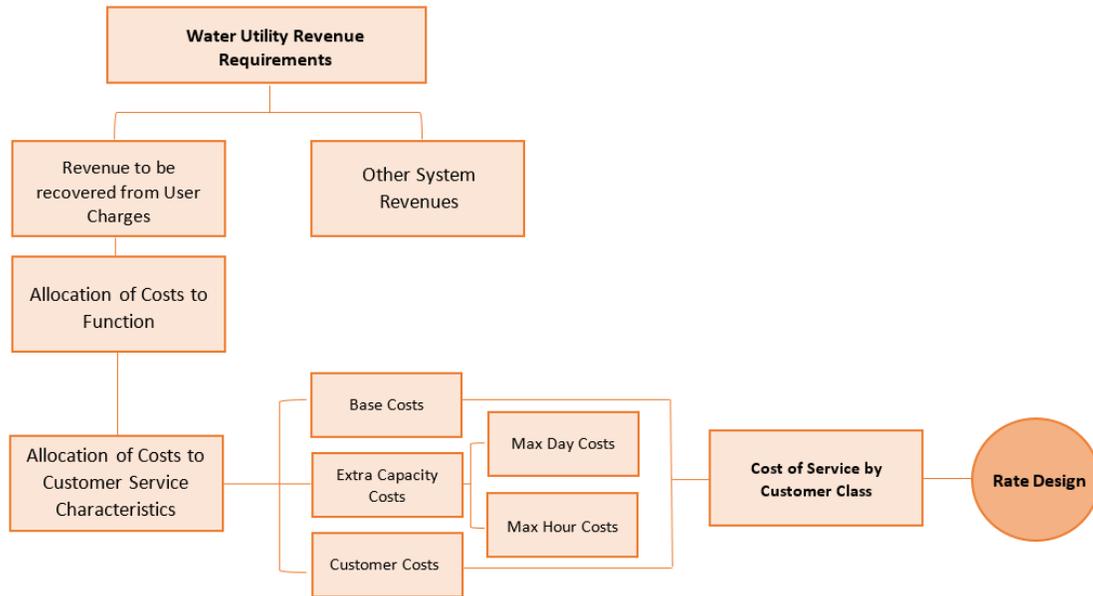
5.2.5 Allocation of Costs to Customer Classes

Equitably allocating the water and wastewater systems' user charge revenue requirements to the customer classes involves a multi-step process. Beginning with O&M costs, the following steps were completed:

- Allocate costs to functions (called unit processes in the wastewater system)
- Allocate costs by functions to customer service characteristic
- Allocate costs to customer classes based on each class' proportion of the customer service characteristics

Figure 5-2 illustrates how the separate cost allocation steps fit into the overall process of setting rates for the water system.

Figure 5-2: Rate Setting Process



5.2.6 Allocation of Costs to Functions

A water or wastewater utility's O&M expenditures may be reported according to a chart of accounts that identifies the system functions. Alternatively, the expenses may follow the divisions of the utility such as management, distribution, storage, treatment, billing, etc. The functions need to be identified and costs separated accordingly. The first cost allocation step determines the percentage of each O&M line item to be allocated to one or more of the system's functions. Functionalizing costs in this manner enhances the accuracy and equity of the system cost allocation to the customer classes. For purposes of the study, the O&M expenditures for the water system were allocated to the following system functions based on fixed asset allocations and direction from Utility Staff:

- Source of Supply
- Treatment
- Pumping
- Transmission
- Distribution
- Storage
- Buildings/ Improvements

- Administration
- Tools/Equip
- Power & Chemicals
- Meters & Services
- Customer & Accounts

The O&M expenditures for the wastewater system were allocated to the following unit processes based on fixed asset allocations and direction from Utility Staff:

- Treatment by Others
- Collection
- Interceptor
- Lift Station
- Administration
- Customer & Accounts
- Meters & Services

5.2.7 Allocation of Costs to Customer Service Characteristics

The assignment of costs to customer service characteristics varies with the allocation methodology used. In the method of cost allocation used by Arcadis, costs are typically assigned to the following customer service characteristics for water:

- Base
- Maximum-Day Extra Capacity
- Maximum-Hour Extra Capacity
- Customer
- Meter & Services

Base costs vary with water consumption under average demand conditions. They are the costs that would be incurred if water consumption occurred evenly from day to day and hour to hour, and the system did not require investment in additional capacity to meet peak requirements.

Maximum-day and maximum-hour extra capacity costs (otherwise known as extra-capacity demands) represent costs incurred to meet water demands that exceed average levels of water usage by system customers. Extra-capacity costs are incurred because of water usage variations and peak demands imposed on a water system. Such demands are directly related to customer water consumption characteristics and fire-flow demands. Extra-capacity costs are typically divided into costs incurred to meet maximum-day and maximum-hour water demands of system customers.

Customer-related costs are those costs incurred to serve customers, regardless of water demands. Customer costs vary with the number of customers. Examples of these costs include administration and billing costs.

Meter & Services costs vary with the size of the meter and/or service used to serve the customer. Examples of meter & services costs include meter replacement and maintenance costs.

In the method of cost allocation followed by Arcadis, costs are typically assigned to the following customer service characteristics for wastewater:

- Flow
- BOD
- TSS
- Number of Customers
- Demand

Flow costs vary with the hydraulic flow of sanitary sewage. The relative strength of sewage does not affect flow costs. Typically, flow costs include the cost of operating lift stations and the capital costs for assets that are designed based on hydraulic flow requirements.

Pollutant strength costs, including BOD and TSS, represent costs incurred to treat wastewater of various qualities. As the Town's wastewater treatment processes are the responsibility of PCWRA and the wastewater fund does not charge for strength characteristics, the single unit process allocated to the strength characteristics is Treatment by Others.

Customer-related costs are incurred to serve customers, regardless of wastewater flows or strengths. Customer costs are those costs that vary with the number of customers. Examples of these costs include water meter reading (to bill wastewater flow) and billing costs.

Demand-related costs are those capital-related costs that are to be recovered on an equivalent water meter basis. In this COS analysis, 20 percent of the wastewater system's capital costs are recovered in this manner. The demand-related cost represents a portion of the cost of capacity in PCWRA's system.

5.2.8 Distribution of Costs to Customer Classes

The projections of customer class consumption and their respective usage characteristics are calculated in this step. As mentioned previously, the water system customer classes included in this study are residential, multi-family, multi-family indoor use only, commercial, commercial indoor use only, irrigation, and bulk; wastewater system classes are residential, multi-family, multi-family indoor use only, commercial, and commercial indoor use only. Each class contributes a different proportion of total annual usage.

For the water utility, base costs are allocated to each class in proportion to its total annual consumption. Costs related to max-day and max-hour extra capacity are allocated to each class in proportion to the class' estimated peaking factors of each class' extra-capacity demands relative to the total extra-capacity demands. Peaking factors by class were determined by analyzing monthly consumption data and system peaking factors.

Customer costs typically are allocated based on the proportion of the number of customers of each class. Meters and service costs are allocated according to the proportion of equivalent meters.

For the wastewater utility, flow costs are allocated to each class in proportion to total annual usage (calculated using the AWMC). Costs related to BOD and TSS are allocated to each class in proportion to the class' estimated strengths based on typical domestic strength factors.

Customer costs are allocated based on the proportion of customers; meters and services costs are allocated according to the proportion of equivalent meters. The proportion of equivalent meters by customer class is also used to allocate demand costs.

5.2.9 Capital Costs

Under the cash-basis approach to calculating revenue requirements, capital costs consist of non-debt funded capital expenditures (e.g., capital outlays), debt service, and transfers to reserve funds. Unlike O&M costs where each line item is allocated to the water system functions, capital costs under this approach are allocated to customer classes based on the allocation of fixed assets net of accumulated depreciation and contributions. To generate capital cost allocation percentages used under the cash basis approach, each fixed asset line item is allocated according to the following four steps:

1. Allocate net fixed assets used to serve the Town's customers to functions (called unit processes in the wastewater system)
2. Allocate assets by functions to customer service characteristics
3. Allocate assets to customer classes based on each class' proportion of the customer service characteristics
4. Distribute the capital costs to each class of customers based on each class' proportionate use of the allocated assets

5.2.10 Rate Design Development and Rate Calculation

The last step in the COS analysis is the actual design of the water and wastewater rate structures and calculation of the rates by customer class. Several types of rate structures have been used historically and are currently in use throughout the industry. The most important concern is to ensure the rate structure recovers the costs of service and meets the Town's objectives identified by the community. The rate design process is described in Section 6 of this report.

5.3 WATER COST-OF-SERVICE ANALYSIS RESULTS

Arcadis followed the steps described above to conduct the water COS analysis. The results presented in this section summarize the costs of service for each of the water system's customer classes for 2017.

5.3.1 Estimated Water System Revenue Requirements

The first two steps of the analysis determine the test year revenue requirements and user charge revenue requirements, or revenues to be recovered from the calculated water rates. Based on the Town's O&M and capital budget and Arcadis' financial planning assumptions, Table 5-1 presents the water fund revenue requirements for 2017. Appendix G presents the entire water fund COS analysis.

Table 5-1:
Summary of 2017 Water Fund Revenue Requirements

| Description | FY2017 |
|--|---------------------|
| O&M Expenses | |
| Admin ¹ | \$1,309,782 |
| Customer Billing | 222,813 |
| Meter Services | 1,083,890 |
| Meters Retrofit / AMI | |
| Engineering | 360,092 |
| Mapping | 77,641 |
| Field Services | 729,517 |
| Facility Maintenance | 899,429 |
| Water Plant Operations | 3,517,224 |
| SCADA | 347,567 |
| Reg & Water Quality Compliance | 157,225 |
| CIP Related O&M | - |
| PCWPF Water Treatment Charges | 1,528,166 |
| Subtotal O&M | \$10,233,345 |
| Less: Transfers | - |
| Less: Minor Capital | - |
| Total O&M | \$10,233,345 |
| Capital Expenses | |
| Transfer to Capital Fund | \$200,643 |
| Debt Service | 1,740,767 |
| Cash Funded Capital | 5,378,920 |
| Minor Capital Outlay | 984,182 |
| Subtotal Capital | \$8,304,512 |
| Total Revenue Requirements | \$18,537,857 |
| Less: O&M Related Non-Rate Revenue | (1,384,581) |
| Less: Capital Related Non-Rate Revenue | (3,463,962) |
| User Charge Revenue Requirement | \$13,689,314 |

¹Includes cost of services provided by the Town like HR, IT, Finance, TM, etc.

After subtracting non-rate revenues and calculating the user charge revenue requirements for 2017, Arcadis determined the water rates for 2017 need to recover approximately \$13.7 million.

Customer service characteristics are estimated for 2017 based on consumption for the most recent twelve months ending December 2015 from the Town's billing records, peaking factors calculated by the Town, plus the projected minimum additional flow by customer class. Minimum additional flow per class is calculated based on a representative customer's annualized average winter monthly consumption multiplied by projected growth. Based on expected water sales in 2016, projections were limited to a total of 2.3 billion gallons in 2016 for all customers except Bulk users. Bulk user volume is based on actual usage data given the variability of this customer class' consumption. Table 5-2 summarizes the projected 2017 customer service characteristics. Table 5-3 shows the proportions of each characteristic projected for 2017 for each customer class.

Table 5-2:
Water Customer Service Characteristics by Customer Class
Projected for 2017

| Customer Class | Base Consumption (kgal) | Max-Day Extra Capacity (MGD) | Max-Hour Extra Capacity (MGD) | Customers | Equivalent Meter |
|------------------------------|-------------------------|------------------------------|-------------------------------|---------------|------------------|
| Residential | 1,598,618 | 6.35 | 8.58 | 18,908 | 18,937 |
| Multi-family | 95,577 | 0.25 | 0.41 | 112 | 790 |
| Commercial | 134,909 | 0.37 | 0.59 | 294 | 1,288 |
| Bulk | 52,002 | 0.19 | 0.31 | 29 | 65 |
| Irrigation | 314,657 | 2.28 | 2.51 | 435 | 2,506 |
| Multi-family Indoor Use Only | 118,314 | 0.10 | 0.34 | 706 | 1,843 |
| Commercial Indoor Use Only | 129,331 | 0.16 | 0.41 | 289 | 1,669 |
| Total | 2,443,408 | 9.70 | 13.16 | 20,773 | 27,098 |

Table 5-3:
Summary of Water Customer Service Characteristics
Projected for 2017

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter |
|------------------------------|---------------|---------------|---------------|---------------|---------------|
| Residential | 65.43% | 65.44% | 65.25% | 91.02% | 69.88% |
| Multi-family | 3.91% | 2.62% | 3.12% | 0.54% | 2.92% |
| Commercial | 5.52% | 3.81% | 4.49% | 1.42% | 4.75% |
| Bulk | 2.13% | 1.91% | 2.38% | 0.14% | 0.24% |
| Irrigation | 12.88% | 23.54% | 19.07% | 2.09% | 9.25% |
| Multi-family Indoor Use Only | 4.84% | 1.04% | 2.59% | 3.40% | 6.80% |
| Commercial Indoor Use Only | 5.29% | 1.64% | 3.10% | 1.39% | 6.16% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

The user charge revenue requirements reported in Table 5-1 are allocated first among functions, then to customer service characteristic, and finally to each customer class based on the percentages presented in Table 5-3. The result is the cost of service by customer service characteristic and class, shown in Table 5-4.

Table 5-4:
Summary of Water Cost of Service by Customer Class
Projected for 2017

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Residential | \$4,070,500 | \$2,241,822 | \$709,648 | \$1,704,454 | \$756,145 | \$9,482,570 |
| Multi-family | 243,365 | 89,664 | 33,986 | 10,096 | 31,544 | 408,655 |
| Commercial | 343,515 | 130,476 | 48,888 | 26,503 | 51,415 | 600,796 |
| Bulk | 132,411 | 65,381 | 25,911 | 2,614 | 2,588 | 228,905 |
| Irrigation | 801,198 | 806,438 | 207,382 | 39,213 | 100,084 | 1,954,316 |
| Multi-family | | | | | | |
| Indoor Use Only | 301,259 | 35,472 | 28,136 | 63,642 | 73,598 | 502,107 |
| Commercial | | | | | | |
| Indoor Use Only | 329,310 | 56,286 | 33,685 | 26,052 | 66,631 | 511,965 |
| Total | \$6,221,558 | \$3,425,540 | \$1,087,638 | \$1,872,573 | \$1,082,005 | \$13,689,314 |

5.4 WASTEWATER COST-OF-SERVICE ANALYSIS RESULTS

Arcadis' approach to the wastewater COS analysis follows guidelines discussed in this section. This section presents the costs of service by customer class for the wastewater system.

5.4.1 Estimated Wastewater System Revenue Requirements

Test year revenue requirements and user charge revenue requirements, or revenues to be recovered from the calculated wastewater rates, are presented in Table 5-5. Arcadis projects that the wastewater system needs to recover approximately \$10.7 million from its wastewater customers in 2017. Appendix H presents the entire wastewater fund COS analysis.

Table 5-5:
Summary of 2017 Wastewater Fund Revenue Requirements

| Description | FY2017 |
|--|---------------------|
| O&M Expenses | |
| Administration ¹ | \$741,042 |
| Customer Billing | 215,802 |
| Engineering | 247,973 |
| Mapping | 77,552 |
| Field Services | 655,145 |
| Facility Maintenance | 377,749 |
| Plant Operations ² | 2,665,184 |
| SCADA | 178,713 |
| CIP Related O&M | 8,606 |
| Subtotal O&M | \$5,167,766 |
| Less: Transfers | - |
| Less: Minor Capital Outlay | - |
| Total O&M | \$5,167,766 |
| Capital Expenses | |
| Capital Fund Transfer | \$67,001 |
| Minor Capital Outlay | 76,750 |
| Debt Service | 333,258 |
| Cash Funded Capital | \$5,636,243 |
| Subtotal Capital | 6,113,252 |
| Total Revenue Requirements | \$11,281,018 |
| Less: O&M Related Non-Rate Revenue | (\$244,251) |
| Less: Capital Related Non-Rate Revenue | (\$340,506) |
| User Charge Revenue Requirement | \$10,696,262 |

¹Includes cost of services provided by the town like HR, IT, Finance, and TM.

²Provided by PCWRA

Customer service characteristics are estimated for 2017 based on the latest 12 months ending December 2015 flow from the Town's billing records and assumed residential strength factors plus the projected minimum additional flow by customer class. The 2016 cost-of-service model does not currently base wastewater charges on BOD and TSS; therefore, no differences in concentrations are used. However, the model has the capability to adjust for future customers with difference strength characteristics. Minimum additional flow per class is calculated based on a representative customer's annualized average winter monthly consumption multiplied by projected growth. Table 5-6 summarizes the projected 2017 customer service characteristics. Table 5-7 shows the proportions of each characteristic, as projected for 2017 for each customer class.

Table 5-6:
Wastewater Customer Service Characteristics by Customer Class
Projected for 2017

| Customer Class | Flow (kgal) | BOD (Pounds) | TSS (Pounds) | Customers | Equivalent Meter |
|------------------------------|------------------|------------------|------------------|---------------|------------------|
| Residential | 729,886 | 2,095,270 | 2,631,270 | 18,552 | 18,586 |
| Commercial | 74,674 | 214,366 | 269,204 | 287 | 1,466 |
| Commercial Indoor Use Only | 108,583 | 311,707 | 391,446 | 272 | 1,780 |
| Multi-family | 63,082 | 181,088 | 227,413 | 112 | 939 |
| Multi-family Indoor Use Only | 107,231 | 307,826 | 386,572 | 706 | 2,093 |
| Total | 1,083,457 | 3,110,258 | 3,905,905 | 19,929 | 24,863 |

Table 5-7:
Summary of Wastewater Customer Service Characteristics
Projected for 2017

| Customer Class | Flow (kgal) | BOD (Pounds) | TSS (Pounds) | Customers | Equivalent Meter |
|------------------------------|---------------|---------------|---------------|---------------|------------------|
| Residential | 67.37% | 67.37% | 67.37% | 93.09% | 74.75% |
| Commercial | 6.89% | 6.89% | 6.89% | 1.44% | 5.90% |
| Commercial Indoor Use Only | 10.02% | 10.02% | 10.02% | 1.36% | 7.16% |
| Multi-family | 5.82% | 5.82% | 5.82% | 0.56% | 3.78% |
| Multi-family Indoor Use Only | 9.90% | 9.90% | 9.90% | 3.54% | 8.42% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

The user charge revenue requirements reported in Table 5-5 are allocated first among unit processes, then to customer service characteristic, and finally to each customer class based on the percentages presented in Table 5-7. The result is the cost of service by customer service characteristic and class. Table 5-8 shows the result.

Table 5-8:
Summary of Wastewater Cost of Service by Customer Class
Projected for 2017

| Customer Class | Flow (kgal) | BOD (Pounds) | TSS (Pounds) | Customers | Total |
|-----------------|--------------------|--------------------|------------------|--------------------|---------------------|
| Residential | \$5,285,367 | \$687,491 | \$382,229 | \$1,175,411 | \$7,530,498 |
| Commercial | 540,744 | 70,337 | 39,106 | 18,184 | 668,370 |
| Commercial | | | | | |
| Indoor Use Only | 786,287 | 102,276 | 56,863 | 17,233 | 962,659 |
| Multi-family | 456,799 | 59,418 | 33,035 | 7,096 | 556,348 |
| Multi-family | | | | | |
| Indoor Use Only | 776,498 | 101,003 | 56,155 | 44,731 | 978,386 |
| Total | \$7,845,695 | \$1,020,525 | \$567,387 | \$1,262,655 | \$10,696,262 |

5.4.2 Wastewater Monthly Service Charge

An important rate design feature that directly affects the rate results is the policy decision to include 20 percent of annual capital costs in the monthly service charge. Including a portion of capital costs in the monthly service charge increases revenue stability and requires all customers to pay a portion of debt service and other capital expenses strictly on an equivalent water meter basis rather than on a wastewater volume basis. Including 20 percent of capital costs in the base rate reduces the volume rate and recovers a portion of the PCWRA debt service costs from users who require more capacity in the wastewater system. In Arcadis’ analysis, the demand charge component of the monthly service charges recovers the 20 percent of annual wastewater system capital costs.

Water meter size is closely related to the amount of water a customer can potentially use and therefore discharge into the Town’s wastewater system. Accounts with larger meter sizes potentially use more capacity in the Town’s system. With this rate design feature, these accounts pay a proportionate share of the capital costs as part of the monthly service charge.

6 Rate Design

6.1 INTRODUCTION

Once the costs of service by class were determined, Arcadis developed water and wastewater COS based rates based on the Town's existing rate structures. The wastewater fund follows a uniform rate structure, with a monthly service charge that varies by meter size. This section presents the results of the rate development for water, water resources, wastewater, and stormwater utilities.

6.2 WATER SYSTEM RATES

6.2.1 Water Budget-Based Rate Structure

A water budget-based rate structure identifies a monthly budgeted amount of water by individual account that varies by landscaped area and historical evapotranspiration rates (ET). Irrigation requirements per square foot of landscaped area depend on ET for the area of Castle Rock and historical precipitation.

The irrigation season in the Town is defined as the months of April through October. Total inches of water allowed per square foot of landscaped area for the Town averages approximately 30 inches. The total water allowance is based on 80 percent of the 7 year average of historical ET for the year. The Town believes this value is adequate because ET demands are based on the maximum requirements for bluegrass. The 80 percent factor adjusts the annual monthly allowance for a more appropriate irrigation allowance.

For non-irrigation or winter months, an irrigation allowance is not included in an account's water budget. Rather, an account's historical average winter monthly water consumption (AWMC) provides actual data on the account's winter water usage during November, December, January, and February. The water budget for an account during November through March will be equal to the account's AWMC for the previous year.

Data on AWMC by account are currently calculated for sewer billings. For accounts with two meters (i.e., one indoor meter and one irrigation meter), the water budget-based rate structure will be applied to the irrigation meter only. The indoor meter will be billed as if each month were a winter or non-irrigation month (customer is billed based on the account's AWMC).

6.2.2 Water Usage Thresholds

The water budget-based rate structure consists of three consumption tiers. Table 6-1 presents the tier threshold by class for the irrigation and winter seasons.

Table 6-1:
Water Usage Thresholds

| Irrigation Season (April through October 31 Consumption) | | | | |
|---|--------|--------|--------|--|
| Class | Tier 1 | Tier 2 | Tier 3 | |
| Residential | AWMC | Budget | Excess | |
| Multi-family Indoor Use Only | AWMC | N/A | Excess | |
| Multi-family | AWMC | Budget | Excess | |
| Commercial Indoor Use Only | AWMC | N/A | Excess | |
| Commercial | AWMC | Budget | Excess | |
| Irrigation | N/A | Budget | Excess | |
| Winter Season – (November 1 through March 31 Consumption) | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | |
| Residential | AWMC | N/A | Excess | |
| Multi-family Indoor Use Only | AWMC | N/A | Excess | |
| Multi-family | AWMC | N/A | Excess | |
| Commercial Indoor Use Only | AWMC | N/A | Excess | |
| Commercial | AWMC | N/A | Excess | |
| Irrigation | N/A | N/A | Excess | |

Explanations of the specific tier rates follow. Bulk water accounts are not subject to a water budget-based rate structure and are not discussed in this section.

6.2.2.1 Description of Thresholds

For Residential, Multi-family and Commercial accounts with meters providing both indoor and irrigation water, the rate structure includes three usage tiers at increasing rates per thousand gallons (kgal).

Tier 1, or base tier, includes all usage up to an individual account’s AWMC. This represents the base amount of consumption an individual account requires for basic indoor use. Average AWMC for the Town’s representative residential customer is 5,000 gallons per month. AWMC for Multi-family and Commercial accounts varies according to meter size and type of commercial account.

Tier 2, or irrigation budget tier, includes usage above an account’s AWMC and including its monthly irrigation allowance. The threshold will vary by month during the irrigation months. An account’s landscaped area in square feet and the weekly irrigation requirements will determine the monthly irrigation allowance.

Tier 3, or excess tier, includes all usage greater than an account’s AWMC plus irrigation allowance during a month. The goal of this tier is to target users who may be using water inefficiently.

6.2.3 Tier Rates

The actual rates calculated for consumption tiers in the water budget rate structure recommended here are tied to the results of the COS analysis. Each account, excluding Bulk customers, pays a fixed monthly service charge consisting of a customer charge and a meter charge. A monthly water resource charge per single family equivalent (SFE, varying by

meter size) is added to an account's bill. The water resources charge is discussed in Section 6.4.

The water rate structure consists of three increasing tier rates:

- Tier 1 = Base COS rate
- Tier 2 = Base plus extra-capacity rates by customer class
- Tier 3 = Excess-use rate to recover the Town's remaining revenue requirements

The rate per 1,000 gallons for Tier 1 was initially tied to the Town's base unit cost per 1,000 gallons. This rate equals the cost to the Town of providing one unit of water to its customers on an average use basis. It differs from the average COS rates because it does not include any peaking-related costs. This rate is the same for all customer classes and provides an incentive for customers to maintain low water usage.

The rate for Tier 2 was intended to represent the cost of providing base and peaking-related water demands to the Town's customers. It includes the costs of maximum-day and maximum-hour costs of delivering water during the peak irrigation periods. This rate varies by customer class due to differences in peaking characteristics among the classes. Irrigation requirements cause peaking on the system; therefore the water used within a customer's irrigation budget is charged at the peaking rate.

Finally, the rate for Tier 3 recovers a portion of the Town's remaining revenue requirements. This rate is determined from the CIM analysis and is intended to recover a portion of the remaining revenue requirements not collected from the monthly service charges and volume revenues from Tiers 1 and 2. The analysis assumes 50 percent of revenues collected for consumption in Tier 3 will be counted toward rate revenues. The remaining amount will be for additional water conservation efforts. The Tier 3 rate is based on four factors:

1. The Tier 1 rate is set lower than the average cost of service, thereby under collecting for usage up to an account's AWMC;
2. The effect of price elasticity of demand on water usage – as the price for water changes, customers respond by conserving water; and
3. An expectation that some of the Town's accounts will use more than their water budget allowance.
4. Adjustments to Tier 1 and 2 rates to recover a portion of the remaining revenue requirements.

Residential accounts are subject to a water conservation surcharge for usage greater than 40,000 gallons per month. This surcharge intends to send a conservation price signal to customers with excessive usage.

6.3 WASTEWATER SYSTEM RATES

The Town currently charges wastewater customers a fixed monthly service charge that consists of a customer charge and a demand charge, plus a uniform volume rate for wastewater flow. An account's flow is estimated using its AWMC. The proposed 2017 wastewater rates consist of a monthly charge that includes the demand charge by meter size, plus a uniform volume rate for all customers.

6.4 WATER RESOURCES USER CHARGES

The Town currently assesses all water resources customers a fixed monthly service charge per SFE. Arcadis recommends no change in the equivalency schedule used to determine SFEs for assessing water resources charges. The water resource charge calculated per SFE for 2017 is presented in Section 7.

6.5 STORMWATER MONTHLY UTILITY FEE

During the 2010 study, Arcadis reviewed the existing assumptions used for determining the stormwater monthly utility fee. This year's study update used assumptions revised during the 2010 review. For single-family residential units, the percent imperviousness was determined based on the following assumptions:

- Density of 3 units per acre from the water design criteria section of the Town of Castle Rock - Public Works Regulations – February 12, 1999
- Typical two-story homes
- Average home size of 2,100 sq. ft. from County Assessor data

Using these assumptions and Figure RO-5 from the Urban Drainage and Flood Control District (UDFCD) Criteria Manual, a single-family residential account's percent imperviousness was estimated to be 33 percent.

Town Geographical Information System (GIS) data indicate the average lot size of a single-family home in the Town is 9,864 sq. ft. Applying 33 percent imperviousness to this lot size results in an impervious area of 3,255 sq. ft. per SFE. The assumption of one SFE used in this study is 3,255 sq. ft.

Arcadis also re-calculated the stormwater SFEs based on percent imperviousness for non-residential accounts during this 2016 Update Study. The average percent imperviousness for multi-family and other non-residential properties was assumed to be 80 percent, unless otherwise indicated in the Town's billing system data. SFEs were calculated based on the percent imperviousness of each property multiplied by its parcel size.

7 Findings and Recommendations

7.1 FINDINGS

Arcadis has completed the 2016 Utilities Rates and Fees Study Update, including utility system financial planning, COS rate studies, and rate design. The purpose of this study is to provide the Town with an update for their water, water resources, wastewater, and stormwater fund rates and fees designed to meet Town policies and objectives during the years 2017 through 2021. Arcadis' findings are based on a thorough review of the information provided.

After the rate structure analysis and consideration of the Town's preferences, Arcadis has concluded the following rates and structures will adequately address the Town's needs for 2017.

Table 7-1:
Water
Proposed 2017 Monthly Service Charge

| Meter Size | Monthly Charge |
|-----------------------|----------------|
| 5/8" x 3/4" | \$9.54 |
| 3/4" | \$9.54 |
| 1" | \$13.72 |
| 1.5" | \$18.78 |
| 2" | \$26.00 |
| 3" | \$41.78 |
| 4" | \$94.12 |
| 6" | \$147.26 |
| Bulk Customers | \$9.54 |

Table 7-2:
Water
Proposed 2017 Volumetric Rates by Tier

| Irrigation Season (April through October 31 Consumption) | | | | |
|---|----------------|----------------------|------------------|--------------------------------------|
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.82 | \$5.53 | \$8.29 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | N/A | \$3.57 | N/A |
| Multi-family w/Irrigation | \$2.82 | \$4.70 | \$7.04 | N/A |
| Commercial Indoor Use Only | \$2.82 | N/A | \$3.80 | N/A |
| Commercial w/Irrigation | \$2.82 | \$4.75 | \$7.13 | N/A |
| Irrigation | N/A | \$7.58 | \$11.36 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |
| Winter Season – (November 1 through March 31 Consumption) | | | | |
| Class | Tier 1 AWMC | Tier 2 Irrigation | Tier 3 Excess | Tier 4 Surcharge over 40 Kgals |
| Residential | \$2.82 | N/A | \$5.53 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | N/A | \$3.57 | N/A |
| Multi-family w/Irrigation | \$2.82 | N/A | \$4.70 | N/A |
| Commercial Indoor Use Only | \$2.82 | N/A | \$3.80 | N/A |
| Commercial w/Irrigation | \$2.82 | N/A | \$4.75 | N/A |
| Irrigation | N/A | N/A | \$11.36 | N/A |
| Bulk | \$5.07 | N/A | N/A | N/A |

Table 7-3:
Water Resources
Proposed 2017 Monthly and Volumetric

| Meter Size | Monthly Charge |
|-------------------------|----------------|
| 5/8" x 3/4" | \$17.52 |
| 3/4" | \$26.15 |
| 1" | \$99.11 |
| 1.5" | \$187.50 |
| 2" | \$313.54 |
| 3" | \$588.90 |
| 4" | \$1,502.32 |
| 6" | \$2,429.34 |
| Volumetric Rate | |
| Bulk Customer, Per Kgal | \$0.24 |

Table 7-4:
Wastewater
Proposed 2017 Monthly and Volumetric Rates

| Meter Size | Monthly Charge |
|-------------------------|----------------|
| 5/8" x 3/4" | \$9.30 |
| 3/4" | \$9.30 |
| 1" | \$14.80 |
| 1.5" | \$21.46 |
| 2" | \$30.96 |
| 3" | \$51.72 |
| 4" | \$120.58 |
| 6" | \$190.48 |
| Volumetric Rate | |
| All Customers, Per Kgal | \$6.59 |

Table 7-5:
Proposed 2017 Stormwater Monthly Service Charges

| Monthly Stormwater Fee | | |
|---|--|--------|
| All Customers, per Single Family Equivalent (SFE) | | \$7.12 |
| SFE Assignment | | |
| Customer Class | Impervious Sq. Ft. | SFE |
| Single Family Attached & Detached | 3,255 | 1 |
| Non-Single Family (Multi Family & Commercial) | Parcel size times 80% imperviousness divided by 3,255 impervious sq. ft. per SFE = # of SFEs | |

7.2 PROPOSED RATES FOR 2017 THROUGH 2021

Rates for the five-year study period (2017 through 2021) were projected using the percentage rate revenue increases projected by the financial plans. Appendix B contains the rate schedules for the years 2017 through 2021.

7.3 RECOMMENDATIONS

As part of the 2016 Utilities Rates and Fees Study Update, Arcadis recommends the Town:

- Continue to monitor changes in the actual use equivalency schedule to be applied when assessing monthly service charges by meter size. Also monitor by meter type within each meter size.
- Adopt the presented rates and fees for the years 2017 through 2021.
- Closely monitor water sales and revenues to ensure revenues are adequate to cover costs.
- Arcadis recommends that to ensure the long-term sustainability of the stormwater enterprise, a review of the timing of CIP expenditures, O&M expenses, and sources and uses of funds among sub-funds be thoroughly performed.
- Annually review the operating results and update the financial plan to proactively manage changes in costs, revenues, and system growth.
- Maintain a minimum of 1,000 gallons AWMC for customers with zero AWMC. This will result in a more appropriate wastewater charge and will create a minimum Tier 1 usage allowance for the water bill calculation.

APPENDIX A

Rate Schedules for FY2017 through FY2021



Water
Proposed Monthly Service Charges 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|----------------|----------|----------|----------|----------|----------|
| 5/8" x 3/4" | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |
| 3/4" | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |
| 1" | \$13.72 | \$13.72 | \$13.72 | \$13.72 | \$13.72 |
| 1.5" | \$18.78 | \$18.78 | \$18.78 | \$18.78 | \$18.78 |
| 2" | \$26.00 | \$26.00 | \$26.00 | \$26.00 | \$26.00 |
| 3" | \$41.78 | \$41.78 | \$41.78 | \$41.78 | \$41.78 |
| 4" | \$94.12 | \$94.12 | \$94.12 | \$94.12 | \$94.12 |
| 6" | \$147.26 | \$147.26 | \$147.26 | \$147.26 | \$147.26 |
| Bulk Customers | \$9.54 | \$9.54 | \$9.54 | \$9.54 | \$9.54 |

Water
Proposed Volume Rates 2017 - 2021

| Class | Irrigation Season – April through October 31 Consumption | | | | | | | | | | | | | | |
|------------------------------|--|--------|--------|--------|--------|-------------------|--------|--------|--------|--------|---------------|---------|---------|---------|---------|
| | Tier 1 AVMC | | | | | Tier 2 Irrigation | | | | | Tier 3 Excess | | | | |
| | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Residential | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$8.29 | \$8.29 | \$8.29 | \$8.29 | \$8.29 |
| Multi-family Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.57 | \$3.57 | \$3.57 | \$3.57 | \$3.57 |
| Multi-family with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$7.04 | \$7.04 | \$7.04 | \$7.04 | \$7.04 |
| Commercial – Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.80 | \$3.80 | \$3.80 | \$3.80 | \$3.80 |
| Commercial with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$7.13 | \$7.13 | \$7.13 | \$7.13 | \$7.13 |
| | N/A | N/A | N/A | N/A | N/A | \$7.58 | \$7.58 | \$7.58 | \$7.58 | \$7.58 | \$11.36 | \$11.36 | \$11.36 | \$11.36 | \$11.36 |
| | Winter Season – November 1 through March 31 Consumption | | | | | | | | | | | | | | |
| Residential | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$5.53 | \$5.53 | \$5.53 | \$5.53 | \$5.53 |
| Multi-family Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.57 | \$3.57 | \$3.57 | \$3.57 | \$3.57 |
| Multi-family with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$4.70 | \$4.70 | \$4.70 | \$4.70 | \$4.70 |
| Commercial - Indoor Use Only | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$3.80 | \$3.80 | \$3.80 | \$3.80 | \$3.80 |
| Commercial with Irrigation | \$2.82 | \$2.82 | \$2.82 | \$2.82 | \$2.82 | N/A | N/A | N/A | N/A | N/A | \$4.75 | \$4.75 | \$4.75 | \$4.75 | \$4.75 |
| | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | \$11.36 | \$11.36 | \$11.36 | \$11.36 | \$11.36 |
| Bulk | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Water Resources
Proposed Monthly and Volumetric Rates 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---------------------------------------|------------|------------|------------|------------|------------|
| 5/8" x 3/4" | \$17.52 | \$18.05 | \$18.59 | \$19.15 | \$19.82 |
| 3/4" | \$26.15 | \$26.93 | \$27.74 | \$28.57 | \$29.57 |
| 1" | \$99.11 | \$102.08 | \$105.14 | \$108.30 | \$112.09 |
| 1.5" | \$187.50 | \$193.12 | \$198.91 | \$204.88 | \$212.05 |
| 2" | \$313.54 | \$322.94 | \$332.63 | \$342.61 | \$354.60 |
| 3" | \$588.90 | \$606.56 | \$624.76 | \$643.50 | \$666.03 |
| 4" | \$1,502.32 | \$1,547.39 | \$1,593.81 | \$1,641.62 | \$1,699.08 |
| 6" | \$2,429.34 | \$2,502.22 | \$2,577.28 | \$2,654.60 | \$2,747.51 |
| Bulk Customers Volumetric Rate | | | | | |
| Per Kgal | \$0.24 | \$0.24 | \$0.25 | \$0.26 | \$0.27 |

Wastewater
Proposed Monthly and Volumetric Rates 2017 - 2021

| Meter Size | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|----------------------------|----------|----------|----------|----------|----------|
| 5/8" x 3/4" | \$9.30 | \$9.30 | \$9.30 | \$9.30 | \$9.30 |
| 3/4" | \$9.30 | \$9.30 | \$9.30 | \$9.30 | \$9.30 |
| 1" | \$14.80 | \$14.80 | \$14.80 | \$14.80 | \$14.80 |
| 1.5" | \$21.46 | \$21.46 | \$21.46 | \$21.46 | \$21.46 |
| 2" | \$30.96 | \$30.96 | \$30.96 | \$30.96 | \$30.96 |
| 3" | \$51.72 | \$51.72 | \$51.72 | \$51.72 | \$51.72 |
| 4" | \$120.58 | \$120.58 | \$120.58 | \$120.58 | \$120.58 |
| 6" | \$190.48 | \$190.48 | \$190.48 | \$190.48 | \$190.48 |
| Volumetric Rate | | | | | |
| All Customers, Per Kgal | \$6.59 | \$6.59 | \$6.59 | \$6.59 | \$6.59 |

Stormwater
Proposed Monthly Service Charges 2017 - 2021

| Description | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---|--------|--------|--------|--------|--------|
| All Customers, per Single Family Equivalent (SFE) | \$7.12 | \$7.41 | \$7.71 | \$8.01 | \$8.33 |

APPENDIX B

Water Fund Long-Term Financial Plan – With Capital Improvement Program



Table 1
Town of Castle Rock
Water
Proforma - Operating Fund

| Line No. | Description | Fiscal Year Ending December 31st | | | | |
|-----------------------------|---------------------------------------|----------------------------------|----------------------|----------------------|----------------------|----------------------|
| | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Revenues | | | | | | |
| 1 | Rate Revenues | \$ 13,689,314 | \$ 14,079,856 | \$ 14,470,398 | \$ 14,860,940 | \$ 15,251,482 |
| 2 | Rate Revenues from Increase | - | - | - | - | - |
| 3 | Miscellaneous Revenue | 1,324,072 | 1,363,075 | 1,402,774 | 1,418,203 | 1,434,471 |
| 4 | Transfers In | 2,557,750 | 695,250 | 685,125 | - | - |
| 5 | Interest Income | 10,100 | 24,008 | 33,819 | 41,169 | 45,828 |
| 6 | Total Revenues | <u>\$ 17,581,235</u> | <u>\$ 16,162,189</u> | <u>\$ 16,592,115</u> | <u>\$ 16,320,312</u> | <u>\$ 16,731,780</u> |
| Revenue Requirements | | | | | | |
| 7 | Operating Expenses | \$ 8,705,180 | \$ 9,057,141 | \$ 9,520,448 | \$ 10,221,945 | \$ 10,679,897 |
| 8 | Non-Operating Expenses | - | - | - | - | - |
| 9 | Transfers Out | 1,728,809 | 1,808,271 | 1,905,445 | 2,014,536 | 2,200,625 |
| 10 | Minor Capital Expense | 984,182 | 1,017,882 | 1,040,682 | 1,048,282 | 1,082,482 |
| Debt Service | | | | | | |
| 11 | Existing Debt Service | 1,740,767 | 1,746,879 | 1,752,251 | 1,733,994 | 1,740,790 |
| 12 | New-Revenue Bond | - | - | - | - | - |
| 13 | New-General Obligation Bond | - | - | - | - | - |
| 14 | New-State Revolving Loan Fund | - | - | - | - | - |
| 15 | Total Debt Service | <u>\$ 1,740,767</u> | <u>\$ 1,746,879</u> | <u>\$ 1,752,251</u> | <u>\$ 1,733,994</u> | <u>\$ 1,740,790</u> |
| 16 | Capital Projects Funded with Cash | - | - | - | - | - |
| 17 | Total Revenue Requirements | <u>\$ 13,158,937</u> | <u>\$ 13,630,173</u> | <u>\$ 14,218,826</u> | <u>\$ 15,018,757</u> | <u>\$ 15,703,794</u> |
| 18 | Revenues Over (Under) Expenses | <u>\$ 4,422,298</u> | <u>\$ 2,532,016</u> | <u>\$ 2,373,289</u> | <u>\$ 1,301,555</u> | <u>\$ 1,027,986</u> |
| 19 | Beginning Balance | \$ 313,776 | \$ 4,736,074 | \$ 7,268,089 | \$ 9,641,378 | \$ 10,942,933 |
| 20 | Revenues Over (Under) Expenses | <u>4,422,298</u> | <u>2,532,016</u> | <u>2,373,289</u> | <u>1,301,555</u> | <u>1,027,986</u> |
| 21 | Ending Balance | <u>\$ 4,736,074</u> | <u>\$ 7,268,089</u> | <u>\$ 9,641,378</u> | <u>\$ 10,942,933</u> | <u>\$ 11,970,919</u> |

Table 2
Town of Castle Rock
Water
Projected Rate Revenue Requirements

| Line No. | Description | Category | Fiscal Year Ending December 31 | | | | |
|----------|--|----------|--------------------------------|--------------------|------------------|------------------|--------------------|
| | | | 1 FY2017 | 2 FY2018 | 3 FY2019 | 4 FY2020 | 5 FY2021 |
| | Operation and Maintenance Expense | | | | | | |
| 1 | Water Fund O&M | | \$ 8,705,180 | \$ 9,057,141 | \$ 9,520,448 | \$ 10,221,945 | \$ 10,679,897 |
| 2 | WR Fund - 4260 PCWPF Water Treatment Charges | | <u>1,528,166</u> | <u>1,607,369</u> | <u>1,704,115</u> | <u>1,811,221</u> | <u>1,994,905</u> |
| 3 | Total O&M Expenses | | \$ 10,233,345 | \$ 10,664,510 | \$ 11,224,563 | \$ 12,033,166 | \$ 12,674,802 |
| | Capital Expenditures | | | | | | |
| 4 | Debt Service | | \$ 1,740,767 | \$ 1,746,879 | \$ 1,752,251 | \$ 1,733,994 | \$ 1,740,790 |
| 5 | Transfers Out | | 200,643 | 225,861 | 272,052 | 339,856 | 238,710 |
| 6 | Minor Capital Outlay | | 984,182 | 1,017,882 | 1,040,682 | 1,048,282 | 1,082,482 |
| 7 | Pay-Go Cash Funded Capital | | <u>5,378,920</u> | <u>2,764,951</u> | <u>4,475,356</u> | <u>8,290,897</u> | <u>2,683,562</u> |
| 8 | Total Capital Expenditures | | \$ 8,304,512 | \$ 5,755,573 | \$ 7,540,341 | \$ 11,413,029 | \$ 5,745,544 |
| 9 | Total O&M and Capital Expenses | | \$ 18,537,857 | \$ 16,420,084 | \$ 18,764,905 | \$ 23,446,195 | \$ 18,420,346 |
| | Less Revenue From Other Sources | | | | | | |
| 10 | Miscellaneous Revenue | O&M | \$1,324,072 | \$1,363,075 | \$1,402,774 | \$1,418,203 | \$1,434,471 |
| 11 | System Development Fee Revenue | Capital | 2,476,181 | 2,546,943 | 2,618,496 | 2,684,064 | 2,760,058 |
| 12 | Transfers From Restricted Fund | Capital | 2,557,750 | 695,250 | 685,125 | - | - |
| 13 | Interest Income | O&M | 60,509 | 68,316 | 73,954 | 66,092 | 59,429 |
| 14 | Sources & Uses of Funds | Capital | <u>(1,569,969)</u> | <u>(2,333,356)</u> | <u>(485,842)</u> | <u>4,416,895</u> | <u>(1,085,093)</u> |
| 15 | Rate Revenue Requirement | | \$ 13,689,314 | \$ 14,079,856 | \$ 14,470,398 | \$ 14,860,940 | \$ 15,251,482 |
| | Adjustment for Revenue From Other Sources | | | | | | |
| 16 | Operation and Maintenance Expenses | | \$ 8,848,764 | \$ 9,233,120 | \$ 9,747,836 | \$ 10,548,870 | \$ 11,180,903 |
| 17 | Capital Expenses | | <u>4,840,550</u> | <u>4,846,736</u> | <u>4,722,562</u> | <u>4,312,069</u> | <u>4,070,579</u> |
| 18 | Total Rate Revenue Requirement | | \$ 13,689,314 | \$ 14,079,856 | \$ 14,470,398 | \$ 14,860,940 | \$ 15,251,482 |

Town of Castle Rock
 e-Forecast Version 3.0
 Water
 Capital Improvement Program - Alternative 1 (Priority 1, 2 and 3)

=Rank 1
 =Rank 2
 =Rank 3
 = Not Ranked

| Line No | Description | 1 | 2 | 3 | 4 | 5 |
|-----------|--|------------------|------------------|------------------|------------------|------------------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 | Water Supply Wells | | | | | |
| 2 | Well Rehab/Replacement | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| 3 | Well Equipment Replacement | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| 4 | Building 204 Improvements | 0 | 0 | 0 | 0 | 0 |
| 5 | NEW Deep Groundwater Well and raw waterline | 2,750,000 | 0 | 0 | 0 | 0 |
| 6 | Crystal Valley Ranch Wells - 1300 GPM ph1 | 0 | 0 | 0 | 0 | 0 |
| 7 | Crystal Valley Ranch Wells - 1250 GPM ph1 | 0 | 0 | 0 | 0 | 0 |
| 8 | Crystal Valley Ranch Wells - 1175 GPM ph3 | 0 | 0 | 0 | 0 | 0 |
| 9 | Lanterns Wells 1500 gpm (raw line?; treat where?) | 0 | 0 | 0 | 0 | 0 |
| 10 | Raw Water Transmission Lines to where ? | 0 | 0 | 0 | 0 | 0 |
| 11 | VFD replacement (Well/ps/tmt plant) | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 |
| 12 | Treatment | | | | | |
| 13 | RWTP Filter Media Underdrains Upgrades | 0 | 0 | 0 | 0 | 0 |
| 14 | Meadows WTP Filter Rehab | 0 | 0 | 0 | 0 | 0 |
| 15 | WTP Facility Upgrades | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| 16 | WTP Equipment replacement | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| 17 | Meadows WTP Skylight Removal Ph 2 | 0 | 0 | 0 | 0 | 0 |
| 18 | Decommission Miller WTP (?) | 0 | 0 | 0 | 0 | 0 |
| 19 | Water WTP Access Drive Paving | 0 | 0 | 0 | 0 | 0 |
| 20 | Water Tmt Plant media replacement | 0 | 0 | 0 | 105,000 | 0 |
| 21 | Water Storage | | | | | |
| 22 | Tank Rehab | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| 23 | Liberty Village Yellow Zone Tank (Tank 18) Liberty Village | 0 | 0 | 0 | 3,425,609 | 0 |
| 24 | Tank 11B (was Tank 14B) 2.3 MG (Tower Rd) | 0 | 0 | 0 | 0 | 0 |
| 25 | Tank (2.0 MG) Red Zone | 0 | 0 | 0 | 0 | 0 |
| 26 | Tank 6B Demolition | 0 | 0 | 0 | 0 | 0 |
| 27 | Tank 3 demolition | 0 | 0 | 0 | 0 | 0 |
| 28 | Tank 3 Replacement (Reservoir Road) | 0 | 0 | 0 | 0 | 0 |
| 29 | Add stairs to Tank 3, Tank 4 and 16A (? Which tank) | 60,000 | 60,000 | 0 | 0 | 0 |
| 30 | Tank 5 Demolition | 150,000 | 0 | 0 | 0 | 0 |
| 31 | Tanks 17 Access Road Paving | 0 | 0 | 0 | 0 | 0 |
| 32 | Storage Tank Replacement | 0 | 0 | 0 | 0 | 0 |
| 33 | Water Pumping | | | | | |
| 34 | Green Zone Pumping Upgrades Ph1, Phase I (2100 gpm; + PS Equipment Replacement | 0 | 0 | 0 | 0 | 0 |
| 35 | PS Equipment Replacement | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| 36 | Blue Zone PS Upsize (replace mid-duty pump, inc 1000 g) | 0 | 0 | 0 | 0 | 0 |
| 37 | Red Zone Pumping Upsize, Ph1 (2245 gpm) 75 HP | 0 | 0 | 550,000 | 0 | 0 |
| 38 | Red Zone Pumping Upsize, Ph2 (4170 gpm) 125 HP | 0 | 0 | 0 | 0 | 0 |
| 39 | Red Zone Pumping Upsize, Ph3 (14,000 gpm) 425 HP | 0 | 0 | 0 | 0 | 0 |
| 40 | Milestone Pump Station PRV Valve | 0 | 0 | 0 | 75,000 | 0 |
| 41 | Green Zone Pumping Upgrades Phase II (9205 gpm) | 0 | 0 | 0 | 0 | 0 |
| 42 | Well 9 demolition (Kinner St) | 0 | 0 | 0 | 0 | 0 |
| 43 | Blue Zone Pressure Control mode | 0 | 0 | 0 | 0 | 0 |
| 44 | Transmission & Distribution | | | | | |
| 45 | Young American Valve Replacement Program | 160,000 | 160,000 | 0 | 0 | 0 |
| 46 | Waterline Rehab/Replacement | 150,000 | 150,000 | 200,000 | 200,000 | 200,000 |
| 47 | Distribution System Upgrades (PRVs, pipelines, etc) | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 |
| 48 | Craig & Gould North Infrastructure Improvements (FF Issue | 0 | 0 | 55,000 | 480,000 | 0 |
| 49 | Tacker Court PRV (former Tank 2 site) | 200,000 | 0 | 0 | 0 | 0 |
| 50 | Electric Actuated Valves at Tanks | 75,000 | 75,000 | 75,000 | 0 | 0 |
| 51 | Tank Mixers | 25,000 | 25,000 | 25,000 | 0 | 0 |
| 52 | Meadows Skylight Removal | 0 | 0 | 0 | 0 | 0 |
| 53 | Facilities Paving Program | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| 54 | Diamond Ridge Pump Station Control Valve | 0 | 0 | 0 | 0 | 75,000 |
| 55 | Prairie Hawk Waterline Extension | 0 | 0 | 0 | 0 | 0 |
| 56 | Glovers Waterline Replacement phase 1 | 0 | 0 | 374,000 | 0 | 0 |
| 57 | Glovers Waterline Replacement phase 2 | 0 | 0 | 0 | 363,000 | 0 |
| 58 | Glovers Waterline Replacement phase 2 | 0 | 0 | 0 | 0 | 594,000 |
| 59 | Crowfoot Purple Line Upsize | 151,000 | 0 | 0 | 0 | 0 |
| 60 | Crowfoot Red Zone Upsize | 0 | 0 | 0 | 0 | 0 |
| 61 | Crowfoot to Crimson Sky (developer 16" or town build 16") | 0 | 0 | 0 | 0 | 0 |
| 62 | Crimson Sky to Oaks Valve | 0 | 0 | 0 | 0 | 0 |
| 63 | RWRWTC Tank 16 Transmission Line | 0 | 0 | 0 | 0 | 0 |
| 64 | 5th Street Red Zone Connection | 0 | 0 | 0 | 0 | 0 |
| 65 | Tank 18 Blue Zone Transmission | 0 | 0 | 0 | 0 | 0 |
| 66 | South Ridge Rd Transmission, 24" | 0 | 0 | 0 | 0 | 0 |
| 67 | Tank 6 to CVR Transmission, 24" (developer 16") | 0 | 0 | 0 | 0 | 0 |
| 68 | Cystal Valley Ranch Loop Rd Ph1, 24" (developer 16") | 0 | 0 | 0 | 0 | 0 |
| 69 | Crystal Valley Ranch Loop Rd Ph2, 20" (developer 16") | 0 | 0 | 0 | 0 | 0 |
| 70 | Blue Zone - Plum Creek to Frontage Road Transmission, 2 | 0 | 0 | 0 | 0 | 0 |
| 71 | Pine Canyon Transmission (may need to have developer u | 0 | 0 | 0 | 0 | 0 |
| 72 | Tank 11 to Pine Canyon 16" Pipe (developer 12") | 0 | 0 | 0 | 321,000 | 0 |
| 73 | Pine Canyon Red Zone Transmission | 0 | 0 | 0 | 0 | 0 |
| 74 | RWTP Red Zone Transmission | 0 | 0 | 0 | 0 | 0 |
| 75 | RWTP Green Zone Transmission | 0 | 0 | 0 | 0 | 0 |
| 76 | Plum Creek WTP to Tank 12 Transmission | 0 | 0 | 0 | 0 | 0 |
| 77 | Highway 85 Transmission | 0 | 703,000 | 0 | 0 | 0 |
| 78 | Topeka Way/Plum Creek Parkway Waterline Looping, 12" | 0 | 0 | 0 | 0 | 0 |
| 79 | Woodlands Founders PRV | 0 | 0 | 0 | 0 | 0 |
| 80 | Other Projects | | | | | |
| 81 | Security Improvements | 50,000 | 50,000 | 50,000 | 50,000 | 25,000 |
| 82 | General Facility Upgrades | 75,000 | 75,000 | 75,000 | 75,000 | 75,000 |
| 83 | SCADA System Capital Improvements | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| 84 | Facilities Capital Replacements (bldg components) | 75,000 | 75,000 | 75,000 | 75,000 | 75,000 |
| 85 | Machinery and Equipment | 0 | 0 | 0 | 0 | 0 |
| 86 | Admin/ Customer Service Building | 0 | 0 | 1,403,641 | 0 | 0 |
| 87 | Site Improvements at 175 Kellogg Court | 157,920 | 0 | 0 | 1,021,325 | 0 |
| 88 | Total Capital Improvements | 5,378,920 | 2,673,000 | 4,182,641 | 7,490,934 | 2,344,000 |

APPENDIX C

Water Resources Fund Long-Term Financial Plan – With Capital Improvement Program



Table 1
Town of Castle Rock
Water Resources
Proforma - Operating Fund

| Line No. | Description | Fiscal Year Ending December 31st | | | | |
|------------------------------|---------------------------------------|----------------------------------|----------------|------------------|----------------|----------------|
| | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Revenues | | | | | | |
| 1 | Rate Revenues | \$ 8,382,661 | \$ 8,882,558 | \$ 9,404,905 | \$ 9,950,598 | \$ 10,520,569 |
| 2 | Rate Revenues from Increase | 251,480 | 266,477 | 282,147 | 298,518 | 368,220 |
| 3 | Miscellaneous Revenue | 180,740 | 180,740 | 4,448,490 | 51,740 | 51,740 |
| 4 | Transfers In | 1,528,166 | 1,607,369 | 1,704,115 | 1,811,221 | 1,994,905 |
| 5 | Interest Income | <u>137,411</u> | <u>94,596</u> | <u>106,035</u> | <u>116,972</u> | <u>118,873</u> |
| 6 | Total Revenues | \$ 10,480,457 | \$ 11,031,740 | \$ 15,945,692 | \$ 12,229,049 | \$ 13,054,307 |
| Revenue Requirements | | | | | | |
| 7 | Operating Expenses | \$ 5,193,463 | \$ 6,506,812 | \$ 7,287,181 | \$ 7,905,423 | \$ 8,873,006 |
| 8 | Non-Operating Expenses | - | - | - | - | - |
| 9 | Transfers Out | 4,707 | 4,707 | 4,707 | 4,707 | 4,707 |
| 10 | Minor Capital Expense | 36,405 | 36,521 | 36,639 | 36,749 | 37,201 |
| Debt Service | | | | | | |
| 11 | Existing Debt Service | 3,665,025 | 3,679,475 | 3,701,975 | 3,728,975 | 3,741,975 |
| 12 | New-Revenue Bond | - | - | - | - | - |
| 13 | New-General Obligation Bond | - | - | - | - | - |
| 14 | New-State Revolving Loan Fund | - | - | - | - | - |
| 15 | Total Debt Service | \$ 3,665,025 | \$ 3,679,475 | \$ 3,701,975 | \$ 3,728,975 | \$ 3,741,975 |
| 16 | Capital Projects Funded with Cash | 23,792,542 | - | - | - | - |
| 17 | Total Revenue Requirements | \$ 32,692,142 | \$ 10,227,515 | \$ 11,030,502 | \$ 11,675,854 | \$ 12,656,890 |
| 18 | Revenues Over (Under) Expenses | \$ (22,211,685) | \$ 804,225 | \$ 4,915,191 | \$ 553,195 | \$ 397,417 |
| 19 | Beginning Balance | \$ 45,458,641 | \$ 23,246,956 | \$ 24,051,181 | \$ 28,966,372 | \$ 29,519,567 |
| 20 | Revenues Over (Under) Expenses | <u>(22,211,685)</u> | <u>804,225</u> | <u>4,915,191</u> | <u>553,195</u> | <u>397,417</u> |
| 21 | Ending Balance | \$ 23,246,956 | \$ 24,051,181 | \$ 28,966,372 | \$ 29,519,567 | \$ 29,916,984 |
| Debt Service Coverage | | | | | | |
| 22 | Debt Service Coverage Test 1 | 523% | 510% | 628% | 515% | 517% |
| 23 | Debt Service Coverage Test 2 | 523% | 510% | 628% | 515% | 517% |

Table 2
Town of Castle Rock
Water Resources
Projected Rate Revenue Requirements

| Line No. | Description | Category | Fiscal Year Ending December 31 | | | | |
|----------|---|----------|--------------------------------|---------------|---------------|---------------|---------------|
| | | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| 1 | Operation and Maintenance Expense | | \$ 5,193,463 | \$ 6,506,812 | \$ 7,287,181 | \$ 7,905,423 | \$ 8,873,006 |
| | Capital Expenditures | | | | | | |
| 2 | Debt Service | | \$ 3,665,025 | \$ 3,679,475 | \$ 3,701,975 | \$ 3,728,975 | \$ 3,741,975 |
| 3 | Transfers Out | | 4,707 | 248,974 | 189,976 | 66,311 | 28,764 |
| 4 | Minor Capital Outlay | | 36,405 | 36,521 | 36,639 | 36,749 | 37,201 |
| 5 | Pay-Go Cash Funded Capital | | 56,664,897 | 13,618,625 | 10,457,166 | 4,016,706 | 2,021,888 |
| 6 | Total Capital Expenditures | | \$ 60,371,034 | \$ 17,583,595 | \$ 14,385,756 | \$ 7,848,741 | \$ 5,829,828 |
| 7 | Total O&M and Capital Expenses | | \$ 65,564,497 | \$ 24,090,407 | \$ 21,672,937 | \$ 15,754,165 | \$ 14,702,835 |
| | Less Revenue From Other Sources | | | | | | |
| 8 | Miscellaneous Revenue | O&M | \$ 180,740 | \$ 180,740 | \$ 4,448,490 | \$ 51,740 | \$ 51,740 |
| 9 | Water Resources Fee Revenue | Capital | 15,401,681 | 15,832,928 | 16,276,250 | 16,676,767 | 17,143,716 |
| 10 | Transfers From Restricted Fund | Capital | 1,528,166 | 1,607,369 | 1,704,115 | 1,811,221 | 1,994,905 |
| 11 | Interest Income | O&M | 174,279 | 100,548 | 127,249 | 174,809 | 232,445 |
| 12 | Sources & Uses of Funds | Capital | 39,645,491 | (2,780,213) | (10,570,220) | (13,209,488) | (15,608,760) |
| 13 | Rate Revenue Requirement | | \$ 8,634,140 | \$ 9,149,035 | \$ 9,687,052 | \$ 10,249,116 | \$ 10,888,789 |
| | Adjustment for Revenue From Other Sources | | | | | | |
| 14 | Operation and Maintenance Expenses | | \$ 4,838,444 | \$ 6,225,524 | \$ 2,711,442 | \$ 7,678,875 | \$ 8,588,821 |
| 15 | Capital Expenses | | 3,795,696 | 2,923,511 | 6,975,610 | 2,570,241 | 2,299,967 |
| 16 | Total Rate Revenue Requirement | | \$ 8,634,140 | \$ 9,149,035 | \$ 9,687,052 | \$ 10,249,116 | \$ 10,888,789 |

Town of Castle Rock
e-Forecast Version 3.0

Water Resources

Capital Improvement Program - Alternative 1



| | |
|--|--------------|
| | =Rank 1 |
| | =Rank 2 |
| | =Rank 3 |
| | = Not Ranked |

| Line No | Description | 1 | 2 | 3 | 4 | 5 |
|---------|--|-------------------|-------------------|------------------|------------------|------------------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 | Plum Creek Diversion Structure & Pump Station | 3,065,007 | - | - | - | - |
| 2 | Raw Water Pipeline from Diversion to PCWPF | 4,890,384 | - | - | - | - |
| 3 | Pre-Sedimentation Basin | 1,261,997 | - | - | - | - |
| 4 | Horizontal Directionally Drilled Infiltration Galleries | 2,500,000 | - | - | - | - |
| 5 | HDD Gallery property acquisition | 250,000 | - | - | - | - |
| 6 | West Plum Creek Alluvial Wells, Pump Station, and Pipeline | - | - | - | - | - |
| 7 | Purchase WISE Water Capacity from Dominion if Raw Water Pump Station is not complete | - | - | - | - | - |
| 8 | Chatfield Reallocation | 1,198,680 | 1,198,680 | 1,198,680 | 1,198,680 | 1,198,680 |
| 9 | Rehabilitation of Alluvial Well Fields | 60,000 | 155,000 | 150,000 | 120,000 | 300,000 |
| 10 | O&M Center Building | - | - | - | - | - |
| 11 | Admin/Customer Service Building | - | - | 627,940 | - | - |
| 12 | Utilities Site Improvements | 87,566 | - | - | 456,907 | - |
| 13 | Machinery & Equipment | - | - | - | - | - |
| 14 | ASR Program | 500,000 | - | - | 500,000 | - |
| 15 | ASR Program Baski Valve Removal & Replacement | - | - | - | - | - |
| 16 | PC Central Well Field Lateral Arms | 1,500,000 | - | - | - | - |
| 17 | PC South Well Field Lateral Arms and Well 78 Installation | 2,000,000 | - | - | - | - |
| 18 | PC Diversion #1 Installation | 100,000 | - | - | - | - |
| 19 | Membrane Rack Remove and Replace (Installed in 2013) | - | - | - | - | - |
| 20 | Dewatering Facility at PCWPF (Phase I) | 2,000,000 | - | - | - | - |
| 21 | Advanced Treatment Facility (Phase I) | 6,878,485 | 6,878,485 | - | - | - |
| 22 | PCWPF Membrane Expansion (Phase I) | 1,028,904 | - | - | - | - |
| 23 | Generator at PCWPF | 897,300 | - | - | - | - |
| 24 | Membrane Rack Remove and Replace (Installed in 2018) | - | - | - | - | - |
| 25 | PCWPF Advanced Treatment Expansion (Phase 2) and Membrane Expansion (Phase 2) | - | - | - | - | - |
| 26 | PCWPF Pretreatment Expansion (Phase 2) | - | - | - | - | - |
| 27 | PCWPF Membrane & High Service Pump Expansion (Phase 2) | - | - | - | - | - |
| 28 | Dewatering Facility at PCWPF (Phase 2) | - | - | - | - | - |
| 29 | PCWPF Expansion (Phase 2) Membrane Rack Remove and Replace | - | - | - | - | - |
| 30 | PCWPF Expansion (Phase 3) | - | - | - | - | - |
| 31 | PCWPF Expansion (Phase 3) Membrane Rack Remove and Replace | - | - | - | - | - |
| 32 | PCWPF Expansion (Phase 4) | - | - | - | - | - |
| 33 | PCWPF Expansion (Phase 4) Membrane Rack Remove and Replace | - | - | - | - | - |
| 34 | Purchase Capacity in PWSD Rueter-Hess Water Treatment Plant (RHWTWP) | - | - | - | - | - |
| 35 | Groundwater Facilities in Cherry Creek Basin | - | - | - | - | - |
| 36 | Chatfield Raw Pipeline and Pump Station | 100,000 | - | - | - | - |
| 37 | Newlin Gulch Pipeline and Pump Station | 2,555,300 | - | - | - | - |
| 38 | PCWRA Upgrades for Newlin Gulch Pipeline | 3,000,000 | - | - | - | - |
| 39 | Box Elder Creek Properties Option Payments | 575,000 | - | - | - | - |
| 40 | Box Elder Creek Properties Property Purchase | 8,457,000 | - | - | - | - |
| 41 | Box Elder Creek Project Due Diligence | 100,000 | 100,000 | - | - | - |
| 42 | Water Rights Purchase | 4,000,000 | 4,000,000 | 4,000,000 | 1,100,000 | - |
| 43 | New Box Elder Creek Farm Alluvial Wells | - | - | - | - | - |
| 44 | Treatment of Box Elder Alluvial Water (RO Treatment and Brine Disposal) through either new | 100,000 | - | - | - | - |
| 45 | Water Pipeline from BEC Well Field to ECCV Northern WTP | - | - | - | - | - |
| 46 | Firm Capacity in ECCV Northern Line | - | - | - | - | - |
| 47 | Firm capacity in ECCV North and South Pump Stations | - | - | - | - | - |
| 48 | Raw Water Pipeline from South Platte to Box Elder Creek Farms | - | - | - | - | - |
| 49 | Western Pipeline Purchase & Modifications | - | - | - | - | - |
| 50 | ECCV Title Cleanup Credit | - | - | 143,024 | - | - |
| 51 | Binney Connection | 200,000 | 400,000 | 3,400,000 | - | - |
| 52 | WISE Project Subscription Fee (aka DIA Connection Fee) | 150,000 | 150,000 | 150,000 | 150,000 | 163,810 |
| 53 | Castle Rock Delivery Infrastructure (Outer Marker Road to Ray Waterman) | 625,714 | - | - | - | - |
| 54 | WISE Local Infrastructure (in partnership with Parker)* | 8,300,000 | - | - | - | - |
| 55 | Dechlorination at RHR | - | - | - | - | - |
| 56 | WISE Local Infrastructure (Western Side of RHR) - Phase I | - | - | - | - | - |
| 57 | WISE Operating Expenses | 103,560 | 103,560 | 103,560 | 103,560 | 103,560 |
| 58 | Operational Reserve | 180,000 | 180,000 | - | - | - |
| 59 | WISE Water Delivery - Facilities Capital | - | - | - | - | - |
| 60 | Total Capital Improvements | 56,664,897 | 13,165,725 | 9,773,204 | 3,629,147 | 1,766,050 |

APPENDIX D

Wastewater Fund Long-Term Financial Plan – With Capital Improvement Program



Table 1
Town of Castle Rock
Wastewater
Proforma - Operating Fund

| Line No. | Description | Fiscal Year Ending December 31st | | | | |
|-----------------------------|---------------------------------------|----------------------------------|----------------------|----------------------|-----------------------|----------------------|
| | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Revenues | | | | | | |
| 1 | Rate Revenues | \$ 10,696,262 | \$ 11,056,772 | \$ 11,417,282 | \$ 11,777,792 | \$ 12,138,302 |
| 2 | Rate Revenues from Increase | - | - | - | - | - |
| 3 | Miscellaneous Revenue | 159,904 | 159,904 | 159,904 | 159,904 | 159,904 |
| 4 | Transfers In | - | - | - | - | - |
| 5 | Interest Income | 11,314 | 32,501 | 54,334 | 57,328 | 56,788 |
| 6 | Total Revenues | \$ 10,867,479 | \$ 11,249,177 | \$ 11,631,519 | \$ 11,995,024 | \$ 12,354,994 |
| Revenue Requirements | | | | | | |
| 7 | Operating Expenses | \$ 5,167,766 | \$ 5,392,772 | \$ 5,604,147 | \$ 5,888,586 | \$ 6,114,891 |
| 8 | Non-Operating Expenses | - | - | - | - | - |
| 9 | Transfers Out | 67,001 | 67,076 | 67,076 | 9,743,518 | 2,048,369 |
| 10 | Minor Capital Expense | 76,750 | 84,750 | 79,750 | 79,750 | 79,750 |
| Debt Service | | | | | | |
| 11 | Existing Debt Service | 333,258 | 333,546 | 335,274 | 331,356 | 333,660 |
| 12 | New-Revenue Bond | - | - | - | - | - |
| 13 | New-General Obligation Bond | - | - | - | - | - |
| 14 | New-State Revolving Loan Fund | - | - | - | - | - |
| 15 | Total Debt Service | \$ 333,258 | \$ 333,546 | \$ 335,274 | \$ 331,356 | \$ 333,660 |
| 16 | Capital Projects Funded with Cash | - | - | - | - | - |
| 17 | Total Revenue Requirements | \$ 5,644,775 | \$ 5,878,144 | \$ 6,086,247 | \$ 16,043,210 | \$ 8,576,670 |
| 18 | Revenues Over (Under) Expenses | \$ 5,222,704 | \$ 5,371,033 | \$ 5,545,272 | \$ (4,048,187) | \$ 3,778,323 |
| 19 | Beginning Balance | \$ 217,040 | \$ 5,439,745 | \$ 10,810,778 | \$ 16,356,050 | \$ 12,307,863 |
| 20 | Revenues Over (Under) Expenses | 5,222,704 | 5,371,033 | 5,545,272 | (4,048,187) | 3,778,323 |
| 21 | Ending Balance | \$ 5,439,745 | \$ 10,810,778 | \$ 16,356,050 | \$ 12,307,863 | \$ 16,086,186 |

Table 2
Town of Castle Rock
Wastewater
Projected Rate Revenue Requirements

| Line No. | Description | Category | 1 | 2 | 3 | 4 | 5 |
|----------|---|----------|---------------|---------------|---------------|---------------|---------------|
| | | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| 1 | Operation and Maintenance Expense | | \$ 5,167,766 | \$ 5,392,772 | \$ 5,604,147 | \$ 5,888,586 | \$ 6,114,891 |
| | Capital Expenditures | | | | | | |
| 2 | Debt Service | | \$ 333,258 | \$ 333,546 | \$ 335,274 | \$ 331,356 | \$ 333,660 |
| 3 | Transfers Out | | 67,001 | 138,404 | 156,470 | 10,302,620 | 2,139,363 |
| 4 | Minor Capital Outlay | | 76,750 | 84,750 | 79,750 | 79,750 | 79,750 |
| 5 | Pay-Go Cash Funded Capital | | 5,636,243 | 4,339,389 | 5,059,692 | 25,406,647 | 5,603,132 |
| 6 | Total Capital Expenditures | | \$ 6,113,252 | \$ 4,896,089 | \$ 5,631,186 | \$ 36,120,373 | \$ 8,155,905 |
| 7 | Total O&M and Capital Expenses | | \$ 11,281,018 | \$ 10,288,861 | \$ 11,235,333 | \$ 42,008,959 | \$ 14,270,796 |
| | Less Revenue From Other Sources | | | | | | |
| 8 | Miscellaneous Revenue | O&M | \$ 159,904 | \$ 159,904 | \$ 159,904 | \$ 159,904 | \$ 159,904 |
| 9 | System Development Fee Revenue | Capital | 2,999,666 | 2,734,397 | 3,394,547 | 3,611,438 | 3,713,256 |
| 10 | Transfers From Restricted Fund | Capital | - | - | - | - | - |
| 11 | Interest Income | O&M | 84,347 | 97,184 | 112,400 | 67,313 | 56,827 |
| 12 | Sources & Uses of Funds | Capital | (2,659,160) | (3,759,395) | (3,848,799) | 16,716,531 | (3,778,324) |
| 13 | Rate Revenue Requirement | | \$ 10,696,262 | \$ 11,056,772 | \$ 11,417,282 | \$ 21,453,773 | \$ 14,119,134 |
| | Adjustment for Revenue From Other Sources | | | | | | |
| 14 | Operation and Maintenance Expenses | | \$ 4,923,516 | \$ 5,135,684 | \$ 5,331,843 | \$ 5,661,370 | \$ 5,898,160 |
| 15 | Capital Expenses | | 5,772,746 | 5,921,088 | 6,085,439 | 15,792,403 | 8,220,974 |
| 16 | Total Rate Revenue Requirement | | \$ 10,696,262 | \$ 11,056,772 | \$ 11,417,282 | \$ 21,453,773 | \$ 14,119,134 |

Town of Castle Rock
e-Forecast Version 3.0

Wastewater
Capital Improvement Program - Alternative 1 (Priority 1, 2 and 3)

| | |
|--|--------------|
| | =Rank 1 |
| | =Rank 2 |
| | =Rank 3 |
| | = Not Ranked |

| Line No | Description | 1 | 2 | 3 | 4 | 5 |
|-----------|--|------------------|------------------|------------------|-------------------|------------------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 | Recurring Projects | | | | | |
| 2 | Lift Station Rehab/Replacement | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| 3 | Sewer Line Rehab/Replacement | 350,000 | 350,000 | 350,000 | 350,000 | 350,000 |
| 4 | Security Improvements | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| 5 | SCADA System Improvements (Existing Improvements in SCADA Div) | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| 6 | Lift Station Pump and Motor Replacements | 35,000 | 40,000 | 50,000 | 50,000 | 50,000 |
| 7 | WW Facility VFD replacement | 110,000 | 110,000 | 110,000 | 110,000 | 110,000 |
| 8 | PCWRA Capital Buy-in (Debt Service + Capital Exp/Replacement) | 2,404,007 | 2,500,167 | 2,600,174 | 2,704,181 | 2,002,051 |
| 9 | Capital Improvement Projects | | | | | |
| 10 | RV Dump Station | 0 | 0 | 0 | 0 | 0 |
| 11 | Castle Oaks Lift Station Improvements | 200,000 | 0 | 0 | 0 | 0 |
| 12 | Lift Station Mixing Improvements | 32,000 | 32,000 | 32,000 | 32,000 | 32,000 |
| 13 | North Meadows Ext Sewer Crossing/Upsize | 0 | 0 | 0 | 0 | 0 |
| 14 | Craig & Gould North Infrastructure Improvements | 0 | 0 | 250,000 | 105,000 | 0 |
| 15 | Gordon Dr Sewer Improvements | 35,000 | 390,000 | 0 | 0 | 0 |
| 16 | Kinner Street Bottleneck | 0 | 0 | 0 | 0 | 2,117,000 |
| 17 | SH85 Crossing at Castleton (\$252K carried over from 2014) | 0 | 0 | 0 | 0 | 0 |
| 18 | Plum Creek Interceptor Upsize (additional funding for revised scope) | 0 | 0 | 0 | 0 | 0 |
| 19 | Plum Creek Interceptor PCWA Upsize | 0 | 0 | 0 | 0 | 0 |
| 20 | Plum Creek Interceptor North Upsize | 0 | 0 | 0 | 0 | 0 |
| 21 | Plum Creek Interceptor South Upsize - Phase I | 0 | 0 | 0 | 0 | 0 |
| 22 | Plum Creek Interceptor South Upsize - Phase II | 0 | 0 | 0 | 0 | 0 |
| 23 | Plum Creek Interceptor Old WWTP Upsize | 0 | 0 | 0 | 0 | 0 |
| 24 | Malibu Street Upsize | 0 | 0 | 0 | 0 | 0 |
| 25 | Prairie Hawk Interceptor | 0 | 0 | 0 | 0 | 0 |
| 26 | Dawson Ridge Interceptor - Phase I | 0 | 0 | 0 | 0 | 0 |
| 27 | Dawson Ridge Interceptor - Phase II | 0 | 0 | 0 | 0 | 0 |
| 28 | Dawson Ridge Interceptor Modified (replace ph I and ph II) | 0 | 0 | 0 | 0 | 0 |
| 29 | Meadows 17 Lift Station Access Road paving (1060x15x4) | 65,400 | 0 | 0 | 0 | 0 |
| 30 | Castlewood Lift Station #1 Access Road Paving (200x15x4) | 0 | 0 | 0 | 0 | 0 |
| 31 | Castlewood Lift Station #2 Access Road Paving (450x15x4) | 27,000 | 0 | 0 | 0 | 0 |
| 32 | Maher Lift Station Access Road Paving (500x15x4) | 0 | 0 | 0 | 0 | 0 |
| 33 | Ditch Three at PCWRA (Meadows Capital Reserve?) | 233,469 | 233,469 | 233,469 | 233,469 | - |
| 34 | Manganese Control at PCWRA (Meadows Capital Reserve?) | 200,000 | 200,000 | 200,000 | 200,000 | - |
| 35 | Rehab/Replacement at PCWRA | 284,000 | 284,000 | 284,000 | 355,000 | 250,000 |
| 36 | PCWRA Capacity Expansion | 1,500,000 | - | - | 18,500,000 | - |
| 37 | Machinery and Equipment | 0 | 0 | 0 | 0 | 0 |
| 38 | O&M Center Building | 0 | 0 | 0 | 0 | 0 |
| 39 | Admin/Customer Service Building | 0 | 0 | 588,308 | 0 | 0 |
| 40 | Site Improvements | 85,367 | 0 | 0 | 563,140 | 0 |
| 41 | Total Capital Improvements | 5,636,243 | 4,214,636 | 4,772,951 | 23,277,790 | 4,986,051 |

APPENDIX E

Stormwater Fund Long-Term Financial Plan – With Capital Improvement Program



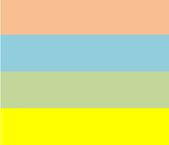
Table 1
Town of Castle Rock
Stormwater
Proforma - Operating Fund

| Line No. | Description | Fiscal Year Ending December 31st | | | | |
|------------------------------|---------------------------------------|----------------------------------|------------------|------------------|------------------|------------------|
| | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| Revenues | | | | | | |
| 1 | Rate Revenues | \$ 2,776,875 | \$ 2,969,752 | \$ 3,181,365 | \$ 3,385,012 | \$ 3,621,243 |
| 2 | Rate Revenues from Increase | 111,075 | 118,790 | 127,255 | 135,400 | 144,850 |
| 3 | Miscellaneous Revenue | 981,203 | 1,004,826 | 1,028,854 | 1,036,110 | 1,061,614 |
| 4 | Transfers In | - | - | - | - | - |
| 5 | Interest Income | <u>12,258</u> | <u>14,524</u> | <u>13,368</u> | <u>12,624</u> | <u>14,372</u> |
| 6 | Total Revenues | \$ 3,881,411 | \$ 4,107,892 | \$ 4,350,841 | \$ 4,569,146 | \$ 4,842,078 |
| Revenue Requirements | | | | | | |
| 7 | Operating Expenses | \$ 2,164,123 | \$ 2,311,947 | \$ 2,407,899 | \$ 2,675,132 | \$ 2,773,663 |
| 8 | Non-Operating Expenses | - | - | - | - | - |
| 9 | Transfers Out | 191,622 | 2,177,283 | 2,128,772 | 2,069,037 | 1,008,743 |
| 10 | Minor Capital Expense | 5,500 | 5,500 | 5,500 | 5,500 | 5,500 |
| Debt Service | | | | | | |
| 11 | Existing Debt Service | - | - | - | - | - |
| 12 | New-Revenue Bond | - | - | - | - | - |
| 13 | New-General Obligation Bond | - | - | - | - | - |
| 14 | New-State Revolving Loan Fund | - | - | - | - | - |
| 15 | Total Debt Service | \$ - | \$ - | \$ - | \$ - | \$ - |
| 16 | Capital Projects Funded with Cash | - | - | - | - | - |
| 17 | Total Revenue Requirements | \$ 2,361,245 | \$ 4,494,730 | \$ 4,542,171 | \$ 4,749,669 | \$ 3,787,906 |
| 18 | Revenues Over (Under) Expenses | \$ 1,520,166 | \$ (386,838) | \$ (191,330) | \$ (180,523) | \$ 1,054,172 |
| 19 | Beginning Balance | \$ 2,304,317 | \$ 3,824,482 | \$ 3,437,644 | \$ 3,246,314 | \$ 3,065,791 |
| 20 | Revenues Over (Under) Expenses | <u>1,520,166</u> | <u>(386,838)</u> | <u>(191,330)</u> | <u>(180,523)</u> | <u>1,054,172</u> |
| 21 | Ending Balance | \$ 3,824,482 | \$ 3,437,644 | \$ 3,246,314 | \$ 3,065,791 | \$ 4,119,963 |
| Debt Service Coverage | | | | | | |
| | Debt Service Coverage Test 1 | N/A | N/A | N/A | N/A | N/A |
| | Debt Service Coverage Test 2 | N/A | N/A | N/A | N/A | N/A |

Table 2
Town of Castle Rock
Stormwater
Projected Rate Revenue Requirements

| Line No. | Description | Category | 1 | 2 | 3 | 4 | 5 |
|----------|---|----------|--------------|--------------|--------------|--------------|--------------|
| | | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
| 1 | Operation and Maintenance Expense | | \$ 2,164,123 | \$ 2,311,947 | \$ 2,407,899 | \$ 2,675,132 | \$ 2,773,663 |
| | Capital Expenditures | | | | | | |
| 2 | Debt Service | | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3 | Transfers Out | | 191,622 | 2,177,283 | 2,128,772 | 2,069,037 | 1,008,743 |
| 4 | Minor Capital Outlay | | 5,500 | 5,500 | 5,500 | 5,500 | 5,500 |
| 5 | Pay-Go Cash Funded Capital | | 2,180,161 | 2,647,994 | 2,593,161 | 3,405,460 | 2,385,567 |
| 6 | Total Capital Expenditures | | \$ 2,377,283 | \$ 4,830,777 | \$ 4,727,432 | \$ 5,479,998 | \$ 3,399,809 |
| 7 | Total O&M and Capital Expenses | | \$ 4,541,406 | \$ 7,142,725 | \$ 7,135,332 | \$ 8,155,129 | \$ 6,173,473 |
| | Less Revenue From Other Sources | | | | | | |
| 8 | Miscellaneous Revenue | O&M | 981,203 | 1,004,826 | 1,028,854 | 1,036,110 | 1,061,614 |
| 9 | Stormwater DIF Revenue | Capital | 1,216,755 | 1,264,807 | 1,249,065 | 1,436,379 | 1,476,598 |
| 10 | Transfers From Restricted Fund | Capital | - | - | - | - | - |
| 11 | Interest Income | O&M | 15,886 | 14,524 | 13,368 | 12,624 | 14,554 |
| 12 | Sources & Uses of Funds | Capital | (633,251) | 386,838 | 191,330 | 180,523 | (1,054,172) |
| 13 | Rate Revenue Requirement | | \$ 2,960,812 | \$ 4,471,730 | \$ 4,652,715 | \$ 5,489,494 | \$ 4,674,879 |
| | Adjustment for Revenue From Other Sources | | | | | | |
| 14 | Operation and Maintenance Expenses | | \$ 1,167,034 | \$ 1,292,598 | \$ 1,365,678 | \$ 1,626,397 | \$ 1,697,495 |
| 15 | Capital Expenses | | 1,793,778 | 3,179,132 | 3,287,037 | 3,863,096 | 2,977,384 |
| 16 | Total Rate Revenue Requirement | | \$ 2,960,812 | \$ 4,471,730 | \$ 4,652,715 | \$ 5,489,494 | \$ 4,674,879 |

Town of Castle Rock
e-Forecast Version 3.0
Stormwater
Capital Improvement Program - Alternative 1



=Rank 1
=Rank 2
=Rank 3
= Not Ranked

| Line No | Description | 1 | | 2 | | 3 | | 4 | | 5 | |
|---------|-------------------------------------|------------------|------------------|------------------|------------------|------------------|------------|------|------|------------|------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 | 6400 West Trib | \$ 132,675 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 2 | 6400 East Trib | \$ - | \$ 322,533 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3 | 6400 South Trib | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 212,280 | \$ - | \$ - | \$ - | \$ - |
| 4 | 6400 South Trib | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 132,675 | \$ - | \$ - | \$ - | \$ - |
| 5 | Hangmans Gulch | \$ 533,361 | \$ 242,438 | \$ - | \$ - | \$ - | \$ 196,192 | \$ - | \$ - | \$ - | \$ - |
| 6 | Parkview Trib | \$ 789,547 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 7 | Omni Trib | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 259,210 | \$ - | \$ - | \$ - | \$ - |
| 8 | Omni Trib | \$ 100,000 | \$ - | \$ - | \$ - | \$ - | \$ 27,899 | \$ - | \$ - | \$ 29,012 | \$ - |
| 9 | Industrial Trib | \$ - | \$ - | \$ - | \$ - | \$ 527,374 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 10 | Industrial Trib | \$ - | \$ - | \$ - | \$ - | \$ 1,313,483 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 11 | Douglas Lane Trib | \$ 450,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 12 | E. Plum Creek | \$ - | \$ 389,180 | \$ 36,972 | \$ 147,712 | \$ 229,970 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 13 | E. Plum Creek | \$ - | \$ 785,967 | \$ 297,192 | \$ 986,394 | \$ 550,159 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 14 | McMurdo Gulch | \$ - | \$ 48,648 | \$ - | \$ 245,891 | \$ 138,690 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 15 | McMurdo Gulch | \$ - | \$ 706,751 | \$ - | \$ 188,399 | \$ 185,745 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 16 | Cherry Creek | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 442,250 | \$ - |
| 17 | Craig & Gould North | \$ - | \$ - | \$ 133,625 | \$ 1,066,375 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 18 | Gordon Drive | \$ 44,000 | \$ 456,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 19 | Chase Drain Installations/Rehab | \$ 15,000 | \$ 15,000 | \$ 15,000 | \$ 15,000 | \$ 15,000 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 20 | Minor Drainageway Stabilization | \$ 57,582 | \$ 57,582 | \$ 57,582 | \$ 57,582 | \$ 57,582 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 21 | Minor Drainageway Stabilization | \$ 27,097 | \$ 27,097 | \$ 27,097 | \$ 27,097 | \$ 27,097 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 22 | Minor Drainageway Stabilization | \$ 39,558 | \$ 39,558 | \$ 39,558 | \$ 39,558 | \$ 39,558 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 23 | Minor Drainageway Stabilization | \$ 31,081 | \$ 31,081 | \$ 31,081 | \$ 31,081 | \$ 31,081 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 24 | Detention Pond Retrofits | \$ 50,000 | \$ 50,000 | \$ 50,000 | \$ 50,000 | \$ 50,000 | \$ - | \$ - | \$ - | \$ - | \$ - |
| 25 | CMP Rehabilitation | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 240,000 | \$ - |
| 26 | Master Plan GIS Database Tool | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 29,485 | \$ - |
| 27 | Master Plan GIS Database Tool | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 20,515 | \$ - |
| 28 | Watershed MP Updates (4 EA) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 117,939 | \$ - |
| 29 | Watershed MP Updates (4 EA) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 82,061 | \$ - |
| 30 | Minor Drainageway MP | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 44,644 | \$ - |
| 31 | Minor Drainageway MP | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 22,023 | \$ - |
| 32 | Admin/ Customer Service Building 20 | \$ - | \$ - | \$ - | \$ 643,724 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 33 | Site Improvements at 175 Kellogg Cl | \$ 72,399 | \$ - | \$ - | \$ - | \$ - | \$ 464,000 | \$ - | \$ - | \$ - | \$ - |
| 34 | Total Capital Improvements | 2,342,301 | 3,171,835 | 3,172,689 | 4,147,345 | 2,352,811 | | | | | |

APPENDIX F

Water Fund Cost-of-Service Study



Table 1
Town of Castle Rock
Water Cost-of-Service Analysis
Projected Water Sales and Peak-Use Characteristics by Customer Class
FY2016

| Customer Class | Total Annual Demands (kgal) | Average-Day Demands (MGD) | Peaking Factors | | Peak Demands | | Extra Capacity | |
|-----------------------------|-----------------------------|---------------------------|-----------------|-------------|--------------|--------------|----------------|--------------|
| | | | Peak-Day | Peak-Hour | Peak-Day | Peak-Hour | Maximum-Day | Maximum-Hour |
| Residential | 1,524,122 | 4.18 | 2.45 | 4.41 | 10.23 | 18.41 | 6.05 | 8.18 |
| Multifamily | 95,577 | 0.26 | 1.97 | 3.54 | 0.52 | 0.93 | 0.25 | 0.41 |
| Commercial | 134,061 | 0.37 | 2.00 | 3.60 | 0.73 | 1.32 | 0.37 | 0.59 |
| Bulk | 52,002 | 0.14 | 2.20 | 4.50 | 0.31 | 0.64 | 0.17 | 0.33 |
| Irrigation | 314,536 | 0.86 | 3.65 | 6.56 | 3.15 | 5.65 | 2.28 | 2.51 |
| Multifamily Indoor Use Only | 100,642 | 0.28 | 1.31 | 2.36 | 0.36 | 0.65 | 0.09 | 0.29 |
| Commercial Indoor Use Only | 129,331 | 0.35 | 1.45 | 2.60 | 0.51 | 0.92 | 0.16 | 0.41 |
| Total | 2,350,272 | 6.44 | 2.46 | 4.43 | 15.81 | 28.53 | 9.38 | 12.72 |

Table 2
Town of Castle Rock
Water Cost-of-Service Analysis
Projected Water Sales and Peak-Use Characteristics by Customer Class
FY2017

| Customer Class | Additional Flow (kgal) | Total Annual Demands (kgal) | Average-Day Demands (MGD) | Peaking Factors | | Peak Demands | | Extra Capacity | |
|-----------------------------|---------------------------|--------------------------------|------------------------------|-----------------|-------------|--------------|--------------|----------------|--------------|
| | | | | Peak-Day | Peak-Hour | Peak-Day | Peak-Hour | Maximum-Day | Maximum-Hour |
| Residential | 74,496.00 | 1,598,618 | 4.38 | 2.45 | 4.41 | 10.73 | 19.31 | 6.35 | 8.58 |
| Multifamily | - | 95,577 | 0.26 | 1.97 | 3.54 | 0.52 | 0.93 | 0.25 | 0.41 |
| Commercial | 848.40 | 134,909 | 0.37 | 2.00 | 3.60 | 0.74 | 1.33 | 0.37 | 0.59 |
| Bulk | - | 52,002 | 0.14 | 2.20 | 4.50 | 0.31 | 0.64 | 0.17 | 0.33 |
| Irrigation | 120.24 | 314,657 | 0.86 | 3.65 | 6.56 | 3.15 | 5.66 | 2.28 | 2.51 |
| Multifamily Indoor Use Only | 17,671.68 | 118,314 | 0.32 | 1.31 | 2.36 | 0.42 | 0.76 | 0.10 | 0.34 |
| Commercial Indoor Use Only | - | 129,331 | 0.35 | 1.45 | 2.60 | 0.51 | 0.92 | 0.16 | 0.41 |
| Total | | 2,443,408 | 6.69 | 2.45 | 4.41 | 16.38 | 29.55 | 9.69 | 13.17 |

Table 3
Town of Castle Rock
Water Cost-of-Service Analysis
Projected Water Sales and Peak-Use Characteristics by Customer Class
FY2018

| Customer Class | Additional Flow (kgal) | Total Annual Demands (kgal) | Average-Day Demands (MGD) | Peaking Factors | | Peak Demands | | Extra Capacity | |
|-----------------------------|---------------------------|--------------------------------|------------------------------|-----------------|-----------|--------------|-----------|----------------|--------------|
| | | | | Peak-Day | Peak-Hour | Peak-Day | Peak-Hour | Maximum-Day | Maximum-Hour |
| Residential | 37,248.00 | 1,635,866 | 4.48 | 2.45 | 4.41 | 10.98 | 19.76 | 6.50 | 8.78 |
| Multifamily | 116,904.96 | 212,482 | 0.58 | 1.97 | 3.54 | 1.15 | 2.06 | 0.56 | 0.91 |
| Commercial | 424.20 | 135,334 | 0.37 | 2.00 | 3.60 | 0.74 | 1.33 | 0.37 | 0.59 |
| Bulk | - | 52,002 | 0.14 | 2.20 | 4.50 | 0.31 | 0.64 | 0.17 | 0.33 |
| Irrigation | 60.12 | 314,717 | 0.86 | 3.65 | 6.56 | 3.15 | 5.66 | 2.28 | 2.51 |
| Multifamily Indoor Use Only | - | 118,314 | 0.32 | 1.31 | 2.36 | 0.42 | 0.76 | 0.10 | 0.34 |
| Total | | 2,598,046 | 7.12 | 2.43 | 4.38 | 17.27 | 31.14 | 10.15 | 13.88 |

Table 4
Town of Castle Rock
Water Cost-of-Service Analysis
Number of Meters and Equivalent Meters by Meter Size and Customer Class
FY2016

| Meter Size | Acct Growth | Equivalent 5/8" x 3/4" Ratios | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|-----------------------------|-------------|-------------------------------|-------------|-------------|------------|------|------------|-----------------------------|----------------------------|--------|
| Number of Customers | | | | | | | | | | |
| 3/4" | 0.00% | 1.00 | 17,296 | 14 | 131 | 32 | 137 | 100 | 108 | 17,818 |
| 1" | 0.00% | 3.40 | 12 | 25 | 71 | 0 | 85 | 64 | 71 | 328 |
| 1-1/2" | 0.00% | 7.73 | 0 | 55 | 48 | 0 | 115 | 86 | 54 | 358 |
| 2" | 0.00% | 11.12 | 0 | 15 | 24 | 0 | 82 | 40 | 40 | 201 |
| 3" | 0.00% | 18.91 | 0 | 2 | 5 | 2 | 8 | 0 | 13 | 30 |
| 4" | 0.00% | 61.21 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 5 |
| 6" | 0.00% | 88.83 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| Total | | | 17,308 | 112 | 280 | 34 | 429 | 290 | 289 | 18,742 |
| Number of Equivalent Meters | | | | | | | | | | |
| 3/4" | | | 17,296 | 14 | 131 | 32 | 137 | 100 | 108 | 17,818 |
| 1" | | | 41 | 85 | 241 | 0 | 289 | 218 | 241 | 1,115 |
| 1-1/2" | | | 0 | 425 | 371 | 0 | 889 | 665 | 417 | 2,767 |
| 2" | | | 0 | 167 | 267 | 0 | 912 | 445 | 445 | 2,235 |
| 3" | | | 0 | 38 | 95 | 38 | 151 | 0 | 246 | 567 |
| 4" | | | 0 | 61 | 0 | 0 | 122 | 0 | 122 | 306 |
| 6" | | | 0 | 0 | 89 | 0 | 0 | 0 | 89 | 178 |
| Total | | | 17,337 | 790 | 1,194 | 70 | 2,500 | 1,427 | 1,669 | 24,987 |

Table 5
Town of Castle Rock
Water Cost-of-Service Analysis
Number of Meters and Equivalent Meters by Meter Size and Customer Class
FY2017

| Meter Size | Acct Growth | Equivalent 3/4" Ratios | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|-----------------------------|-------------|------------------------|-------------|-------------|------------|------|------------|-----------------------------|----------------------------|--------|
| Number of Customers | | | | | | | | | | |
| 3/4" | 0.00% | 1.00 | 18,896 | 14 | 131 | 32 | 143 | 516 | 108 | 19,840 |
| 1" | 0.00% | 3.40 | 12 | 25 | 79 | 0 | 85 | 64 | 71 | 336 |
| 1-1/2" | 0.00% | 7.73 | 0 | 55 | 48 | 0 | 115 | 86 | 54 | 358 |
| 2" | 0.00% | 11.12 | 0 | 15 | 30 | 0 | 82 | 40 | 40 | 207 |
| 3" | 0.00% | 18.91 | 0 | 2 | 5 | 2 | 8 | 0 | 13 | 30 |
| 4" | 0.00% | 61.21 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 5 |
| 6" | 0.00% | 88.83 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| Total | | | 18,908 | 112 | 294 | 34 | 435 | 706 | 289 | 20,778 |
| Number of Equivalent Meters | | | | | | | | | | |
| 3/4" | | | 18,896 | 14 | 131 | 32 | 143 | 516 | 108 | 19,840 |
| 1" | | | 41 | 85 | 269 | 0 | 289 | 218 | 241 | 1,142 |
| 1-1/2" | | | 0 | 425 | 371 | 0 | 889 | 665 | 417 | 2,767 |
| 2" | | | 0 | 167 | 334 | 0 | 912 | 445 | 445 | 2,302 |
| 3" | | | 0 | 38 | 95 | 38 | 151 | 0 | 246 | 567 |
| 4" | | | 0 | 61 | 0 | 0 | 122 | 0 | 122 | 306 |
| 6" | | | 0 | 0 | 89 | 0 | 0 | 0 | 89 | 178 |
| Total | | | 18,937 | 790 | 1,288 | 70 | 2,506 | 1,843 | 1,669 | 27,103 |

Table 6
Town of Castle Rock
Water Cost-of-Service Analysis
Number of Meters and Equivalent Meters by Meter Size and Customer Class
FY2018

| Meter Size | Acct Growth | Equivalent 3/4" Ratios | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only | Total |
|-----------------------------|-------------|------------------------|-------------|-------------|------------|------|------------|-----------------------------|----------------------------|--------|
| Number of Customers | | | | | | | | | | |
| 3/4" | 0.00% | 1.00 | 19,696 | 206 | 131 | 32 | 146 | 516 | 108 | 20,835 |
| 1" | 0.00% | 3.40 | 12 | 25 | 83 | 0 | 85 | 64 | 71 | 340 |
| 1-1/2" | 0.00% | 7.73 | 0 | 55 | 48 | 0 | 115 | 86 | 54 | 358 |
| 2" | 0.00% | 11.12 | 0 | 15 | 33 | 0 | 82 | 40 | 40 | 210 |
| 3" | 0.00% | 18.91 | 0 | 2 | 5 | 2 | 8 | 0 | 13 | 30 |
| 4" | 0.00% | 61.21 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 5 |
| 6" | 0.00% | 88.83 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| Total | | | 19,708 | 304 | 301 | 34 | 438 | 706 | 289 | 21,780 |
| Number of Equivalent Meters | | | | | | | | | | |
| 3/4" | | | 19,696 | 206 | 131 | 32 | 146 | 516 | 108 | 20,835 |
| 1" | | | 41 | 85 | 282 | 0 | 289 | 218 | 241 | 1,156 |
| 1-1/2" | | | 0 | 425 | 371 | 0 | 889 | 665 | 417 | 2,767 |
| 2" | | | 0 | 167 | 367 | 0 | 912 | 445 | 445 | 2,335 |
| 3" | | | 0 | 38 | 95 | 38 | 151 | 0 | 246 | 567 |
| 4" | | | 0 | 61 | 0 | 0 | 122 | 0 | 122 | 306 |
| 6" | | | 0 | 0 | 89 | 0 | 0 | 0 | 89 | 178 |
| Total | | | 19,737 | 982 | 1,335 | 70 | 2,509 | 1,843 | 1,669 | 28,145 |

Table 7
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Summary of Number of Customers by Customer Class

| Customer Class | FY2016 | FY2017 | FY2018 |
|-----------------------------|--------|--------|--------|
| Residential | 17,308 | 18,908 | 19,708 |
| Multifamily | 112 | 112 | 304 |
| Commercial | 280 | 294 | 301 |
| Bulk | 34 | 34 | 34 |
| Irrigation | 429 | 435 | 438 |
| Multifamily Indoor Use Only | 290 | 706 | 706 |
| Commercial Indoor Use Only | 289 | 289 | 289 |
| | ----- | ----- | ----- |
| Total | 18,742 | 20,778 | 21,780 |

Table 8
Town of Castle Rock
Water Cost-of-Service Analysis
Summary of Equivalent Meters by Customer Class

| Customer Class | FY2016 | FY2017 | FY2018 |
|-----------------------------|--------|--------|--------|
| Residential | 17,337 | 18,937 | 19,737 |
| Multifamily | 790 | 790 | 982 |
| Commercial | 1,194 | 1,288 | 1,335 |
| Bulk | 70 | 70 | 70 |
| Irrigation | 2,500 | 2,506 | 2,509 |
| Multifamily Indoor Use Only | 1,427 | 1,843 | 1,843 |
| Commercial Indoor Use Only | 1,669 | 1,669 | 1,669 |
| | ----- | ----- | ----- |
| Total | 24,987 | 27,103 | 28,145 |

Table 9
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Summary of Customer Characteristics
 FY2016

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter |
|-----------------------------|---------|---------|----------|----------|---------|
| Residential | 64.85% | 64.58% | 64.37% | 92.35% | 69.38% |
| Multifamily | 4.07% | 2.71% | 3.23% | 0.60% | 3.16% |
| Commercial | 5.70% | 3.92% | 4.62% | 1.49% | 4.78% |
| Bulk | 2.21% | 1.82% | 2.58% | 0.18% | 0.28% |
| Irrigation | 13.38% | 24.36% | 19.72% | 2.29% | 10.01% |
| Multifamily Indoor Use Only | 4.28% | 0.91% | 2.28% | 1.55% | 5.71% |
| Commercial Indoor Use Only | 5.50% | 1.70% | 3.20% | 1.54% | 6.68% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 10
Town of Castle Rock
Water Cost-of-Service Analysis
Summary of Customer Characteristics
FY2017

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter |
|-----------------------------|---------|---------|----------|----------|---------|
| Residential | 65.43% | 65.54% | 65.18% | 91.00% | 69.87% |
| Multifamily | 3.91% | 2.62% | 3.12% | 0.54% | 2.91% |
| Commercial | 5.52% | 3.81% | 4.49% | 1.41% | 4.75% |
| Bulk | 2.13% | 1.76% | 2.49% | 0.16% | 0.26% |
| Irrigation | 12.88% | 23.58% | 19.05% | 2.09% | 9.25% |
| Multifamily Indoor Use Only | 4.84% | 1.04% | 2.58% | 3.40% | 6.80% |
| Commercial Indoor Use Only | 5.29% | 1.65% | 3.09% | 1.39% | 6.16% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 11
Town of Castle Rock
Water Cost-of-Service Analysis
Summary of Customer Characteristics
FY2018

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter |
|-----------------------------|---------|---------|----------|----------|---------|
| Residential | 62.97% | 64.03% | 63.31% | 90.49% | 70.13% |
| Multifamily | 8.18% | 5.56% | 6.59% | 1.40% | 3.49% |
| Commercial | 5.21% | 3.65% | 4.28% | 1.38% | 4.74% |
| Bulk | 2.00% | 1.68% | 2.36% | 0.16% | 0.25% |
| Irrigation | 12.11% | 22.51% | 18.08% | 2.01% | 8.92% |
| Multifamily Indoor Use Only | 4.55% | 0.99% | 2.45% | 3.24% | 6.55% |
| Commercial Indoor Use Only | 4.98% | 1.57% | 2.94% | 1.33% | 5.93% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 12
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Capital Costs

| Item | FY2017 | FY2018 |
|----------------------------|--------------|--------------|
| Debt Service | \$ 1,740,767 | \$ 1,746,879 |
| Transfers Out | 200,643 | 225,861 |
| Minor Capital Outlay | 984,182 | 1,017,882 |
| Pay-Go Cash Funded Capital | 5,378,920 | 2,764,951 |
| | ----- | ----- |
| Total | \$8,304,512 | \$5,755,573 |

Table 13
 Town of Castle Rock
 Water Cost-of-Service Analysis
 O&M and Capital Non-Rate Revenues

| Item | FY2017 | FY2018 |
|-----------------------------------|-------------|-------------|
| O&M Related Non-Rate Revenues | | |
| Miscellaneous Revenue | 1,324,072 | 1,363,075 |
| Interest Income | 60,509 | 68,316 |
| | ----- | ----- |
| Total | \$1,384,581 | \$1,431,391 |
| Capital Related Non-Rate Revenues | | |
| System Development Fee Revenue | 2,476,181 | 2,546,943 |
| Transfers From Restricted Fund | 2,557,750 | 695,250 |
| Sources & Uses of Funds | (1,569,969) | (2,333,356) |
| | ----- | ----- |
| Total | \$3,463,962 | \$908,837 |

Table 14
 Town of Castle Rock
 Water Cost-of-Service Analysis
 User Charge Revenue Requirements

| Item | FY2017 | FY2018 |
|----------------------------------|--------------|--------------|
| Total Revenue Requirements | | |
| Operation & Maintenance | \$10,233,345 | \$10,664,510 |
| Capital | 8,304,512 | 5,755,573 |
| | ----- | ----- |
| Total | \$18,537,857 | \$16,420,084 |
| | | |
| User Charge Revenue Requirements | | |
| Operation & Maintenance | \$8,848,764 | \$9,233,120 |
| Capital | 4,840,550 | 4,846,736 |
| | ----- | ----- |
| Total | \$13,689,314 | \$14,079,856 |

Table 15
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Service Characteristics
FY2017

| Function | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-------------------------|-------------|-------------|-----------|-------------|-------------|-------------|
| Source of Supply | \$239,433 | \$348,621 | \$0 | \$0 | \$0 | \$588,054 |
| Treatment | 226,800 | 330,227 | 0 | 0 | 0 | 557,027 |
| Pumping | 21,731 | 31,641 | 42,912 | 0 | 0 | 96,284 |
| Transmission | 85,042 | 123,824 | 167,935 | 0 | 0 | 376,802 |
| Distribution | 149,785 | 218,092 | 295,785 | 0 | 0 | 663,662 |
| Storage | 78,483 | 114,273 | 0 | 0 | 0 | 192,756 |
| Buildings/ Improvements | 0 | 0 | 0 | 0 | 0 | 0 |
| Administration | 0 | 0 | 0 | 0 | 0 | 0 |
| Tools/Equip | 0 | 0 | 0 | 0 | 0 | 0 |
| Power & Chemicals | 3,872,473 | 0 | 0 | 0 | 0 | 3,872,473 |
| Meters & Services | 0 | 0 | 0 | 0 | 1,078,890 | 1,078,890 |
| Customer & Accounts | 0 | 0 | 0 | 1,422,816 | 0 | 1,422,816 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$4,673,746 | \$1,166,679 | \$506,633 | \$1,422,816 | \$1,078,890 | \$8,848,764 |

Table 16
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Service Characteristics
FY2018

| Function | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-------------------------|-------------|-------------|-----------|-------------|-------------|-------------|
| Source of Supply | \$244,759 | \$356,377 | \$0 | \$0 | \$0 | \$601,136 |
| Treatment | 231,845 | 337,574 | 0 | 0 | 0 | 569,419 |
| Pumping | 22,214 | 32,345 | 43,867 | 0 | 0 | 98,426 |
| Transmission | 88,607 | 129,015 | 174,975 | 0 | 0 | 392,597 |
| Distribution | 154,447 | 224,879 | 304,990 | 0 | 0 | 684,317 |
| Storage | 90,171 | 131,292 | 0 | 0 | 0 | 221,462 |
| Buildings/ Improvements | 0 | 0 | 0 | 0 | 0 | 0 |
| Administration | 0 | 0 | 0 | 0 | 0 | 0 |
| Tools/Equip | 0 | 0 | 0 | 0 | 0 | 0 |
| Power & Chemicals | 4,065,595 | 0 | 0 | 0 | 0 | 4,065,595 |
| Meters & Services | 0 | 0 | 0 | 0 | 1,089,118 | 1,089,118 |
| Customer & Accounts | 0 | 0 | 0 | 1,511,050 | 0 | 1,511,050 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$4,897,638 | \$1,211,481 | \$523,832 | \$1,511,050 | \$1,089,118 | \$9,233,120 |

Table 17
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Classes
FY2017

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-----------|-------------|-------------|-------------|
| Residential | \$3,057,833 | \$764,648 | \$330,204 | \$1,294,764 | \$753,829 | \$6,201,278 |
| Multifamily | 182,820 | 30,583 | 15,814 | 7,669 | 31,447 | 268,334 |
| Commercial | 258,054 | 44,503 | 22,748 | 20,132 | 51,257 | 396,695 |
| Bulk | 99,469 | 20,585 | 12,605 | 2,328 | 2,779 | 137,766 |
| Irrigation | 601,874 | 275,063 | 96,496 | 29,788 | 99,777 | 1,102,998 |
| Multifamily Indoor Use Only | 226,311 | 12,099 | 13,092 | 48,345 | 73,373 | 373,219 |
| Commercial Indoor Use Only | 247,384 | 19,198 | 15,674 | 19,790 | 66,427 | 368,473 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$4,673,746 | \$1,166,679 | \$506,633 | \$1,422,816 | \$1,078,890 | \$8,848,764 |

Table 18
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Classes
FY2018

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-----------|-------------|-------------|-------------|
| Residential | \$3,083,810 | \$775,669 | \$331,613 | \$1,367,299 | \$763,761 | \$6,322,152 |
| Multifamily | 400,556 | 67,399 | 34,503 | 21,091 | 38,000 | 561,548 |
| Commercial | 255,121 | 44,255 | 22,395 | 20,883 | 51,645 | 394,299 |
| Bulk | 98,030 | 20,406 | 12,370 | 2,359 | 2,702 | 135,867 |
| Irrigation | 593,280 | 272,726 | 94,720 | 30,388 | 97,110 | 1,088,223 |
| Multifamily Indoor Use Only | 223,037 | 11,994 | 12,849 | 48,981 | 71,326 | 368,186 |
| Commercial Indoor Use Only | 243,805 | 19,032 | 15,383 | 20,050 | 64,574 | 362,843 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$4,897,638 | \$1,211,481 | \$523,832 | \$1,511,050 | \$1,089,118 | \$9,233,120 |

Table 19
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Service Characteristics
FY2016

| Plant-in-Service | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Source of Supply | \$9,109,250 | \$13,263,353 | \$0 | \$0 | \$0 | \$22,372,603 |
| Treatment | 6,552,480 | 9,540,616 | 0 | 0 | 0 | 16,093,096 |
| Pumping | 633,931 | 923,023 | 1,251,839 | 0 | 0 | 2,808,793 |
| Transmission | 1,215,243 | 1,769,432 | 2,399,772 | 0 | 0 | 5,384,447 |
| Distribution | 2,226,695 | 3,242,138 | 4,397,113 | 0 | 0 | 9,865,947 |
| Storage | 3,752,826 | 5,464,232 | 0 | 0 | 0 | 9,217,059 |
| Buildings/ Improvements | 0 | 0 | 0 | 5,972,306 | 0 | 5,972,306 |
| Administration | 624,330 | 909,044 | 213,980 | 158,553 | 1,624 | 1,907,531 |
| Tools/Equip | 26,554 | 38,664 | 11,379 | 0 | 25,532 | 102,130 |
| Power & Chemicals | 0 | 0 | 0 | 0 | 0 | 0 |
| Meters & Services | 0 | 0 | 0 | 0 | 35,642 | 35,642 |
| Customer & Accounts | 0 | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$24,141,309 | \$35,150,501 | \$8,274,084 | \$6,130,859 | \$62,799 | \$73,759,552 |
| Total Direct | \$23,516,979 | \$34,241,457 | \$8,060,104 | \$5,972,306 | \$61,175 | \$71,852,021 |

Table 20
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Service Characteristics
FY2017

| Plant-in-Service | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Source of Supply | \$6,582,193 | \$9,583,879 | \$0 | \$0 | \$0 | \$16,166,073 |
| Treatment | 6,234,903 | 9,078,213 | 0 | 0 | 0 | 15,313,116 |
| Pumping | 597,397 | 869,828 | 1,179,695 | 0 | 0 | 2,646,919 |
| Transmission | 1,124,866 | 1,637,841 | 2,221,303 | 0 | 0 | 4,984,010 |
| Distribution | 2,136,086 | 3,110,208 | 4,218,185 | 0 | 0 | 9,464,478 |
| Storage | 3,549,463 | 5,168,129 | 0 | 0 | 0 | 8,717,593 |
| Buildings/ Improvements | 0 | 0 | 0 | 5,897,038 | 0 | 5,897,038 |
| Administration | 608,429 | 885,891 | 208,530 | 154,515 | 1,583 | 1,858,948 |
| Tools/Equip | 14,510 | 21,127 | 6,218 | 0 | 13,952 | 55,807 |
| Power & Chemicals | 0 | 0 | 0 | 0 | 0 | 0 |
| Meters & Services | 0 | 0 | 0 | 0 | 26,376 | 26,376 |
| Customer & Accounts | 0 | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$20,847,847 | \$30,355,117 | \$7,833,930 | \$6,051,553 | \$41,910 | \$65,130,357 |

Table 21
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Service Characteristics
FY2018

| Plant-in-Service | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Source of Supply | \$8,393,457 | \$12,221,136 | \$0 | \$0 | \$0 | \$20,614,594 |
| Treatment | 5,943,653 | 8,654,144 | 0 | 0 | 0 | 14,597,797 |
| Pumping | 567,617 | 826,469 | 1,120,889 | 0 | 0 | 2,514,975 |
| Transmission | 1,117,937 | 1,627,751 | 2,207,620 | 0 | 0 | 4,953,308 |
| Distribution | 2,067,385 | 3,010,177 | 4,082,519 | 0 | 0 | 9,160,081 |
| Storage | 3,369,872 | 4,906,638 | 0 | 0 | 0 | 8,276,510 |
| Buildings/ Improvements | 0 | 0 | 0 | 5,854,706 | 0 | 5,854,706 |
| Administration | 597,698 | 870,267 | 204,852 | 151,790 | 1,555 | 1,826,162 |
| Tools/Equip | 11,943 | 17,389 | 5,118 | 0 | 11,483 | 45,933 |
| Power & Chemicals | 0 | 0 | 0 | 0 | 0 | 0 |
| Meters & Services | 0 | 0 | 0 | 0 | 23,817 | 23,817 |
| Customer & Accounts | 0 | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$22,069,562 | \$32,133,972 | \$7,620,998 | \$6,006,496 | \$36,855 | \$67,867,883 |

Table 22
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Classes
FY2016

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Residential | \$15,655,336 | \$22,700,237 | \$5,325,627 | \$5,661,770 | \$43,572 | \$49,386,543 |
| Multifamily | 981,744 | 952,292 | 267,516 | 36,637 | 1,985 | 2,240,175 |
| Commercial | 1,377,036 | 1,377,036 | 382,400 | 91,593 | 3,000 | 3,231,065 |
| Bulk | 534,149 | 640,979 | 213,227 | 11,122 | 175 | 1,399,653 |
| Irrigation | 3,230,825 | 8,561,686 | 1,631,769 | 140,334 | 6,284 | 13,570,898 |
| Multifamily Indoor Use Only | 1,033,770 | 320,469 | 188,393 | 94,864 | 3,587 | 1,641,083 |
| Commercial Indoor Use Only | 1,328,449 | 597,802 | 265,152 | 94,537 | 4,194 | 2,290,134 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$24,141,309 | \$35,150,501 | \$8,274,084 | \$6,130,859 | \$62,799 | \$73,759,552 |

Table 23
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Classes
FY2017

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Residential | \$13,639,857 | \$19,894,920 | \$5,105,856 | \$5,506,919 | \$29,283 | \$44,176,835 |
| Multifamily | 815,494 | 795,714 | 244,525 | 32,620 | 1,222 | 1,889,574 |
| Commercial | 1,151,085 | 1,157,902 | 351,747 | 85,627 | 1,991 | 2,748,352 |
| Bulk | 443,696 | 535,588 | 194,902 | 9,902 | 108 | 1,184,196 |
| Irrigation | 2,684,738 | 7,156,688 | 1,492,099 | 126,693 | 3,876 | 11,464,094 |
| Multifamily Indoor Use Only | 1,009,489 | 314,795 | 202,439 | 205,621 | 2,850 | 1,735,195 |
| Commercial Indoor Use Only | 1,103,487 | 499,510 | 242,364 | 84,171 | 2,580 | 1,932,112 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$20,847,847 | \$30,355,117 | \$7,833,930 | \$6,051,553 | \$41,910 | \$65,130,357 |

Table 24
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Classes
FY2018

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|--------------|--------------|-------------|-------------|----------|--------------|
| Residential | \$13,896,155 | \$20,574,256 | \$4,824,493 | \$5,435,079 | \$25,845 | \$44,755,829 |
| Multifamily | 1,804,970 | 1,787,735 | 501,962 | 83,837 | 1,286 | 4,179,790 |
| Commercial | 1,149,616 | 1,173,854 | 325,817 | 83,010 | 1,748 | 2,734,045 |
| Bulk | 441,740 | 541,265 | 179,968 | 9,377 | 91 | 1,172,441 |
| Irrigation | 2,673,417 | 7,233,925 | 1,378,036 | 120,792 | 3,286 | 11,409,456 |
| Multifamily Indoor Use Only | 1,005,041 | 318,132 | 186,928 | 194,701 | 2,414 | 1,707,214 |
| Commercial Indoor Use Only | 1,098,624 | 504,804 | 223,794 | 79,701 | 2,185 | 1,909,108 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$22,069,562 | \$32,133,972 | \$7,620,998 | \$6,006,496 | \$36,855 | \$67,867,883 |

Table 25
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Capital Costs to Customer Classes
FY2017

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-----------|-----------|---------|-------------|
| Residential | \$1,013,727 | \$1,478,609 | \$379,472 | \$409,279 | \$2,176 | \$3,283,264 |
| Multifamily | 60,608 | 59,138 | 18,173 | 2,424 | 91 | 140,435 |
| Commercial | 85,550 | 86,056 | 26,142 | 6,364 | 148 | 204,260 |
| Bulk | 32,976 | 39,805 | 14,485 | 736 | 8 | 88,011 |
| Irrigation | 199,532 | 531,892 | 110,894 | 9,416 | 288 | 852,022 |
| Multifamily Indoor Use Only | 75,026 | 23,396 | 15,045 | 15,282 | 212 | 128,961 |
| Commercial Indoor Use Only | 82,012 | 37,124 | 18,013 | 6,256 | 192 | 143,596 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$1,549,432 | \$2,256,021 | \$582,225 | \$449,757 | \$3,115 | \$4,840,550 |

Table 26
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Capital Costs to Customer Classes
FY2018

| Customer Classes | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-----------|-----------|---------|-------------|
| Residential | \$992,384 | \$1,469,296 | \$344,538 | \$388,142 | \$1,846 | \$3,196,205 |
| Multifamily | 128,901 | 127,670 | 35,847 | 5,987 | 92 | 298,497 |
| Commercial | 82,099 | 83,830 | 23,268 | 5,928 | 125 | 195,250 |
| Bulk | 31,547 | 38,654 | 12,852 | 670 | 7 | 83,729 |
| Irrigation | 190,920 | 516,606 | 98,411 | 8,626 | 235 | 814,798 |
| Multifamily Indoor Use Only | 71,774 | 22,719 | 13,349 | 13,904 | 172 | 121,919 |
| Commercial Indoor Use Only | 78,457 | 36,050 | 15,982 | 5,692 | 156 | 136,338 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$1,576,082 | \$2,294,825 | \$544,248 | \$428,950 | \$2,632 | \$4,846,736 |

Table 27
Town of Castle Rock
Water Cost-of-Service Analysis
User Charge Revenue Requirements by Customer Service Characteristics

| Parameter | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------|-------------|-------------|-------------|-------------|-------------|--------------|
| FY2017 | | | | | | |
| O&M | \$4,673,746 | \$1,166,679 | \$506,633 | \$1,422,816 | \$1,078,890 | \$8,848,764 |
| Capital | 1,549,432 | 2,256,021 | 582,225 | 449,757 | 3,115 | 4,840,550 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,223,178 | \$3,422,700 | \$1,088,858 | \$1,872,573 | \$1,082,005 | \$13,689,314 |
| FY2018 | | | | | | |
| O&M | \$4,897,638 | \$1,211,481 | \$523,832 | \$1,511,050 | \$1,089,118 | \$9,233,120 |
| Capital | 1,576,082 | 2,294,825 | 544,248 | 428,950 | 2,632 | 4,846,736 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,473,720 | \$3,506,305 | \$1,068,080 | \$1,940,000 | \$1,091,750 | \$14,079,856 |

Table 28
Town of Castle Rock
Water Cost-of-Service Analysis
Percentage Allocation of Revenue Requirements for Rate Design

| Allocation Percentages | Base | Max-Day | Max-Hour | Customer | Meter |
|------------------------|---------|---------|----------|----------|---------|
| O&M | | | | | |
| Base Rate | 0.00% | 0.00% | 0.00% | 100.00% | 100.00% |
| Volume Charge | 100.00% | 100.00% | 100.00% | 0.00% | 0.00% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Capital | | | | | |
| Base Rate | 0.00% | 0.00% | 0.00% | 100.00% | 100.00% |
| Volume Charge | 100.00% | 100.00% | 100.00% | 0.00% | 0.00% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 29
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Revenue Requirements for Rate Design Purposes
FY2017

| Description | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|---------------|-------------|-------------|-------------|-------------|-------------|--------------|
| O&M | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$1,422,816 | \$1,078,890 | \$2,501,706 |
| Volume Charge | 4,673,746 | 1,166,679 | 506,633 | 0 | 0 | 6,347,058 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$4,673,746 | \$1,166,679 | \$506,633 | \$1,422,816 | \$1,078,890 | \$8,848,764 |
| Capital | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$449,757 | \$3,115 | \$452,872 |
| Volume Charge | 1,549,432 | 2,256,021 | 582,225 | 0 | 0 | 4,387,678 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$1,549,432 | \$2,256,021 | \$582,225 | \$449,757 | \$3,115 | \$4,840,550 |
| Total | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$1,872,573 | \$1,082,005 | \$2,954,578 |
| Volume Charge | 6,223,178 | 3,422,700 | 1,088,858 | 0 | 0 | 10,734,736 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Grand Total | \$6,223,178 | \$3,422,700 | \$1,088,858 | \$1,872,573 | \$1,082,005 | \$13,689,314 |

Table 30
Town of Castle Rock
Water Cost-of-Service Analysis
Allocation of Revenue Requirements for Rate Design Purposes
FY2018

| Description | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|---------------|-------------|-------------|-------------|-------------|-------------|--------------|
| O&M | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$1,511,050 | \$1,089,118 | \$2,600,168 |
| Volume Charge | 4,897,638 | 1,211,481 | 523,832 | 0 | 0 | 6,632,951 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$4,897,638 | \$1,211,481 | \$523,832 | \$1,511,050 | \$1,089,118 | \$9,233,120 |
| Capital | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$428,950 | \$2,632 | \$431,582 |
| Volume Charge | 1,576,082 | 2,294,825 | 544,248 | 0 | 0 | 4,415,155 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$1,576,082 | \$2,294,825 | \$544,248 | \$428,950 | \$2,632 | \$4,846,736 |
| Total | | | | | | |
| Base Rate | \$0 | \$0 | \$0 | \$1,940,000 | \$1,091,750 | \$3,031,750 |
| Volume Charge | 6,473,720 | 3,506,305 | 1,068,080 | 0 | 0 | 11,048,106 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Grand Total | \$6,473,720 | \$3,506,305 | \$1,068,080 | \$1,940,000 | \$1,091,750 | \$14,079,856 |

Table 31
Town of Castle Rock
Water Cost-of-Service Analysis
Base Rate Costs by Customer Class

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------|---------|----------|-------------|-------------|-------------|
| FY2017: | | | | | | |
| Residential | \$0 | \$0 | \$0 | \$1,704,044 | \$756,006 | \$2,460,049 |
| Multifamily | 0 | 0 | 0 | 10,094 | 31,538 | 41,632 |
| Commercial | 0 | 0 | 0 | 26,496 | 51,405 | 77,901 |
| Bulk | 0 | 0 | 0 | 3,064 | 2,787 | 5,852 |
| Irrigation | 0 | 0 | 0 | 39,203 | 100,065 | 139,269 |
| Multifamily Indoor Use Only | 0 | 0 | 0 | 63,627 | 73,584 | 137,211 |
| Commercial Indoor Use Only | 0 | 0 | 0 | 26,046 | 66,619 | 92,664 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$0 | \$0 | \$0 | \$1,872,573 | \$1,082,005 | \$2,954,578 |
| FY2018: | | | | | | |
| Residential | \$0 | \$0 | \$0 | \$1,755,442 | \$765,607 | \$2,521,048 |
| Multifamily | 0 | 0 | 0 | 27,078 | 38,092 | 65,170 |
| Commercial | 0 | 0 | 0 | 26,811 | 51,769 | 78,580 |
| Bulk | 0 | 0 | 0 | 3,028 | 2,708 | 5,737 |
| Irrigation | 0 | 0 | 0 | 39,014 | 97,345 | 136,359 |
| Multifamily Indoor Use Only | 0 | 0 | 0 | 62,885 | 71,498 | 134,384 |
| Commercial Indoor Use Only | 0 | 0 | 0 | 25,742 | 64,730 | 90,472 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$0 | \$0 | \$0 | \$1,940,000 | \$1,091,750 | \$3,031,750 |

Table 32
Town of Castle Rock
Water Cost-of-Service Analysis
Volume Charge Costs by Customer Class

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-------------|----------|-------|--------------|
| FY2017: | | | | | | |
| Residential | \$4,071,560 | \$2,243,257 | \$709,676 | \$0 | \$0 | \$7,024,493 |
| Multifamily | 243,429 | 89,721 | 33,987 | 0 | 0 | 367,137 |
| Commercial | 343,604 | 130,560 | 48,890 | 0 | 0 | 523,054 |
| Bulk | 132,445 | 60,390 | 27,090 | 0 | 0 | 219,925 |
| Irrigation | 801,407 | 806,954 | 207,391 | 0 | 0 | 1,815,752 |
| Multifamily Indoor Use Only | 301,337 | 35,495 | 28,137 | 0 | 0 | 364,970 |
| Commercial Indoor Use Only | 329,396 | 56,322 | 33,687 | 0 | 0 | 419,405 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,223,178 | \$3,422,700 | \$1,088,858 | \$0 | \$0 | \$10,734,736 |
| FY2018: | | | | | | |
| Residential | \$4,076,194 | \$2,244,964 | \$676,151 | \$0 | \$0 | \$6,997,310 |
| Multifamily | 529,456 | 195,069 | 70,350 | 0 | 0 | 794,875 |
| Commercial | 337,220 | 128,085 | 45,663 | 0 | 0 | 510,968 |
| Bulk | 129,577 | 59,060 | 25,222 | 0 | 0 | 213,859 |
| Irrigation | 784,200 | 789,331 | 193,131 | 0 | 0 | 1,766,663 |
| Multifamily Indoor Use Only | 294,811 | 34,713 | 26,198 | 0 | 0 | 355,722 |
| Commercial Indoor Use Only | 322,262 | 55,082 | 31,365 | 0 | 0 | 408,709 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,473,720 | \$3,506,305 | \$1,068,080 | \$0 | \$0 | \$11,048,106 |

Table 33
Town of Castle Rock
Water Cost-of-Service Analysis
Summary of Cost of Service by Customer Class

| Customer Class | Base | Max-Day | Max-Hour | Customer | Meter | Total |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| FY2017: | | | | | | |
| Residential | \$4,071,560 | \$2,243,257 | \$709,676 | \$1,704,044 | \$756,006 | \$9,484,542 |
| Multifamily | 243,429 | 89,721 | 33,987 | 10,094 | 31,538 | 408,769 |
| Commercial | 343,604 | 130,560 | 48,890 | 26,496 | 51,405 | 600,955 |
| Bulk | 132,445 | 60,390 | 27,090 | 3,064 | 2,787 | 225,777 |
| Irrigation | 801,407 | 806,954 | 207,391 | 39,203 | 100,065 | 1,955,021 |
| Multifamily Indoor Use Only | 301,337 | 35,495 | 28,137 | 63,627 | 73,584 | 502,181 |
| Commercial Indoor Use Only | 329,396 | 56,322 | 33,687 | 26,046 | 66,619 | 512,069 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,223,178 | \$3,422,700 | \$1,088,858 | \$1,872,573 | \$1,082,005 | \$13,689,314 |
| FY2018: | | | | | | |
| Residential | \$4,076,194 | \$2,244,964 | \$676,151 | \$1,755,442 | \$765,607 | \$9,518,358 |
| Multifamily | 529,456 | 195,069 | 70,350 | 27,078 | 38,092 | 860,045 |
| Commercial | 337,220 | 128,085 | 45,663 | 26,811 | 51,769 | 589,548 |
| Bulk | 129,577 | 59,060 | 25,222 | 3,028 | 2,708 | 219,596 |
| Irrigation | 784,200 | 789,331 | 193,131 | 39,014 | 97,345 | 1,903,022 |
| Multifamily Indoor Use Only | 294,811 | 34,713 | 26,198 | 62,885 | 71,498 | 490,106 |
| Commercial Indoor Use Only | 322,262 | 55,082 | 31,365 | 25,742 | 64,730 | 499,181 |
| | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,473,720 | \$3,506,305 | \$1,068,080 | \$1,940,000 | \$1,091,750 | \$14,079,856 |

Table 34
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Calculation of Unit Costs by Customer Class
 FY2017

| Customer Class | Base Per kgal | Max-Day Per kgal | Max-Hour Per kgal | Customer Per Account | Meter Per Equivalent Meter |
|-----------------------------|---------------|------------------|-------------------|----------------------|----------------------------|
| Residential | \$2.55 | \$1.40 | \$0.44 | \$7.51 | \$3.33 |
| Multifamily | 2.55 | 0.94 | 0.36 | 7.51 | 3.33 |
| Commercial | 2.55 | 0.97 | 0.36 | 7.51 | 3.33 |
| Bulk | 2.55 | 1.16 | 0.52 | 7.51 | 3.33 |
| Irrigation | 2.55 | 2.56 | 0.66 | 7.51 | 3.33 |
| Multifamily Indoor Use Only | 2.55 | 0.30 | 0.24 | 7.51 | 3.33 |
| Commercial Indoor Use Only | 2.55 | 0.44 | 0.26 | 7.51 | 3.33 |

Table 35
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Calculation of Unit Costs by Customer Class
 FY2018

| Customer Class | Base Per kgal | Max-Day Per kgal | Max-Hour Per kgal | Customer Per Account | Meter Per Equivalent Meter |
|-----------------------------|---------------|------------------|-------------------|----------------------|----------------------------|
| Residential | \$2.49 | \$1.37 | \$0.41 | \$7.42 | \$3.23 |
| Multifamily | 2.49 | 0.92 | 0.33 | 7.42 | 3.23 |
| Commercial | 2.49 | 0.95 | 0.34 | 7.42 | 3.23 |
| Bulk | 2.49 | 1.14 | 0.49 | 7.42 | 3.23 |
| Irrigation | 2.49 | 2.51 | 0.61 | 7.42 | 3.23 |
| Multifamily Indoor Use Only | 2.49 | 0.29 | 0.22 | 7.42 | 3.23 |
| Commercial Indoor Use Only | 2.49 | 0.43 | 0.24 | 7.42 | 3.23 |

Table 36
 Town of Castle Rock
 Water Cost-of-Service Analysis
 COS Volume-Based Water Rates
 (\$/kgal)

| Customer Class | Calculated Volume Rates | | |
|-----------------------------|-------------------------|--------|--------|
| | FY2016 | FY2017 | FY2018 |
| Residential | \$2.78 | \$4.39 | \$4.28 |
| Multifamily | 2.55 | 3.84 | 3.74 |
| Commercial | 2.56 | 3.88 | 3.78 |
| Bulk | 2.72 | 4.23 | 4.11 |
| Irrigation | 3.35 | 5.77 | 5.61 |
| Multifamily Indoor Use Only | 2.23 | 3.08 | 3.01 |
| Commercial Indoor Use Only | 2.30 | 3.24 | 3.16 |
| Average Rate | \$2.78 | \$4.39 | \$4.25 |

Table 37
Town of Castle Rock
Water Cost-of-Service Analysis
COS Base Rate Charges

| | Per Account per Month | Per Equiv.Meter per Month |
|-----------------------------|--------------------------|------------------------------|
| Customer Class | Customer Charge | Meter Charge |
| FY2017: | | |
| Residential | \$7.51 | \$3.33 |
| Multifamily | 7.51 | 3.33 |
| Commercial | 7.51 | 3.33 |
| Bulk | 7.51 | 3.33 |
| Irrigation | 7.51 | 3.33 |
| Multifamily Indoor Use Only | 7.51 | 3.33 |
| Commercial Indoor Use Only | 7.51 | 3.33 |
| FY2018: | | |
| Residential | \$7.42 | \$3.23 |
| Multifamily | 7.42 | 3.23 |
| Commercial | 7.42 | 3.23 |
| Bulk | 7.42 | 3.23 |
| Irrigation | 7.42 | 3.23 |
| Multifamily Indoor Use Only | 7.42 | 3.23 |
| Commercial Indoor Use Only | 7.42 | 3.23 |

Table 38
Town of Castle Rock
Water Cost-of-Service Analysis
Monthly Meter Charge by Meter Size

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only |
|------------|-------------|-------------|------------|--------|------------|--------------------------------|-------------------------------|
| FY2017: | | | | | | | |
| 3/4" | \$3.33 | \$3.33 | \$3.33 | \$3.33 | \$3.33 | \$3.33 | \$3.33 |
| 1" | 11.31 | 11.31 | 11.31 | 11.31 | 11.31 | 11.31 | 11.31 |
| 1-1/2" | 25.72 | 25.72 | 25.72 | 25.72 | 25.72 | 25.72 | 25.72 |
| 2" | 36.99 | 36.99 | 36.99 | 36.99 | 36.99 | 36.99 | 36.99 |
| 3" | 62.91 | 62.91 | 62.91 | 62.91 | 62.91 | 62.91 | 62.91 |
| 4" | 203.64 | 203.64 | 203.64 | 203.64 | 203.64 | 203.64 | 203.64 |
| 6" | 295.53 | 295.53 | 295.53 | 295.53 | 295.53 | 295.53 | 295.53 |
| FY2018: | | | | | | | |
| 3/4" | \$3.23 | \$3.23 | \$3.23 | \$3.23 | \$3.23 | \$3.23 | \$3.23 |
| 1" | 10.99 | 10.99 | 10.99 | 10.99 | 10.99 | 10.99 | 10.99 |
| 1-1/2" | 24.99 | 24.99 | 24.99 | 24.99 | 24.99 | 24.99 | 24.99 |
| 2" | 35.95 | 35.95 | 35.95 | 35.95 | 35.95 | 35.95 | 35.95 |
| 3" | 61.13 | 61.13 | 61.13 | 61.13 | 61.13 | 61.13 | 61.13 |
| 4" | 197.87 | 197.87 | 197.87 | 197.87 | 197.87 | 197.87 | 197.87 |
| 6" | 287.15 | 287.15 | 287.15 | 287.15 | 287.15 | 287.15 | 287.15 |

Table 39
 Town of Castle Rock
 Water Cost-of-Service Analysis
 Monthly Customer Charge by Meter Size

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only |
|------------|-------------|-------------|------------|--------|------------|--------------------------------|-------------------------------|
| FY2017: | | | | | | | |
| 3/4" | \$7.51 | \$7.51 | \$7.51 | \$7.51 | \$7.51 | \$7.51 | \$7.51 |
| 1" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| 1-1/2" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| 2" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| 3" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| 4" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| 6" | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 | 7.51 |
| FY2018: | | | | | | | |
| 3/4" | \$7.42 | \$7.42 | \$7.42 | \$7.42 | \$7.42 | \$7.42 | \$7.42 |
| 1" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |
| 1-1/2" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |
| 2" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |
| 3" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |
| 4" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |
| 6" | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 | 7.42 |

Table 40
Town of Castle Rock
Water Cost-of-Service Analysis
Total Fixed Monthly Charge by Meter Size

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | Multifamily Indoor Use Only | Commercial Indoor Use Only |
|------------|-------------|-------------|------------|---------|------------|--------------------------------|-------------------------------|
| FY2017: | | | | | | | |
| 3/4" | \$10.84 | \$10.84 | \$10.84 | \$10.84 | \$10.84 | \$10.84 | \$10.84 |
| 1" | 18.82 | 18.82 | 18.82 | 18.82 | 18.82 | 18.82 | 18.82 |
| 1-1/2" | 33.23 | 33.23 | 33.23 | 33.23 | 33.23 | 33.23 | 33.23 |
| 2" | 44.51 | 44.51 | 44.51 | 44.51 | 44.51 | 44.51 | 44.51 |
| 3" | 70.42 | 70.42 | 70.42 | 70.42 | 70.42 | 70.42 | 70.42 |
| 4" | 211.15 | 211.15 | 211.15 | 211.15 | 211.15 | 211.15 | 211.15 |
| 6" | 303.04 | 303.04 | 303.04 | 303.04 | 303.04 | 303.04 | 303.04 |
| FY2018: | | | | | | | |
| 3/4" | \$10.66 | \$10.66 | \$10.66 | \$10.66 | \$10.66 | \$10.66 | \$10.66 |
| 1" | 18.41 | 18.41 | 18.41 | 18.41 | 18.41 | 18.41 | 18.41 |
| 1-1/2" | 32.41 | 32.41 | 32.41 | 32.41 | 32.41 | 32.41 | 32.41 |
| 2" | 43.37 | 43.37 | 43.37 | 43.37 | 43.37 | 43.37 | 43.37 |
| 3" | 68.55 | 68.55 | 68.55 | 68.55 | 68.55 | 68.55 | 68.55 |
| 4" | 205.29 | 205.29 | 205.29 | 205.29 | 205.29 | 205.29 | 205.29 |
| 6" | 294.57 | 294.57 | 294.57 | 294.57 | 294.57 | 294.57 | 294.57 |

Table 41
Town of Castle Rock
Water Cost-of-Service Analysis
Revenues Generated by COS Rates
FY2017

| Customer Class | Base Monthly Charge | Volume Rate | Total Revenue | Revenue Requirement | Surplus/ (Deficiency) |
|-----------------------------|---------------------|--------------|---------------|---------------------|-----------------------|
| Residential | \$2,460,049 | \$7,024,493 | \$9,484,542 | \$9,484,542 | \$0 |
| Multifamily | 41,632 | 367,137 | 408,769 | 408,769 | 0 |
| Commercial | 77,901 | 523,054 | 600,955 | 600,955 | 0 |
| Bulk | 5,852 | 219,925 | 225,777 | 225,777 | 0 |
| Irrigation | 139,269 | 1,815,752 | 1,955,021 | 1,955,021 | 0 |
| Multifamily Indoor Use Only | 137,211 | 364,970 | 502,181 | 502,181 | 0 |
| Commercial Indoor Use Only | 92,664 | 419,405 | 512,069 | 512,069 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,954,578 | \$10,734,736 | \$13,689,314 | \$13,689,314 | \$0 |

Table 42
Town of Castle Rock
Water Cost-of-Service Analysis
Revenues Generated by COS Rates
FY2018

| Customer Class | Base Monthly Charge | Volume Rate | Total Revenue | Revenue Requirement | Surplus/ (Deficiency) |
|-----------------------------|---------------------|--------------|---------------|---------------------|-----------------------|
| Residential | \$2,521,048 | \$6,997,310 | \$9,518,358 | \$9,518,358 | \$0 |
| Multifamily | 65,170 | 794,875 | 860,045 | 860,045 | 0 |
| Commercial | 78,580 | 510,968 | 589,548 | 589,548 | 0 |
| Bulk | 5,737 | 213,859 | 219,596 | 219,596 | 0 |
| Irrigation | 136,359 | 1,766,663 | 1,903,022 | 1,903,022 | 0 |
| Multifamily Indoor Use Only | 134,384 | 355,722 | 490,106 | 490,106 | 0 |
| Commercial Indoor Use Only | 90,472 | 408,709 | 499,181 | 499,181 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$3,031,750 | \$11,048,106 | \$14,079,856 | \$14,079,856 | \$0 |

APPENDIX G

Wastewater Fund Cost-of-Service Study



Table 1
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Projected Wastewater Flows and Loadings by Class (MG/Year)
 FY2016

| Customer Class | Annual Flows (MG) | mg/l | | Pounds | |
|----------------------------|----------------------|------|-----|-----------|-----------|
| | | BOD | TSS | BOD | TSS |
| Residential | 664.7 | 344 | 432 | 1,908,303 | 2,396,473 |
| Commercial | 73.8 | 344 | 432 | 211,948 | 266,167 |
| Commercial Indoor Use Only | 108.6 | 344 | 432 | 311,732 | 391,477 |
| Multifamily | 63.1 | 344 | 432 | 181,103 | 227,432 |
| Mutifamily Indoor Use Only | 89.6 | 344 | 432 | 257,117 | 322,891 |
| Total | 999.8 | 344 | 432 | 2,870,203 | 3,604,441 |

Table 2
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Projected Wastewater Flows and Loadings by Class (MG/Year)
FY2017

| Customer Class | Additional Flow (MG) | Annual Flow (MG) | mg/l | | Pounds | |
|----------------------------|----------------------|------------------|-------|-------|-----------|-----------|
| | | | BOD | TSS | BOD | TSS |
| Residential | 65.18 | 729.886 | 344 | 432 | 2,095,270 | 2,631,270 |
| Commercial | 0.85 | 74.674 | 344 | 432 | 214,366 | 269,204 |
| Commercial Indoor Use Only | - | 108.583 | 344 | 432 | 311,707 | 391,446 |
| Multifamily | - | 63.082 | 344 | 432 | 181,088 | 227,413 |
| Mutifamily Indoor Use Only | 17.67 | 107.231 | 344 | 432 | 307,826 | 386,572 |
| Total | 83.7 | 1,083.457 | 1,720 | 2,160 | 3,110,258 | 3,905,905 |

Table 3
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Projected Wastewater Flows and Loadings by Class (MG/Year)
FY2018

| Customer Class | Additional Flow (MG) | Annual Flow (MG) | mg/l | | Pounds | |
|----------------------------|-------------------------|---------------------|-------|-------|-----------|-----------|
| | | | BOD | TSS | BOD | TSS |
| Residential | 37.25 | 767.1 | 344 | 432 | 2,202,197 | 2,765,550 |
| Commercial | 0.42 | 75.1 | 344 | 432 | 215,584 | 270,733 |
| Commercial Indoor Use Only | - | 108.6 | 344 | 432 | 311,707 | 391,446 |
| Multifamily | 116.90 | 180.0 | 344 | 432 | 516,685 | 648,860 |
| Mutifamily Indoor Use Only | - | 107.2 | 344 | 432 | 307,826 | 386,572 |
| Total | 154.6 | 1,238.0 | 1,720 | 2,160 | 3,553,999 | 4,463,162 |

Table 4
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Number of Customers and Equivalent Meters by Meter Size and Customer Class
FY2016

| Meter Size | Equivalent 5/8" x 3/4" Ratios | Residential | Commercial | Commercial Indoor Use Only | Multifamily | Mutifamily Indoor Use Only | Total |
|------------------------------------|----------------------------------|-------------|------------|-------------------------------|-------------|-------------------------------|--------|
| Number of Customers | | | | | | | |
| 3/4" | 1.00 | 17,141 | 128 | 101 | 14 | 100 | 17,484 |
| 1" | 4.06 | 11 | 68 | 66 | 25 | 64 | 234 |
| 1-1/2" | 9.18 | 0 | 47 | 53 | 55 | 86 | 241 |
| 2" | 13.19 | 0 | 24 | 38 | 15 | 40 | 117 |
| 3" | 19.92 | 0 | 5 | 12 | 2 | 0 | 19 |
| 4" | 81.19 | 0 | 0 | 1 | 1 | 0 | 2 |
| 6" | 102.67 | 0 | 1 | 1 | 0 | 0 | 2 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 17,152 | 273 | 272 | 112 | 290 | 18,099 |
| Number of Equivalent Meters | | | | | | | |
| 3/4" | | 17,141 | 128 | 101 | 14 | 100 | 17,484 |
| 1" | | 45 | 276 | 268 | 102 | 260 | 950 |
| 1-1/2" | | 0 | 431 | 487 | 505 | 789 | 2,212 |
| 2" | | 0 | 317 | 501 | 198 | 528 | 1,543 |
| 3" | | 0 | 100 | 239 | 40 | 0 | 378 |
| 4" | | 0 | 0 | 81 | 81 | 0 | 162 |
| 6" | | 0 | 103 | 103 | 0 | 0 | 205 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 17,186 | 1,354 | 1,780 | 939 | 1,677 | 22,936 |

Table 5
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Number of Customers and Equivalent Meters by Meter Size and Customer Class
FY2017

| Meter Size | Equivalent 3/4" Ratios | Residential | Commercial | Commercial Indoor Use Only | Multifamily | Mutifamily Indoor Use Only | Total |
|-----------------------------|---------------------------|-------------|------------|-------------------------------|-------------|-------------------------------|--------|
| Number of Customers | | | | | | | |
| 3/4" | 1.0 | 18,541 | 128 | 101 | 14 | 516 | 19,300 |
| 1" | 4.1 | 11 | 76 | 66 | 25 | 64 | 242 |
| 1-1/2" | 9.2 | 0 | 47 | 53 | 55 | 86 | 241 |
| 2" | 13.2 | 0 | 30 | 38 | 15 | 40 | 123 |
| 3" | 19.9 | 0 | 5 | 12 | 2 | 0 | 19 |
| 4" | 81.2 | 0 | 0 | 1 | 1 | 0 | 2 |
| 6" | 102.7 | 0 | 1 | 1 | 0 | 0 | 2 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 18,552 | 287 | 272 | 112 | 706 | 19,929 |
| Number of Equivalent Meters | | | | | | | |
| 3/4" | | 18,541 | 128 | 101 | 14 | 516 | 19,300 |
| 1" | | 45 | 309 | 268 | 102 | 260 | 983 |
| 1-1/2" | | 0 | 431 | 487 | 505 | 789 | 2,212 |
| 2" | | 0 | 396 | 501 | 198 | 528 | 1,622 |
| 3" | | 0 | 100 | 239 | 40 | 0 | 378 |
| 4" | | 0 | 0 | 81 | 81 | 0 | 162 |
| 6" | | 0 | 103 | 103 | 0 | 0 | 205 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 18,586 | 1,466 | 1,780 | 939 | 2,093 | 24,863 |

Table 6
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Number of Customers and Equivalent Meters by Meter Size and Customer Class
FY2018

| Meter Size | Equivalent 3/4" Ratios | Residential | Commercial | Commercial Indoor Use Only | Multifamily | Mutifamily Indoor Use Only | Total |
|-----------------------------|---------------------------|-------------|------------|-------------------------------|-------------|-------------------------------|--------|
| Number of Customers | | | | | | | |
| 3/4" | 1.0 | 19,341 | 128 | 101 | 206 | 516 | 20,292 |
| 1" | 4.1 | 11 | 80 | 66 | 25 | 64 | 246 |
| 1-1/2" | 9.2 | 0 | 47 | 53 | 55 | 86 | 241 |
| 2" | 13.2 | 0 | 33 | 38 | 15 | 40 | 126 |
| 3" | 19.9 | 0 | 5 | 12 | 2 | 0 | 19 |
| 4" | 81.2 | 0 | 0 | 1 | 1 | 0 | 2 |
| 6" | 102.7 | 0 | 1 | 1 | 0 | 0 | 2 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 19,352 | 294 | 272 | 304 | 706 | 20,928 |
| Number of Equivalent Meters | | | | | | | |
| 3/4" | | 19,341 | 128 | 101 | 206 | 516 | 20,292 |
| 1" | | 45 | 325 | 268 | 102 | 260 | 999 |
| 1-1/2" | | 0 | 431 | 487 | 505 | 789 | 2,212 |
| 2" | | 0 | 435 | 501 | 198 | 528 | 1,662 |
| 3" | | 0 | 100 | 239 | 40 | 0 | 378 |
| 4" | | 0 | 0 | 81 | 81 | 0 | 162 |
| 6" | | 0 | 103 | 103 | 0 | 0 | 205 |
| | | ----- | ----- | ----- | ----- | ----- | ----- |
| Total | | 19,386 | 1,522 | 1,780 | 1,131 | 2,093 | 25,911 |

Table 7
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Summary of Number of Customers by Customer Class

| Customer Class | FY2016 | FY2017 | FY2018 |
|----------------------------|--------|--------|--------|
| Residential | 17,152 | 18,552 | 19,352 |
| Commercial | 273 | 287 | 294 |
| Commercial Indoor Use Only | 272 | 272 | 272 |
| Multifamily | 112 | 112 | 304 |
| Mutifamily Indoor Use Only | 290 | 706 | 706 |
| | ----- | ----- | ----- |
| Total | 18,099 | 19,929 | 20,928 |

Table 8
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Summary of Equivalent Meters by Customer Class

| Customer Class | FY2016 | FY2017 | FY2018 |
|----------------------------|--------|--------|--------|
| Residential | 17,186 | 18,586 | 19,386 |
| Commercial | 1,354 | 1,466 | 1,522 |
| Commercial Indoor Use Only | 1,780 | 1,780 | 1,780 |
| Multifamily | 939 | 939 | 1,131 |
| Mutifamily Indoor Use Only | 1,677 | 2,093 | 2,093 |
| | ----- | ----- | ----- |
| Total | 22,936 | 24,863 | 25,911 |

Table 9
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Summary of Customer Characteristics
 FY2016

| Customer Class | Flow | BOD | TSS | Customer | Demand |
|----------------------------|---------|---------|---------|----------|---------|
| Residential | 66.49% | 66.49% | 66.49% | 94.77% | 74.93% |
| Commercial | 7.38% | 7.38% | 7.38% | 1.51% | 5.91% |
| Commercial Indoor Use Only | 10.86% | 10.86% | 10.86% | 1.50% | 7.76% |
| Multifamily | 6.31% | 6.31% | 6.31% | 0.62% | 4.10% |
| Mutifamily Indoor Use Only | 8.96% | 8.96% | 8.96% | 1.60% | 7.31% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 10
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Summary of Customer Characteristics
FY2017

| Customer Class | Flow | BOD | TSS | Customer | Demand |
|----------------------------|---------|---------|---------|----------|---------|
| Residential | 67.37% | 67.37% | 67.37% | 93.09% | 74.75% |
| Commercial | 6.89% | 6.89% | 6.89% | 1.44% | 5.90% |
| Commercial Indoor Use Only | 10.02% | 10.02% | 10.02% | 1.36% | 7.16% |
| Multifamily | 5.82% | 5.82% | 5.82% | 0.56% | 3.78% |
| Mutifamily Indoor Use Only | 9.90% | 9.90% | 9.90% | 3.54% | 8.42% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 11
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Summary of Customer Characteristics
 FY2018

| Customer Class | Flow | BOD | TSS | Customer | Demand |
|----------------------------|---------|---------|---------|----------|---------|
| Residential | 61.96% | 61.96% | 61.96% | 92.47% | 74.82% |
| Commercial | 6.07% | 6.07% | 6.07% | 1.40% | 5.87% |
| Commercial Indoor Use Only | 8.77% | 8.77% | 8.77% | 1.30% | 6.87% |
| Multifamily | 14.54% | 14.54% | 14.54% | 1.45% | 4.37% |
| Mutifamily Indoor Use Only | 8.66% | 8.66% | 8.66% | 3.37% | 8.08% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Table 12
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Capital Expenditures

| Item | FY2017 | FY2018 |
|----------------------------|--------------------|--------------------|
| Debt Service | \$ 333,258 | \$ 333,546 |
| Transfers Out | \$ 67,001 | \$ 138,404 |
| Minor Capital Outlay | \$ 76,750 | \$ 84,750 |
| Pay-Go Cash Funded Capital | \$ 5,636,243 | \$ 4,339,389 |
| | ----- | ----- |
| Total | \$6,113,252 | \$4,896,089 |

Table 13
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 O&M Non-Rate Revenues

| Item | FY2017 | FY2018 |
|-----------------------|--------------------|--------------------|
| Miscellaneous Revenue | \$ 159,904 | \$ 159,904 |
| Interest Income | 84,347 | 97,184 |
| Total | ----- \$244,251 | ----- \$257,088 |

Table 14
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Capital Non-Rate Revenues

| Item | FY2017 | FY2018 |
|--------------------------------|-------------|---------------|
| System Development Fee Revenue | 2,999,666 | 2,734,397 |
| Transfers From Restricted Fund | 0 | 0 |
| Sources & Uses of Funds | (2,659,160) | (3,759,395) |
| | ----- | ----- |
| Total | \$340,506 | (\$1,024,999) |

Table 15
Town of Castle Rock
Wastewater Cost-of-Service Analysis
User Charge Revenue Requirements

| Item | FY2017 | FY2018 |
|----------------------------------|--------------|--------------|
| Total Revenue Requirements | | |
| O&M | \$5,167,766 | \$5,392,772 |
| Capital | 6,113,252 | 4,896,089 |
| | ----- | ----- |
| Total | \$11,281,018 | \$10,288,861 |
| User Charge Revenue Requirements | | |
| O&M | \$4,923,516 | \$5,135,684 |
| Capital | 5,772,746 | 5,921,088 |
| | ----- | ----- |
| Total | \$10,696,262 | \$11,056,772 |

Table 16
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Net O&M Expenses by Unit Process

| O&M Expenses | FY2016 | FY2017 | FY2018 |
|-------------------------|-------------|-------------|-------------|
| Treatment by Others | \$2,627,250 | \$2,522,808 | \$2,625,966 |
| Collection | 749,054 | 757,566 | 790,916 |
| Interceptor | 293,923 | 297,264 | 310,350 |
| Lift Station | 454,887 | 476,798 | 504,308 |
| Admin | 0 | 0 | 0 |
| Customer Accounts | 835,594 | 869,079 | 904,144 |
| Meters and Services | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 |
| Tools/ Equipment | 0 | 0 | 0 |
| Treatment Plant | 0 | 0 | 0 |
| | ----- | ----- | ----- |
| Total | \$4,960,709 | \$4,923,516 | \$5,135,684 |

Table 17
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Percent Allocation of O&M Expenses to Customer Service Characteristics

| Unit Process | Flow | BOD | TSS | Customer | Total | Check |
|-------------------------|--------|-------|-------|----------|--------|---------------|
| Treatment by Others | 37.2% | 40.3% | 22.4% | 0.0% | 100.0% | O.K. |
| Collection | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% | O.K. |
| Interceptor | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% | O.K. |
| Lift Station | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% | O.K. |
| Admin | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% | O.K. |
| Customer Accounts | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% | O.K. |
| Meters and Services | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% | O.K. |
| Buildings/ Improvements | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | No Allocation |
| Tools/ Equipment | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | No Allocation |
| Treatment Plant | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | No Allocation |

Table 18
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Service Characteristics
FY2016

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|-------------|-------------|-----------|-----------|-------------|
| Treatment by Others | \$977,914 | \$1,060,001 | \$589,335 | \$0 | \$2,627,250 |
| Collection | 749,054 | 0 | 0 | 0 | 749,054 |
| Interceptor | 293,923 | 0 | 0 | 0 | 293,923 |
| Lift Station | 454,887 | 0 | 0 | 0 | 454,887 |
| Admin | 0 | 0 | 0 | 0 | 0 |
| Customer Accounts | 0 | 0 | 0 | 835,594 | 835,594 |
| Meters and Services | 0 | 0 | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 | 0 | 0 |
| Tools/ Equipment | 0 | 0 | 0 | 0 | 0 |
| Treatment Plant | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,475,779 | \$1,060,001 | \$589,335 | \$835,594 | \$4,960,709 |

Table 19
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Service Characteristics
FY2017

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|-------------|-------------|-----------|-----------|-------------|
| Treatment by Others | \$939,038 | \$1,017,863 | \$565,907 | \$0 | \$2,522,808 |
| Collection | 757,566 | 0 | 0 | 0 | 757,566 |
| Interceptor | 297,264 | 0 | 0 | 0 | 297,264 |
| Lift Station | 476,798 | 0 | 0 | 0 | 476,798 |
| Admin | 0 | 0 | 0 | 0 | 0 |
| Customer Accounts | 0 | 0 | 0 | 869,079 | 869,079 |
| Meters and Services | 0 | 0 | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 | 0 | 0 |
| Tools/ Equipment | 0 | 0 | 0 | 0 | 0 |
| Treatment Plant | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,470,667 | \$1,017,863 | \$565,907 | \$869,079 | \$4,923,516 |

Table 20
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Service Characteristics
FY2018

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|-------------|-------------|-----------|-----------|-------------|
| Treatment by Others | \$977,436 | \$1,059,483 | \$589,047 | \$0 | \$2,625,966 |
| Collection | 790,916 | 0 | 0 | 0 | 790,916 |
| Interceptor | 310,350 | 0 | 0 | 0 | 310,350 |
| Lift Station | 504,308 | 0 | 0 | 0 | 504,308 |
| Admin | 0 | 0 | 0 | 0 | 0 |
| Customer Accounts | 0 | 0 | 0 | 904,144 | 904,144 |
| Meters and Services | 0 | 0 | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 | 0 | 0 |
| Tools/ Equipment | 0 | 0 | 0 | 0 | 0 |
| Treatment Plant | 0 | 0 | 0 | 0 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,583,010 | \$1,059,483 | \$589,047 | \$904,144 | \$5,135,684 |

Table 21
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Classes
FY2016

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------------|-----------|-----------|-------------|
| Residential | \$1,646,063 | \$704,760 | \$391,829 | \$791,873 | \$3,534,525 |
| Commercial | 182,822 | 78,275 | 43,519 | 12,604 | 317,220 |
| Commercial Indoor Use Only | 268,894 | 115,126 | 64,008 | 12,558 | 460,585 |
| Multifamily | 156,216 | 66,884 | 37,186 | 5,171 | 265,456 |
| Mutifamily Indoor Use Only | 221,784 | 94,957 | 52,794 | 13,389 | 382,923 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,475,779 | \$1,060,001 | \$589,335 | \$835,594 | \$4,960,709 |

Table 22
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Classes
FY2017

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------------|-----------|-----------|-------------|
| Residential | \$1,664,401 | \$685,698 | \$381,232 | \$809,030 | \$3,540,360 |
| Commercial | 170,284 | 70,153 | 39,004 | 12,516 | 291,957 |
| Commercial Indoor Use Only | 247,608 | 102,009 | 56,715 | 11,862 | 418,193 |
| Multifamily | 143,849 | 59,263 | 32,949 | 4,884 | 240,945 |
| Mutifamily Indoor Use Only | 244,525 | 100,739 | 56,009 | 30,788 | 432,060 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,470,667 | \$1,017,863 | \$565,907 | \$869,079 | \$4,923,516 |

Table 23
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of O&M Expenses to Customer Classes
FY2018

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------------|-----------|-----------|-------------|
| Residential | \$1,600,534 | \$656,497 | \$364,997 | \$836,056 | \$3,458,085 |
| Commercial | 156,684 | 64,268 | 35,731 | 12,702 | 269,385 |
| Commercial Indoor Use Only | 226,545 | 92,923 | 51,663 | 11,751 | 382,882 |
| Multifamily | 375,521 | 154,029 | 85,636 | 13,134 | 628,320 |
| Mutifamily Indoor Use Only | 223,725 | 91,766 | 51,020 | 30,501 | 397,012 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,583,010 | \$1,059,483 | \$589,047 | \$904,144 | \$5,135,684 |

Table 24
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Summary of Net Plant-in-Service Allocated to System Unit Processes

| Unit Process | FY2016 | FY2017 | FY2018 |
|-------------------------|--------------|--------------|--------------|
| Treatment by Others | \$0 | \$0 | \$0 |
| Collection | 15,270,478 | 14,815,226 | 14,359,975 |
| Interceptor | 5,961,222 | 5,813,389 | 5,665,557 |
| Lift Station | 2,635,817 | 2,532,122 | 2,428,427 |
| Admin | 963,375 | 935,392 | 907,408 |
| Customer Accounts | 0 | 0 | 0 |
| Meters and Services | 0 | 0 | 0 |
| Buildings/ Improvements | 617,782 | 579,343 | 540,903 |
| Tools/ Equipment | 221,757 | 181,940 | 142,123 |
| Treatment Plant | 29,174 | 28,445 | 27,715 |
| | ----- | ----- | ----- |
| Total | \$25,699,606 | \$24,885,857 | \$24,072,109 |

Table 25
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Percent Allocation of Net Plant-in-Service to Customer Service Characteristics

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|--------|-------|-------|----------|---------|
| Treatment by Others | 37.2% | 40.3% | 22.4% | 0.0% | 100.00% |
| Collection | 100.0% | 0.0% | 0.0% | 0.0% | 100.00% |
| Interceptor | 100.0% | 0.0% | 0.0% | 0.0% | 100.00% |
| Lift Station | 100.0% | 0.0% | 0.0% | 0.0% | 100.00% |
| Admin | 0.0% | 0.0% | 0.0% | 100.0% | 100.00% |
| Customer Accounts | 0.0% | 0.0% | 0.0% | 100.0% | 100.00% |
| Meters and Services | 0.0% | 0.0% | 0.0% | 100.0% | 100.00% |
| Buildings/ Improvements | 0.0% | 0.0% | 0.0% | 100.0% | 100.00% |
| Tools/ Equipment | 0.0% | 0.0% | 0.0% | 100.0% | 100.00% |
| Treatment Plant | 37.2% | 40.3% | 22.4% | 0.0% | 100.00% |

Table 26
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Service Characteristics
FY2017

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|--------------|----------|---------|-------------|--------------|
| Treatment by Others | \$0 | \$0 | \$0 | \$0 | \$0 |
| Collection | 14,815,226 | 0 | 0 | 0 | 14,815,226 |
| Interceptor | 5,813,389 | 0 | 0 | 0 | 5,813,389 |
| Lift Station | 2,532,122 | 0 | 0 | 0 | 2,532,122 |
| Admin | 0 | 0 | 0 | 935,392 | 935,392 |
| Customer Accounts | 0 | 0 | 0 | 0 | 0 |
| Meters and Services | 0 | 0 | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 | 579,343 | 579,343 |
| Tools/ Equipment | 0 | 0 | 0 | 181,940 | 181,940 |
| Treatment Plant | 10,588 | 11,476 | 6,381 | 0 | 28,445 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$23,171,326 | \$11,476 | \$6,381 | \$1,696,675 | \$24,885,857 |

Table 27
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Service Characteristics
FY2018

| Unit Process | Flow | BOD | TSS | Customer | Total |
|-------------------------|--------------|----------|---------|-------------|--------------|
| Treatment by Others | \$0 | \$0 | \$0 | \$0 | \$0 |
| Collection | 14,359,975 | 0 | 0 | 0 | 14,359,975 |
| Interceptor | 5,665,557 | 0 | 0 | 0 | 5,665,557 |
| Lift Station | 2,428,427 | 0 | 0 | 0 | 2,428,427 |
| Admin | 0 | 0 | 0 | 907,408 | 907,408 |
| Customer Accounts | 0 | 0 | 0 | 0 | 0 |
| Meters and Services | 0 | 0 | 0 | 0 | 0 |
| Buildings/ Improvements | 0 | 0 | 0 | 540,903 | 540,903 |
| Tools/ Equipment | 0 | 0 | 0 | 142,123 | 142,123 |
| Treatment Plant | 10,316 | 11,182 | 6,217 | 0 | 27,715 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$22,464,275 | \$11,182 | \$6,217 | \$1,590,435 | \$24,072,109 |

Table 28
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Classes
FY2017

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|--------------|----------|---------|-------------|--------------|
| Residential | \$15,609,700 | \$7,731 | \$4,298 | \$1,579,442 | \$17,201,172 |
| Commercial | 1,597,022 | 791 | 440 | 24,434 | 1,622,687 |
| Commercial Indoor Use Only | 2,322,206 | 1,150 | 639 | 23,157 | 2,347,152 |
| Multifamily | 1,349,102 | 668 | 371 | 9,535 | 1,359,677 |
| Mutifamily Indoor Use Only | 2,293,295 | 1,136 | 631 | 60,106 | 2,355,169 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$23,171,326 | \$11,476 | \$6,381 | \$1,696,675 | \$24,885,857 |

Table 29
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Net Plant-in-Service to Customer Classes
FY2018

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|--------------|----------|---------|-------------|--------------|
| Residential | \$13,919,746 | \$6,929 | \$3,852 | \$1,470,666 | \$15,401,193 |
| Commercial | 1,362,673 | 678 | 377 | 22,343 | 1,386,071 |
| Commercial Indoor Use Only | 1,970,250 | 981 | 545 | 20,671 | 1,992,447 |
| Multifamily | 3,265,885 | 1,626 | 904 | 23,103 | 3,291,517 |
| Mutifamily Indoor Use Only | 1,945,721 | 969 | 538 | 53,653 | 2,000,881 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$22,464,275 | \$11,182 | \$6,217 | \$1,590,435 | \$24,072,109 |

Table 30
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Percent Allocation of Capital Costs to Customer Classes (Based on Net Plant-in-Service to Customer Classes)
FY2017

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|--------|-------|-------|----------|---------|
| Residential | 62.73% | 0.03% | 0.02% | 6.35% | 69.12% |
| Commercial | 6.42% | 0.00% | 0.00% | 0.10% | 6.52% |
| Commercial Indoor Use Only | 9.33% | 0.00% | 0.00% | 0.09% | 9.43% |
| Multifamily | 5.42% | 0.00% | 0.00% | 0.04% | 5.46% |
| Mutifamily Indoor Use Only | 9.22% | 0.00% | 0.00% | 0.24% | 9.46% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 93.11% | 0.05% | 0.03% | 6.82% | 100.00% |

Table 31
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Percent Allocation of Capital Costs to Customer Classes (Based on Net Plant-in-Service to Customer Classes)
FY2018

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|--------|-------|-------|----------|---------|
| Residential | 57.83% | 0.03% | 0.02% | 6.11% | 63.98% |
| Commercial | 5.66% | 0.00% | 0.00% | 0.09% | 5.76% |
| Commercial Indoor Use Only | 8.18% | 0.00% | 0.00% | 0.09% | 8.28% |
| Multifamily | 13.57% | 0.01% | 0.00% | 0.10% | 13.67% |
| Mutifamily Indoor Use Only | 8.08% | 0.00% | 0.00% | 0.22% | 8.31% |
| | ----- | ----- | ----- | ----- | ----- |
| Total | 93.32% | 0.05% | 0.03% | 6.61% | 100.00% |

Table 32
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Capital Costs to Customer Classes
FY2017

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|---------|---------|-----------|-------------|
| Residential | \$3,620,966 | \$1,793 | \$997 | \$366,382 | \$3,990,138 |
| Commercial | 370,460 | 183 | 102 | 5,668 | 376,413 |
| Commercial Indoor Use Only | 538,680 | 267 | 148 | 5,372 | 544,467 |
| Multifamily | 312,950 | 155 | 86 | 2,212 | 315,403 |
| Mutifamily Indoor Use Only | 531,973 | 263 | 146 | 13,943 | 546,326 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$5,375,028 | \$2,662 | \$1,480 | \$393,576 | \$5,772,746 |

Table 33
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Capital Costs to Customer Classes
FY2018

| Customer Classes | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|---------|---------|-----------|-------------|
| Residential | \$3,423,881 | \$1,704 | \$948 | \$361,744 | \$3,788,277 |
| Commercial | 335,181 | 167 | 93 | 5,496 | 340,936 |
| Commercial Indoor Use Only | 484,628 | 241 | 134 | 5,084 | 490,088 |
| Multifamily | 803,319 | 400 | 222 | 5,683 | 809,624 |
| Mutifamily Indoor Use Only | 478,595 | 238 | 132 | 13,197 | 492,163 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$5,525,604 | \$2,751 | \$1,529 | \$391,204 | \$5,921,088 |

Table 34
Town of Castle Rock
Wastewater Cost-of-Service Analysis
User Charge Revenue Requirements by Customer Service Characteristics

| Description | Flow | BOD | TSS | Customer | Total |
|-------------|-------------|-------------|-----------|-------------|--------------|
| FY2017 | | | | | |
| O&M | \$2,470,667 | \$1,017,863 | \$565,907 | \$869,079 | \$4,923,516 |
| Capital | 5,375,028 | 2,662 | 1,480 | 393,576 | 5,772,746 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$7,845,695 | \$1,020,525 | \$567,387 | \$1,262,655 | \$10,696,262 |
| FY2018 | | | | | |
| O&M | \$2,583,010 | \$1,059,483 | \$589,047 | \$904,144 | \$5,135,684 |
| Capital | 5,525,604 | 2,751 | 1,529 | 391,204 | 5,921,088 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$8,108,614 | \$1,062,234 | \$590,576 | \$1,295,347 | \$11,056,772 |

Table 35
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Percentage Allocation of Revenue Requirements for Rate Design

| Description | Flow | BOD | TSS | Customer |
|----------------|---------|---------|---------|----------|
| O&M | | | | |
| Base Charge | 0.00% | 0.00% | 0.00% | 100.00% |
| Demand Charge | 0.00% | 0.00% | 0.00% | 0.00% |
| Volume Rate | 100.00% | 100.00% | 100.00% | 0.00% |
| | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% |
| Capital | | | | |
| Base Charge | 0.00% | 0.00% | 0.00% | 100.00% |
| Demand Charge | 20.00% | 20.00% | 20.00% | 0.00% |
| Volume Rate | 80.00% | 80.00% | 80.00% | 0.00% |
| | ----- | ----- | ----- | ----- |
| Total | 100.00% | 100.00% | 100.00% | 100.00% |

Table 36
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Revenue Requirements for Rate Design
FY2017

| Description | Flow | BOD | TSS | Customer | Total |
|----------------|-------------|-------------|-----------|-------------|--------------|
| O&M | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$869,079 | \$869,079 |
| Demand Charge | 0 | 0 | 0 | 0 | 0 |
| Volume Rate | 2,470,667 | 1,017,863 | 565,907 | 0 | 4,054,437 |
| | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$2,470,667 | \$1,017,863 | \$565,907 | \$869,079 | \$4,923,516 |
| Capital | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$393,576 | \$393,576 |
| Demand Charge | 1,075,006 | 532 | 296 | 0 | 1,075,834 |
| Volume Rate | 4,300,023 | 2,130 | 1,184 | 0 | 4,303,336 |
| | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$5,375,028 | \$2,662 | \$1,480 | \$393,576 | \$5,772,746 |
| Total | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$1,262,655 | \$1,262,655 |
| Demand Charge | 1,075,006 | 532 | 296 | 0 | 1,075,834 |
| Volume Rate | 6,770,690 | 1,019,992 | 567,091 | 0 | 8,357,773 |
| | ----- | ----- | ----- | ----- | ----- |
| Grand Total | \$7,845,695 | \$1,020,525 | \$567,387 | \$1,262,655 | \$10,696,262 |

Table 37
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Allocation of Revenue Requirements for Rate Design
FY2018

| Description | Flow | BOD | TSS | Customer | Total |
|----------------|-------------|-------------|-----------|-------------|--------------|
| O&M | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$904,144 | \$904,144 |
| Demand Charge | 0 | 0 | 0 | 0 | 0 |
| Volume Rate | 2,583,010 | 1,059,483 | 589,047 | 0 | 4,231,540 |
| | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$2,583,010 | \$1,059,483 | \$589,047 | \$904,144 | \$5,135,684 |
| Capital | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$391,204 | \$391,204 |
| Demand Charge | 1,105,121 | 550 | 306 | 0 | 1,105,977 |
| Volume Rate | 4,420,483 | 2,200 | 1,223 | 0 | 4,423,907 |
| | ----- | ----- | ----- | ----- | ----- |
| Subtotal | \$5,525,604 | \$2,751 | \$1,529 | \$391,204 | \$5,921,088 |
| Total | | | | | |
| Base Charge | \$0 | \$0 | \$0 | \$1,295,347 | \$1,295,347 |
| Demand Charge | 1,105,121 | 550 | 306 | 0 | 1,105,977 |
| Volume Rate | 7,003,493 | 1,061,684 | 590,271 | 0 | 8,655,448 |
| | ----- | ----- | ----- | ----- | ----- |
| Grand Total | \$8,108,614 | \$1,062,234 | \$590,576 | \$1,295,347 | \$11,056,772 |

Table 38
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Base Rate Costs by Class

| Customer Class | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------|-------|-------|-------------|-------------|
| FY2017: | | | | | |
| Residential | \$0 | \$0 | \$0 | \$1,175,411 | \$1,175,411 |
| Commercial | 0 | 0 | 0 | 18,184 | 18,184 |
| Commercial Indoor Use Only | 0 | 0 | 0 | 17,233 | 17,233 |
| Multifamily | 0 | 0 | 0 | 7,096 | 7,096 |
| Mutifamily Indoor Use Only | 0 | 0 | 0 | 44,731 | 44,731 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$0 | \$0 | \$0 | \$1,262,655 | \$1,262,655 |
| FY2018: | | | | | |
| Residential | \$0 | \$0 | \$0 | \$1,197,800 | \$1,197,800 |
| Commercial | 0 | 0 | 0 | 18,197 | 18,197 |
| Commercial Indoor Use Only | 0 | 0 | 0 | 16,836 | 16,836 |
| Multifamily | 0 | 0 | 0 | 18,816 | 18,816 |
| Mutifamily Indoor Use Only | 0 | 0 | 0 | 43,698 | 43,698 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$0 | \$0 | \$0 | \$1,295,347 | \$1,295,347 |

Table 39
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Demand Charge Costs by Class

| Customer Class | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------|-------|----------|-------------|
| FY2017: | | | | | |
| Residential | \$724,193 | \$359 | \$199 | \$0 | \$724,751 |
| Commercial | 74,092 | 37 | 20 | 0 | 74,149 |
| Commercial Indoor Use Only | 107,736 | 53 | 30 | 0 | 107,819 |
| Multifamily | 62,590 | 31 | 17 | 0 | 62,638 |
| Mutifamily Indoor Use Only | 106,395 | 53 | 29 | 0 | 106,477 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$1,075,006 | \$532 | \$296 | \$0 | \$1,075,834 |
| FY2018: | | | | | |
| Residential | \$684,776 | \$341 | \$190 | \$0 | \$685,307 |
| Commercial | 67,036 | 33 | 19 | 0 | 67,088 |
| Commercial Indoor Use Only | 96,926 | 48 | 27 | 0 | 97,001 |
| Multifamily | 160,664 | 80 | 44 | 0 | 160,788 |
| Mutifamily Indoor Use Only | 95,719 | 48 | 26 | 0 | 95,793 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$1,105,121 | \$550 | \$306 | \$0 | \$1,105,977 |

Table 40
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Volume Charge Costs by Class

| Customer Class | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------------|-----------|----------|-------------|
| FY2017: | | | | | |
| Residential | \$4,561,173 | \$687,133 | \$382,029 | \$0 | \$5,630,335 |
| Commercial | 466,652 | 70,300 | 39,085 | 0 | 576,037 |
| Commercial Indoor Use Only | 678,551 | 102,223 | 56,833 | 0 | 837,607 |
| Multifamily | 394,209 | 59,387 | 33,018 | 0 | 486,614 |
| Mutifamily Indoor Use Only | 670,104 | 100,950 | 56,126 | 0 | 827,179 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$6,770,690 | \$1,019,992 | \$567,091 | \$0 | \$8,357,773 |
| FY2018: | | | | | |
| Residential | \$4,339,639 | \$657,861 | \$365,755 | \$0 | \$5,363,255 |
| Commercial | 424,829 | 64,401 | 35,806 | 0 | 525,036 |
| Commercial Indoor Use Only | 614,248 | 93,116 | 51,770 | 0 | 759,134 |
| Multifamily | 1,018,177 | 154,349 | 85,814 | 0 | 1,258,340 |
| Mutifamily Indoor Use Only | 606,601 | 91,957 | 51,126 | 0 | 749,683 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$7,003,493 | \$1,061,684 | \$590,271 | \$0 | \$8,655,448 |

Table 41
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Summary of Cost of Service by Customer Class

| Customer Class | Flow | BOD | TSS | Customer | Total |
|----------------------------|-------------|-------------|-----------|-------------|--------------|
| FY2017: | | | | | |
| Residential | \$5,285,367 | \$687,491 | \$382,229 | \$1,175,411 | \$7,530,498 |
| Commercial | 540,744 | 70,337 | 39,106 | 18,184 | 668,370 |
| Commercial Indoor Use Only | 786,287 | 102,276 | 56,863 | 17,233 | 962,659 |
| Multifamily | 456,799 | 59,418 | 33,035 | 7,096 | 556,348 |
| Mutifamily Indoor Use Only | 776,498 | 101,003 | 56,155 | 44,731 | 978,386 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$7,845,695 | \$1,020,525 | \$567,387 | \$1,262,655 | \$10,696,262 |
| FY2018: | | | | | |
| Residential | \$5,024,416 | \$658,202 | \$365,944 | \$1,197,800 | \$7,246,362 |
| Commercial | 491,865 | 64,435 | 35,824 | 18,197 | 610,321 |
| Commercial Indoor Use Only | 711,173 | 93,164 | 51,797 | 16,836 | 872,970 |
| Multifamily | 1,178,841 | 154,429 | 85,859 | 18,816 | 1,437,945 |
| Mutifamily Indoor Use Only | 702,320 | 92,004 | 51,152 | 43,698 | 889,174 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$8,108,614 | \$1,062,234 | \$590,576 | \$1,295,347 | \$11,056,772 |

Table 42
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Calculation of Unit Costs by Customer Class
 FY2017

| Customer Class | Flow Per kgal | BOD Per Pound | TSS Per Pound | Customer Per Bill |
|----------------------------|---------------|---------------|---------------|-------------------|
| Residential | \$7.24 | \$0.33 | \$0.15 | \$5.28 |
| Commercial | 7.24 | 0.33 | 0.15 | 5.28 |
| Commercial Indoor Use Only | 7.24 | 0.33 | 0.15 | 5.28 |
| Multifamily | 7.24 | 0.33 | 0.15 | 5.28 |
| Mutifamily Indoor Use Only | 7.24 | 0.33 | 0.15 | 5.28 |

Table 43
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Calculation of Unit Costs by Customer Class
 FY2018

| Customer Class | Flow Per kgal | BOD Per Pound | TSS Per Pound | Customer Per Bill |
|----------------------------|---------------|---------------|---------------|-------------------|
| Residential | \$6.55 | \$0.30 | \$0.13 | \$5.16 |
| Commercial | 6.55 | 0.30 | 0.13 | 5.16 |
| Commercial Indoor Use Only | 6.55 | 0.30 | 0.13 | 5.16 |
| Multifamily | 6.55 | 0.30 | 0.13 | 5.16 |
| Mutifamily Indoor Use Only | 6.55 | 0.30 | 0.13 | 5.16 |

Table 44
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Proposed Wastewater Volume Charges
 (\$/kgal)

| Customer Class | FY2016 | FY2017 | FY2018 |
|----------------------------|--------|--------|--------|
| Residential | \$4.13 | \$7.71 | \$6.99 |
| Commercial | 4.13 | 7.71 | 6.99 |
| Commercial Indoor Use Only | 4.13 | 7.71 | 6.99 |
| Multifamily | 4.13 | 7.71 | 6.99 |
| Mutifamily Indoor Use Only | 4.13 | 7.71 | 6.99 |
| Average Rate | \$4.13 | \$7.71 | \$6.99 |

Table 45
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Monthly Service Charges

| Customer Class | Demand Charge per Equiv Meter | Customer Charge per Acct |
|----------------------------|----------------------------------|-----------------------------|
| FY2017: | | |
| Residential | \$3.61 | \$5.28 |
| Commercial | 3.61 | 5.28 |
| Commercial Indoor Use Only | 3.61 | 5.28 |
| Multifamily | 3.61 | 5.28 |
| Mutifamily Indoor Use Only | 3.61 | 5.28 |
| FY2018: | | |
| Residential | \$3.56 | \$5.16 |
| Commercial | 3.56 | 5.16 |
| Commercial Indoor Use Only | 3.56 | 5.16 |
| Multifamily | 3.56 | 5.16 |
| Mutifamily Indoor Use Only | 3.56 | 5.16 |

Table 46
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Monthly Base Rate by Meter Size

| Meter Size | Residential | Commercial | Commercial Indoor Use Only | Multifamily | Multifamily Indoor Use Only |
|------------|-------------|------------|----------------------------|-------------|-----------------------------|
| FY2017: | | | | | |
| 3/4" | \$5.28 | \$5.28 | \$5.28 | \$5.28 | \$5.28 |
| 1" | 5.28 | 5.28 | 5.28 | 5.28 | 5.28 |
| 1-1/2" | 0.00 | 5.28 | 5.28 | 5.28 | 5.28 |
| 2" | 0.00 | 5.28 | 5.28 | 5.28 | 5.28 |
| 3" | 0.00 | 5.28 | 5.28 | 5.28 | 0.00 |
| 4" | 0.00 | 0.00 | 5.28 | 5.28 | 0.00 |
| 6" | 0.00 | 5.28 | 5.28 | 0.00 | 0.00 |
| FY2018: | | | | | |
| 3/4" | \$5.16 | \$5.16 | \$5.16 | \$5.16 | \$5.16 |
| 1" | 5.16 | 5.16 | 5.16 | 5.16 | 5.16 |
| 1-1/2" | 0.00 | 5.16 | 5.16 | 5.16 | 5.16 |
| 2" | 0.00 | 5.16 | 5.16 | 5.16 | 5.16 |
| 3" | 0.00 | 5.16 | 5.16 | 5.16 | 0.00 |
| 4" | 0.00 | 0.00 | 5.16 | 5.16 | 0.00 |
| 6" | 0.00 | 5.16 | 5.16 | 0.00 | 0.00 |

Table 47
 Town of Castle Rock
 Wastewater Cost-of-Service Analysis
 Monthly Demand Charge by Meter Size

| Meter Size | Residential | Commercial | Commercial | Multifamily | Multifamily Indoor |
|------------|-------------|------------|------------|-------------|--------------------|
| FY2017: | | | | | |
| 3/4" | \$3.61 | \$3.61 | \$3.61 | \$3.61 | \$3.61 |
| 1" | 14.64 | 14.64 | 14.64 | 14.64 | 14.64 |
| 1-1/2" | 0.00 | 33.10 | 33.10 | 33.10 | 33.10 |
| 2" | 0.00 | 47.56 | 47.56 | 47.56 | 47.56 |
| 3" | 0.00 | 71.83 | 71.83 | 71.83 | 0.00 |
| 4" | 0.00 | 0.00 | 292.76 | 292.76 | 0.00 |
| 6" | 0.00 | 370.21 | 370.21 | 0.00 | 0.00 |
| FY2018: | | | | | |
| 3/4" | \$3.56 | \$3.56 | \$3.56 | \$3.56 | \$3.56 |
| 1" | 14.44 | 14.44 | 14.44 | 14.44 | 14.44 |
| 1-1/2" | 0.00 | 32.65 | 32.65 | 32.65 | 32.65 |
| 2" | 0.00 | 46.92 | 46.92 | 46.92 | 46.92 |
| 3" | 0.00 | 70.85 | 70.85 | 70.85 | 0.00 |
| 4" | 0.00 | 0.00 | 288.79 | 288.79 | 0.00 |
| 6" | 0.00 | 365.19 | 365.19 | 0.00 | 0.00 |

Table 48
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Total Monthly Service Charges by Meter Size

| Meter Size | | Residential | Commercial | Commercial | Multifamily | Multifamily Indoor |
|------------|------|-------------|------------|------------|-------------|--------------------|
| FY2017: | | | | | | |
| 3/4" | | \$8.89 | \$8.89 | \$8.89 | \$8.89 | \$8.89 |
| 1" | 2.24 | 19.92 | 19.92 | 19.92 | 19.92 | 19.92 |
| 1-1/2" | 1.93 | 0.00 | 38.38 | 38.38 | 38.38 | 38.38 |
| 2" | 1.38 | 0.00 | 52.84 | 52.84 | 52.84 | 52.84 |
| 3" | 1.46 | 0.00 | 77.11 | 77.11 | 77.11 | 0.00 |
| 4" | 3.87 | 0.00 | 0.00 | 298.04 | 298.04 | 0.00 |
| 6" | 1.26 | 0.00 | 375.49 | 375.49 | 0.00 | 0.00 |
| FY2018: | | | | | | |
| 3/4" | | \$8.71 | \$8.71 | \$8.71 | \$8.71 | \$8.71 |
| 1" | 2.25 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 1-1/2" | 1.93 | 0.00 | 37.81 | 37.81 | 37.81 | 37.81 |
| 2" | 1.38 | 0.00 | 52.07 | 52.07 | 52.07 | 52.07 |
| 3" | 1.46 | 0.00 | 76.01 | 76.01 | 76.01 | 0.00 |
| 4" | 3.87 | 0.00 | 0.00 | 293.95 | 293.95 | 0.00 |
| 6" | 1.26 | 0.00 | 370.35 | 370.35 | 0.00 | 0.00 |

Table 49
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Revenues Generated by COS Rates
FY2016

| Customer Class | Monthly Service Charge | Volume Charge | Total Revenue | Revenue Requirement | Surplus/ (Deficiency) |
|----------------------------|------------------------|---------------|---------------|---------------------|-----------------------|
| Residential | \$791,873 | \$2,742,652 | \$3,534,525 | \$3,534,525 | \$0 |
| Commercial | 12,604 | 304,616 | 317,220 | 317,220 | 0 |
| Commercial Indoor Use Only | 12,558 | 448,028 | 460,585 | 460,585 | 0 |
| Multifamily | 5,171 | 260,285 | 265,456 | 265,456 | 0 |
| Mutifamily Indoor Use Only | 13,389 | 369,534 | 382,923 | 382,923 | 0 |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$835,594 | \$4,125,115 | \$4,960,709 | \$4,960,709 | \$0 |

Table 50
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Revenues Generated by COS Rates
FY2017

| Customer Class | Monthly Service Charge | Volume Charge | Total Revenue | Revenue Requirement | Surplus/ (Deficiency) |
|----------------------------|------------------------|---------------|---------------|---------------------|-----------------------|
| Residential | \$1,979,607 | \$5,630,335 | \$7,609,942 | \$7,530,498 | \$79,444 |
| Commercial | 81,617 | 576,037 | 657,654 | 668,370 | (10,716) |
| Commercial Indoor Use Only | 94,237 | 837,607 | 931,844 | 962,659 | (30,815) |
| Multifamily | 47,738 | 486,614 | 534,352 | 556,348 | (21,996) |
| Mutifamily Indoor Use Only | 135,290 | 827,179 | 962,470 | 978,386 | (15,917) |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,338,489 | \$8,357,773 | \$10,696,262 | \$10,696,262 | (\$0) |

Table 51
Town of Castle Rock
Wastewater Cost-of-Service Analysis
Revenues Generated by COS Rates
FY2018

| Customer Class | Monthly Service Charge | Volume Charge | Total Revenue | Revenue Requirement | Surplus/ (Deficiency) |
|----------------------------|------------------------|---------------|---------------|---------------------|-----------------------|
| Residential | \$2,025,243 | \$5,363,255 | \$7,388,498 | \$7,246,362 | \$142,136 |
| Commercial | 83,153 | 525,036 | 608,188 | 610,321 | (2,133) |
| Commercial Indoor Use Only | 92,795 | 759,134 | 851,929 | 872,970 | (21,041) |
| Multifamily | 67,103 | 1,258,340 | 1,325,443 | 1,437,945 | (112,502) |
| Mutifamily Indoor Use Only | 133,031 | 749,683 | 882,714 | 889,174 | (6,461) |
| | ----- | ----- | ----- | ----- | ----- |
| Total | \$2,401,324 | \$8,655,448 | \$11,056,772 | \$11,056,772 | (\$0) |

APPENDIX H

Customer Characteristics Analysis Technical Memorandum





TECHNICAL MEMORANDUM

To: Jennifer Ivey, Arcadis U.S., Inc. **Date:** September 1, 2016

From: Anne Glassman, Business Solutions Manager
Jennifer Thompson, Enterprise Fund Analyst

Re: Customer Characteristics Analysis – 2016

Town of Castle Rock usage data has been internally prepared and analyzed for the cost-of-service 2016 Rates and Fees Study. Data was analyzed to determine assumptions such as the number of accounts by meter size and customer class along with their associated meter equivalency ratios. We calculated the representative customer by customer class to be used in presenting the comparison of adopted versus proposed rates on a representative customer's total annual utility bill. Data was also prepared to show water consumption by customer class by rate tier over time.

All tables in this study have been restated to show the actual number of meters versus the average number of meters and the actual consumption tables have been restated to show actual consumption versus the average consumption.

Water Utility Customers by Meter Size and Customer Class

Table 1 shows the number of meters by meter size and customer class using 12 months of billing data (Jan15-Dec15). This shows that 18,737 customers were receiving Town water services during this capture period. The FY2014 accounts based on 12 months of billing data (Jan14-Dec14) showed 17,961 customers were receiving Town water services. There are 776 more accounts in the 2016 study versus the 2015 study.

¹ Latigo Multifamily Indoor Only 1.5-inch meter customers have been moved to 1-inch meter size for the Customer characteristics analysis in all tables presented in this document.

**Table 1: Water Utility Meters by Meter Size
FY2015 Accounts based on 12 months of billing data (Jan15-Dec15)**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 502 | - | 4 | - | 19 | - | - | 525 |
| 3/4" | 16,794 | 14 | 127 | 27 | 118 | 100 | 108 | 17,288 |
| 1" | 12 | 25 | 71 | - | 85 | 64 | 71 | 328 |
| 1.5" | - | 55 | 48 | - | 115 | 86 | 54 | 358 |
| 2" | - | 15 | 24 | - | 82 | 40 | 40 | 201 |
| 3" | - | 2 | 5 | 2 | 8 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 17,308 | 112 | 280 | 29 | 429 | 290 | 289 | 18,737 |

**Table 2: Water Utility Meters by Meter Size
FY2014 Accounts based on 12 months of billing data (Jan14-Dec14)**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 331 | - | 3 | - | 16 | - | - | 350 |
| 3/4" | 16,224 | 14 | 127 | 28 | 116 | 100 | 105 | 16,714 |
| 1" | 9 | 25 | 72 | - | 84 | 64 | 69 | 323 |
| 1.5" | - | 54 | 48 | - | 109 | 79 | 48 | 338 |
| 2" | - | 15 | 24 | - | 81 | 39 | 39 | 198 |
| 3" | - | 2 | 5 | 3 | 8 | - | 13 | 31 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 16,564 | 111 | 280 | 31 | 416 | 282 | 277 | 17,961 |

The difference in accounts is primarily due to an additional 744 residential accounts reported in the FY2015 billing data.

**Table 3: Water Utility Meters by Meter Size
FY2017 Projected accounts based on 12 months of billing data (Jan15-Dec15)
Plus projected growth for FY2016 & FY2017**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 694 | - | 4 | - | 21 | 416 | - | 1,135 |
| 3/4" | 18,202 | 14 | 127 | 55 | 122 | 100 | 108 | 18,728 |
| 1" | 12 | 25 | 79 | - | 85 | 64 | 71 | 336 |
| 1.5" | - | 55 | 48 | - | 115 | 86 | 54 | 358 |
| 2" | - | 15 | 30 | - | 82 | 40 | 40 | 207 |
| 3" | - | 2 | 5 | 2 | 8 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 2 | 5 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 18,908 | 112 | 294 | 57 | 435 | 706 | 289 | 20,801 |

Table 3 shows FY2017 projected water utility accounts using 2015 billing data plus projected growth for 2016 and 2017. The FY2017 water accounts are projected to equal 20,773. Growth is projected for the following classes:

2016:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 28 Bulk 3/4" x 3/4" accounts
- 1,154 Total

2017:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 910 Total

Total growth of 1,154 accounts is projected for 2016 and 910 accounts for 2017 for a total of 2,064 projected for the water fund thru FY2017.

Wastewater Utility Customers by Meter Size and Customer Class

Table 4 shows customer meters by meter size and customer class using 12 months of billing data (Jan15-Dec15). This shows that 18,099 customers are receiving Town wastewater services. The FY2014 accounts based on 12 months of billing data (Jan14-Dec14) shows that 17,335 customers received Town wastewater services. There are 764 more accounts in the 2016 study versus the 2015 study.

**Table 4: Wastewater Utility Meters by Meter Size
FY2015 Accounts based on 12 months of billing data (Jan15-Dec15)**

| Meter Size | Residential | Multifamily | Commercial | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------------|-----------------|---------------|
| | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 502 | - | 4 | - | - | 506 |
| 3/4" | 16,639 | 14 | 124 | 100 | 101 | 16,978 |
| 1" | 11 | 25 | 68 | 64 | 66 | 234 |
| 1.5" | - | 55 | 47 | 86 | 53 | 241 |
| 2" | - | 15 | 24 | 40 | 38 | 117 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 17,152 | 112 | 273 | 290 | 272 | 18,099 |

**Table 5: Wastewater Utility Meters by Meter Size
FY2014 Accounts based on 12 months of data (Jan14-Dec14)**

| Meter Size | Residential | Multifamily | Commercial | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------------|-----------------|---------------|
| | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 331 | - | 3 | - | - | 334 |
| 3/4" | 16,070 | 14 | 124 | 100 | 99 | 16,407 |
| 1" | 8 | 25 | 69 | 64 | 64 | 230 |
| 1.5" | - | 54 | 47 | 79 | 46 | 226 |
| 2" | - | 15 | 24 | 39 | 37 | 115 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 16,409 | 111 | 273 | 282 | 260 | 17,335 |

Similar to the Water Fund, an additional 743 residential accounts were reported in the most recent billing data.

**Table 6: Wastewater Utility Meters by Meter Size
FY2017 Projected accounts based on 12 months of billing data (Jan15-Dec15)
Plus projected growth for FY2016 & FY2017**

| Meter Size | Residential | Multifamily | Commercial | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|--------------------|--------------------|---------------|
| | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 694 | - | 4 | 416 | - | 1,114 |
| 3/4" | 18,047 | 14 | 124 | 100 | 101 | 18,386 |
| 1" | 11 | 25 | 76 | 64 | 66 | 242 |
| 1.5" | - | 55 | 47 | 86 | 53 | 241 |
| 2" | - | 15 | 30 | 40 | 38 | 123 |
| 3" | - | 2 | 5 | - | 12 | 19 |
| 4" | - | 1 | - | - | 1 | 2 |
| 6" | - | - | 1 | - | 1 | 2 |
| Total | 18,752 | 112 | 287 | 706 | 272 | 20,129 |

Table 6 shows projected wastewater utility accounts using billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 wastewater accounts are projected to equal 20,129. Growth is projected for the following classes:

2016:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1,123 Total

2017:

- 96 Residential 5/8"x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8"x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 907 Total

Total growth of 1,123 accounts is projected for 2016 and 907 for 2017 for a total of 2,030 projected for the wastewater fund thru FY2017.

Water Resources Utility Customers by Meter Size and Customer Class

Table 7 shows Water Resources customer meters by meter size and customer class based on 12 months of billing data (Jan15-Dec15). Table 8 shows Water Resources customer meters by meter size based on 12 months of billing data (Jan14-Dec14). There are 773 more accounts in the 2016 study versus the 2015 study.

**Table 7: Water Resources Utility Meters by Meter Size
FY2015 Accounts based on 12 months of billing data (Jan15-Dec15)**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 502 | - | 4 | - | 19 | - | - | 525 |
| 3/4" | 16,793 | 14 | 127 | 27 | 118 | 100 | 108 | 17,287 |
| 1" | 12 | 25 | 71 | - | 85 | 64 | 70 | 327 |
| 1.5" | - | 55 | 48 | - | 110 | 86 | 54 | 353 |
| 2" | - | 15 | 24 | - | 77 | 40 | 40 | 196 |
| 3" | - | 2 | 5 | 2 | 7 | - | 13 | 29 |
| 4" | - | 1 | - | - | 2 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 17,307 | 112 | 280 | 29 | 418 | 290 | 287 | 18,723 |

**Table 8: Water Resources Utility Meters by Meter Size
FY2014 Accounts based on 12 months of billing data (Jan14-Dec14)**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 331 | - | 3 | - | 16 | - | - | 350 |
| 3/4" | 16,223 | 14 | 127 | 28 | 116 | 100 | 105 | 16,713 |
| 1" | 9 | 25 | 72 | - | 84 | 64 | 68 | 322 |
| 1.5" | - | 54 | 48 | - | 106 | 79 | 48 | 335 |
| 2" | - | 15 | 24 | - | 77 | 39 | 39 | 194 |
| 3" | - | 2 | 5 | 3 | 7 | - | 13 | 30 |
| 4" | - | 1 | - | - | 2 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 16,563 | 111 | 280 | 31 | 408 | 282 | 275 | 17,950 |

**Table 9: Water Resources Utility Meters by Meter Size
FY2017 Projected accounts based on 12 months of data (Jan15-Dec15)
Plus projected growth for FY2016 & FY2017**

| Meter Size | Residential | Multifamily | Commercial | Bulk | Irrigation | MultiFamily | Commercial | Total |
|--------------|---------------|-------------|------------|-----------|------------|-----------------|-----------------|---------------|
| | | | | | | Indoor Use Only | Indoor Use Only | |
| 5/8" | 694 | - | 4 | - | 21 | 416 | - | 1,135 |
| 3/4" | 18,201 | 14 | 127 | 27 | 122 | 100 | 108 | 18,699 |
| 1" | 12 | 25 | 79 | - | 85 | 64 | 70 | 335 |
| 1.5" | - | 55 | 48 | - | 110 | 86 | 54 | 353 |
| 2" | - | 15 | 30 | - | 77 | 40 | 40 | 202 |
| 3" | - | 2 | 5 | 2 | 7 | - | 13 | 29 |
| 4" | - | 1 | - | - | 2 | - | 1 | 4 |
| 6" | - | - | 1 | - | - | - | 1 | 2 |
| Total | 18,907 | 112 | 294 | 29 | 424 | 706 | 287 | 20,759 |

Table 9 shows FY2017 projected water resources fund accounts based on billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 water resources accounts are projected to equal 20,759. Growth is projected for the following classes:

2016:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 316 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 1,126 Total

2017:

- 96 Residential 5/8" x 3/4" meter accounts
- 704 Residential 3/4" meter accounts (all single family detached units)
- 100 Multi-Family 5/8" x 3/4" meter accounts
- 4 Commercial 1" accounts
- 3 Commercial 2" accounts
- 1 Irrigation 5/8" x 3/4" accounts
- 2 Irrigation 3/4" x 3/4" accounts
- 910 Total

Total growth of 1,126 accounts is projected for 2016 and 910 for 2017 for a total of 2,036 projected for the water resources fund thru FY2017.

Stormwater Utility SFEs

Table 10 shows stormwater average monthly SFEs accounts based on 12 months of billing data (Jan15-Dec15). Table 11 shows Stormwater average monthly SFEs accounts based on 12 months of billing data (Jan14-Dec14).

**Table 10: Stormwater Utility Average Monthly SFEs for Billing Purposes
2015 Accounts based on 12 months of billing data (Jan15-Dec15)**

| | Total Monthly SFE |
|----------------------|-------------------|
| Residential | 17,142 |
| Non-Residential | 13,747 |
| Stormwater Customers | 30,889 |

**Table 11: Stormwater Utility Average Monthly SFEs for Billing Purposes
2014 Accounts based on 12 months of billing data (Jan14-Dec14)**

| | Total Monthly SFE |
|----------------------|-------------------|
| Residential | 16,388 |
| Non-Residential | 13,441 |
| Stormwater Customers | 29,828 |

**Table 12: Stormwater Utility Average Monthly SFEs for Billing Purposes
FY2017 Projected accounts based on 12 months of billing data (Jan15-Dec15)
Plus growth projections for FY2016 & FY2017**

| | Total Monthly SFE |
|----------------------|-------------------|
| Residential | 19,158 |
| Non-Residential | 14,087 |
| Stormwater Customers | 33,245 |

Table 12 shows FY2017 projected stormwater accounts based on 12 months of billing data (Jan15-Dec15) plus projected growth for 2016 and 2017. The FY2017 Stormwater SFE's are projected to equal 33,245. Growth is projected for the following classes:

2016:

- 1,116 Residential SFEs accounts
 - 80 Detached SFEs in Cherry Creek Basin
 - 1036 Detached SFEs in Plum Creek Basin
- 170 Commercial SFEs in the Plum Creek Basin

2017:

- 900 Residential SFEs accounts
 - 112 Detached SFEs in Cherry Creek Basin
 - 788 Detached SFEs in Plum Creek Basin
- 170 Commercial SFEs in the Plum Creek Basin

Total growth of 1,286 SFEs are projected for the Stormwater fund in 2016 and 1,070 SFEs are projected for 2017; SFE counts in Tables 10 through 12 have been rounded.

Water Usage Data for Meter Equivalency Factors

The Town implemented an actual use meter equivalency schedule for assessing monthly service charges for water, wastewater, and water resources in 2010. Analysis of three years of water consumption by meter size serves as the basis for the actual use equivalencies. Equivalency factors were calculated by establishing the average use for all ¾” meters as the base unit and dividing the average use for larger meter sizes by the average use for ¾” meters.

Table 13 shows average water consumption by class and meter size for the updated 2016 analysis. Our analysis includes a three-year rolling average of water utility billing data. The latest data includes years 2013, 2014 and 2015. Table 14 shows the same data for years 2012, 2013 and 2014. Table 15 is the change between the 2015 and 2016 study.

Table 13: 3 Yr. Average Water Consumption per Bill by Customer Class by Meter Size (2013, 2014, 2015 Calendar Year Billing Data)

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|
| | | | | | Indoor Use Only | Indoor Use Only |
| ¾" | 6.16 | 19.33 | 7.16 | 14.47 | 3.57 | 6.38 |
| 1" | 11.72 | 32.69 | 29.26 | 27.16 | 13.23 | 28.72 |
| 1.5" | - | 69.99 | 51.76 | 72.79 | 39.48 | 35.26 |
| 2" | - | 80.86 | 82.44 | 88.11 | 75.98 | 72.98 |
| 3" | - | 325.96 | 139.05 | 178.89 | - | 75.67 |
| 4" | - | 470.55 | - | 472.81 | - | 514.77 |
| 6" | - | - | 1,164.38 | - | - | 100.24 |

Table 14: 3 Yr. Average Water Consumption per Bill by Customer Class by Meter Size (2012, 2013, 2014 Calendar Year Billing Data)

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|
| | | | | | Indoor Use Only | Indoor Use Only |
| ¾" | 6.54 | 19.48 | 6.83 | 14.06 | 3.61 | 6.77 |
| 1" | 10.30 | 32.95 | 28.35 | 31.24 | 13.51 | 22.78 |
| 1.5" | - | 66.88 | 53.46 | 72.41 | 39.73 | 35.31 |
| 2" | - | 81.86 | 93.88 | 100.20 | 71.26 | 75.71 |
| 3" | - | 325.17 | 152.20 | 192.18 | - | 79.77 |
| 4" | - | 468.96 | - | 681.29 | - | 435.33 |
| 6" | - | - | 1,172.50 | - | - | 109.52 |

Table 15: Change in 3 Yr. Average Water Consumption per Bill by Customer Class by Meter Size (Change in Data from Table 13 and 14 above)

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|
| | | | | | Indoor Use Only | Indoor Use Only |
| 3/4" | (0.38) | (0.15) | 0.33 | 0.41 | (0.05) | (0.39) |
| 1" | 1.43 | (0.26) | 0.91 | (4.08) | (0.28) | 5.94 |
| 1.5" | - | 3.11 | (1.70) | 0.38 | (0.25) | (0.05) |
| 2" | - | (1.01) | (11.44) | (12.10) | 4.72 | (2.73) |
| 3" | - | 0.79 | (13.15) | (13.28) | - | (4.10) |
| 4" | - | 1.59 | - | (208.49) | - | 79.44 |
| 6" | - | - | (8.12) | - | - | (9.29) |

Meter Equivalencies Discussion

Tables 16 through 18 provide a comparison of average consumption by meter size for accounts including the irrigation class compared with the average consumption excluding the irrigation class. Table 16 represents the results for the 2016 rate study data. Table 17 represents the results for the average consumption by meter size used in the 2015 rate study. Finally, Table 18 compares the two tables to determine if the current data is significantly different from what was analyzed in the 2015 rate study.

Tables 19 through 21 calculate and compare equivalency factors by customer class and meter size based on a 3/4" single family residential customer. Equivalency factors are compared between the 2015 rate study results and the 2016 rate study update.

**Table 16: Average Water Consumption by Meter Size
2016 Rate Study Update (2013, 2014, 2015 Calendar Year Billing Data)**

| Meter Size | With Irrigation | Without Irrigation |
|------------|-----------------|--------------------|
| 3/4" | 8.52 | 3.89 |
| 1" | 35.32 | 14.75 |
| 1.5" | 83.62 | 29.74 |
| 2" | 122.36 | 40.74 |
| 3" | 171.44 | 73.98 |
| 4" | 511.97 | 488.09 |
| 6" | 770.60 | 494.02 |

**Table 17: Average Water Consumption by Meter Size
2015 Rate Study Update (2012, 2013, 2014 Calendar Year Billing Data)**

| Meter Size | With Irrigation | Without Irrigation |
|------------|-----------------|--------------------|
| 3/4" | 9.16 | 4.00 |
| 1" | 35.69 | 14.44 |
| 1.5" | 81.59 | 30.48 |
| 2" | 127.12 | 46.46 |
| 3" | 190.28 | 77.03 |
| 4" | 520.36 | 372.72 |
| 6" | 801.43 | 480.60 |

**Table 18: Change in Average Water Consumption by Meter Size
(Change in Data from Table 16 to Table 17)**

| Meter Size | With Irrigation | Without Irrigation |
|------------|-----------------|--------------------|
| 3/4" | (0.64) | (0.11) |
| 1" | (0.37) | 0.31 |
| 1.5" | 2.03 | (0.74) |
| 2" | (4.76) | (5.71) |
| 3" | (18.84) | (3.04) |
| 4" | (8.39) | 115.37 |
| 6" | (30.83) | 13.43 |

**Table 19: Actual Use Equivalency Factors
2016 Rate Study
(2013, 2014, 2015 Calendar Year Billing Data)**

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial | Equivalency |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|-------------|
| | | | | | Indoor Use Only | Indoor Use Only | |
| 3/4" | 1.00 | 3.14 | 1.16 | 2.35 | 0.58 | 1.04 | 1.00 |
| 1" | 1.90 | 5.31 | 4.75 | 4.41 | 2.15 | 4.66 | 4.06 |
| 1.5" | - | 11.36 | 8.40 | 11.82 | 6.41 | 5.73 | 9.18 |
| 2" | - | 13.13 | 13.39 | 14.31 | 12.34 | 11.85 | 13.19 |
| 3" | - | 52.93 | 22.58 | 29.05 | - | 12.29 | 19.92 |
| 4" | - | 76.40 | - | 76.77 | - | 83.58 | 81.19 |
| 6" | - | - | 189.06 | - | - | 16.28 | 102.67 |

**Table 20: Actual Use Equivalency Factors
2015 Rate Study Update
(2012, 2013, 2014 Calendar Year Billing Data)**

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial | Equivalency Factor |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|--------------------|
| | | | | | Indoor Use Only | Indoor Use Only | |
| 3/4" | 1.00 | 2.98 | 1.04 | 2.15 | 0.55 | 1.03 | 1.00 |
| 1" | 1.57 | 5.04 | 4.33 | 4.77 | 2.06 | 3.48 | 3.82 |
| 1.5" | - | 10.22 | 8.17 | 11.07 | 6.07 | 5.40 | 8.55 |
| 2" | - | 12.51 | 14.35 | 15.31 | 10.89 | 11.57 | 13.22 |
| 3" | - | 49.70 | 23.26 | 29.37 | - | 12.19 | 20.43 |
| 4" | - | 71.67 | - | 104.12 | - | 66.53 | 68.25 |
| 6" | - | - | 179.20 | - | - | 16.74 | 97.97 |

**Table 21: Actual Use Equivalency Factors
(Change in Data from Table 19 and Table 20)**

| Meter Size | Residential | Multifamily | Commercial | Irrigation | MultiFamily | Commercial | Equivalency Factor |
|------------|-------------|-------------|------------|------------|-----------------|-----------------|--------------------|
| | | | | | Indoor Use Only | Indoor Use Only | |
| 3/4" | - | 0.16 | 0.12 | 0.20 | 0.03 | 0.00 | 0.00 |
| 1" | 0.33 | 0.27 | 0.42 | (0.36) | 0.08 | 1.18 | 0.24 |
| 1.5" | - | 1.14 | 0.23 | 0.75 | 0.34 | 0.33 | 0.63 |
| 2" | - | 0.62 | (0.96) | (1.01) | 1.45 | 0.28 | (0.03) |
| 3" | - | 3.23 | (0.68) | (0.32) | - | 0.09 | (0.50) |
| 4" | - | 4.73 | - | (27.35) | - | 17.05 | 12.94 |
| 6" | - | - | 9.86 | - | - | (0.46) | 4.70 |

Customers with atypical consumption skew the calculation of the equivalency factor, so therefore they are excluded from this data.

Calculating Representative Customers by Class

The Town analyzed customer data for the years 2013, 2014 & 2015 to determine an average representative customer by class that will be used to represent the comparison of adopted rates versus proposed rates on representative customers' bills. The process included the following steps:

- Calculate and report the average consumption, total consumption, and consumption for irrigation season and winter season based on the most recent calendar year of water billing data (Jan15-Dec15).
- Select the most common meter size within each customer class and associated average consumption based on customer class and meter size.
- Select one customer per class from the data sample with both irrigation and winter period consumption to be a representative customer for those classes.
- Customers with atypical consumption have been removed from the calculation for a representative customer by class.

Results of the representative customer analysis are shown in Table 22. Average Winter Monthly Consumption (AWMC) is calculated for each customer by dividing the total water used in the months of November, December, January and February by four. This represents the amount of water for indoor use (Tier 1) and the amount of wastewater treated each month. The AWMC is reset annually on the April statement. For new customers until an individual AWMC is established, the customer class average is assigned for water and a \$36/SFE monthly fee is charged for wastewater. During this study period, for single-family residential customers, the average AWMC is 5,000 gallons (water available at Tier 1) and the monthly wastewater charge is \$36/SFE.

**Table 22: Representative Customer by Class
2016 Rate Study based on 2015 Calendar Year Water Billing Data**

| Customer Class | Meter Size | Total Consumption (kgal) | Average Monthly Consumption (Jan-Dec 2015) (kgal) | Average Winter Monthly Consumption (kgal) | Average Irrigation Monthly Consumption (kgal) |
|-------------------------------|------------|--------------------------|---|---|---|
| Residential | 3/4" | 68.48 | 6.16 | 3.88 | 8.44 |
| Multifamily (with irrigation) | 1.5" | 962.49 | 69.99 | 50.74 | 89.25 |
| Commercial (with irrigation) | 3/4" | 101.88 | 7.16 | 5.05 | 9.32 |
| Irrigation | 3/4" | 183.35 | 14.47 | 1.67 | 27.35 |
| Multifamily Indoor Use Only | 3/4" | 53.59 | 3.57 | 3.54 | 3.59 |
| Commercial Indoor Use Only | 3/4" | 76.89 | 6.38 | 6.01 | 6.77 |

Table 22 uses 2015 calendar year water billing data to determine an average total consumption by customer class. Table 23 uses 2014 calendar year water billing data to determine an average total consumption by customer class. Table 24 is the change between the 2015 and 2016 study.

**Table 23: Representative Customer by Class
2015 Rate Study based on 2014 Calendar Year Water Billing Data**

| Customer Class | Meter Size | Total Consumption (kgal) | Average Monthly Consumption (Jan-Dec 2014) (kgal) | Average Winter Monthly Consumption (kgal) | Average Irrigation Monthly Consumption (kgal) |
|-------------------------------|------------|--------------------------|---|---|---|
| Residential | 3/4" | 71.67 | 6.54 | 4.00 | 9.10 |
| Multifamily (with irrigation) | 1.5" | 776.24 | 66.88 | 49.95 | 83.81 |
| Commercial (with irrigation) | 3/4" | 111.74 | 6.83 | 4.81 | 8.85 |
| Irrigation | 3/4" | 181.25 | 14.06 | 1.73 | 26.57 |
| Multifamily Indoor Use Only | 3/4" | 61.32 | 3.61 | 3.51 | 3.72 |
| Commercial Indoor Use Only | 3/4" | 78.92 | 6.77 | 6.10 | 7.46 |

**Table 24: Representative Customer by Class
(Change in Data from Table 22 and Table 23)**

| Customer Class | Meter Size | Total Consumption (kgal) | Average Monthly Consumption (Jan-Dec 2013) (kgal) | Average Winter Monthly Consumption (kgal) | Average Irrigation Monthly Consumption (kgal) |
|-------------------------------|------------|--------------------------|---|---|---|
| Residential | 3/4" | -3.19 | -0.38 | -0.12 | -0.66 |
| Multifamily (with irrigation) | 1.5" | 186.25 | 3.11 | 0.79 | 5.44 |
| Commercial (with irrigation) | 3/4" | -9.86 | 0.33 | 0.24 | 0.47 |
| Irrigation | 3/4" | 2.10 | 0.41 | -0.06 | 0.78 |
| Multifamily Indoor Use Only | 3/4" | -7.73 | -0.04 | 0.03 | -0.13 |
| Commercial Indoor Use Only | 3/4" | -2.03 | -0.39 | -0.09 | -0.69 |

Water Consumption by Tier

To compare the total water usage by rate tier over time, the following tables were prepared from 2013-2015 calendar year data. The comparison shows overall changes in customers' consumption characteristics and will be used to evaluate the composition of rate revenue by tier for future studies.

Billed usage is shown by customer class and tier. Revenues from billed usage in Tier 4 are directed to water conservation programs accounted for separately in the Water Resources Fund.

**Table 25: Billed Usage by Customer by Class and Tier in kgals
January 2015 through December 2015 Billing Data**

| Winter | | | | | |
|-----------------------|----------------|----------------|----------------|------------------|--------------|
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 38,474 | 9,309 | - | 47,783 | - |
| Commercial w/ Irrig. | 26,934 | 5,842 | - | 32,776 | - |
| Irrigation | - | 703 | 1,232 | 1,935 | - |
| MultiFamily | 32,673 | 5,123 | - | 37,796 | - |
| MultiFamily w/ Irrig. | 24,184 | 3,494 | - | 27,678 | - |
| Residential | 307,870 | 33,976 | 10 | 341,856 | 444 |
| Total Kgals | 430,135 | 58,448 | 1,242 | 489,824 | 444 |
| Block % of Total | 88% | 12% | 0% | 100% | |
| Irrigation | | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 55,452 | 18,845 | - | 74,297 | - |
| Commercial w/ Irrig. | 42,006 | 31,801 | 19,947 | 93,754 | 15 |
| Irrigation | - | 254,193 | 40,774 | 294,967 | - |
| MultiFamily | 47,922 | 9,282 | - | 57,204 | - |
| MultiFamily w/ Irrig. | 36,486 | 17,871 | 8,184 | 62,541 | - |
| Residential | 498,101 | 507,892 | 82,007 | 1,088,000 | 8,372 |
| Total Kgals | 679,967 | 839,885 | 150,912 | 1,670,763 | 8,387 |
| Block % of Total | 41% | 50% | 9% | 100% | |

**Table 26: Billed Usage by Customer by Class and Tier in kgals
January 2014 through December 2014 Billing Data**

| Winter | | | | | |
|----------------------|----------------|----------------|---------------|------------------|--------------|
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 32,970 | 10,214 | - | 43,184 | - |
| Commercial w/ Irri. | 26,163 | 5,352 | - | 31,515 | - |
| Irrigation | 1 | 915 | 1,832 | 2,748 | - |
| MultiFamily | 31,071 | 4,217 | - | 35,288 | - |
| MultiFamily w/ Irri. | 24,091 | 3,011 | - | 27,102 | - |
| Residential | 297,046 | 30,113 | 15 | 327,174 | 1,016 |
| Total Kgals | 411,342 | 53,822 | 1,847 | 467,011 | 1,016 |
| Block % of Total | 88% | 12% | 0% | 100% | |
| Irrigation | | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 52,349 | 17,174 | - | 69,523 | - |
| Commercial w/ Irri. | 38,818 | 31,320 | 17,002 | 87,140 | 25 |
| Irrigation | 57,228 | 178,348 | 18,530 | 254,107 | - |
| MultiFamily | 44,643 | 7,658 | - | 52,301 | - |
| MultiFamily w/ Irri. | 35,458 | 18,202 | 5,742 | 59,402 | - |
| Residential | 480,987 | 482,378 | 46,472 | 1,009,837 | 6,497 |
| Total Kgals | 709,483 | 735,081 | 87,746 | 1,532,310 | 6,522 |
| Block % of Total | 46% | 48% | 6% | 100% | |

**Table 27: Billed Usage by Customer by Class and Tier in kgals
January 2013 through December 2013 Billing Data**

| Winter | | | | | |
|----------------------|----------------|----------------|----------------|------------------|---------------|
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 28,752 | 7,148 | - | 35,900 | - |
| Commercial w/ Irri. | 27,732 | 3,280 | - | 31,012 | - |
| Irrigation | 1 | 60 | 1,398 | 1,459 | - |
| MultiFamily | 31,181 | 3,847 | - | 35,028 | - |
| MultiFamily w/ Irri. | 23,627 | 2,767 | - | 26,394 | - |
| Residential | 286,615 | 29,961 | 0 | 316,576 | 339 |
| Total Kgals | 397,908 | 47,063 | 1,398 | 446,369 | 339 |
| Block % of Total | 89% | 11% | 0% | 100% | |
| Irrigation | | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 42,184 | 24,558 | - | 66,742 | - |
| Commercial w/ Irri. | 41,083 | 31,585 | 14,028 | 86,696 | - |
| Irrigation | 59,011 | 183,688 | 21,159 | 263,857 | - |
| MultiFamily | 44,984 | 6,468 | 29 | 51,481 | - |
| MultiFamily w/ Irri. | 35,117 | 19,535 | 6,061 | 60,713 | - |
| Residential | 466,114 | 517,054 | 61,941 | 1,045,108 | 16,578 |
| Total Kgals | 688,492 | 782,888 | 103,217 | 1,574,597 | 16,578 |
| Block % of Total | 44% | 50% | 7% | 100% | |

**Table 28: Billed Usage by Customer by Class and Tier in kgals
Calendar Year 2015 vs. Calendar Year 2014 Billing Data**

| Winter | | | | | |
|----------------------|-----------------|----------------|---------------|----------------|--------------|
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 5,504 | (905) | - | 4,599 | - |
| Commercial w/ Irri. | 771 | 490 | - | 1,261 | - |
| Irrigation | (1) | (212) | (600) | (813) | - |
| MultiFamily | 1,602 | 906 | - | 2,508 | - |
| MultiFamily w/ Irri. | 93 | 483 | - | 576 | - |
| Residential | 10,824 | 3,863 | (5) | 14,682 | (572) |
| Total Kgals | 18,793 | 4,625 | (605) | 22,813 | (572) |
| Block % of Total | 0% | 0% | 0% | 0% | |
| Irrigation | | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 3,103 | 1,671 | - | 4,774 | - |
| Commercial w/ Irri. | 3,188 | 481 | 2,945 | 6,614 | (10) |
| Irrigation | (57,228) | 75,845 | 22,243 | 40,860 | - |
| MultiFamily | 3,279 | 1,624 | - | 4,903 | - |
| MultiFamily w/ Irri. | 1,028 | (331) | 2,442 | 3,139 | - |
| Residential | 17,114 | 25,514 | 35,535 | 78,163 | 1,875 |
| Total Kgals | (29,516) | 104,804 | 63,165 | 138,453 | 1,865 |
| Block % of Total | -6% | 2% | 3% | 0% | |

**Table 29: Billed Usage by Customer by Class and Tier in kgals
Calendar Year 2015 vs. Calendar Year 2013 Billing Data**

| Winter | | | | | |
|----------------------|----------------|---------------|---------------|---------------|----------------|
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 9,722 | 2,161 | - | 11,883 | - |
| Commercial w/ Irri. | (798) | 2,562 | - | 1,764 | - |
| Irrigation | (1) | 643 | (166) | 476 | - |
| MultiFamily | 1,492 | 1,276 | - | 2,768 | - |
| MultiFamily w/ Irri. | 557 | 727 | - | 1,284 | - |
| Residential | 21,255 | 4,016 | 9 | 25,280 | 105 |
| Total Kgals | 32,227 | 11,385 | (157) | 43,455 | 105 |
| Block % of Total | -1% | 1% | 0% | 0% | |
| Irrigation | | | | | |
| Class | Tier 1 | Tier 2 | Tier 3 | Total | Tier 4 |
| Commercial | 13,268 | (5,713) | - | 7,555 | - |
| Commercial w/ Irri. | 923 | 216 | 5,919 | 7,058 | 15 |
| Irrigation | (59,011) | 70,506 | 19,615 | 31,110 | - |
| MultiFamily | 2,938 | 2,814 | (29) | 5,723 | - |
| MultiFamily w/ Irri. | 1,369 | (1,664) | 2,123 | 1,828 | - |
| Residential | 31,987 | (9,162) | 20,066 | 42,892 | (8,207) |
| Total Kgals | (8,525) | 56,997 | 47,694 | 96,166 | (8,192) |
| Block % of Total | -3% | 1% | 2% | 0% | |