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Town of Castle Rock

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

2016 Utilities Rates and Fees Study Update – Vol. 2 of 2 System Development Fees

FINAL REPORT

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1 Executive Summary

1.1 PURPOSE

The Town of Castle Rock Utilities Department (Town), as part of its 2016 Utilities Rates and Fees Study Update, authorized Arcadis to review its water, renewable water resources (water resources), and wastewater system development fees (SDFs) and stormwater development impact fees. The purpose of this study is to provide the Town with a thorough review of its SDFs and the underlying assumptions, and provide updated fees for 2017 through 2021.

This report presents the methodologies applied to the review and analysis of SDFs and stormwater development impact fees (DIFs). It includes outputs of the analysis and projects fees through 2021.

The contents of this report and the proposed fees take into account the Town's Hybrid 3,500 acre feet (AF) renewable water project costs. The 2016 Annual Rates and Fees Study Update was informed by the financial terms of negotiated agreements and revised capital and operating expenditure projections.

1.2 METHODOLOGY

There are two generally accepted methodologies for calculating SDFs: the equity buy-in approach and the incremental cost (or improvement) approach. Both the American Water Works Association (AWWA) and the Water Environment Federation (WEF) also acknowledge an approach using components of both methods. This third approach is referred to as the combined or hybrid approach. Arcadis used the combined approach for calculating the Town's water, water resources, and wastewater SDFs. The component methodologies are summarized below.

It is difficult to identify remaining capacity to serve growth, so it is assumed that the Town's existing structures and improvements are assumed to have no available capacity for new development and capital improvements are available to provide runoff capacity for new customers. The incremental cost approach for calculating stormwater development impact fees is therefore followed.

1.2.1 Equity Buy-In Approach

The equity buy-in approach is most appropriate in situations where new customers can be served by the existing system. Under this method, new customers pay a proportionate share of the value of the existing facilities. The AWWA recommends that the equity method is best

employed within systems that have adequate capacity to serve both existing and future customers without major system expansions.[1]

1.2.2 Incremental Cost (Improvement) Approach

The incremental cost approach is most appropriate when the existing system is at or near its maximum capacity and new customers cannot be accommodated absent significant investment in facilities. Under the incremental cost approach, new customers pay a proportionate share of the expansion-related costs of the new facilities. The SDF is calculated using capital improvement plans (CIPs) developed in the Town's master planning process.

1.2.3 Combined Approach

The combined approach can be the most appropriate approach because new customers tend to use capacity available in the existing facilities (buy-in) as well as new capacity that the utility must build in order to accommodate growth and the additional units of service (incremental cost). This method best conforms to "growth pays for growth" policies, which is the Town's policy.

With the combined approach, the equity method and incremental cost method are essentially combined so that new customers of the utility pay for their share of the existing system equity as well as their share of the capacity expansion costs. The equity portion of the connection fee is called the buy-in component, and the incremental cost portion of the fee is referred to as the improvement component.

The combined approach as followed for the Town's water, water resources, and wastewater SDFs complies with the criteria for impact fees required in the Colorado Revised Statutes (CRS) 29-20-104.5. This statute requires that SDFs and impact fees are:

- Legislatively adopted
- Applied to a broad class of property
- Recover the costs imposed by proposed development

The incremental cost approach followed for the stormwater development impact fees also complies with CRS 29-20-104.5.

1.3 CAPACITY DEFINITIONS

Defining capacity in both the existing facilities and new capital improvements is a critical step in determining SDFs. Moreover, defining capacity required by a single-family equivalent user is required for each of the SDFs and the stormwater development impact fee. For purposes of the Town's SDFs, the following assumptions on capacity definitions apply.

[1] American Water Works Association, AWWA Manual M1, Sixth Edition, 2012. Chapter V.9 Miscellaneous and Special Charges, pages 229 – 248

1. A single-family equivalent (SFE) is a measure of the amount of water/wastewater flow required to meet potential demand of a single-family detached residence.
2. For the water and water resources systems, one SFE is assumed to require 400 gallons per day (gpd).
3. For the wastewater systems, one SFE is assumed to require 220 gpd of flow capacity.
4. For stormwater capacity, one SFE equals 3,255 square feet (sq. ft.) of impervious area.

1.4 EQUIVALENCY SCHEDULE

Hydraulic capacity is the existing methodology for determining SFEs for all construction types. Water demand for each new customer is determined based on a count of water fixtures and potential aggregate demand in gallons per minute (gpm). The SDF is calculated based on the ratio of aggregate demand for the new customer to 30 gallons per minute flow per SFE. The flow per minute was increased in 2011 from 20 gallons (as has been used in previous SDF analyses for the Town) to 30 gallons because of advanced meter technology and the demand from larger homes. The Town has retained the 20 GPM and fractional SFE as acknowledgement of the potential for smaller water users with low-flow fixtures and water wise landscape.

The hydraulic capacity method assesses the SDF based on each customer's unique demand on the water system and allows for greater flexibility in authorized meters as technology continues to evolve. The existing equivalency schedule for determining SFEs for SDF purposes is presented in Table 1-1 below.

Table 1-1:
Equivalent Meter Schedules

Meter Size	Max Rated Flow (gpm)*	Equivalent Meter Ratio for ¾"
5/8" x 3/4"	20	0.67
3/4"	30	1.00
1"	50	1.67
1.5"	100	3.33
2" C2	200	6.67
2" T2	250	8.33
3" C2	500	16.67
3" T2	650	21.67
4" C2	1,000	33.33
4" T2	1,250	41.67
6" C2	2,000	66.67
6" T2	2,500	83.33

*Flow rate depends on meter size.

1.5 EXISTING AND CALCULATED SDFS

The existing 2016 SDFs and proposed SDFs for 2017 are presented below for each system.

1.5.1 Water SDFs

Updates to the water SDF indicate an increase in the SDF for 2017. The primary drivers for calculation of the 2017 water SDF are:

1. Changes in net fixed assets value and construction work in progress
2. Updated capacity in existing and future facilities
3. Growth in SFEs

The table below summarizes the results of the Water SDF analysis.

Table 1-2:
Existing and Proposed Water SDF

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8" x 3/4"	$2,169	$2,220
3/4"	3,237	3,314
1"	5,407	5,534
1.5"	10,781	11,036
2" C2	21,594	22,104
2" T2	26,968	27,606
3" C2	53,969	55,244
3" T2	70,156	71,814
4" C2	107,905	110,456
4" T2	134,905	138,094
6" C2	215,842	220,944
6" T2	269,778	276,156

Arcadis recommends the Town adopt the proposed 2017 SDF and escalate the SDF annually by 2.80 percent beginning in 2018.[2]

1.5.2 Water Resources SDFs

Updates to the water resources SDF indicate an increase in the SDF for 2017. The primary drivers for calculation of the 2017 water resources SDF are:

4. Changes in net fixed assets value and construction work in progress
5. Updated capacity in existing and future facilities
6. Growth in SFEs

The table below presents the study results and recommendations.

[2] 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.

Table 1-3:
Existing and Proposed Water Resources SDFs

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8" x 3/4"	$10,196	$10,216
3/4"	15,218	15,248
1"	25,414	25,464
1.5"	50,676	50,776
2" C2	101,504	101,704
2" T2	126,766	127,016
3" C2	253,684	254,184
3" T2	329,774	330,424
4" C2	507,216	508,216
4" T2	634,134	635,384
6" C2	1,014,584	1,016,584
6" T2	1,268,116	1,270,616

Arcadis recommends the Town keep the 2016 SDF unchanged for 2017 and escalate the SDF annually by 2.80 percent beginning in 2018.[3]

1.5.3 Wastewater SDFs

Updates to the wastewater SDF indicate an increase in the SDF for 2017. Primary drivers behind the 2017 wastewater SDFs include:

1. Updated wastewater fund net fixed asset value and changes in construction work in progress
2. Updated capacity in the existing and future facilities
3. Growth in existing SFEs

The wastewater SDF results are presented below.

[3] *Ibid.*

Table 1-4:
Existing and Proposed Wastewater SDFs

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8" x 3/4"	$2,173	$2,303
3/4"	3,243	3,437
1"	5,416	5,740
1.5"	10,799	11,445
2" C2	21,631	22,925
2" T2	27,014	28,630
3" C2	54,061	57,295
3" T2	70,276	74,480
4" C2	108,089	114,555
4" T2	135,136	143,220
6" C2	216,211	229,145
6" T2	270,239	286,405

Arcadis recommends the Town adopt the proposed 2017 SDF and escalate the SDF annually by 2.80 percent beginning in 2018.[4]

1.5.4 Stormwater Development Impact Fees

Unlike the water, water resources, and wastewater SDFs, stormwater development impact fees are assessed based on impervious area by development type. The costs of stormwater capital improvements for new development are proportioned across the planned developments by type:

- Single-family detached
- Single-family attached
- Multi-family
- Commercial/Industrial

The stormwater fees are also bifurcated for properties located within the Cherry Creek Basin and the Plum Creek Basin.

Primary drivers to the updated stormwater development impact fee include:

1. Decrease in the number of developable acres by land use type
2. More current costs of the stormwater capital improvement program

Results of the stormwater development impact fee analysis are presented below. Single Family and Multifamily development impact fees are per dwelling unit. Units for Commercial/Industrial development are per 1,000 sq. ft. of building space.

[4] *Ibid.*

Table 1-5:
Existing and Proposed Stormwater Development Impact Fees

Per Unit	Current 2016 Fee	Proposed 2017 Fee
Cherry Creek		
Single-Family Detached	$748	$843
Single-Family Attached	500	563
Multifamily	453	511
Commercial/ Industrial	338	380
Plum Creek		
Single-Family Detached	$1,125	$1,317
Single-Family Attached	752	880
Multifamily	682	798
Commercial/ Industrial	508	594

Arcadis recommends the Town adopt the proposed 2017 stormwater DIF for Cherry Creek and Plum Creek Basin and escalate the fees beginning in 2018 at an average rate of 2.80 percent per year.[5]

1.6 PROJECTED SDFS FOR 2017 THROUGH 2021

The Town reviews the SDFs each year, and adjusts based on the updated CIP and asset costs. As new projects are added to serve growth and as projects are completed the SDF is adjusted. Throughout this SDF study update, Arcadis revised fixed asset values and CIP costs and recalculated the fees to reflect current conditions in the Town. Costs for capital improvements were maintained at 2016 dollars. In order to maintain SDF revenues to match increases in capital costs over time, Arcadis recommends that the SDFs for water, water resources, wastewater, and the stormwater development impact fees be escalated for the study period of 2017 through 2021. Using 2017 as the base year, the fees presented below are escalated at an average of 2.80 percent per year beginning in 2018. 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.

The following tables in this section contain recommended implementation schedules for the SDFs for water, water resources, wastewater, and the stormwater development impact fees. Recommended implementation schedules reflect the results of the 2016 update study.

[5] *Ibid.*

Table 1-6:
Recommended Water SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8” x 3/4”	$2,169	$2,220	$2,283	$2,346	$2,412	$2,480
3/4"	3,237	3,314	3,407	3,502	3,600	3,701
1"	5,407	5,534	5,690	5,848	6,012	6,181
1.5"	10,781	11,036	11,345	11,662	11,988	12,324
2" C2	21,594	22,104	22,725	23,358	24,012	24,686
2” T2	26,968	27,606	28,380	29,172	29,988	30,829
3" C2	53,969	55,244	56,795	58,378	60,012	61,696
3" T2	70,156	71,814	73,830	75,888	78,012	80,201
4" C2	107,905	110,456	113,555	116,722	119,988	123,354
4” T2	134,905	138,094	141,970	145,928	150,012	154,221
6" C2	215,842	220,944	227,145	233,478	240,012	246,746
6” T2	269,778	276,156	283,905	291,822	299,988	308,404

Table 1-7:
Recommended Water Resources SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8” x 3/4”	$10,196	$10,216	$10,502	$10,796	$11,099	$11,409
3/4"	15,218	15,248	15,675	16,114	16,565	17,029
1"	25,414	25,464	26,177	26,910	27,664	28,438
1.5"	50,676	50,776	52,198	53,660	55,161	56,707
2" C2	101,504	101,704	104,552	107,480	110,489	113,583
2” T2	126,766	127,016	130,573	134,230	137,986	141,852
3" C2	253,684	254,184	261,302	268,620	276,139	283,873
3" T2	329,774	330,424	339,677	349,190	358,964	369,018
4" C2	507,216	508,216	522,448	537,080	552,111	567,577
4” T2	634,134	635,384	653,177	671,470	690,264	709,598
6" C2	1,014,584	1,016,584	1,045,052	1,074,320	1,104,389	1,135,323
6” T2	1,268,116	1,270,616	1,306,198	1,342,780	1,380,361	1,419,027

Table 1-8:
Recommended Wastewater SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8" x 3/4"	$2,173	$2,303	$2,367	$2,433	$2,502	$2,572
3/4"	3,243	3,437	3,533	3,632	3,734	3,839
1"	5,416	5,740	5,900	6,065	6,236	6,411
1.5"	10,799	11,445	11,765	12,095	12,434	12,784
2" C2	21,631	22,925	23,565	24,225	24,906	25,606
2" T2	27,014	28,630	29,430	30,255	31,104	31,979
3" C2	54,061	57,295	58,895	60,545	62,246	63,996
3" T2	70,276	74,480	76,560	78,705	80,916	83,191
4" C2	108,089	114,555	117,755	121,055	124,454	127,954
4" T2	135,136	143,220	147,220	151,345	155,596	159,971
6" C2	216,211	229,145	235,545	242,145	248,946	255,946
6" T2	270,239	286,405	294,405	302,655	311,154	319,904

Table 1-9:
Recommended Stormwater DIF Implementation Schedule

Land Use Type	Current 2016 DIF	Proposed 2017 DIF	Proposed 2018 DIF	Proposed 2019 DIF	Proposed 2020 DIF	Proposed 2021 DIF
Cherry Creek Basin						
Single Family Detached	$748	$843	$867	$891	$916	$942
Single Family Attached	500	563	579	595	612	629
Multifamily	453	511	525	540	555	571
Commercial (Retail/Office)	338	380	391	402	413	425
Plum Creek Basin						
Single Family Detached	$1,125	$1,317	$1,354	$1,392	$1,431	$1,471
Single Family Attached	752	880	905	930	956	983
Multifamily	682	798	820	843	867	891
Commercial (Retail/Office)	508	594	611	628	646	664

2 Introduction

2.1 STUDY PURPOSE

The purpose of the water, water resources, and wastewater system development fee (SDF) and stormwater development impact fee study update is to provide the Town with a thorough review of its SDFs and the underlying assumptions. The intent is to update old assumptions and provide updated fees for 2017 through 2021.

2.2 ORGANIZATION OF THE REPORT

This report consists of eight sections:

- *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, Equivalency Schedules* provides information regarding the equivalency schedules that can be used to determine single-family residential equivalents and provides proposed equivalency schedules for use in calculating system development fees.
- *Section 4, System Development Fee Overview* summarizes the acceptable approaches for determining system development fees and the associated steps required in the calculations.
- *Section 5, Water System Development Fees* describes the specific values used to develop the water SDFs.
- *Section 6, Water Resources System Development Fees* describes the specific values used to develop the water resources SDFs.
- *Section 7, Wastewater System Development Fees* describes the specific values used to develop the wastewater SDFs.
- *Section 8, Stormwater Development Impact Fees* describes the methodology and specific values used to develop the stormwater DIFs.
- *Section 9, Summary* provides an overall review of the results, projected fees for 2017 through 2021, and other recommendations from the study.

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

2.3 LIST OF ACRONYMS

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

- AF: Acre Feet
- CIP: Capital Improvement Program
- COP: Certificates of Participation
- DIF: Development Impact Fee
- ENR: Engineering News Record
- FAR: Floor Area Ratio
- FY: Fiscal Year
- gpd: Gallons per day
- gpm: Gallons per minute
- I&I: Inflow and infiltration
- Kgal : Thousand (1,000) gallons
- O&M: Operations and Maintenance
- PCWRA: Plum Creek Water Reclamation Authority
- PCWPF: Plum Creek Water Purification Facility
- RCNLD: Replacement Cost New Less Depreciation
- SDF: System Development Fee
- SFE: Single Family Equivalent
- Sq. Ft.: Square Feet

3 Equivalency Schedules

Equivalency schedules are used to determine the number of SFEs represented by different meter sizes. Equivalency schedules are used for several purposes, such as for calculating SDFs and monthly service charges by meter size. This section defines the Town's equivalency schedules used in this study.

3.1 DEFINITIONS

SDFs are one-time fees charged to new customers in the Town that are intended to recover the costs of investments in infrastructure and projects designed to provide capacity for new customers. These fees are calculated in a manner consistent with the Colorado Revised Statutes (CRS) 29-20-104.5.

SFEs or single-family equivalents define the relative size or demand of a specific account. One residential account equals one SFE. A multi-family or commercial account represents a multiple of residential accounts or SFEs, typically defined by water demand or wastewater flow. Town Municipal Code 13.02.10 defines an SFE as a relative measure of demand placed on the water, sewer, and/or irrigation capital plant of the Town by an average single-family residential unit.

Equivalency schedule is a set of ratios that define how many SFEs are represented by different meter sizes. Equivalency schedules are established to determine the water, water resources, and wastewater SDFs a new connection must pay, based on their representative SFE requirement for new capacity. Equivalency schedules are used to calculate the monthly service charges for water, water resources, and wastewater service as well.

Hydraulic equivalency schedules are based on the relative capacity of different meter sizes and meter types utilized to deliver water. Hydraulic equivalencies can also be based on relative potential demands of different customers. Based on characteristic hydraulic demands, a single-family meter size of ¾" x ¾" is designated as the base for one SFE. The maximum flow rate of water through the meter in gallons per minute (gpm) becomes the unit of comparison. The maximum flow rate demanded by new customers is compared to the base demand in order to determine the equivalency ratio. For example, if the base single-family residential customer requires 30 gpm and a commercial customer requires 200 gpm, the equivalency ratio equals 6.67.

Actual use equivalency schedules are based on the relative average monthly water usage of the Town's customers. Average monthly use per account by meter size was calculated using a 2013 to 2015 three-year average of monthly consumption data. The average usage

of a single-family residential meter size is designated as the base. The average usage of larger meter sizes is divided by the base usage to calculate equivalent ratios.

3.2 SCHEDULE FOR SDFS

Water meters are sized to deliver a maximum amount of water. Therefore, the water meter hydraulic capacity reflects the potential demands a customer may place on the system. The calculation of SFEs for purposes of assessing SDFs in the Town is based on the ratio of the required hydraulic capacity of a new connection to the capacity of a typical ¾" x ¾" single-family residential meter. The capacity required by a new connection is determined by a fixture count.

Review of fixture counts for the typical single-family residential property in the Town indicates that the hydraulic capacity required is, on average, 30 gallons per minute (gpm). In 2010, Arcadis and Staff concluded that one SFE equals 30 gpm of maximum flow. If a customer requires 200 gpm of maximum flow, its SFEs would equal 200/30 or 6.67 SFEs. The existing equivalency schedule for determining SFEs for SDF purposes is presented in Table 3-1 below.

Table 3-1:
Equivalent Meter Schedules

Meter Size	Max Rated Flow (gpm)*	Equivalent Meter Ratio for ¾"
5/8" x 3/4"	20	0.67
3/4"	30	1.00
1"	50	1.67
1.5"	100	3.33
2" C2	200	6.67
2" T2	250	8.33
3" C2	500	16.67
3" T2	650	21.67
4" C2	1,000	33.33
4" T2	1,250	41.67
6" C2	2,000	66.67
6" T2	2,500	83.33

*Flow rate depends on meter size.

4 System Development Fee Overview

The term system development fee (SDF) is used interchangeably with other similar terms in the water and wastewater utility industry to describe any fee or charge that recovers capital costs associated with system growth. Also known as tap fees, impact fees, system investment charges, plant investment fees, and other terms; these fees are designed to recover the capital costs of growth from those causing the growth to occur, rather than from the utility's existing customer base. Figure 4-1 details the combined SDF methodology.

Figure 4-1: System Development Fee Methodology

When properly designed, an SDF should be a one-time charge to new connections to the system that recovers the utility's investments to provide capacity to new growth, either as a capital improvement or a facilities expansion. At any given moment, a utility will have a certain amount of capacity in its system that is available to serve new customers while at the same time, it will have plans for new capital improvements and/or facilities expansions to serve anticipated growth in demand. To the extent that the system has available capacity, it can be said that the utility has already made an investment in new capital improvements and/or facilities expansions whose cost remains unrecovered.

Without recovering investments in new capital improvements/facilities expansion, the utility would effectively be subsidizing growth at the expense of existing rate payers. For this reason, both existing and proposed investments in capacity are examined in calculating SDFs. The rational nexus for such fees is always the unrecovered investment in available capacity, whether that capacity is existing or proposed.

In charging new customers for both past and new investments in capacity, the SDF, like other such fees, promotes a concept in utility rate making called intergenerational equity. The term intergenerational equity means that existing customers do not subsidize new customers, and vice versa. In many communities, this is often referred to as "growth pays for growth."

SDFs can be designed to avoid the subsidization of new growth. If such a policy is desired by a community, as it is for the Town, the SDF can include two components: a buy-in component for past investments in system capacity that remains available to serve the new connections, and an improvement or incremental component for planned future investments to make additional capacity available to serve new users. Deficiency remediation or in-kind replacements in the existing system should not be included in the fee calculations.

4.1 SYSTEM DEVELOPMENT FEES METHODOLOGY

There are a number of ways to calculate SDFs. The American Water Works Association (AWWA) describes two methodologies for calculation of such fees, called the equity buy-in approach and the incremental cost approach. The AWWA also acknowledges that a hybrid of both approaches may be most appropriate which is referred to as the combined method in this report.[6]

4.1.1 Equity Buy-In Approach

The equity buy-in method is most appropriate in situations where new customers can be served in the existing system. Under this method, new customers pay a proportionate share of the value of the existing facilities. The buy-in method determines the value of the existing system assets and divides it by the current total single family equivalents (SFEs) that can be served by the system. The result is a SDF per SFE. The AWWA recommends that the buy-in approach is best employed within systems that have adequate capacity to serve both existing and future customers without major system expansions and where existing facilities are not scheduled for replacement and/or upgrades in the short term.

4.1.2 Incremental Cost (Growth) Approach

The incremental cost method is most appropriate when the existing system is at or near its maximum capacity and new customers cannot be accommodated without significant investment in facilities. Under the incremental cost method, new customers pay a proportionate share of the expansion-related costs of the new facilities. The system investment charge is calculated using capital improvement programs (CIPs) maintained by staff. Total CIP dollars for growth are divided by total new SFEs able to be served to calculate the system investment charge per SFE.

[6] AWWA M1 citation: American Water Works Association, AWWA Manual M1, Sixth Edition, 2012. Chapter V.9 Miscellaneous and Special Charges, pages 229 – 248.

4.1.3 Combined Approach

The combined approach can be the most appropriate method because new customers tend to use capacity available in the existing facilities (buy-in) as well as new capacity that the utility must build in order to accommodate growth and the additional units of service (incremental cost). This method best conforms to "growth pays for growth" policies. To calculate the combined SDF per SFE, a weighted average of the fee calculated under the buy-in method and the fee calculated under the incremental cost is computed. This is the approach used for the Town's study.

4.2 VALUATION APPROACHES

The first step in developing the SDF under the equity buy-in method is to calculate the amount of existing system equity. Equity, as defined by generally accepted accounting principles, is equal to total assets minus total liabilities of the system. However, because the accounting convention typically depreciates the system's long-term assets (i.e. utility plant in service) under various depreciation techniques, and because those techniques sometimes have little bearing on the actual condition or value of the utility's assets, questions arise as to what is a fair valuation of the system's existing assets.

Several approaches exist to estimate the value of the utility's assets.

4.2.1 Original Cost Approach

The original cost approach is taken straight from the utility's asset records. As the name suggests, the original cost is that price paid for the asset at the time it was acquired and placed into service. The original cost is not adjusted for inflation or market revaluation.

4.2.2 Book Value Approach

The book value approach is also a direct descendant of the asset record. Book value is the value of the asset that remains once it has been adjusted for depreciation. Accumulated depreciation is deducted from the original cost of the asset to determine its book value as reported on the utility's balance sheet.

4.2.3 Replacement Cost New Approach

The replacement cost new approach (RCN) revalues the original cost of the assets at today's value, thus taking into account inflation and market forces. To calculate the replacement cost of assets, the construction cost index (CCI) and, where applicable, the building cost index (BCI) provided by the Engineering News Record (ENR) database may be used instead of more exhaustive engineering studies. These indices are commonly used within the industry to restate the value of existing assets in current dollars. To use the CCI index, divide the current year index value by the index value for the year the particular asset was placed into service.

4.2.4 Replacement Cost New Less Depreciation Approach

The last method used is the replacement cost new less depreciation approach, or RCNLD. Under the RCNLD method, the replacement cost, calculated as described above, is adjusted for accumulated depreciation. The accumulated depreciation used in the RCNLD method is not the same amount as that used in the net book value method described earlier. Instead, accumulated depreciation is expressed as a percentage of net book value such that the percentage of remaining asset value under RCNLD is equivalent to the percentage of remaining asset value as reported under the net book value method. This approach is used for the Town's study. This approach is used for the Town's study to reflect the value of the existing assets in today's dollars while acknowledging the depreciation that has occurred in the system.

4.3 CAPACITY DEFINITIONS FOR BUY-IN COMPONENT

In the buy-in method, the next step is to define the capacity in the existing system. Typically, this is represented in million gallons per day (MGD) or similar measure. The capacity is then converted into the number of SFEs that can be served by the existing system. SFEs are defined based on the utility's policies.

For purposes of this study, the existing users in the system were updated by utility staff to reflect changes in requirements in the existing system. Please see the individual sections for the assumptions used in this 2016 Study.

4.4 MULTI-PURPOSE PROJECT COST ALLOCATIONS

When calculating the improvement component of the SDF, the first step is to review the CIP and allocate the project costs between growth and non-growth.

A portion of any utility capital improvement is planned for replacements and betterments to the existing utility plant. Capital improvements that benefit existing customers are not considered necessary for construction or expansion of facilities to serve new customers, and therefore are not properly included in the improvement portion of the SDF. To separate those improvements required for system growth and those that benefit only the existing utility customers, the utility has to allocate its CIP into growth-related portions.

4.5 CAPACITY DEFINITIONS FOR THE IMPROVEMENT COMPONENT

Unlike the calculation of SFEs for the buy-in portion, the improvement component focuses only on new utility connections. In order to project new utility connections, it is necessary for the utility to make an engineering assessment to determine the new capacity available to the system once the growth-related CIP projects are placed into service.

For purposes of this report, new SFEs able to be served by the growth-related CIP are based on Master Plan assumptions of capacity requirements per SFE and capacities of individual projects.

4.6 ASSESSMENT SCHEDULE DEVELOPMENT

SDFs are normally assessed based on the number of equivalent units a new customer represents. An equivalent unit equates different hydraulic demands, often represented by different sizes and types of meters, to a common denominator. For purposes of this study, the common denominator is rated maximum flow of 30 gpm. Other demands calculated for new customers are used to calculate the appropriate number of SFEs by dividing those demands by the 30 gpm.

Arcadis proposes an assessment schedule based on this calculation of SFEs. In practice, however, the Town may adjust its approach to match a particular meter size with a known hydraulic capacity. For purposes of this study, the assessment schedules for water, water resources, and wastewater SDFs are presented for a set of meter sizes and types that are based on maximum rated flow for those particular meters. Any different assumptions on hydraulic capacity will change the calculated SDF.

5 Water System Development Fees

Following the approach for calculating SDFs using the combined approach, the assumptions and steps for the water SDFs are described in this section.

5.1 EQUITY BUY-IN COMPONENT

The buy-in component is based on the equity buy-in approach, and requires three steps:

1. Fixed asset valuation,
2. Capacity definition, and
3. Assessment schedule development

The following is a description of each step.

5.1.1 Fixed Asset Valuation

The value of the Town's water fixed assets is based on an estimate of RCNLD for assets, including construction work in progress for the current year, that have capacity remaining to serve new customers. An estimate of the value of assets contributed by developers was excluded from the SDF calculation. In addition, the value was adjusted by the amount of principal on outstanding debt. Existing debt will be repaid through rates and therefore is ineligible for repayment with development fees.

The Town's system is designed to meet the needs of its customers and provide safe and reliable water service throughout its service area. The system consists of individual components that serve specific functions. To estimate the value of assets related to each function, the SDF value of each asset is allocated to one or more of 10 functions. The Town's functions are:

1. Source of supply
2. Treatment
3. Pumping
4. Transmission
5. Distribution
6. Storage
7. Buildings/Improvements
8. Administration

9. Tools/Equipment
10. Exclude from SDF

Table 5-1 summarizes the asset values attributed to each function. Based on the analysis, the total value of the Town's water system assets including construction work in progress for SDF purposes in fiscal year ending 2015 is $222.3 million. Many assets used in the distribution system are typically contributed by developers and thus excluded from the calculation of the buy-in fee SDF. To explicitly show the value of the excluded assets, the value of assets assigned to this function that is estimated to be contributed by developers was reassigned to the Exclude from SDF function. Of the total RCNLD value, $138.1 million is excluded from the SDF. Thus, for purposes of establishing a buy-in SDF, the Town's water system, net of outstanding debt is valued at approximately $84.2 million.

Table 5-1:
RCNLD Water System Value by Function

Function	RCNLD
Source of Supply	$ 27,055,808
Treatment	17,901,422
Pumping	3,366,977
Transmission	6,686,120
Distribution	10,973,501
Storage	10,432,589
Buildings/Improvements	5,401,149
Administration	2,236,601
Tools/ Equipment	93,447
Exclude from SDF	138,096,738
Meters / Services	29,948
Total	**$ 222,274,300**

5.1.2 Capacity Definition

The next step in determining the buy-in component under the equity buy-in approach is to define the system capacity. Specifically, under the equity buy-in approach the system capacity is based on the unused capacity of the system for each function identified above. Town Staff engineers provided data used for this analysis.

Table 5-2 lists the current capacities of each water system function. It also presents an estimate of the capacity in the existing system that is available for growth. Underlying the numbers shown in this table is the assumption that one SFE requires 400 gallons of water per day on an average-day basis. This estimate is based on the Town's estimate of water use per SFE in 2015. The peak-day factor of 2.2 used to estimate system capacities was obtained from the Utilities Engineering Manager and Public Works Design Guidelines. Similar demands per SFE were used for source of supply and treatment capacities. Pumping, transmission, and distribution facilities, however, are sized for peak-hour use and were assigned a peaking factor of 5.5 obtained from the Utilities Engineering Manager and Public Works Design Guidelines and a requirement per SFE of 540 gallons per day. The amount of

storage required per SFE is 400 gallons per day with a peaking factor of 2.2. These values were obtained from the Utilities Engineering Manager and the Town's Public Works Design Guidelines.

Table 5-2:
Water System Component Capacities

Function	Capacities	Unit	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply	16.30	MGD	18,523	18,523	0	0.00%
Treatment	23.45	MGD	26,648	16,534	10,114	37.95%
Pumping	41.41	MGD	13,943	12,717	1,225	8.79%
Transmission	41.41	MGD	13,943	12,717	1,225	8.79%
Distribution[1]	41.41	MGD	26,230	26,230	0	0.00%
Storage	36.02	MG	40,932	16,534	24,398	59.61%
Buildings/ Improvements	37,500	SFE	37,500	26,230	11,270	30.05%
Administration	0	SFE	0	26,230	0	0.00%
Tools/ Equipment	0	SFE	0	26,230	0	0.00%
Exclude from SDF	0	N/A	0	N/A	0	0.00%
Meters/ Services	0	N/A	0	N/A	0	0.00%

[1]Distribution facilities are typically designed just for the area they serve and therefore are assumed to have zero remaining capacity for new customers.

Using these assumptions and the capacities for each function summarized in Table 5-2, the number of SFEs that can be served by each function is calculated. Subtracting the number of SFEs currently served by the utility generates the number of SFEs available for growth. A description of how the number of SFEs currently served by the Town is estimated follows below.

5.1.3 Assessment Schedule Development

The number of existing SFEs is typically based on the number of meters by size and the associated equivalency factors. The equivalency factors are calculated based on average actual use by meter size. The inventory of number of meters by meter size for 2016 and equivalency factors that result in the current number of SFEs are presented in Table 5-3. Based on the equivalency schedule used in this rate and fee study and presented here, the Town is estimated to have 26,230 water SFEs based on FY 2015 billing data.

Table 5-3:
Inventory of Existing Water SFEs[1,2]

Meter Size	Number of Meters	Equivalency Factor	Number of SFEs
5/8" x 3/4"	525	1.00	530
3/4"	17,261	1.00	17,261
1"	328	4.06	1,332
1.5"	358	9.18	3,286
2"	201	13.19	2,651
3"	28	19.92	558
4"	5	81.19	406
6"	2	102.67	205
Total	**18,708**		**26,230**

[1]Does not include bulk water customers.
[2]Meter sizes 2-inch and larger include C2 and T2 meter types.

Utilities Engineering reviewed the capacities for the water and wastewater systems in 2016 to ensure that the values used are appropriate. Some changes have occurred since the last capacity evaluation, particularly the "Used Capacity." Details on the changes follow below.

1. Source of supply capacity decreased. Out of 49 deep wells, two are down due to pumping equipment and possible power issues. Three alluvial wells are not currently active due to lateral arm drilling. Used capacity reflects the maximum day demand observed in 2015.

2. Water treatment capacity increased due to removing the PS Miller plant and adding the PCWPF. Used capacity reflects the maximum day demand observed in 2015.

3. Pumping, transmission and distribution capacities remained unchanged. The used capacity reflects the peak hour demand observed in 2015.

4. Storage capacity remains unchanged. The used capacity reflects the maximum day demand observed in 2015.

5.1.4 Buy-In Component Calculation

The total costs to be recovered from the buy-in component of the water SDF are based on the percentage of remaining capacities by functions calculated in Table 5-2 and the total system asset values shown in Table 5-1. Table 5-4 presents the total buy-in amount by function. The total amount attributable to the buy-in component is $15.5 million. Table 5-5 calculates the buy-in component per SFE for each of the functions. The total buy-in component per SFE is $976.

It is important to note that Arcadis calculated each of the two components of the water SDF assuming a weighted average of the system capacities by function. To calculate the buy-in

component, the dollars by function were divided by the sum of the capacities of the existing system and capital improvements. The purpose of this approach is for calculating the combined fee. A new customer pays for one unit of capacity, rather than one unit of existing capacity and one unit of new capacity, hence the weighted average calculation.

Table 5-4:
Calculation of Water Buy-in Totals

Function	System Value RCNLD	Remaining Capacity	Cost of Available Capacity RCNLD
Source of Supply	$ 27,055,808	0.0%	$ 0
Treatment	17,901,422	38.0%	6,794,143
Pumping	3,366,977	8.8%	295,910
Transmission	6,686,120	8.8%	587,617
Distribution	10,973,501	0.0%	0
Storage	10,432,589	59.6%	6,218,426
Buildings/Improvements	5,401,149	30.1%	1,623,281
Administration	2,236,601	0.0%	0
Tools/ Equipment	93,447	0.0%	0
Exclude from SDF	138,096,738	0.0%	0
Meters / Services	29,948	0.0%	0
Total	**$ 222,274,300**		**$ 15,519,377**

Table 5-5:
Calculation of Water Buy-in Component per SFE

Function	Cost of Available Capacity RCNLD	Total Capacity Available[1] (SFEs)	Buy-in per SFE
Source of Supply	$ 0	8,545	$ 0
Treatment	6,794,143	10,114	672
Pumping	295,910	17,081	17
Transmission	587,617	30,114	20
Distribution	0	7,889	0
Storage	6,218,426	31,784	196
Buildings/Improvements	1,623,281	22,541	72
Administration	0	0	0
Tools/Equipment	0	0	0
Exclude from SDF	0	0	0
Meters / Services	0	0	0
Total	**$ 15,519,377**	**128,068**	**$976**

[1]Includes unused capacities from Table 5-2 and 5-8

5.2 IMPROVEMENT COMPONENT

The improvement is based on the Town's updated CIP from an updated planning process in 2016. The total CIP from 2017 through 2055 is approximately $124.4 million as shown in Table 5-6.

Table 5-6:
Water CIP Costs by Function (2017 - 2055)

Function	CIP Costs 2017 - 2055
Source of Supply	$12,350,000
Treatment	0
Pumping	5,125,000
Transmission	11,911,000
Distribution	1,905,000
Storage	10,725,609
Buildings/Improvements	2,582,886
Administration	0
Tools/ Equipment	0
Exclude from SDF	79,842,000
Total	**$124,441,495**

To calculate an improvement component based on the incremental cost approach, the following three tasks must be completed:

1. Multi-purpose project allocations,
2. Capacity definitions, and
3. Assessment schedule development

5.2.1 Multi-Purpose Project Allocations

Allocating the costs of multi-purpose projects is an integral part of calculating an improvement fee. A multi-purpose project is an improvement that will serve both growth and address existing needs. Few projects are designed and built exclusively to serve growth or solve an existing deficiency. Rather, projects are designed to maximize economies of scale in design and construction. Therefore, projects serving both growth and rehabilitation/upgrade (i.e., multi-purpose projects) are allocated to growth and non-growth.

In some cases, two or more capital projects are part of an improvement of a particular system function. To avoid potential double-counting of added capacities, all projects were first assigned to functions and then grouped into project groups. Table 5-7 shows the result of determining only the growth-related costs of the CIP after this project allocation step. Out of the $124.4 million CIP, $37.0 million is included in the improvement component calculation.

Table 5-7:
Growth-related Water CIP Costs for Improvement Component

Function	Cost of New Capacity
Source of Supply	$9,600,000
Treatment	0
Pumping	5,125,000
Transmission	11,911,000
Distribution	1,905,000
Storage	7,725,609
Buildings/Improvements	776,270
Administration	0
Tools/Equipment	0
Exclude from SDF	0
Total	**$37,042,879**

5.2.2 Capacity Definition

Table 5-8 summarizes the system capacities added for growth-related CIP projects by function. It also presents the estimated number of SFEs available for growth by function.

Table 5-8:
Water System Capacities for System Improvements

Function	New Capacities Added	Units	Added SFEs
Source of Supply	7.52	MGD	8,545
Treatment	0.00	MGD	0
Pumping	47.09	MGD	15,855
Transmission	85.80	MGD	28,889
Distribution	23.43	MGD	7,889
Storage	6.50	MG	7,386
Buildings/Improvements	11,270.39	SFE	11,270
Administration	0.00	SFE	0
Tools/Equipment	0.00	SFE	0
Exclude from SDF	0.00	NA	0
Total			**79,835**

5.2.3 Assessment Schedule

As with the buy-in component, the improvement component portion of the Town's proposed SDF is based on meter size. The same assessment schedule presented in Table 5-3 shows the number of SFEs for each meter size.

5.2.4 Improvement Component Calculation

The improvement component is calculated based on the cost of the growth-related capital projects and the total available capacities estimated by these processes. As with the buy-in

fee component, Arcadis has calculated the additional capacities by summing the capacities from the existing system and the capital improvements by function. Table 5-9 summarizes the improvement component by system function. Based on the CIP developed by the Town in 2016, the improvement component per SFE is $2,338.

Table 5-9:
Water Improvement Fee Component per SFE

Function	Cost of New Capacity RCNLD	Total Capacity Available (SFEs)	Improvement per SFE
Source of Supply	$9,600,000	8,545	$1,123
Treatment	0	10,114	0
Pumping	5,125,000	17,081	300
Transmission	11,911,000	30,114	396
Distribution	1,905,000	7,889	241
Storage	7,725,609	31,784	243
Buildings/Improvements	776,270	22,541	34
Administration	0	0	0
Tools/Equipment	0	0	0
Exclude from SDF	0	0	0
Total	**$37,042,879**	**128,068**	**$2,338**

5.3 RESULTS AND PROPOSED WATER SDF FOR 2017

As shown in Tables 5-5 and 5-9, the total buy-in and improvement components are calculated to be $976 and $2,338 per SFE respectively, for a total rounded water SDF of $3,314 per SFE for 2017.

Table 5-10 presents the existing and Town proposed schedule of SDFs by meter size.

Table 5-10:
Proposed Water SDF by Meter Size

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8" x 3/4"	$2,169	$2,220
3/4"	3,237	3,314
1"	5,407	5,534
1.5"	10,781	11,036
2" C2	21,594	22,104
2" T2	26,968	27,606
3" C2	53,969	55,244
3" T2	70,156	71,814
4" C2	107,905	110,456
4" T2	134,905	138,094
6" C2	215,842	220,944
6" T2	269,778	276,156

6 Water Resources System Development Fees

The water resources fixed assets are primarily related to the Rueter-Hess reservoir, PCWPF, water rights, and piping to continue to maintain sufficient capacity for new customers. Arcadis calculated the water resources SDF by following the combined approach. The assumptions and steps for the water resources SDFs are described in this section.

6.1 EQUITY BUY-IN COMPONENT

The buy-in component for water resources follows the following three steps:

1. Fixed asset valuation,
2. Capacity definition, and
3. Assessment schedule development

The following is a description of each step.

6.1.1 Fixed Asset Valuation

Similar to the water system, the value of the Town's water resources fixed assets is based on an estimate of RCNLD for assets, including construction work in progress for the current year, that currently have capacity remaining to serve new customers. An estimate of the value of assets contributed by developers was excluded from the SDF calculation. Unlike the water system, the outstanding debt for the Town's Certificates of Participation (COPs) is not subtracted from the asset values. Some assets purchased with COP proceeds are not Town-owned assets.

As in the water system, the Town's water resources system consists of individual components that serve specific functions. To estimate the value of assets related to each function, the SDF value of each asset is allocated to one or more of 10 functions. The Town's water resources functions mirror the water system functions:

1. Source of supply
2. Treatment
3. Pumping
4. Transmission
5. Distribution
6. Storage

7. Buildings/Improvements
8. Administration
9. Tools/Equipment
10. Exclude from SDF

Table 6-1 summarizes the asset values attributed to each function. Based on the analysis, the total value of the Town's water resources system assets including construction work in progress for SDF purposes in fiscal year ending 2015 is $130.4 million. Assets used in the system that are contributed assets are excluded from the calculation of the buy-in fee SDF. To explicitly show the value of the excluded assets, the value of assets assigned to this function that is estimated to be contributed by developers was reassigned to the Exclude from SDF function. Of the total RCNLD value, $31.8 million is excluded from the SDF. For purposes of establishing a buy-in SDF, the Town's water resources system's RCNLD value is approximately $98.6 million.

Table 6-1:
RCNLD Water Resources System Value by Function

Function	RCNLD
Source of Supply	$26,193,382
Treatment	17,682,717
Pumping	0
Transmission	2,192,960
Distribution	315,267
Storage	51,040,997
Buildings/ Improvements	314,210
Administration	901,199
Tools/ Equipment	17,919
Exclude from SDF	31,755,677
Total	**$130,414,327**

6.1.2 Capacity Definition

The next step in determining the buy-in component under the equity buy-in approach is to define the system capacity. Specifically, under the equity buy-in approach the system capacity is based on the unused capacity of the system for each function identified above. Town Staff engineers provided data used for this analysis.

Table 6-2 lists the current capacities of each water resources system function. It also presents an estimate of the capacity in the existing system that is available for growth. Underlying the numbers shown in this table is the assumption that one SFE requires 400 gallons of water per day on a peak-day basis. This estimate is based on the Town's estimate of water use per SFE in 2015. The peak-day factor of 2.2 used to estimate system capacities was obtained from the Utilities Engineering Manager and Public Works Design Guidelines. Similar demands per SFE were used for source of supply, treatment, pumping, and transmission capacities. The amount of storage required per SFE is 0.45 acre feet per day.

This value is derived from the Town's Public Works Design Guidelines. Storage capacity is represented as AF, or acre feet, in the table.

Table 6-2:
Water Resources System Component Capacities

Function	Capacities	Unit	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply	0.8	MGD	909	373	536	59.0%
Treatment	4.0	MGD	4,545	2,364	2,182	48.0%
Pumping	0	MGD	0	0	0	0.0%
Transmission	4.51	MGD	5,125	2,665	2,460	48.0%
Distribution	0	NA	0	0	0	0.0%
Storage	8,000	AF	17,778	9,244	8,533	48.0%
Buildings/ Improvements	37,500	SFE	37,500	25,986	11,514	30.7%
Administration	0	SFE	0	0	0	0.0%
Tools/ Equipment	0	SFE	0	0	0	0.0%

6.1.3 Assessment Schedule Development

Using the assumptions and the capacities for each function summarized in Table 6-2, the number of SFEs that can be served by each function is calculated. Subtracting the number of SFEs currently served by the utility generates the number of SFEs available for growth. A fundamental assumption regarding the SFEs currently served and the SFEs available for growth is that 40 percent of the SFEs that can be served are existing users and 60 percent are new users. This assumption was established in the initial water resources SDF study and is still valid based on capacity calculations in Table 6-2 above. The Town determined its renewable water resources program was to be allocated based on the proportion of then-existing SFEs to the expected SFEs in 2055.

The number of existing SFEs is typically based on the number of meters by size and the associated equivalency factors. The equivalency factors are calculated based on average actual water use by meter size. The inventory of number of meters by meter size for 2016 and equivalency factors that result in the current number of SFEs are presented in Table 6-3.

Table 6-3:
Inventory of Existing Water Resources SFEs[1,2]

Meter Size	Number of Meters	Equivalency Factor	Number of SFEs
5/8" x 3/4"	525	1.00	525
3/4"	17,260	1.00	17,260
1"	327	4.06	1,328
1.5"	353	9.18	3,241
2" C2	196	13.19	2,585
3" C2	26	19.92	518
4" C2	4	81.19	325
6" C2	2	102.67	205
Total	**18,693**		**25,986**

[1]Does not include bulk water customers.
[2]Meter sizes 2-inch and larger include C2 and T2 meter types.

In order to assess SDFs, Arcadis proposes that the number of SFEs a new customer represents is determined by an assessment of that customer's potential capacity needs. For purposes of this study and for developing an SDF assessment schedule, hydraulic capacities in gpm are assumed for specific meter sizes and types.

6.1.4 Buy-In Component Calculation

The total costs to be recovered from the buy-in component of the water resources SDF are based on the percentage of remaining capacities by functions calculated in Table 6-2 and the total system asset values shown in Table 6-1. Table 6-4 presents the total buy-in amount by function. The total amount attributable to the buy-in component is $49.6 million. Table 6-5 calculates the buy-in component per SFE for each of the functions. The total buy-in component per SFE is $3,980.

Table 6-4:
Calculation of Water Resources Buy-in Totals

Function	System Value RCNLD	Remaining Capacity	Cost of Available Capacity RCNLD
Source of Supply	$26,193,382	59.0%	$15,454,095
Treatment	17,682,717	48.0%	8,487,704
Pumping	0	0.0%	0
Transmission	2,192,960	48.0%	1,052,621
Distribution	315,267	0.0%	0
Storage	51,040,997	48.0%	24,499,678
Buildings/ Improvements	314,210	30.7%	96,472
Administration	901,199	0.0%	0
Tools/ Equipment	17,919	0.0%	0
Exclude from SDF	31,755,677	0.0%	0
Total	**$130,414,327**		**$49,590,570**

Table 6-5:
Calculation of Water Resources Buy-in Component per SFE

Function	Cost of Available Capacity RCNLD	Total Capacity Available (SFEs)	Buy-in per SFE
Source of Supply	$15,454,095	9,679	$1,597
Treatment	8,487,704	38,878	218
Pumping	0	13,299	0
Transmission	1,052,621	15,794	67
Distribution	0	0	0
Storage	24,499,678	11,700	2,094
Buildings/ Improvements	96,472	23,027	4
Administration	0	0	0
Tools/ Equipment	0	0	0
Exclude from SDF	0	0	0
Total	**$49,590,570**	**112,378**	**$3,980**

6.2 IMPROVEMENT COMPONENT

The improvement component is based on the Town's updated water resources CIP from the updated planning process in 2016 and the review of renewable water supply projects contained in the Town's Hybrid 3,500 AF renewable water project. The total CIP from 2017 through 2055 is approximately $314.6 million as shown in Table 6-6.

Table 6-6:
Water Resources CIP Costs by Function (2017 - 2055)

Function	CIP Costs 2017- 2055
Source of Supply	$44,356,174
Treatment	119,464,341
Pumping	17,825,610
Transmission	112,514,839
Distribution	0
Storage	19,310,646
Buildings/ Improvements	1,172,413
Administration	0
Tools/ Equipment	0
Exclude from SDF	0
Total	**$314,644,022**

The improvement component was calculated by completing the following three tasks:

1. Multi-purpose project allocations,
2. Capacity definitions, and
3. Assessment schedule development

6.2.1 Multi-Purpose Project Allocations

Similar to the water system, the water resources capital improvement projects were first assigned to functions and then grouped into project groups. Table 6-7 shows the result of determining only the growth-related costs of the CIP after this project allocation step. Out of the $314.6 million CIP, $201.5 million is included in the improvement component calculation.

Table 6-7:
Growth-related Water Resources CIP Costs for Improvement Component

Function	CIP Costs 2017 - 2055	New Capacity	Cost of New Capacity
Source of Supply	$44,356,174	58.5%	$25,955,667
Treatment	119,464,341	64.4%	76,988,178
Pumping	17,825,610	50.8%	9,052,804
Transmission	112,514,839	68.6%	77,153,502
Distribution	0	0.0%	0
Storage	19,310,646	62.1%	11,991,599
Buildings/Improvements	1,172,413	30.7%	359,965
Administration	0	0.0%	0
Tools/Equipment	0	0.0%	0
Exclude from SDF	0	0.0%	0
Total	**$314,644,022**		**$201,501,713**

6.2.2 Capacity Definition

Table 6-8 summarizes the system capacities added for growth-related CIP projects by function. It also presents the estimated number of SFEs available for growth by function.

Table 6-8:
Water Resources System Capacities for System Improvements

Function	Added SFEs
Source of Supply	9,143
Treatment	36,696
Pumping	13,299
Transmission	13,334
Distribution	0
Storage	3,167
Buildings/Improvements	11,514
Administration	0
Tools/Equipment	0
Exclude from SDF	0
Total	**87,153**

6.2.3 Assessment Schedule

As with the buy-in component, the improvement component portion of the Town's proposed SDF is based on assumed hydraulic capacities of specific meter sizes and types.

6.2.4 Improvement Component Calculation

The improvement component is calculated based on the cost of the growth-related capital projects and the total available capacities estimated by these processes. Table 6-9 summarizes the water resources system improvement component by system function. Based on the CIP developed by the Town, the improvement component per SFE is $11,268.

Table 6-9:
Water Resources Improvement Fee Component per SFE

Function	Cost of New Capacity RCNLD	Total Capacity Available (SFEs)	Improvement per SFE
Source of Supply	$25,955,667	9,679	$2,682
Treatment	76,988,178	38,878	1,980
Pumping	9,052,804	13,299	681
Transmission	77,153,502	15,794	4,885
Distribution	0	0	0
Storage	11,991,599	11,700	1,025
Buildings/Improvements	359,965	23,027	16
Administration	0	0	0
Tools/Equipment	0	0	0
Exclude from SDF	0	0	0
Total	**$201,501,713**	**112,378**	**$11,268**

6.3 RESULTS AND PROPOSED WATER RESOURCES SDF FOR 2017

As shown in Tables 6-5 and 6-9, the total buy-in and improvement components are calculated to be $3,980 and $11,268 per SFE respectively, for a total water resources SDF of $15,248 per SFE for 2017. Table 6-10 presents the existing and the Town proposed SDFs by meter size.

Table 6-10:
Proposed Water Resources SDF by Meter Size

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8" x 3/4"	$10,196	$10,216
3/4"	15,218	15,248
1"	25,414	25,464
1.5"	50,676	50,776
2" C2	101,504	101,704
2" T2	126,766	127,016
3" C2	253,684	254,184
3" T2	329,774	330,424
4" C2	507,216	508,216
4" T2	634,134	635,384
6" C2	1,014,584	1,016,584
6" T2	1,268,116	1,270,616

7 Wastewater System Development Fees

Arcadis also applied the combined approach for calculating the Town's SDFs for its wastewater system. The equity buy-in component, however, is divided into buy-in for the Town's existing wastewater system and a buy-in for treatment-related assets by the Plum Creek Water Reclamation Authority (PCWRA). PCWRA is the treatment entity for the Town's flows and has invested significant capital in plant expansions. The approach for determining the buy-in treatment component as well as the improvement component is described in this section.

7.1 EQUITY BUY-IN COMPONENT

The buy-in component is based on the equity buy-in approach, and requires three steps:

1. Fixed asset valuation,
2. Capacity definition, and
3. Assessment schedule development

The following is a description of each step followed to determine the wastewater system buy-in SDF.

7.1.1 Fixed Asset Valuation

Similar to the water system valuation, the wastewater system value is based on an estimate of the RCNLD for assets, including construction work in progress for the current year, that currently have capacity remaining to serve new customers. An estimate of the value of assets contributed by developers was excluded from the SDF calculation. In addition, the value was adjusted by the amount of principal on outstanding debt. Existing debt will be repaid through rates and therefore is ineligible for repayment with development fees.

The Town's wastewater system is designed to collect wastewater from its customers and provide safe and reliable wastewater service throughout its service area. It is PCWRA's responsibility to treat the Town's wastewater. The Town's system consists of individual components that serve specific functions. To estimate the value of assets related to each function, the SDF value of each asset is allocated to one or more of eight functions, typically referred to in wastewater systems as unit processes. However, note that the Treatment Plant unit process is handled separately in this buy-in step. The Town's wastewater unit processes are:

1. Collection System

2. Interceptor System
3. Treatment Plant
4. Lift Stations
5. Buildings/Improvements
6. Administration
7. Tools/Equipment
8. Exclude from SDF

Table 7-1 summarizes the asset values attributed to each unit process. Based on the analysis, the total value of the Town's wastewater system assets including construction work in progress for SDF purposes in fiscal year ending 2015 is $74.8 million. Many assets used in the collection system are typically contributed by developers and thus excluded from the calculation of the buy-in component. To explicitly show the value of the excluded assets, the value of assets that is estimated to be contributed by developers was reassigned to the Exclude from SDF unit process. Of the total RCNLD value, the majority or $53.3 million is excluded from the SDF. Thus, for purposes of establishing a buy-in SDF, the Town's wastewater system, net of outstanding debt is valued at approximately $21.5 million.

Table 7-1:
RCNLD Wastewater System Value by Function

Unit Process	RCNLD
Collection System	$12,621,840
Interceptor System	5,069,050
Treatment Plant	9,966
Lift Station	2,039,874
Buildings/ Improvements	591,094
Administration	1,060,281
Tools/Equipment	90,194
Exclude from SDF	53,278,221
Total	**$74,760,519**

7.1.2 Capacity Definition

The next step in determining the buy-in component under the equity buy-in approach is to define the system capacity. Specifically, under the equity buy-in approach the system capacity is based on the unused capacity of the system for each unit process identified above. Town Staff engineers provided data used for this analysis.

Table 7-2 lists the current capacities of each wastewater unit process in the Town (excluding PCWRA's treatment component). This table also presents an estimate of the capacity in the existing system that is available for growth. The interceptor system capacity required per SFE is approximately 220 gallons per day on a wet-weather peak capacity

basis. This value is derived from the Town's master plan and the aggregate gpd peaking factor of 2.1 for the Town's interceptors.

Table 7-2:
Wastewater System Component Capacities

Unit Process	Capacities	Unit	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Collection System	0.0	MGD	0	0	0	0.00%
Interceptor System	8.8	MGD	19,071	17,143	1,929	10.11%
Treatment Plant[1]	4.6	MGD	20,714	0	0	0.00%
Lift Station	11.55	MGD	10,504	2,118	8,385	79.83%
Buildings/ Improvements	37,500	SFE	37,500	22,936	14,564	38.84%
Administration	0.0	SFE	0	22,936	0	0.00%
Tools/Equipment	0.0	SFE	0	22,936	0	0.00%

[1]The wastewater treatment component is calculated separately in Section 7.2 of report.

Using these assumptions and the capacities for each unit process summarized in Table 7-2, the number of SFEs that can be served by each unit process is calculated. Subtracting the number of SFEs currently served by the utility generates the number of SFEs available for growth. A description of how the number of SFEs currently served by the Town's wastewater system is estimated follows below.

7.1.3 Assessment Schedule Development

The number of SFEs currently using the Town's wastewater system is based on different approaches depending on the system component. First, generally used capacity is based on the number of meters by size and the associated equivalency factors. The equivalency factors are calculated based on average actual use by meter size. The inventory of number of meters by meter size for 2015 and equivalency factors that result in the current number of SFEs are presented in Table 7-3. The Town is estimated to have 22,936 wastewater SFEs.

Table 7-3:
Inventory of Existing Wastewater SFEs[1]

Meter Size	Number of Meters	Equivalency Factor	Number of SFEs
5/8" x 3/4"	506	1.0	506
3/4"	16,978	1.0	16,978
1"	234	4.06	950
1.5"	241	9.18	2,212
2"	117	13.19	1,543
3"	19	19.92	378
4"	2	81.19	162
6"	2	102.67	205
Total	**18,099**		**22,936**

[1]Meter sizes 2-inch and larger include C2 and T2 meter types.

The currently used capacity for the Interceptor System and Lift Station components are determined based on actual flow data obtained from the Town's Utilities Engineering Manager.

Utilities Engineering reviewed the capacities in 2016 for the wastewater system to ensure that the values used are appropriate.

1. The collection system capacity is set at 0 since these are contributed assets and have no available capacity to absorb additional growth.

2. The interceptor system is split between the two primary interceptors that receive wastewater from the collection system and convey it to the water reclamation facility for treatment. The Plum Creek Interceptor conveys approximately two-thirds of the wastewater generated by the Town for treatment. This interceptor serves all parts of Town in the Plum Creek basin except for the Meadows. Capacity is a function of pipe diameter, pipe material and slope of the pipe, and this interceptor capacity is rated at 6.23 mgd based on the critical reach in this pipeline. The Meadows Interceptor conveys approximately one-third of the wastewater generated by the Town for treatment. This interceptor serves all the Meadows development. This interceptor capacity is rated at 2.58 mgd based on the critical reach in this pipeline.

3. Lift station capacity is the sum of all the individual lift station capacities and is collectively rated at 11.55 mgd. Used capacity reflects the sum of maximum daily flows observed in the lift stations.

4. Treatment system capacity is based on the Town's capacity in the PCWRA. PCWRA is rated for 4.6 mgd. The Town will add an additional 2.70 mgd of capacity to meet growth demands.

7.1.4 Buy-In Component Calculation

The total costs to be recovered from the buy-in component of the wastewater SDF are based on the percentage of remaining capacities by unit process calculated in Table 7-2 and the total system asset values shown in Table 7-1. Table 7-4 presents the total buy-in amount by unit process. The total amount attributable to the buy-in component for the Town's wastewater system components (excluding treatment) is $2.4 million. Table 7-5 calculates the buy-in component per SFE for each of the unit processes. The total buy-in component per SFE is $209.

Table 7-4:
Calculation of Wastewater Buy-in Totals

Unit Process	System Value RCNLD[1]	Remaining Capacity	Cost of Available Capacity RCNLD
Collection System	$12,621,840	0.0%	$0
Interceptor System	5,069,050	10.1%	512,601
Treatment Plant	9,966	0.0%	0
Lift Station	2,039,874	79.8%	1,628,510
Buildings/ Improvements	591,094	38.8%	229,568
Administration	1,060,281	0.0%	0
Tools/Equipment	90,194	0.0%	0
Exclude from SDF	53,278,221	0.0%	0
Total	**$74,760,519**		**$2,370,678**

[1]The system value for RCNLD is net of wastewater debt service.

Table 7-5:
Calculation of Wastewater Buy-in Component per SFE

Unit Process	Cost of Available Capacity RCNLD	Total Capacity Available (SFEs)	Buy-in per SFE
Collection System	$0	13,182	$0
Interceptor System	512,601	73,963	7
Treatment Plant	0	0	0
Lift Station	1,628,510	8,385	194
Buildings/ Improvements	229,568	29,128	8
Administration	0	0	0
Tools/Equipment	0	0	0
Exclude from SDF	0	0	0
Total	**$2,370,678**	**124,658**	**$209**

7.2 TREATMENT FEE COMPONENT

As mentioned previously, part of the existing wastewater system serving the Town's customers is the treatment process and associated assets provided by PCWRA. The calculation of the treatment fee component was updated in 2016 to reflect all debt issues obtained by PCWRA for treatment plant improvements, costs associated with the cash payment for Clarifier Number 3, the two PCWRA capacity expansions, Ditch 3 at PCWRA, and Manganese Control at PCWRA. Table 7-6 presents the calculation and shows the total principal on debt for the treatment plant expansions. Capacity for new customers allows for approximately 16,528 SFEs. By dividing the cost of expansion-related capacity by 16,528 SFEs, the treatment fee component calculates to be $3,163 per SFE.

Table 7-6:
Wastewater Treatment Fee per SFE

Unit Process	Cost of PCWRA Treatment Plant	Growth Percentage	Growth Portion of Treatment Cost	Added SFEs	Treatment Component per SFE (rounded)
Treatment Component	$55,304,811	94.5%	$52,285,916	16,528	**$3,163**

7.3 IMPROVEMENT COMPONENT

The improvement component is based on the Town's updated CIP from an engineering review in 2016. The total CIP through 2055 is approximately $75.8 million as shown in Table 7-7.

Table 7-7:
Wastewater CIP Cost by Function (2017 - 2055)

Unit Process	CIP Costs 2017 - 2055
Collection System	$387,000
Interceptor System	4,149,950
Treatment Plant[1]	23,857,989
Lift Station	0
Buildings/ Improvements	1,236,815
Administration	0
Tools/Equipment	0
Exclude from SDF	46,182,867
Total	**$75,814,621**

[1]Costs included in 7.2 Treatment Fee Component

To calculate the improvement component based on the incremental cost approach, the following three tasks must be completed:

1. Multi-purpose project allocations,
2. Capacity definitions, and
3. Assessment schedule development

7.3.1 Multi-Purpose Project Allocations

Similar to the approach followed for allocating the water system projects, only growth-related portions of projects can be included in the improvement component calculation. The Town's engineers allocated wastewater projects serving both growth and rehabilitation/upgrade (i.e., multi-purpose projects) as either growth or non-growth. Out of $75.8 million of capital improvements, only $26.8 is included in the improvement component calculation.

Table 7-8:
Growth-related Wastewater CIP Costs for Improvement Component

Unit Process	Cost of New Capacity
Collection System	$233,813
Interceptor System	2,211,246
Treatment Plant[1]	23,857,989
Lift Station	0
Buildings/ Improvements	480,351
Administration	0
Tools/Equipment	0
Exclude from SDF	0
Total	**$26,783,399**

[1]Costs included in 7.2 Treatment Fee Component

7.3.2 Capacity Definition

Table 7-9 summarizes the system capacities added by function. It also presents the estimated number of SFEs available for growth by unit process.

Table 7-9:
Wastewater System Capacities for System Improvements

Unit Process	New Capacities Added	Units	Added SFEs
Collection System	2.90	MGD	13,182
Interceptor System	33.28	MGD	72,035
Treatment Plant	2.70	MGD	6,136
Lift Station	0.00	MGD	0
Buildings/ Improvements	14,564	SFE	14,564
Administration	0.00	SFE	0
Tools/Equipment	0.00	SFE	0
Exclude from SDF	0.00	SFE	0
Total			**105,917**

7.3.3 Assessment Schedule

As with the buy-in component, the improvement component portion of the Town's proposed SDF is based on meter size. The same assessment schedule presented in Table 7-3 shows the number of SFEs for each meter size.

7.3.4 Improvement Component Calculation

The improvement component is calculated based on the cost of the growth-related capital projects and the total available capacities estimated by these processes. Table 7-10 summarizes the wastewater system improvement component by system unit process. Based on the CIP developed by the Town, the improvement component per SFE is $64.

Table 7-10:
Wastewater Improvement Fee Component per SFE

Unit Process	Cost of New Capacity RCNLD	Total Capacity Available (SFEs)	Improvement per SFE
Collection System	$233,813	13,182	$18
Interceptor System	2,211,246	73,963	30
Treatment Plant[1]	0	0	0
Lift Station	0	8,385	0
Buildings/ Improvements	480,351	29,128	16
Administration	0	0	0
Tools/Equipment	0	0	0
Exclude from SDF	0	0	0
Total	**$2,925,410**	**124,659**	**$64**

[1]Treatment Plant costs included in the Treatment calculation in Section 7.2

7.4 RESULTS AND PROPOSED WASTEWATER SDF FOR 2017

As shown in Tables 7-5, 7-6, and 7-10, the total buy-in, treatment, and improvement components calculated to be $209, $3,163 and $64 respectively, for a total SDF of $3,437 per SFE. Table 7-11 presents the existing and the Town proposed SDFs by meter size.

Table 7-11:
Proposed Wastewater SDF by Meter Size

Meter Size	Current 2016 SDF	Proposed 2017 SDF
5/8"x ¾"	$2,173	$2,303
¾" x ¾"	3,243	3,437
1"	5,416	5,740
1.5"	10,799	11,445
2" C2	21,631	22,925
2" T2	27,014	28,630
3" C2	54,061	57,295
3" T2	70,276	74,480
4" C2	108,089	114,555
4" T2	135,136	143,220
6" C2	216,211	229,145
6" T2	270,239	286,405

8 Stormwater Development Impact Fees

Stormwater development impact fees (DIFs) were developed differently than the previous utilities' SDFs. The nature of stormwater improvements is such that with existing system improvements it is difficult to identify remaining capacity to serve growth; therefore, the incremental or improvement cost method was applied in the analysis. Additional capacity to serve growth also varies by drainage basin in the Town's service area. Values are presented, therefore, for both the Cherry Creek Basin and the Plum Creek Basin.

The assessment of stormwater DIFs also differs from the other utilities. Stormwater flow is based on runoff and impervious area. The assumptions regarding impervious areas, developable acres, and others were reviewed and revised by Arcadis and Town Staff in the 2010 study. These assumptions are maintained in this study update.

8.1 STORMWATER DEVELOPMENT IMPACT FEE DATA

Four data elements are essential to calculating stormwater DIFs following the incremental cost methodology:

1. Capital improvement program (CIP)
2. Developable acres
3. Percent imperviousness by acre
4. Units per acre

The most recent assumptions of capital projects from the stormwater planning process in 2016 are used in this analysis. These improvements are divided among non-growth related, growth related, and developer's contributions costs. The value of the improvements included in the stormwater DIF is $44.2 million and is presented in Table 8-1.

Table 8-1:
Stormwater Capital Improvement Cost Allocations

Item	2017 – 2055
Total Non-Growth Related Cost	$42,343,958
Total Growth Related Improvement Costs	44,231,626
Developer's Contribution	19,979,305
Total Capital Improvement Costs	**$106,554,889**
Growth Related Improvements Costs	
Total Cherry Creek Basin	5,680,152
Total Plum Creek Basin	38,551,474
Total Growth Related Improvement Costs	**$44,231,626**

Acres available to be developed by land use type were reduced to reflect construction anticipated through 2016. Table 8-2 presents developable acreage by land use type.

Table 8-2:
Acreage to be Developed

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	950	2,779
Single Family Attached	18	47
Multifamily	254	969
Commercial (Retail/ Office)	252	1,826
Open Spaces	460	1,600
Total	**1,935**	**7,220**

Imperviousness percentages by land use type were based on the Urban Drainage and Flood Control District (UDFCD) Criteria Manual.[7] For single-family residential detached units, the percent imperviousness was determined based on the following assumptions:

- Density of 3 units per acre
- Typical two-story homes
- Average home size of 2,100 square feet (sq. ft.)

Using these assumptions and Figure RO-5 from the UDFCD Criteria Manual, single-family residential detached percentage imperviousness was estimated to be 33 percent.

[7]Urban Drainage and Flood Control District Criteria Manual Volume 1, Denver, Colorado, June 2001, Revised April 2008

Table 8-3:
Percentage of Imperviousness by Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	33%	33%
Single Family Attached	75%	75%
Multifamily	80%	80%
Commercial (Retail/ Office)	80%	80%
Open Spaces	2%	2%

Units per acre are needed to determine the actual stormwater DIF per unit. Single-family detached, single-family attached, and multi-family DIFs are assessed per dwelling unit, whereas commercial and industrial DIFs are assessed per 1,000 sq. ft. of building space. The units per acre were obtained from:

- Single-family residential detached density of 3 units per acre from the water design criteria section of the Town of Castle Rock - Public Works Regulations – February 12, 1999
- Actual density in the Town as of July 2010 for single-family residential attached (townhomes) and multifamily land use types
- Average Floor Area Ratio (FAR) for office space in Castle Rock from the Douglas County Community Planning and Sustainable Development Department for commercial/industrial land use. FAR is defined as a measure of development density. It is calculated as the building square footage divided by the building lot square footage.

8.2 STEPS TO CALCULATE THE STORMWATER FEE

8.2.1 Step 1: Proportionate Share of Capital Costs

The first step in the fee calculation is to determine each land use type's proportionate share of capital costs. Developable acres by land use type and percent imperviousness are used to estimate the impervious acreage by land use type. The cost of stormwater improvements for new development is then apportioned across land use types by the percentage share of total impervious area of development. Tables 8-4 and 8-5 demonstrate the allocation of capital costs across land use types.

Table 8-4:
Allocation of Factor of Capital Costs

Land Use Type	Impervious Acreage		Proportionate Share	
	Cherry Creek Basin	Plum Creek Basin	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	314	917	42.30%	28.48%
Single Family Attached	14	35	1.87%	1.10%
Multifamily	203	775	27.35%	24.07%
Commercial (Retail/ Office)	202	1,460	27.24%	45.36%
Open Spaces	9	32	1.24%	0.99%
Total	**741**	**3,220**	**100.00%**	**100.00%**

Table 8-5:
Allocation of Capital Cost by Land Use Type

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	$2.402,679	$10,980,553
Single Family Attached	106,129	422,142
Multifamily	1,553,672	9,278,716
Commercial (Retail/ Office)	1,547,147	17,486,884
Open Spaces	70,526	383,179
Total	**$5,680,152**	**$38,551,474**

8.2.2 Step 2: Capital Costs per Acre

The next step in the fee calculation is to calculate the capital cost per acre by land use type. The allocated costs by land use type are divided by the developable acres for this step. Table 8-6 shows the result of this step.

Table 8-6:
Capital Cost per Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	$2,528	$3,951
Single Family Attached	5,746	8,980
Multifamily	6,129	9,579
Commercial (Retail/ Office)	6,129	9,579
Open Spaces	153	239

8.2.3 Step 3: Stormwater DIF per Unit

The last step in the fee calculation is to calculate the stormwater development impact fee per unit of development. A unit is defined as a residential dwelling unit or 1,000 sq. ft. of retail/office/industrial development. The capital cost per acre for each land use type is presented in Table 8-6. The dollar amounts allocated to each land use type are divided by the number of units per acre to determine the fee per unit for each development type.

Single-family detached and single-family attached units per acre are 3 and 10, respectively. Multifamily development in the Town averages 12 units per acre. For commercial/industrial development, the FAR from the Douglas County database shows that one acre of development has an average FAR of 0.37. This average FAR was verified with the projected non-residential development data from the Town's Development Services Department. Applying the average FAR is the most conservative approach to minimizing the overall increases to the stormwater development impact fees.

By multiplying one acre (43,560 square feet) by the FAR of 0.37, the result is 16,117 sq. ft. for each commercial/industrial building. The development impact fee for commercial and industrial development is based on each 1,000 sq. ft. of building space; therefore, the number of units per acre for commercial/industrial development is 16.1. Dividing the capital cost per acre for each land use type by the number of units per acre results in the stormwater development impact fee per unit.

Table 8-7 shows the units per acre assumed for each land use type. Note that while values are shown for Open Space land use types, no stormwater DIF is assessed.

Table 8-7:
Number of Units per Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	3	3
Single Family Attached	10	10
Multifamily	12	12
Commercial (Retail/ Office)	16.1	16.1
Open Spaces	NA	NA

The proposed stormwater development impact fees for 2017 by land use type and drainage basin are summarized in Table 8-8.

Table 8-8:
DIF per Unit

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	$843	$1,317
Single Family Attached	$563	$880
Multifamily	$511	$798
Commercial (Retail/ Office)	$380	$594
Open Spaces	$0	$0

8.3 STORMWATER DEVELOPMENT IMPACT FEE EQUATION

The equation below represents the calculation of stormwater DIFs:

$$C = \frac{[(DA * IMP)/TIA]*CIP}{DA}$$

$$DIF = C/U$$

Where:

C = stormwater capital cost per acre

DIF = stormwater development impact fee per unit

DA = developable acres

IMP = percent imperviousness

TIA = total impervious acres

CIP = growth-related capital improvement plan costs

U = units per acre

9 Summary

9.1 STUDY SUMMARY

Arcadis has completed the 2016 Utilities Rates and Fees Study Update, in particular the review and revisions to the Town's water, water resources, wastewater SDFs, and stormwater development impact fees as discussed in this report. The purpose of this study is to provide the Town with a thorough review of its SDFs and the underlying assumptions, and provide updated fees for 2017 through 2021. Arcadis' review is based on development fee approaches that are acceptable to the industry and to the State of Colorado's impact fee legislation. Arcadis recommends that periodic reviews of growth, capital improvements, and use of revenues from SDFs are made to allow the Town to proactively make changes if needed.

9.2 RECOMMENDED SDFS FOR 2017 THROUGH 2021

Following the methodologies described in this report, Arcadis revised fixed asset and CIP costs and recalculated the fees to reflect current conditions in the Town. Costs for capital improvements were maintained at 2016 dollars. In order to maintain SDF revenues to match increases in capital costs over time, Arcadis recommends that the SDFs for water, water resources, and wastewater be escalated for the study period of 2017 through 2021. It is recommended that stormwater development impact fees for the Plum Creek and Cherry Creek basin be escalated for the study period of 2017 through 2021 then escalated in years 2018 through 2021. Using 2017 as the base year, the fees presented below are escalated at an average of 2.80 percent per year beginning in 2018. This escalation represents Arcadis' expectation of future cost escalations based on the average ENR index increase from 2007 through July of 2016.

Table 9-1:
Recommended Water SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8” x 3/4”	$2,169	$2,220	$2,283	$2,346	$2,412	$2,480
3/4"	3,237	3,314	3,407	3,502	3,600	3,701
1"	5,407	5,534	5,690	5,848	6,012	6,181
1.5"	10,781	11,036	11,345	11,662	11,988	12,324
2" C2	21,594	22,104	22,725	23,358	24,012	24,686
2” T2	26,968	27,606	28,380	29,172	29,988	30,829
3" C2	53,969	55,244	56,795	58,378	60,012	61,696
3" T2	70,156	71,814	73,830	75,888	78,012	80,201
4" C2	107,905	110,456	113,555	116,722	119,988	123,354
4” T2	134,905	138,094	141,970	145,928	150,012	154,221
6" C2	215,842	220,944	227,145	233,478	240,012	246,746
6” T2	269,778	276,156	283,905	291,822	299,988	308,404

Table 9-2:
Recommended Water Resources SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8” x 3/4”	$10,196	$10,216	$10,502	$10,796	$11,099	$11,409
3/4"	15,218	15,248	15,675	16,114	16,565	17,029
1"	25,414	25,464	26,177	26,910	27,664	28,438
1.5"	50,676	50,776	52,198	53,660	55,161	56,707
2" C2	101,504	101,704	104,552	107,480	110,489	113,583
2” T2	126,766	127,016	130,573	134,230	137,986	141,852
3" C2	253,684	254,184	261,302	268,620	276,139	283,873
3" T2	329,774	330,424	339,677	349,190	358,964	369,018
4" C2	507,216	508,216	522,448	537,080	552,111	567,577
4” T2	634,134	635,384	653,177	671,470	690,264	709,598
6" C2	1,014,584	1,016,584	1,045,052	1,074,320	1,104,389	1,135,323
6” T2	1,268,116	1,270,616	1,306,198	1,342,780	1,380,361	1,419,027

Table 9-3:
Recommended Wastewater SDF Implementation Schedule

Meter Size	Current 2016 SDF	Proposed 2017 SDF	Proposed 2018 SDF	Proposed 2019 SDF	Proposed 2020 SDF	Proposed 2021 SDF
5/8” x 3/4”	$2,173	$2,303	$2,367	$2,433	$2,502	$2,572
3/4"	3,243	3,437	3,533	3,632	3,734	3,839
1"	5,416	5,740	5,900	6,065	6,236	6,411
1.5"	10,799	11,445	11,765	12,095	12,434	12,784
2" C2	21,631	22,925	23,565	24,225	24,906	25,606
2” T2	27,014	28,630	29,430	30,255	31,104	31,979
3" C2	54,061	57,295	58,895	60,545	62,246	63,996
3" T2	70,276	74,480	76,560	78,705	80,916	83,191
4" C2	108,089	114,555	117,755	121,055	124,454	127,954
4” T2	135,136	143,220	147,220	151,345	155,596	159,971
6" C2	216,211	229,145	235,545	242,145	248,946	255,946
6” T2	270,239	286,405	294,405	302,655	311,154	319,904

Table 9-4:
Recommended Stormwater DIF Implementation Schedule

Land Use Type	Current 2016 DIF	Proposed 2017 DIF	Proposed 2018 DIF	Proposed 2019 DIF	Proposed 2020 DIF	Proposed 2021 DIF
Cherry Creek Basin						
Single Family Detached	$748	$843	$867	$891	$916	$942
Single Family Attached	500	563	579	595	612	629
Multifamily	453	511	525	540	555	571
Commercial (Retail/Office)	338	380	391	402	413	425
Plum Creek Basin						
Single Family Detached	$1,125	$1,317	$1,354	$1,392	$1,431	$1,471
Single Family Attached	752	880	905	930	956	983
Multifamily	682	798	820	843	867	891
Commercial (Retail/Office)	508	594	611	628	646	664

9.3 RECOMMENDATIONS

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

- Continue to monitor the Water Resources CIP project cost allocations between new and existing customers as the renewable water supply projects are fully implemented.
- On completion of the comprehensive Stormwater Fund system review:
  - Revise the remaining developable acres by land use type for use in calculating the Stormwater DIF as construction progresses.
  - Consider replacing the Urban Drainage and Flood Control District Criteria Manual impervious percentage assumptions with unique imperviousness by construction type within the Town.
  - Review density assumptions by construction type as Public Works' regulations are revised or Town-specific development supports.
  - Review average Floor Area Ratios from the Douglas County Community Planning and Sustainable Development Department or a more appropriate Town-specific source.

APPENDIX A

Water System Development Fees

Appendix A
Water System Development Fees

Table 1
Town of Castle Rock
Water System Development Fee Analysis
Summary Net Fixed Asset Valuation

Description	Book Value	Original Cost	RCNLD	RCN
Source of Supply	$19,385,718	$30,354,040	$27,055,808	$47,299,895
Treatment	12,406,989	23,429,455	17,901,422	37,883,860
Pumping	2,296,969	3,911,950	3,366,977	5,781,001
Transmission	4,465,871	6,844,813	6,686,120	10,328,345
Distribution	8,071,866	13,758,416	10,973,501	25,733,902
Storage	7,651,440	13,510,942	10,432,589	20,518,650
Buildings/ Improvements	4,922,794	5,993,727	5,401,149	6,836,158
Administration	1,613,921	1,675,702	2,236,601	2,307,926
Tools/ Equipment	89,734	965,740	93,447	1,412,002
Exclude from SDF	108,423,890	157,348,744	138,096,738	214,802,778
Power / Chemicals	0	0	0	0
Meters / Services	29,607	34,107	29,948	34,554
Customer / Accounts	0	0	0	0
Total	$169,358,798	$257,827,636	$222,274,302	$372,939,072

Table 2
Town of Castle Rock
Water System Development Fee Analysis
Inventory of Existing SFEs for FY2015

Meter Size	Number of Meters	Equivalency Factor	Max Flow Rate	Max Flow Rate Equivalency	SFEs
3/4 x 5/8 -Inch	525	1.01	20.0	0.67	530
3/4-Inch	17,261	1.00	30.0	1.00	17,261
1-Inch	328	4.06	50.0	1.67	1,332
1 1/2-Inch	358	9.18	100.0	3.33	3,286
2-Inch OMNI C2	201	13.19	200.0	6.67	2,651
2-Inch OMNI T2	0	0.00	250.0	8.33	0
3-Inch OMNI C2	28	19.92	500.0	16.67	558
3-Inch OMNI T2	0	0.00	650.0	21.67	0
4-Inch OMNI C2	5	81.19	1,000.0	33.33	406
4-Inch OMNI T2	0	0.00	1,250.0	41.67	0
6-Inch OMNI C2	2	102.67	2,000.0	66.67	205
6-Inch OMNI T2	0	0.00	2,500.0	83.33	0
Total	18,708				26,230

Table 3
Town of Castle Rock
Water System Development Fee Analysis
System Capacity for Existing System

System Component		System Component Capacities			SFEs Estimates					Capacity Comparison		
		Capacities	Units		Requirements per SFEs	Units	Peaking Factor	Unit Conversion	SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply		16.30	MGD	Max Day	400.0	gpd	2.20	1,000,000	18,523	18,523	0	0.00%
Treatment		23.45	MGD	Max Day	400.0	gpd	2.20	1,000,000	26,648	16,534	10,114	37.95%
Pumping		41.41	MGD	Peak Hour	540.0	gpd	5.50	1,000,000	13,943	12,717	1,225	8.79%
Transmission		41.41	MGD	Peak Hour	540.0	gpd	5.50	1,000,000	13,943	12,717	1,225	8.79%
Distribution		41.41	MGD	Peak Hour	540.0	gpd	5.50	1,000,000	26,230	26,230	0	0.00%
Storage		36.02	MG	Max Day	400.0	gpd	2.20	1,000,000	40,932	16,534	24,398	59.61%
Buildings/ Improvements (1)		37,500	SFE		1.0	SFE	1.00	1	37,500	26,230	11,270	30.05%
Administration		0	SFE		1.0	SFE	1.00	1	0	26,230	0	0.00%
Tools/ Equipment		0	SFE		1.0	SFE	1.00	1	0	26,230	0	0.00%
Exclude from SDF		0	NA	NA	0.0	NA		0	0	26,230	0	0.00%
Power / Chemicals		0	NA	NA	0.0	NA		0	0	26,230	0	0.00%
Meters / Services		0	NA	NA	0.0	NA		0	0	26,230	0	0.00%
Customer / Accounts		0	NA	NA	0.0	NA		0	0	26,230	0	0.00%

(1) Growth estimated for 2015 - 2055 plus existing SFE count based on meter size accounts for capacity of existing buildings and capacity for growth component of new O&M facility

Table 4
Town of Castle Rock
Water System Development Fee Analysis
System Capacity for System Improvements

	System Component Capacities		SFEs Estimates			
System Component	Additional Capacity from	Units	Requirements per SFEs	Units	Unit Conversion	Additional SFEs Available
Source of Supply	7.52	MGD	400.0	gpd	1,000,000	8,545
Treatment	0.00	MGD	400.0	gpd	1,000,000	0
Pumping	47.09	MGD	540.0	gpd	1,000,000	15,855
Transmission	85.80	MGD	540.0	gpd	1,000,000	28,889
Distribution	23.43	MGD	540.0	gpd	1,000,000	7,889
Storage	6.50	MG	400.0	gpd	1,000,000	7,386
Buildings/ Improvements	11,270.39	SFE	1.0	SFE	1	11,270
Administration	0.00	SFE	1.0	SFE	1	0
Tools/ Equipment	0.00	SFE	1.0	SFE	1	0
Exclude from SDF	0.00	NA	0.0	NA	0	0
Power / Chemicals	0.00	NA	0.0	NA	0	0
Meters / Services	0.00	NA	0.0	NA	0	0
Customer / Accounts	0.00	NA	0.0	NA	0	0

Table 5
Town of Castle Rock
Water System Development Fee Analysis
Capital Improvements Costs Allocated to System Function - 2017 and beyond

Description	Total Project Costs ($)	Source of Supply	Treatment	Pumping	Transmission	Distribution	Storage	Buildings/	Administration	Tools/ Equipment	Exclude from SDF	Power / Chemicals	Meters / Services	Customer / Accounts
Water Supply Wells														
Well Rehab/Replacement	$19,500,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Well Equipment Replacement	3,900,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
New Deep Groundwater Well and Raw Waterline	2,750,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crystal Valley Ranch Wells - 1300 GPM ph 1	2,500,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crystal Valley Ranch Wells - 1250 GPM ph 1	2,500,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crystal Valley Ranch Wells - 1175 GPM ph 3	2,500,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lanterns Wells 1500 gpm (raw line?; treat where?)	2,100,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
VFD Replacement (Well/PS/TMT Plant)	4,875,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Treatment														
WTP Facility Upgrades	1,950,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
WTP Equipment replacement	3,900,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Water TMT Plant Media Replacement	840,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Water Storage														
Tank Rehab	2,075,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Liberty Village Yellow Zone Tank (Tank 18) Liberty Village	3,425,609	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tank 11B (was Tank 14B) 2.3 MG (Tower Rd)	3,000,000	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%
Tank (2.0 MG) Red Zone	2,800,000	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tank 3 demolition	150,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tank 3 Replacement (Reservoir Road)	1,500,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Add stairs to Tank 3, Tank 4 and 16A (? Which tank)	120,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tank 5 Demolition	150,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Storage Tank Replacement	3,000,000	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Water Pumping														
Green Zone Pumping Upgrades Ph1, Phase I (2100 gpm; 45 HP)	1,000,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PS Equipment Replacement	2,100,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Blue Zone PS Upsize (replace mid-duty pump, inc 1000 gpm)	75,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Zone Pumping Upsize, Ph1 (2245 gpm) 75 HP	550,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Zone Pumping Upsize, Ph2 (4170 gpm) 125 HP	1,000,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Zone Pumping Upsize,Ph3 (14,000 gpm) 425 HP25 HP	1,000,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Milestone Pump Statlon PRV Valve	75,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Green Zone Pumping Upgrades Phase II (9205 gpm)	1,500,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transmission & Distribution														
Waterline Rehab/Replacement	10,550,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Distribution System Upgrades (PRVs, pipelines, etc)	9,750,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Craig & Gould North Infrastructure Improvements (FF Issue)	535,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tacker Court PRV (former Tank 2 site)	200,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Electric Actuated Valves at Tanks	225,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tank Mixers	75,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Facilitiies Paving Program	2,100,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Diamond Ridge Pump Station Control Valve	75,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Glovers Waterline Replacement phase 1	374,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Glovers Waterline Replacement phase 2	363,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Glovers Waterline Replacement phase 2	594,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Crowfoot Purple Line Upsize	151,000	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crowfoot Red Zone Upsize	330,000	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crowfoot to Crimson Sky (developer 16" with town cost share to 30")	1,812,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crimson Sky to Oaks Valve	1,709,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RWRWTC Tank 16 Transmission Line	898,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5th Street Red Zone Connection	150,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tank 18 Blue Zone Transmission	576,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Ridge Rd Transmission	1,688,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tank 6 to CVR Transmission, 24" (developer 16")	1,004,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cyrstal Valley Ranch Loop Rd Ph1, 24" (developer 16")	559,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crystal Valley Ranch Loop Rd Ph2, 20" (developer 16")	2,015,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blue Zone - Plum Creek to Frontage Road Transmission, 24" (developer 16")	1,500,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pine Canyon Transmission (may need to have developer upsize, costs could be sooner; dev	1,002,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tank 11 to Pine Canyon 20" Pipe (developer 12")	321,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Pine Canyon Red Zone Transmission	774,000	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RWTP Red Zone Transmission	392,000	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RWTP Green Zone Transmission	258,000	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plum Creek WTP to Tank 12 Transmission	1,601,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Highway 85 Transmission	703,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Woodlands Founders PRV	94,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Young American Valve Replacement Program	320,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Projects		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Security Improvements	1,375,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
General Facility Upgrades	2,925,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
SCADA System Capital Improvements	1,100,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Facilities Capital Replacements (bldg components)	2,925,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Admin/Customer Service Building	1,403,641	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Site Improvements at 175 Kellogg Court	1,179,245	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	$124,441,495													

Table 6
Town of Castle Rock
Water System Development Fee Analysis
Summary of New Capacity Costs

Description	New Capacity Added	Units	Units per SFEs	Unit Conversion Factor	Peaking Factor	Added SFEs	Cost of New Capacity $
Source of Supply	7.52	MGD	400.0	1,000,000	2.20	8,545	$9,600,000
Treatment	0.00	MGD	400.0	1,000,000	2.20	0	0
Pumping	47.09	MGD	540.0	1,000,000	5.50	15,855	5,125,000
Transmission	85.80	MGD	540.0	1,000,000	5.50	28,889	11,911,000
Distribution	23.43	MGD	540.0	1,000,000	5.50	7,889	1,905,000
Storage	6.50	MG	400.0	1,000,000	2.20	7,386	7,725,609
Buildings/ Improvements	11,270.39	SFE	1.0	1	1.00	11,270	776,270
Administration	0.00	SFE	1.0	1	1.00	0	0
Tools/ Equipment	0.00	SFE	1.0	1	1.00	0	0
Exclude from SDF	0.00	NA	0.0	0	0.00	0	0
Power / Chemicals	0.00	NA	0.0	0	0.00	0	0
Meters / Services	0.00	NA	0.0	0	0.00	0	0
Customer / Accounts	0.00	NA	0.0	0	0.00	0	0
Total	11,440.73					79,835	$37,042,879

Table 7
Town of Castle Rock
Water System Development Fee Analysis
Calculation of Buy-In Totals

System Component	Capacity Available for Growth	Book Value	Original Cost	RCNLD	RCN
Source of Supply	0.0%	$0	$0	$0	$0
Treatment	38.0%	4,708,836	8,892,203	6,794,143	14,378,096
Pumping	8.8%	201,872	343,806	295,910	508,069
Transmission	8.8%	392,488	601,564	587,617	907,718
Distribution	0.0%	0	0	0	0
Storage	59.6%	4,560,700	8,053,302	6,218,426	12,230,300
Buildings/ Improvements	30.1%	1,479,515	1,801,377	1,623,281	2,054,564
Administration	0.0%	0	0	0	0
Tools/ Equipment	0.0%	0	0	0	0
Exclude from SDF	0.0%	0	0	0	0
Power / Chemicals	0.0%	0	0	0	0
Meters / Services	0.0%	0	0	0	0
Customer / Accounts	0.0%	0	0	0	0
Total		$11,343,410	$19,692,251	$15,519,377	$30,078,748

Table 8
Town of Castle Rock
Water System Development Fee Analysis
Calculation of Calculated SDF Using Book Value

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Calculated SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$0	$9,600,000	$9,600,000	0	8,545	8,545	$0	$1,123	$1,123
Treatment	4,708,836	0	4,708,836	10,114	0	10,114	466	0	466
Pumping	201,872	5,125,000	5,326,872	1,225	15,855	17,081	12	300	312
Transmission	392,488	11,911,000	12,303,488	1,225	28,889	30,114	13	396	409
Distribution	0	1,905,000	1,905,000	0	7,889	7,889	0	241	241
Storage	4,560,700	7,725,609	12,286,309	24,398	7,386	31,784	143	243	387
Buildings/ Improvements	1,479,515	776,270	2,255,785	11,270	11,270	22,541	66	34	100
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Power / Chemicals	0	0	0	0	0	0	0	0	0
Meters / Services	0	0	0	0	0	0	0	0	0
Customer / Accounts	0	0	0	0	0	0	0	0	0
Total	$11,343,410	$37,042,879	$48,386,289	48,233	79,835	128,068	$700	$2,338	$3,038

Table 9
Town of Castle Rock
Water System Development Fee Analysis
Calculation of Calculated SDF Using Original Cost

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Calculated SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$0	$9,600,000	$9,600,000	0	8,545	8,545	$0	$1,123	$1,123
Treatment	8,892,203	0	8,892,203	10,114	0	10,114	879	0	879
Pumping	343,806	5,125,000	5,468,806	1,225	15,855	17,081	20	300	320
Transmission	601,564	11,911,000	12,512,564	1,225	28,889	30,114	20	396	416
Distribution	0	1,905,000	1,905,000	0	7,889	7,889	0	241	241
Storage	8,053,302	7,725,609	15,778,911	24,398	7,386	31,784	253	243	496
Buildings/ Improvements	1,801,377	776,270	2,577,647	11,270	11,270	22,541	80	34	114
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Power / Chemicals	0	0	0	0	0	0	0	0	0
Meters / Services	0	0	0	0	0	0	0	0	0
Customer / Accounts	0	0	0	0	0	0	0	0	0
Total	$19,692,251	$37,042,879	$56,735,130	48,233	79,835	128,068	$1,253	$2,338	$3,591

Table 10
Town of Castle Rock
Water System Development Fee Analysis
Calculation of Calculated SDF Using RCNLD

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Calculated SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$0	$9,600,000	$9,600,000	0	8,545	8,545	$0	$1,123	$1,123
Treatment	6,794,143	0	6,794,143	10,114	0	10,114	672	0	$672
Pumping	295,910	5,125,000	5,420,910	1,225	15,855	17,081	17	300	$317
Transmission	587,617	11,911,000	12,498,617	1,225	28,889	30,114	20	396	$415
Distribution	0	1,905,000	1,905,000	0	7,889	7,889	0	241	$241
Storage	6,218,426	7,725,609	13,944,035	24,398	7,386	31,784	196	243	$439
Buildings/ Improvements	1,623,281	776,270	2,399,552	11,270	11,270	22,541	72	34	$106
Administration	0	0	0	0	0	0	0	0	$0
Tools/ Equipment	0	0	0	0	0	0	0	0	$0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Power / Chemicals	0	0	0	0	0	0	0	0	0
Meters / Services	0	0	0	0	0	0	0	0	0
Customer / Accounts	0	0	0	0	0	0	0	0	0
Total	$15,519,377	$37,042,879	$52,562,256	48,233	79,835	128,068	$976	$2,338	$3,314

Table 11
Town of Castle Rock
Water System Development Fee Analysis
Calculation of Calculated SDF Using RCN

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Calculated SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$0	$9,600,000	$9,600,000	0	8,545	8,545	$0	$1,123	$1,123
Treatment	14,378,096	0	14,378,096	10,114	0	10,114	1,422	0	1,422
Pumping	508,069	5,125,000	5,633,069	1,225	15,855	17,081	30	300	330
Transmission	907,718	11,911,000	12,818,718	1,225	28,889	30,114	30	396	426
Distribution	0	1,905,000	1,905,000	0	7,889	7,889	0	241	241
Storage	12,230,300	7,725,609	19,955,909	24,398	7,386	31,784	385	243	628
Buildings/ Improvements	2,054,564	776,270	2,830,835	11,270	11,270	22,541	91	34	126
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Power / Chemicals	0	0	0	0	0	0	0	0	0
Meters / Services	0	0	0	0	0	0	0	0	0
Customer / Accounts	0	0	0	0	0	0	0	0	0
Total	$30,078,748	$37,042,879	$67,121,627	48,233	79,835	128,068	$1,957	$2,338	$4,295

Table 12
Town of Castle Rock
Water System Development Fee Analysis
Summary of SDFs by Meter Size Using RCNLD

Meter Size	Buy-In	Improvement	Total
3/4 x 5/8 -Inch	$654	$1,566	$2,220
3/4-Inch	976	2,338	3,314
1-Inch	1,630	3,904	5,534
1 1/2-Inch	3,251	7,785	11,036
2-Inch OMNI C2	6,512	15,594	22,104
2-Inch OMNI T2	8,132	19,475	27,606
3-Inch OMNI C2	16,275	38,974	55,244
3-Inch OMNI T2	21,156	50,664	71,814
4-Inch OMNI C2	32,539	77,924	110,456
4-Inch OMNI T2	40,682	97,423	138,094
6-Inch OMNI C2	65,089	155,872	220,944
6-Inch OMNI T2	81,353	194,822	276,156

Table 13
Town of Castle Rock
Water System Development Fee Analysis
Comparison of SDFs by Meter Size Using RCNLD

Meter Size	Existing	Calculated	Difference	Percent Change
3/4 x 5/8 -Inch	$2,169	$2,220	$51	2.4%
3/4-Inch	3,237	3,314	77	2.4%
1-Inch	5,407	5,534	127	2.4%
1 1/2-Inch	10,781	11,036	255	2.4%
2-Inch OMNI C2	21,594	22,104	510	2.4%
2-Inch OMNI T2	26,968	27,606	638	2.4%
3-Inch OMNI C2	53,969	55,244	1,275	2.4%
3-Inch OMNI T2	70,156	71,814	1,658	2.4%
4-Inch OMNI C2	107,905	110,456	2,551	2.4%
4-Inch OMNI T2	134,905	138,094	3,189	2.4%
6-Inch OMNI C2	215,842	220,944	5,102	2.4%
6-Inch OMNI T2	269,778	276,156	6,378	2.4%

Table 14
Town of Castle Rock
Water System Development Fee Analysis
Comparison of SDFs by Meter Size

Meter Size	Existing	Book Value	Original Cost	RCNLD	RCN
3/4 x 5/8 -Inch	$2,169	$2,035	$2,406	$2,220	$2,878
3/4-Inch	3,237	3,038	3,591	3,314	4,295
1-Inch	5,407	5,073	5,997	5,534	7,173
1 1/2-Inch	10,781	10,117	11,958	11,036	14,302
2-Inch OMNI C2	21,594	20,263	23,952	22,104	28,648
2-Inch OMNI T2	26,968	25,307	29,913	27,606	35,777
3-Inch OMNI C2	53,969	50,643	59,862	55,244	71,598
3-Inch OMNI T2	70,156	65,833	77,817	71,814	93,073
4-Inch OMNI C2	107,905	101,257	119,688	110,456	143,152
4-Inch OMNI T2	134,905	126,593	149,637	138,094	178,973
6-Inch OMNI C2	215,842	202,543	239,412	220,944	286,348
6-Inch OMNI T2	269,778	253,157	299,238	276,156	357,902

Table 15
Town of Castle Rock
Water System Development Fee Analysis
Calculated Water SDF Implementation Schedule

Meter Size	FY2017	FY2018	FY2019	FY2020	FY2021
3/4 x 5/8 -Inch	$2,220	$2,283	$2,346	$2,412	$2,480
3/4-Inch	3,314	3,407	3,502	3,600	3,701
1-Inch	5,534	5,690	5,848	6,012	6,181
1 1/2-Inch	11,036	11,345	11,662	11,988	12,324
2-Inch OMNI C2	22,104	22,725	23,358	24,012	24,686
2-Inch OMNI T2	27,606	28,380	29,172	29,988	30,829
3-Inch OMNI C2	55,244	56,795	58,378	60,012	61,696
3-Inch OMNI T2	71,814	73,830	75,888	78,012	80,201
4-Inch OMNI C2	110,456	113,555	116,722	119,988	123,354
4-Inch OMNI T2	138,094	141,970	145,928	150,012	154,221
6-Inch OMNI C2	220,944	227,145	233,478	240,012	246,746
6-Inch OMNI T2	276,156	283,905	291,822	299,988	308,404

APPENDIX B

Water Resources System Development Fees

Appendix B
Water Resources System Development Fees

Table 1
Town of Castle Rock
Water Resources System Development Fee Analysis
Summary Net Fixed Asset Valuation (Including Credits for Debt Service)

Description	Book Value	Original Cost	RCNLD	RCN
Source of Supply	$25,188,242	$25,864,365	$26,193,382	$26,926,072
Treatment	16,819,273	17,794,599	17,682,717	18,708,294
Pumping	0	1,600	0	1,874
Transmission	1,726,315	2,151,941	2,192,960	2,758,744
Distribution	301,495	303,095	315,267	317,141
Storage	44,826,093	44,838,497	51,040,997	51,055,189
Buildings/ Improvements	271,592	458,312	314,210	534,807
Administration	874,519	946,675	901,199	982,169
Tools/ Equipment	17,057	43,375	17,919	46,371
Exclude from SDF	27,991,296	28,067,192	31,755,677	31,848,143
Customer Accounts	0	0	0	0
Total	$118,015,884	$120,469,652	$130,414,327	$133,178,803

Table 2
Town of Castle Rock
Water Resources System Development Fee Analysis
Inventory of SFEs for FY2015

Meter Size	Number of Meters	Equivalency Factor	Max Flow Rate	Max Flow Rate Equivalency	SFEs
3/4 x 5/8 -Inch	525	1.0	20.0	0.67	525
3/4-Inch	17,260	1.0	30.0	1.00	17,260
1-Inch	327	4.06	50.0	1.67	1,328
1 1/2-Inch	353	9.18	100.0	3.33	3,241
2-Inch OMNI C2	196	13.19	200.0	6.67	2,585
2-Inch OMNI T2	0	0.00	250.0	8.33	0
3-Inch OMNI C2	26	19.92	500.0	16.67	518
3-Inch OMNI T2	0	0.00	650.0	21.67	0
4-Inch OMNI C2	4	81.19	1,000.0	33.33	325
4-Inch OMNI T2	0	0.00	1,250.0	41.67	0
6-Inch OMNI C2	2	102.67	2,000.0	66.67	205
6-Inch OMNI T2	0	0.0	2,500.0	83.33	0
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Total	18,693				25,986

Table 3
Town of Castle Rock
Water Resources System Development Fee Analysis
System Capacity for Existing System

	System Component Capacities			SFEs Estimates					Capacity Comparison		
System Component	Capacities	Units	Units/Period	Requirements per SFEs	Units	Peaking Factor	Unit Conversion	SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply	0.8	MGD	Yearly Average	400.0	gpd	2.20	1,000,000	909	373	536	59.0%
Treatment	4.0	MGD	Max Day	400.0	gpd	2.20	1,000,000	4,545	2,364	2,182	48.0%
Pumping	0	MGD	Max Day	400.0	gpd	2.20	1,000,000	0	0	0	0.0%
Transmission	4.51	MGD	Max Day	400.0	gpd	2.20	1,000,000	5,125	2,665	2,460	48.0%
Distribution	0	NA	Peak Hour	NA	NA	NA	NA	0	0	0	0.0%
Storage	8,000	AF	Max Day	0.45	AF per Day	1.00	1	17,778	9,244	8,533	48.0%
Buildings/ Improvements (1)	37,500	SFE		1.0	SFE		1	37,500	25,986	11,514	30.7%
Administration	0	SFE		1.0	SFE		1	0	0	0	0.0%
Tools/ Equipment	0	SFE		1.0	SFE		1	0	0	0	0.0%
Exclude from SDF	0	NA	NA	0.0	NA		0	0	0	0	0.0%

(1) Growth estimated for 2014 - 2055 plus existing SFE count based on meter size accounts for capacity of existing buildings and capacity for growth component of new O&M facility

Table 4
Town of Castle Rock
Water Resources System Development Fee Analysis
System Capacity for System Improvements

	System Component Capacities		SFEs Estimates			
System Component	Additional Capacity from Improvements	Units	Requirements per SFEs	Units	Unit Conversion	Additional SFEs Available
Source of Supply	9,143	SFE	400.0	gpd	1,000,000	9,143
Treatment	36,696	SFE	400.0	gpd	1,000,000	36,696
Pumping	13,299	SFE	400.0	gpd	1,000,000	13,299
Transmission	13,334	SFE	400.0	gpd	1,000,000	13,334
Distribution	0	NA	NA	NA	NA	0
Storage	3,167	SFE	0.5	AF per Day	1	3,167
Buildings/ Improvements	11,514	SFE	1.0	SFE	1	11,514
Administration	0	SFE	1.0	SFE	1	0
Tools/ Equipment	0	SFE	1.0	SFE	1	0
Exclude from SDF	0	NA	0.0	NA	0	0
Customer Accounts	0	NA	0.0	NA	0	0

Table 5
Town of Castle Rock
Water Resources System Development Fee Analysis
Capital Improvements Costs Allocated to System Function - 2017 and beyond

Description	Total Project Costs ($)	Source of Supply	Treatment	Pumping	Transmission	Distribution	Storage	Buildings/	Administration	Tools/ Equipment	Exclude from SDF	Customer Accounts	Total
Plum Creek Diversion Structure & Pump Station	3,065,007	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Raw Water Pipeline from Diversion to PCWPF	4,890,384	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Pre-Sedimentation Basin	1,575,137	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Horizontal Directionally Drilled Infiltration Galleries	2,500,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
HDD Gallery property acquistion	250,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
West Plum Creek Alluvial Wells, Pump Station, and Pipeline	9,730,000	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Chatfield Reallocation	16,830,646	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Rehabilitation of Alluvial Well Fields	5,615,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Admin/Customer Service Building	627,940	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100%
Utilities Site Improvements	544,473	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100%
Machinery & Equipment	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100%
ASR Program	1,000,000	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
ASR Program Baski Valve Removal & Replacement	1,480,000	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PC Central Well Field Lateral Arms	1,500,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PC South Well Field Lateral Arms and Well 78 Installation	2,000,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PC Diversion #1 Installation	100,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Membrane Rack Remove and Replace (Installed in 2013)	1,600,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Dewatering Facility at PCWPF (Phase I)	3,900,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Advanced Treatment Facility (Phase I)	17,756,969	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Membrane Expansion (Phase I)	1,028,904	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Generator at PCWPF	1,997,300	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Membrane Rack Remove and Replace (Installed in 2018)	1,200,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Advanced Treatment Expansion (Phase 2) and Membrane Expa	20,747,438	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Pretreatment Expansion (Phase 2)	8,156,169	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Membrane & High Service Pump Expansion (Phase 2)	482,643	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Dewatering Facility at PCWPF (Phase 2)	2,300,003	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Expansion (Phase 2) Membrane Rack Remove and Replace	800,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Expansion (Phase 3)	1,252,350	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Expansion (Phase 3) Membrane Rack Remove and Replace	400,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWPF Expansion (Phase 4)	1,493,671	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Purchase Capacity in PWSD Rueter-Hess Water Treatment Plant (RHW	29,600,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Chatfield Raw Pipeline and Pump Station	100,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Newlin Gulch Pipeline and Pump Station	2,555,300	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
PCWRA Upgrades for Newlin Gulch Pipeline	3,000,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Box Elder Creek Properties Option Payments	575,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Box Elder Creek Properties Property Purchase	8,457,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Box Elder Creek Project Due Diligence	200,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Water Rights Purchase	13,100,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
New Box Elder Creek Farm Alluvial Wells	2,570,240	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Treatment of Box Elder Alluvial Water (RO Treatment and Brine Dispo	9,527,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Water Pipeline from BEC Well Field to ECCV Northern WTP	4,550,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Firm Capacity in ECCV Northern Line	2,880,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Firm capacity in ECCV North and South Pump Stations	4,140,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Raw Water Pipeline from South Platte to Box Elder Creek Farms	30,000,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
ECCV Title Cleanup Credit	143,024	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Binney Connection	4,000,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
WISE Project Subscription Fee (aka DIA Connection Fee)	1,091,430	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Castle Rock Delivery Infrastructure (Outter Marker Road to Ray Waterr	19,325,714	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
WISE Local Infrastructure (in partnership with Parker)*	19,610,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
WISE Local Infrastructure (Western Side of RHR) - Phase I	21,440,000	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
WISE Operating Expenses	3,935,280	0.0%	56.0%	38.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Operational Reserve	360,000	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
WISE Water Delivery - Facilities Capital	18,660,000	0.0%	55.0%	39.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	$314,644,022												

Table 6
Town of Castle Rock
Water Resources System Development Fee Analysis
Summary of New Capacity Costs

Description		New Capacity Added	Units	Units per SFEs	Unit Conversion Factor	Peaking Factor	Added SFEs	Cost of New Capacity $
Source of Supply		9,143	SFE	1.0	1	1.00	9,143	$25,955,667
Treatment		36,696	SFE	1.0	1	1.00	36,696	76,988,178
Pumping		13,299	SFE	1.0	1	1.00	13,299	9,052,804
Transmission		13,334	SFE	1.0	1	1.00	13,334	77,153,502
Distribution		0	SFE	1.0	1	1.00	0	0
Storage		3,167	SFE	1.0	1	1.00	3,167	11,991,599
Buildings/ Improvements		11,514	SFE	1.0	1	1.00	11,514	359,965
Administration		0	SFE	1.0	1	1.00	0	0
Tools/ Equipment		0	SFE	1.0	1	1.00	0	0
Exclude from SDF		0	SFE	1.0	1	1.00	0	0
Customer Accounts		0	SFE	1.0	1	0.00	0	0
Unused 2		0.00	NA	0.0	1	0.00	0	0
Unused 3		0.00	NA	0.0	1	0.00	0	0
Total		87,153					87,153	$201,501,713

Table 7
Town of Castle Rock
Water Resources System Development Fee Analysis
Calculation of Buy-In Totals

System Component	Capacity Available for Growth	Book Value	Original Cost	RCNLD	RCN
Source of Supply	59.0%	$14,861,063	$15,259,975	$15,454,095	$15,886,382
Treatment	48.0%	8,073,251	8,541,408	8,487,704	8,979,981
Pumping	0.0%	0	0	0	0
Transmission	48.0%	828,631	1,032,932	1,052,621	1,324,197
Distribution	0.0%	0	0	0	0
Storage	48.0%	21,516,525	21,522,478	24,499,678	24,506,491
Buildings/ Improvements	30.7%	83,387	140,715	96,472	164,201
Administration	0.0%	0	0	0	0
Tools/ Equipment	0.0%	0	0	0	0
Exclude from SDF	0.0%	0	0	0	0
Customer Accounts	0.0%	0	0	0	0
Total		$45,362,857	$46,497,508	$49,590,570	$50,861,252

Table 8
Town of Castle Rock
Water Resources System Development Fee Analysis
Calculation of Proposed SDF Using Book Value

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Proposed SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$14,861,063	$25,955,667	$40,816,730	536	9,143	9,679	$1,535	$2,682	$4,217
Treatment	8,073,251	76,988,178	85,061,429	2,182	36,696	38,878	208	1,980	2,188
Pumping	0	9,052,804	9,052,804	0	13,299	13,299	0	681	681
Transmission	828,631	77,153,502	77,982,133	2,460	13,334	15,794	52	4,885	4,937
Distribution	0	0	0	0	0	0	0	0	0
Storage	21,516,525	11,991,599	33,508,123	8,533	3,167	11,700	1,839	1,025	2,864
Buildings/ Improvements	83,387	359,965	443,351	11,514	11,514	23,027	4	16	19
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Customer Accounts	0	0	0	0	0	0	0	0	0
Total	$45,362,857	$201,501,713	$246,864,570	25,225	87,153	112,378	$3,638	$11,268	$14,906

Table 9
Town of Castle Rock
Water Resources System Development Fee Analysis
Calculation of Proposed SDF Using Original Cost

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Proposed SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$15,259,975	$25,955,667	$41,215,642	536	9,143	9,679	$1,577	$2,682	$4,258
Treatment	8,541,408	76,988,178	85,529,585	2,182	36,696	38,878	220	1,980	2,200
Pumping	0	9,052,804	9,052,804	0	13,299	13,299	0	681	681
Transmission	1,032,932	77,153,502	78,186,434	2,460	13,334	15,794	65	4,885	4,950
Distribution	0	0	0	0	0	0	0	0	0
Storage	21,522,478	11,991,599	33,514,077	8,533	3,167	11,700	1,839	1,025	2,864
Buildings/ Improvements	140,715	359,965	500,680	11,514	11,514	23,027	6	16	22
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Customer Accounts	0	0	0	0	0	0	0	0	0
Total	$46,497,508	$201,501,713	$247,999,222	25,225	87,153	112,378	$3,707	$11,268	$14,975

Table 10
Town of Castle Rock
Water Resources System Development Fee Analysis
Calculation of Proposed SDF Using RCNLD

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Proposed SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$15,454,095	$25,955,667	$41,409,762	536	9,143	9,679	$1,597	$2,682	4,278
Treatment	8,487,704	76,988,178	85,475,882	2,182	36,696	38,878	218	1,980	2,199
Pumping	0	9,052,804	9,052,804	0	13,299	13,299	0	681	681
Transmission	1,052,621	77,153,502	78,206,123	2,460	13,334	15,794	67	4,885	4,952
Distribution	0	0	0	0	0	0	0	0	0
Storage	24,499,678	11,991,599	36,491,277	8,533	3,167	11,700	2,094	1,025	3,119
Buildings/ Improvements	96,472	359,965	456,436	11,514	11,514	23,027	4	16	20
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Customer Accounts	0	0	0	0	0	0	0	0	0
Total	$49,590,570	$201,501,713	$251,092,283	25,225	87,153	112,378	$3,980	$11,268	$15,248

Table 11
Town of Castle Rock
Water Resources System Development Fee Analysis
Calculation of Proposed SDF Using RCN

	Cost of Available Capacity			Capacities Available for Growth (SFEs)			Proposed SDF		
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Total
Source of Supply	$15,886,382	$25,955,667	$41,842,049	536	9,143	9,679	$1,641	$2,682	$4,323
Treatment	8,979,981	76,988,178	85,968,159	2,182	36,696	38,878	231	1,980	2,211
Pumping	0	9,052,804	9,052,804	0	13,299	13,299	0	681	681
Transmission	1,324,197	77,153,502	78,477,699	2,460	13,334	15,794	84	4,885	4,969
Distribution	0	0	0	0	0	0	0	0	0
Storage	24,506,491	11,991,599	36,498,089	8,533	3,167	11,700	2,095	1,025	3,119
Buildings/ Improvements	164,201	359,965	524,166	11,514	11,514	23,027	7	16	23
Administration	0	0	0	0	0	0	0	0	0
Tools/ Equipment	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0
Customer Accounts	0	0	0	0	0	0	0	0	0
Total	$50,861,252	$201,501,713	$252,362,965	25,225	87,153	112,378	$4,058	$11,268	$15,326

Table 12
Town of Castle Rock
Water Resources System Development Fee Analysis
Summary of SDFs by Meter Size Using RCNLD

Meter Size	Buy-In	Improvement	Total
3/4 x 5/8 -Inch	$2,666	$7,550	$10,216
3/4-Inch	3,980	11,268	$15,248
1-Inch	6,646	18,818	25,464
1 1/2-Inch	13,252	37,523	50,776
2-Inch OMNI C2	26,545	75,158	101,704
2-Inch OMNI T2	33,151	93,863	127,016
3-Inch OMNI C2	66,341	187,838	254,184
3-Inch OMNI T2	86,240	244,178	330,424
4-Inch OMNI C2	132,643	375,564	508,216
4-Inch OMNI T2	165,834	469,539	635,384
6-Inch OMNI C2	265,326	751,240	1,016,584
6-Inch OMNI T2	331,627	938,965	1,270,616

Table 13
Town of Castle Rock
Water Resources System Development Fee Analysis
Comparison of SDFs by Meter Size Using RCNLD

Meter Size	Existing	Proposed	Difference	Percent Change
3/4 x 5/8 -Inch	$10,196	$10,216	$20	0.2%
3/4-Inch	15,218	15,248	30	0.2%
1-Inch	25,414	25,464	50	0.2%
1 1/2-Inch	50,676	50,776	100	0.2%
2-Inch OMNI C2	101,504	101,704	200	0.2%
2-Inch OMNI T2	126,766	127,016	250	0.2%
3-Inch OMNI C2	253,684	254,184	500	0.2%
3-Inch OMNI T2	329,774	330,424	650	0.2%
4-Inch OMNI C2	507,216	508,216	1,000	0.2%
4-Inch OMNI T2	634,134	635,384	1,250	0.2%
6-Inch OMNI C2	1,014,584	1,016,584	2,000	0.2%
6-Inch OMNI T2	1,268,116	1,270,616	2,500	0.2%

Table 14
Town of Castle Rock
Water Resources System Development Fee Analysis
Comparison of SDFs by Meter Size

Meter Size	Existing	Book Value	Original Cost	RCNLD	RCN
3/4 x 5/8 -Inch	$10,196	$9,987	$10,033	$10,216	$10,268
3/4-Inch	15,218	14,906	14,975	15,248	15,326
1-Inch	25,414	24,893	25,008	25,464	25,594
1 1/2-Inch	50,676	49,637	49,867	50,776	51,036
2-Inch OMNI C2	101,504	99,423	99,883	101,704	102,224
2-Inch OMNI T2	126,766	124,167	124,742	127,016	127,666
3-Inch OMNI C2	253,684	248,483	249,633	254,184	255,484
3-Inch OMNI T2	329,774	323,013	324,508	330,424	332,114
4-Inch OMNI C2	507,216	496,817	499,117	508,216	510,816
4-Inch OMNI T2	634,134	621,133	624,008	635,384	638,634
6-Inch OMNI C2	1,014,584	993,783	998,383	1,016,584	1,021,784
6-Inch OMNI T2	1,268,116	1,242,117	1,247,867	1,270,616	1,277,116

Table 15
Town of Castle Rock
Water Resources System Development Fee Analysis
Proposed Water Resources SDF Implementation Schedule

Meter Size	FY2017	FY2018	FY2019	FY2020	FY2021
3/4 x 5/8 -Inch	$10,216	$10,502	$10,796	$11,099	$11,409
3/4-Inch	15,248	15,675	16,114	16,565	17,029
1-Inch	25,464	26,177	26,910	27,664	28,438
1 1/2-Inch	50,776	52,198	53,660	55,161	56,707
2-Inch OMNI C2	101,704	104,552	107,480	110,489	113,583
2-Inch OMNI T2	127,016	130,573	134,230	137,986	141,852
3-Inch OMNI C2	254,184	261,302	268,620	276,139	283,873
3-Inch OMNI T2	330,424	339,677	349,190	358,964	369,018
4-Inch OMNI C2	508,216	522,448	537,080	552,111	567,577
4-Inch OMNI T2	635,384	653,177	671,470	690,264	709,598
6-Inch OMNI C2	1,016,584	1,045,052	1,074,320	1,104,389	1,135,323
6-Inch OMNI T2	1,270,616	1,306,198	1,342,780	1,380,361	1,419,027

APPENDIX C

Wastewater System Development Fees

Appendix C
Wastewater System Development Fees

Table 1
Town of Castle Rock
Wastewater System Development Fee Analysis
Summary Net Fixed Asset Valuation (Including Credits for Debt Service)

Description	Book Value	Original Cost	RCNLD	RCN
Collection System	$10,068,926	$14,309,639	$12,621,840	$22,449,939
Interceptor System	4,171,638	5,463,751	5,069,050	6,613,297
Treatment Plant	4,639	28,627	9,966	58,586
Lift Station	1,518,042	2,363,038	2,039,874	3,176,533
Buildings/ Improvements	412,898	834,002	591,094	1,161,157
Administration	785,374	870,714	1,060,281	1,170,834
Tools/Equipment	85,034	211,725	90,194	224,700
Exclude from SDF	39,350,216	55,635,681	53,278,221	79,599,520
Treatment by Others	0	0	0	0
Unused 2	0	0	0	0
Unused 3	0	0	0	0
Unused 4	0	0	0	0
Unused 5	0	0	0	0
Total	$56,396,767	$79,717,177	$74,760,519	$114,454,566

Table 2
Town of Castle Rock
Wastewater System Development Fee Analysis
Inventory of Existing SFEs for FY2015

Meter Size	Number of Meters	Equivalency Factor	Max Flow Rate	Max Flow Rate Equivalency	SFEs
3/4 x 5/8 -Inch	506	1.0	20	0.67	506
3/4-Inch	16,978	1.0	30	1.00	16,978
1-Inch	234	4.06	50	1.67	950
1 1/2-Inch	241	9.18	100	3.33	2,212
2-Inch OMNI C2	117	13.19	200	6.67	1,543
2-Inch OMNI T2	0	0.00	250	8.33	0
3-Inch OMNI C2	19	19.92	500	16.67	378
3-Inch OMNI T2	0	0.00	650	21.67	0
4-Inch OMNI C2	2	81.19	1,000	33.33	162
4-Inch OMNI T2	0	0.00	1,250	41.67	0
6-Inch OMNI C2	2	102.67	2,000	66.67	205
6-Inch OMNI T2	0	0.00	2,500	83.33	0
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Total	18,099				22,936

Table 3
Town of Castle Rock
Wastewater System Development Fee Analysis
System Capacity for Existing System

		System Component Capacities		SFEs Estimates				Capacity Comparison			
System Component	Notes	Capacities	Units	Requirements per SFEs	Units	Unit Conversion	Peaking Factors	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Collection System		0.0	MGD	220.0	gpd	1,000,000	1.0	0	0	0	0.00%
Interceptor System		8.8	MGD	220.0	gpd	1,000,000	2.1	19,071	17,143	1,929	10.11%
Treatment Plant		4.6	MGD	220.0	gpd	1,000,000	2.0	20,714	0	0	0.00%
Lift Station		11.55	MGD	220.0	gpd	1,000,000	5.0	10,504	2,118	8,385	79.83%
Buildings/ Improvements (1)		37,500	SFE	1.0	SFE	1	1.0	37,500	22,936	14,564	38.84%
Administration		0.0	SFE	0.0	SFE	0	0	0	22,936	0	0.00%
Tools/Equipment		0.0	SFE	0.0	SFE	0	0	0	22,936	0	0.00%
Exclude from SDF		0.0	SFE	0.0	SFE	0	0	0	22,936	0	0.00%
Treatment by Others		0.0	NA	0.0	NA	0	0	0	22,936	0	0.00%

(1) Growth estimated for 2016 - 2055 plus existing SFE count based on meter size accounts for capacity of existing buildings and capacity for growth component of new O&M facility

Table 4
Town of Castle Rock
Wastewater System Development Fee Analysis
System Capacity for System Improvements

	System Component Capacities		SFEs Estimates				
System Component	Additional Capacity from Improvements	Units	Requirements per SFEs	Units	Unit Conversion	Peaking Factors	Additional SFEs Available
Collection System	2.90	MGD	220.0	gpd	1,000,000	1.00	13,182
Interceptor System	33.28	MGD	220.0	gpd	1,000,000	2.10	72,035
Treatment Plant	2.70	MGD	220.0	gpd	1,000,000	2.00	6,136
Lift Station	0.00	MGD	220.0	gpd	1,000,000	5.00	0
Buildings/ Improvements	14,564.15	SFE	1.0	SFE	1	1.00	14,564
Administration	0.00	SFE	0.0	SFE	0	0.00	0
Tools/Equipment	0.00	SFE	0.0	SFE	0	0.00	0
Exclude from SDF	0.00	SFE	0.0	SFE	0	0.00	0
Treatment by Others	0.00	NA	0.0	NA	0	0.00	0

Table 5
Town of Castle Rock
Wastewater System Development Fee Analysis
Capital Improvements Costs Allocated to System Function - 2017 and beyond

Description	Total Project Costs ($)	Collection System	Interceptor System	Treatment Plant	Lift Station	Buildings/	Administration	Tools/Equipment	Exclude from SDF	Unused 5	Total
Lift Station Rehab/Replacement	975,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Sewer Line Rehab/Replacement	13,650,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Security Improvements	975,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
SCADA System Improvements (Now in SCADA Division)	975,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Castle Oaks Lift Station Improvements	200,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Lift Station Pump and Motor Replacements	1,925,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
PCWRA Capital Buy-in (Debt Service + Capital Exp/Replacement	12,210,580	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
WW Facility VFD Replacement	4,290,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Craig & Gould North Infrastructure Improvements	355,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Kinner Street Bottleneck	2,117,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Lift Station Mixing Improvements	160,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Plum Creek Interceptor PCWRA Upsize	640,852	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Plum Creek Interceptor Upsize	0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Plum Creek Interceptor North Upsize	763,098	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Gordon Dr Sewer Improvements	425,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Plum Creek Interceptor South Upsize - Phase I	440,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Plum Creek Interceptor South Upsize - Phase II	1,360,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Plum Creek Interceptor Old WWTP Upsize	171,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Malibu Street Upsize	387,000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Prairie Hawk Interceptor	417,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Dawson Ridge Interceptor - Phase I	0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Dawson Ridge Interceptor - Phase II	0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Dawson Ridge Interceptor Modified (Repalce Ph 1 and Ph 2)	358,000	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Machinery and Equipment	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Admin/Customer Service Building	588,308	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100%
Site Improvements	648,507	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100%
Meadows 17 Lift Station Access Road paving (1060x15x4)	65,400	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Castlewood Lift Station #1 Access Road Paving (200x15x4)	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
Castlewood Lift Station #2 Access Road Paving (450x15x4)	27,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100%
PCWRA Capacity Expansion	20,000,000	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Ditch Three at PCWRA (Meadows Capital Reserve?)	933,876	0.0%	0.0%	33.0%	0.0%	0.0%	0.0%	0.0%	67.0%	0.0%	100%
Manganese Control at PCWRA (Meadows Capital Reserve?)	800,000	0.0%	0.0%	33.0%	0.0%	0.0%	0.0%	0.0%	67.0%	0.0%	100%
Rehab/Replacement at PCWRA	9,957,000	0.0%	0.0%	33.0%	0.0%	0.0%	0.0%	0.0%	67.0%	0.0%	100%

Total	$75,814,621										

Table 6
Town of Castle Rock
Wastewater System Development Fee Analysis
Summary of New Capacity Costs

Description	New Capacity Added	Units	Units per SFEs	Unit Conversion Factor	Peaking Factors	Added SFEs	Cost of New Capacity $
Collection System	2.90	MGD	220.0	1,000,000	1.0	13,182	$233,813
Interceptor System	33.28	MGD	220.0	1,000,000	2.1	72,035	2,211,246
Treatment Plant	2.70	MGD	220.0	1,000,000	2.0	6,136	23,857,989
Lift Station	0.00	MGD	220.0	1,000,000	5.0	0	0
Buildings/ Improvements	14,564	SFE	1	1	1	14,564	480,351
Administration	0.00	SFE	0.0	0	0	0	0
Tools/Equipment	0.00	SFE	0.0	0	0	0	0
Exclude from SDF	0.00	SFE	0.0	0	0	0	0
Treatment by Others	0.00	NA	0.0	0	0	0	0
						---	---
Total						105,917	$26,783,399

Table 7
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculation of Buy-In Totals

System Component	Capacity Available for Growth	Book Value	Original Cost	RCNLD	RCN
Collection System	0.0%	$0	$0	$0	$0
Interceptor System	10.1%	421,851	552,514	512,601	668,760
Treatment Plant	0.0%	0	0	0	0
Lift Station	79.8%	1,211,911	1,886,503	1,628,510	2,535,947
Buildings/ Improvements	38.8%	160,360	323,907	229,568	450,967
Administration	0.0%	0	0	0	0
Tools/Equipment	0.0%	0	0	0	0
Exclude from SDF	0.0%	0	0	0	0
Total		$1,794,122	$2,762,925	$2,370,678	$3,655,675

Table 8
Town of Castle Rock
Wastewater System Development Fee Analysis
Existing Treatment Component of SDF

Description	Value
Total Principal PCWA Series 2001 A	$25,525,000
Total Principal PCWA Series 2002 B	3,390,000
Total Principal PCWA Series 2005 B	1,510,000
Clarifier Number 3	1,021,822
Total Cost of PCWA Treatment Plant	$31,446,822
Expansion Portion Only	90.4%
Total Treatment Cost-Expansion Only	$28,427,927
Town of Castle Rock Portion	89.9%
Total Capacity for Growth (SFEs)	10,392
New PCWRA Capacity Expansion	$23,857,989
Added Capacity for Growth (SFEs)	6,136
Total PCWRA Treatment Cost	55,304,811
Total PCWRA Capacity Expansion Cost	52,285,916
Total SFEs	16,528
Cost of New Treatment Capacity	$3,163

Table 9
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculation of Calculated SDF Using Book Value

	Cost of Available Capacity			Capacities Available for Growth			Calculated SDF			
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Treatment	Total
Collection System	$0	$233,813	$233,813	0	13,182	13,182	$0	$18	$0	$18
Interceptor System	421,851	2,211,246	2,633,097	1,929	72,035	73,963	6	30	0	36
Treatment Plant	0	0	0	0	0	0	0	0	3,163	3,163
Lift Station	1,211,911	0	1,211,911	8,385	0	8,385	145	0	0	145
Buildings/ Improvements	160,360	480,351	640,711	14,564	14,564	29,128	6	16	0	22
Administration	0	0	0	0	0	0	0	0	0	0
Tools/Equipment	0	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0	0
Total	$1,794,122	$2,925,410	$4,719,532	24,878	99,781	124,659	$156	$65	$3,164	$3,383

Table 10
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculation of Calculated SDF Using Original Cost

	Cost of Available Capacity			Capacities Available for Growth			Calculated SDF			
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Treatment	Total
Collection System	$0	$233,813	$233,813	0	13,182	13,182	$0	$18	$0	$18
Interceptor System	552,514	2,211,246	2,763,760	1,929	72,035	73,963	7	30	0	37
Treatment Plant	0	0	0	0	0	0	0	0	3,163	3,163
Lift Station	1,886,503	0	1,886,503	8,385	0	8,385	225	0	0	225
Buildings/ Improvements	323,907	480,351	804,258	14,564	14,564	29,128	11	16	0	28
Administration	0	0	0	0	0	0	0	0	0	0
Tools/Equipment	0	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0	0
Total	$2,762,925	$2,925,410	$5,688,334	24,878	99,781	124,659	$244	$65	$3,164	$3,471

Table 11
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculation of Calculated SDF Using RCNLD

	Cost of Available Capacity			Capacities Available for Growth			Calculated SDF			
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Treatment	Total
Collection System	$0	$233,813	$233,813	0	13,182	13,182	$0	$18	$0	$18
Interceptor System	512,601	2,211,246	2,723,847	1,929	72,035	73,963	$7	$30	$0	37
Treatment Plant	0	0	0	0	0	0	0	$0	3,163	3,163
Lift Station	1,628,510	0	1,628,510	8,385	0	8,385	$194	$0	0	194
Buildings/ Improvements	229,568	480,351	709,919	14,564	14,564	29,128	$8	$16	0	24
Administration	0	0	0	0	0	0	$0	$0	0	0
Tools/Equipment	0	0	0	0	0	0	$0	$0	0	0
Exclude from SDF	0	0	0	0	0	0	$0	$0	0	0
Total	$2,370,678	$2,925,410	$5,296,087	24,878	99,781	124,659	$209	$64	$3,163	$3,437

Table 12
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculation of Calculated SDF Using RCN

	Cost of Available Capacity			Capacities Available for Growth			Calculated SDF			
System Component	Existing	New	Total	Existing	New	Total	Buy-In	Improvement	Treatment	Total
Collection System	$0	$233,813	$233,813	0	13,182	13,182	$0	$18	$0	$18
Interceptor System	668,760	2,211,246	2,880,007	1,929	72,035	73,963	9	30	$0	39
Treatment Plant	0	0	0	0	0	0	0	0	3,163	3,163
Lift Station	2,535,947	0	2,535,947	8,385	0	8,385	302	0	0	302
Buildings/ Improvements	450,967	480,351	931,318	14,564	14,564	29,128	15	16	0	32
Administration	0	0	0	0	0	0	0	0	0	0
Tools/Equipment	0	0	0	0	0	0	0	0	0	0
Exclude from SDF	0	0	0	0	0	0	0	0	0	0
Total	$3,655,675	$2,925,410	$6,581,084	24,878	99,781	124,659	$327	$65	$3,164	$3,554

Table 13
Town of Castle Rock
Wastewater System Development Fee Analysis
Summary of SDFs by Meter Size Using RCNLD

Meter Size	Buy-In	Improvement	Treatment	Total
3/4 x 5/8 -Inch	$140	$43	$2,119	$2,303
3/4-Inch	209	64	3,163	3,437
1-Inch	349	107	5,283	5,740
1 1/2-Inch	696	214	10,534	11,445
2-Inch OMNI C2	1,394	428	21,100	22,925
2-Inch OMNI T2	1,741	534	26,351	28,630
3-Inch OMNI C2	3,484	1,069	52,734	57,295
3-Inch OMNI T2	4,529	1,390	68,551	74,480
4-Inch OMNI C2	6,967	2,137	105,436	114,555
4-Inch OMNI T2	8,710	2,672	131,819	143,220
6-Inch OMNI C2	13,935	4,275	210,904	229,145
6-Inch OMNI T2	17,417	5,344	263,607	286,405

Table 14
Town of Castle Rock
Wastewater System Development Fee Analysis
Comparison of SDFs by Meter Size Using RCNLD

Meter Size	Existing	Calculated	Difference	Percent Change
3/4 x 5/8 -Inch	$2,173	$2,303	$130	6.0%
3/4-Inch	3,243	3,437	194	6.0%
1-Inch	5,416	5,740	324	6.0%
1 1/2-Inch	10,799	11,445	646	6.0%
2-Inch OMNI C2	21,631	22,925	1,294	6.0%
2-Inch OMNI T2	27,014	28,630	1,616	6.0%
3-Inch OMNI C2	54,061	57,295	3,234	6.0%
3-Inch OMNI T2	70,276	74,480	4,204	6.0%
4-Inch OMNI C2	108,089	114,555	6,466	6.0%
4-Inch OMNI T2	135,136	143,220	8,084	6.0%
6-Inch OMNI C2	216,211	229,145	12,934	6.0%
6-Inch OMNI T2	270,239	286,405	16,166	6.0%

Table 15
Town of Castle Rock
Wastewater System Development Fee Analysis
Comparison of SDFs by Meter Size

Meter Size	Existing	Book Value	Original Cost	RCNLD	RCN
3/4 x 5/8 -Inch	$2,173	$148	$2,327	$2,303	$2,383
3/4-Inch	3,243	221	3,473	3,437	3,556
1-Inch	5,416	369	5,800	5,740	5,939
1 1/2-Inch	10,799	736	11,565	11,445	11,841
2-Inch OMNI C2	21,631	1,474	23,165	22,925	23,719
2-Inch OMNI T2	27,014	1,841	28,930	28,630	29,621
3-Inch OMNI C2	54,061	3,684	57,895	57,295	59,279
3-Inch OMNI T2	70,276	4,789	75,260	74,480	77,059
4-Inch OMNI C2	108,089	7,366	115,755	114,555	118,521
4-Inch OMNI T2	135,136	9,209	144,720	143,220	148,179
6-Inch OMNI C2	216,211	14,734	231,545	229,145	237,079
6-Inch OMNI T2	270,239	18,416	289,405	286,405	296,321

Table 16
Town of Castle Rock
Wastewater System Development Fee Analysis
Calculated Wastewater SDF Implementation Schedule

Meter Size	FY2017	FY2018	FY2019	FY2020	FY2021
3/4 x 5/8 -Inch	$2,303	$2,367	$2,433	$2,502	$2,572
3/4-Inch	3,437	3,533	3,632	3,734	3,839
1-Inch	5,740	5,900	6,065	6,236	6,411
1 1/2-Inch	11,445	11,765	12,095	12,434	12,784
2-Inch OMNI C2	22,925	23,565	24,225	24,906	25,606
2-Inch OMNI T2	28,630	29,430	30,255	31,104	31,979
3-Inch OMNI C2	57,295	58,895	60,545	62,246	63,996
3-Inch OMNI T2	74,480	76,560	78,705	80,916	83,191
4-Inch OMNI C2	114,555	117,755	121,055	124,454	127,954
4-Inch OMNI T2	143,220	147,220	151,345	155,596	159,971
6-Inch OMNI C2	229,145	235,545	242,145	248,946	255,946
6-Inch OMNI T2	286,405	294,405	302,655	311,154	319,904

APPENDIX D

Stormwater Development Impact Fees

Table 1
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Capital Improvements Costs Allocations

			Existing/Growth Allocation		Basin			Total Growth Related Cost by Basin	
Project	Total Cost w/o Developer Contributions	Developer Contributions	% Existing System	% For Future Growth	% Cherry Creek Basin	% Plum Creek Basin	Non-Growth Related Costs	Cherry Creek Basin	Plum Creek Basin
Tributary B	0	4,139,220	100.0%	0%	0.0%	100%	-	-	-
Tributary B	0	770,697	0.0%	100%	0.0%	100%	-	-	-
6400 West Trib	1,001,714	-	100.0%	0%	0.0%	100%	1,001,714	-	-
6400 West Trib	2,151,191	-	0.0%	100%	0.0%	100%	-	-	2,151,191
6400 West Trib	309,575	-	50.0%	50%	0.0%	100%	154,788	-	154,788
6400 East Trib	367,952	-	100.0%	0%	0.0%	100%	367,952	-	-
6400 East Trib	1,137,644	-	0.0%	100%	0.0%	100%	-	-	1,137,644
6400 East Trib	1,406,355	-	50.0%	50%	0.0%	100%	703,178	-	703,178
6400 South Trib	990,640	-	100.0%	0%	0.0%	100%	990,640	-	-
6400 South Trib	962,955	1,179,392	0.0%	100%	0.0%	100%	-	-	962,955
Tributary C	34,000	-	100.0%	0%	0.0%	100%	34,000	-	-
Tributary C	410,603	212,280	0.0%	100%	0.0%	100%	-	-	410,603
Tributary D	2,116,655	-	100.0%	0%	0.0%	100%	2,116,655	-	-
Tributary D	1,544,041	603,229	0.0%	100%	0.0%	100%	-	-	1,544,041
Tributary D	555,427	-	50.0%	50%	0.0%	100%	277,714	-	277,714
Hangmans Gulch	3,073,564	-	100.0%	0%	0.0%	100%	3,073,564	-	-
Hangmans Gulch	4,939,816	-	0.0%	100%	0.0%	100%	-	-	4,939,816
Hangmans Gulch	1,481,711	-	50.0%	50%	0.0%	100%	740,855	-	740,855
Parkview Trib	2,088,255	-	100.0%	0%	0.0%	100%	2,088,255	-	-
Parkview Trib	824,927	-	0.0%	100%	0.0%	100%	-	-	824,927
Sellars Gulch	3,497,143	3,767,970	100.0%	0%	0.0%	100%	3,497,143	-	-
Sellars Gulch	3,948,852	622,716	0.0%	100%	0.0%	100%	-	-	3,948,852
Sellars Gulch	4,109,988	-	50.0%	50%	0.0%	100%	2,054,994	-	2,054,994
Omni Trib	1,158,835	583,947	100.0%	0%	0.0%	100%	1,158,835	-	-
Omni Trib	594,030	-	0.0%	100%	0.0%	100%	-	-	594,030
Omni Trib	1,655,920	-	50.0%	50%	0.0%	100%	827,960	-	827,960
Industrial Trib	527,374	-	100.0%	0%	0.0%	100%	527,374	-	-
Industrial Trib	2,078,221	875,655	0.0%	100%	0.0%	100%	-	-	2,078,221
Industrial Trib	1,857,450	-	50.0%	50%	0.0%	100%	928,725	-	928,725
Westfield Trib	0	-	100.0%	0%	0.0%	100%	-	-	-
Westfield Trib	0	868,791	50.0%	50%	0.0%	100%	-	-	-
Douglas Lane Trib	450,000	-	100.0%	0%	0.0%	100%	450,000	-	-
Douglas Lane Trib	1,070,245	-	50.0%	50%	0.0%	100%	535,123	-	535,123
Gambel Ridge North Trib	0	-	100.0%	0%	0.0%	100%	-	-	-
Gambel Ridge North Trib	0	140,547	0.0%	100%	0.0%	100%	-	-	-
Gambel Ridge Trib	176,900	-	100.0%	0%	0.0%	100%	176,900	-	-
Gambel Ridge Trib	3,707,652	-	0.0%	100%	0.0%	100%	-	-	3,707,652
N. Dawson Trib	0	-	100.0%	0%	0.0%	100%	-	-	-
N. Dawson Trib	1,201,991	2,337,919	0.0%	100%	0.0%	100%	-	-	1,201,991
N. Dawson Trib	849,120	-	50.0%	50%	0.0%	100%	424,560	-	424,560
S. Dawson Trib	0	-	100.0%	0%	0.0%	100%	-	-	-
S. Dawson Trib	1,273,680	1,073,606	0.0%	100%	0.0%	100%	-	-	1,273,680
S. Dawson Trib	212,280	-	50.0%	50%	0.0%	100%	106,140	-	106,140
E. Plum Creek	3,672,621	-	100.0%	0%	0.0%	100%	3,672,621	-	-
E. Plum Creek	5,247,882	413,062	0.0%	100%	0.0%	100%	-	-	5,247,882
E. Plum Creek	63,153	-	50.0%	50%	0.0%	100%	31,577	-	31,577
McMurdo Gulch	2,667,493	1,934,755	100.0%	0%	100.0%	0%	2,667,493	-	-
McMurdo Gulch	2,593,796	455,518	0.0%	100%	100.0%	0%	-	2,593,796	-
McMurdo Gulch	911,920	-	50.0%	50%	100.0%	0%	455,960	455,960	-
Diamond Ridge Trib	621,600	-	100.0%	0%	100.0%	0%	621,600	-	-
Mitchell Gulch	978,169	-	100.0%	0%	100.0%	0%	978,169	-	-
Mitchell Gulch	391,816	-	0.0%	100%	100.0%	0%	-	391,816	-
Cherry Creek	0	-	100.0%	0%	100.0%	0%	-	-	-
Cherry Creek	671,198	-	0.0%	100%	100.0%	0%	-	671,198	-
PC Special Offline Studies	0	-	100.0%	0%	0.0%	100%	-	-	-
PC Special Offline Studies	0	-	0.0%	100%	0.0%	100%	-	-	-
CC Special Offline Studies	0	-	100.0%	0%	100.0%	0%	-	-	-
CC Special Offline Studies	0	-	0.0%	100%	100.0%	0%	-	-	-
Craig & Gould North	1,200,000	-	100.0%	0%	0.0%	100%	1,200,000	-	-
Gordon Drive	500,000	-	100.0%	0%	0.0%	100%	500,000	-	-
Chase Drain Installations/Rehab	585,000	-	100.0%	0%	50.0%	50%	585,000	-	-
Minor Drainageway Stabilization	2,245,702	-	100.0%	0%	0.0%	100%	2,245,702	-	-
Minor Drainageway Stabilization	1,056,801	-	0.0%	100%	0.0%	100%	-	-	1,056,801
Minor Drainageway Stabilization	1,542,764	-	100.0%	0%	100.0%	0%	1,542,764	-	-
Minor Drainageway Stabilization	1,212,172	-	0.0%	100%	100.0%	0%	-	1,212,172	-
Detention Pond Retrofits	1,950,000	-	100.0%	0%	50.0%	50%	1,950,000	-	-
CMP Rehabilitation	2,400,000	-	100.0%	0%	50.0%	50%	2,400,000	-	-
Master Plan GIS Database Tool	29,485	-	100.0%	0%	50.0%	50%	29,485	-	-
Master Plan GIS Database Tool	20,515	-	0.0%	100%	50.0%	50%	-	10,258	10,258
Watershed MP Updates (4 EA)	530,726	-	100.0%	0%	0.0%	100%	530,726	-	-
Watershed MP Updates (4 EA)	369,274	-	0.0%	100%	0.0%	100%	-	-	369,274
Watershed MP Updates (4 EA)	61,089	-	100.0%	0%	100.0%	0%	61,089	-	-
Watershed MP Updates (4 EA)	38,911	-	0.0%	100%	100.0%	0%	-	38,911	-
Minor Drainageway MP	44,644	-	100.0%	0%	50.0%	50%	44,644	-	-
Minor Drainageway MP	22,023	-	0.0%	100%	50.0%	50%	-	11,011	11,011
Admin/Customer Service Building 2019	643,724	-	50.0%	50%	50.0%	50%	321,862	160,931	160,931
Site Improvements at 175 Kellogg Ct.	536,399	-	50.0%	50%	50.0%	50%	268,200	134,100	134,100
Totals	**$86,575,584**	**$19,979,305**			**50%**	**50%**	**$42,343,958**	**$5,680,152**	**38,551,474**

Table 2
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Capital Improvements Costs Allocations

Item		Total
Total Non Growth Related Cost	$	42,343,958
Total Growth Related Improvement Costs		44,231,626
Developer's Contribution		19,979,305
Total Capital Improvement Costs	$	106,554,889
Growth Related Improvements Costs		
Total Cherry Creek Basin		5,680,152
Total Plum Creek Basin		38,551,474
Total Growth Related Improvement Costs		$44,231,626

Table 3
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Acreage to be Developed

Copy and paste values on these for first number then add formula to end

Land Use Type	Cherry Creek Basin	Plum Creek Basin	Units per acre	Proportion of SF Detached
Single Family Detached	950	2,779	3	100%
Single Family Attached	18	47	10	
Multifamily	254	969	12	
Commercial (Retail/ Office)	252	1,826		
Open Spaces	460	1,600		
Total	1,935	7,220		

Table 4
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Percentage of Imperviousness by Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	33%	33%
Single Family Attached	75%	75%
Multifamily	80%	80%
Commercial (Retail/ Office)	80%	80%
Open Spaces	2%	2%

Table 5
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Allocation of Factor of Capital Costs

	Impervious Acreage		Proportionate Share	
Land Use Type	Cherry Creek Basin	Plum Creek Basin	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	314	917	42.30%	28.48%
Single Family Attached	14	35	1.87%	1.10%
Multifamily	203	775	27.35%	24.07%
Commercial (Retail/ Office)	202	1,460	27.24%	45.36%
Open Spaces	9	32	1.24%	0.99%
Total	741	3,220	100.00%	100.00%

Table 6
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Allocation of Capital Cost by Class

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	$2,402,679	$10,980,553
Single Family Attached	106,129	422,142
Multifamily	1,553,672	9,278,716
Commercial (Retail/ Office)	1,547,147	17,486,884
Open Spaces	70,526	383,179
Total	$5,680,152	$38,551,474

Table 7
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Capital Cost per Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	$2,528	$3,951
Single Family Attached	5,746	8,980
Multifamily	6,129	9,579
Commercial (Retail/ Office)	6,129	9,579
Open Spaces	153	239

Table 8
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Number of Units per Acre

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	3	3
Single Family Attached	10	10
Multifamily	12	12
Commercial (Retail/ Office)	16,117	16,117
Open Spaces	0	0

Table 9
Town of Castle Rock
Stormwater Development Impact Fee Analysis
SDF per Unit

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached Per Unit	$843	$1,317
Single Family Attached Per Unit	$563	$880
Multifamily Per Unit	$511	$798
Commercial (Retail/ Office) Per 1,000 Sq. ft.	$380	$594
Open Spaces	$0	$0

Table 10
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Comparison of SDFs by Unit for Plum Creek Basin

Land Use Type	Existing-Plum Creek Basin	Calculated 2017	Difference	Percent Change
Single Family Detached	1,125	$1,317	$192	17.1%
Single Family Attached	752	880	128	17.1%
Multifamily	682	798	116	17.0%
Commercial (Retail/ Office)	508	594	86	17.0%
Open Spaces	0	0	0	NA

Table 11
Town of Castle Rock
Stormwater Development Impact Fee Analysis
Comparison of SDFs by Unit for Cherry Creek Basin

Land Use Type	Existing Cherry Creek Basin	Calculated 2017	Difference	Percent Change
Single Family Detached	748	843	$95	12.7%
Single Family Attached	500	563	63	12.7%
Multifamily	453	511	58	12.7%
Commercial (Retail/ Office)	338	380	42	12.5%
Open Spaces	0	0	0	NA

Table 12
Stormwater Development Impact Fee Analysis
Implementation Schedule of SDFs by Unit for Plum Creek Basin

Land Use Type	FY2017	FY2018	FY2019	FY2020	FY2021
Single Family Detached	$1,317	$1,354	$1,392	$1,431	$1,471
Single Family Attached	880	905	930	956	983
Multifamily	798	820	843	867	891
Commercial (Retail/ Office)	594	611	628	646	664
Open Spaces	0	0	0	0	0

Table 13
Stormwater Development Impact Fee Analysis
Implementation Schedule of SDFs by Unit for Cherry Creek Basin

Land Use Type	FY2017	FY2018	FY2019	FY2020	FY2021
Single Family Detached	$843	$867	$891	$916	$942
Single Family Attached	563	579	595	612	629
Multifamily	511	525	540	555	571
Commercial (Retail/ Office)	380	391	402	413	425
Open Spaces	0	0	0	0	0

APPENDIX E

Tables from Urban Drainage and Flood Control District Criteria Manual

Table RO-3—Recommended Percentage Imperviousness Values

Land Use or Surface Characteristics	Percentage Imperviousness
Business:	
Commercial areas	95
Neighborhood areas	85
Residential:	
Single-family	*
Multi-unit (detached)	60
Multi-unit (attached)	75
Half-acre lot or larger	*
Apartments	80
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	5
Playgrounds	10
Schools	50
Railroad yard areas	15
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	0
Lawns, clayey soil	0

* See Figures RO-3 through RO-5 for percentage imperviousness.

$$C_A = K_A + \left(1.31i^3 - 1.44i^2 + 1.135i - 0.12\right) \text{ for } C_A \geq 0, \text{ otherwise } C_A = 0 \qquad \text{(RO-6)}$$

$$C_{CD} = K_{CD} + \left(0.858i^3 - 0.786i^2 + 0.774i + 0.04\right) \qquad \text{(RO-7)}$$

$$C_B = \left(\mathrm{C_A} + C_{CD}\right)/2$$

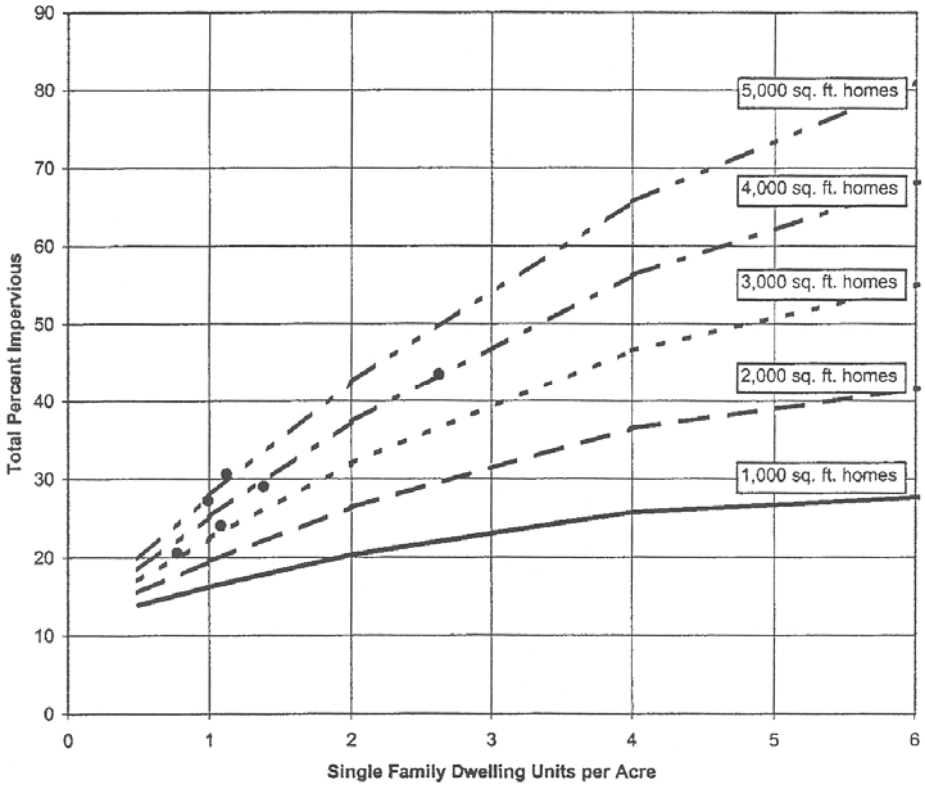

Figure RO-5—Watershed Imperviousness, Single-Family Residential Two-Story Houses

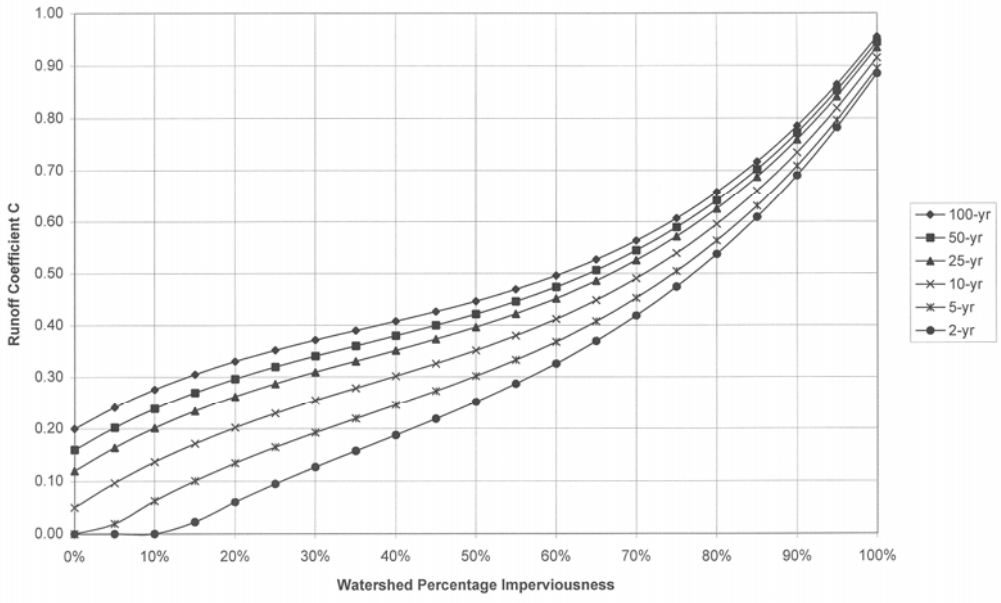

Figure RO-6—Runoff Coefficient, *C*, vs. Watershed Percentage Imperviousness NRCS Hydrologic Soil Group A

APPENDIX F

Comparative Floor Area Ratios

COMPARATIVE FLOOR AREA RATIOS (FAR) FOR SELECTED AREAS

Floor Area Ratios (FARs) can be used as a measure of density or, in some cases, as an indicator of land use efficiency. The ratio is simply the square footage of building divided by the square footage of land in the building lot.

The highest FARs in Douglas County are in the office sector. The average office FAR for the County is .33. Lone Tree ranks the highest among subareas within the County as it registers a .42 average FAR for office space and Castle Rock ranks second with a .37 FAR. Lone Tree also ranks first in retail FAR with a .29 measurement, over the incorporated area average of .23 and substantially above the total County average of .21. Office/warehouse space is a little more efficient than retail in some subareas of the County but not on a countywide basis. Lone Tree, again, has the highest average FAR in the office/warehouse sector at .32. The Primary Urban Area (PUA), in unincorporated Douglas County ranks second with a .27 reading. The countywide average drops to .16 in the office/warehouse sector.

	RETAIL	OFFICE	OFF/WHSE
PRIMARY URBAN AREA (PUA)	0.18	0.35	0.27
ALL UNINCORPORATED	0.17	0.34	0.15
CASTLE PINES NORTH	0.20	0.30	NA
CASTLE ROCK	0.21	0.37	0.15
LONE TREE	0.29	0.42	0.32
PARKER	0.19	0.20	0.24
ALL INCORPORATED	0.23	0.28	0.18
TOTAL COUNTY	0.21	0.33	0.16